DRAFT

SOCORRO

Resource Management Plan Revision and Environmental Impact Statement

BLM - Socorro Field Office

U.S. Department of the Interior

April 2007

BUREAU OF LAND MANAGEMENT

The Bureau of Land Management is responsible for the balanced management of the public lands and resources and their various values so that they are considered in a combination that will best serve the needs of the American people. Management is based upon the principals of multiple use and sustained yield, a combination of uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources. These resources include recreation, range, timber, minerals, watershed, fish and wildlife, wilderness and natural, scenic, scientific, and cultural values.

BLM/NM/PL-07-03-1610

United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Albuquerque District
Socorro Field Office
901 South Highway 85
Socorro, New Mexico 87801
www.nm.blm.gov

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SOCORRO
RESOURCE MANAGEMENT PLAN REVISION/ ENVIRONMENTAL IMPACT STATEMENT

IN REPLY REFER TO:
1610(12000)

Draft (X) **Final ( )**

LEAD AGENCY: **U.S. Department of the Interior, Bureau of Land Management**

TYPE OF ACTION: **Administrative**

JURISDICTION: **Socorro and Catron Counties, New Mexico**

ABSTRACT

This Draft Resource Management Plan Revision (RMPR) and Environmental Impact Statement (EIS) addresses alternative management strategies and the potential effects of those strategies for managing public land and its resources in Socorro and Catron Counties, New Mexico. Within the two-county Planning Area, approximately 1.5 million surface acres and 6 million acres of Federal mineral estate are managed by the Bureau of Land Management (BLM). BLM's management actions must be consistent with the principles of multiple use and sustained yield as directed by the Federal Land Policy and Management Act of 1976.

Four alternatives have been considered. Alternative A would be the continuation of existing management (or no action). Alternatives B, C, and D represent variations from existing management, and include a range from an emphasis on the conservation, protection, and enhancement of natural and cultural resources to an emphasis on resource use and production. Alternative B is BLM's preferred alternative, which represents a balance of resource use and conservation. When completed, the RMPR will provide direction for long-term management of public land within Socorro and Catron Counties.

Comments on this Draft RMPR/EIS must be received within 90 days following the date that the Environmental Protection Agency Notice of Availability is published in the *Federal Register*. Comments should be addressed to:

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Socorro Field Office
Bureau of Land Management
901 S. Highway 85
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Telephone: (505) 838-1273

RECOMMENDED:

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Socorro Field Manager

APPROVED:

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TAKE PRIDE IN AMERICA

IN REPLY REFER TO:
1610 (12000)

Dear Reader:

Enclosed for your review and comment is the Draft Socorro Resource Management Plan Revision and Environmental Impact Statement (Draft RMPR/EIS). This Draft RMPR/EIS also is available on the BLM web site at http://www.nm.blm.gov.This document provides a description and analysis of alternative strategies for managing public land in Socorro and Catron Counties, in west-central New Mexico. Upon completion, this RMPR would replace the 1989 Socorro Resource Management Plan. The Bureau of Land Management (BLM) is seeking public input on the Draft RMPR/EIS to assist in decision-making to determine the management of public land in this area.

The review period for this Draft RMPR/EIS will occur over 90 calendar days from the date that the Environmental Protection Agency publishes the Notice of Availability of this document in the *Federal Register*. Comments on this document may be submitted to the BLM, or presented verbally at scheduled public hearings. During the 90-day review period, the BLM will hold public meetings in two locations as follows:

Date	**Location**	**Address**
Tuesday, May 22	BLM Socorro Field Office	901 S. Highway 85,Socorro ,NM
Wednesday, May 23	Datil Elementary School	Highway 12, Datil, NM

All meetings will be held from 6:00 to 8:00 p.m.

Written comments on this Draft RMPR/EIS may be submitted to:

Socorro Draft RMPR/EIS
c/o Brian Bellew
Bureau of Land Management
901 S. Highway 85
Socorro, New Mexico 87801

Where possible, please refer to specific page numbers in your comments. All written comments must include a full, legible name and return address. In order to be considered in the Proposed RMPR/Final EIS, all written comments must be postmarked no later than 90 days from the date that the Environmental Protection Agency publishes the Notice of Availability of the document in the *Federal Register*.

Written and oral comments that are received during the 90-day review period will be considered fully and evaluated in preparing the Proposed RMPR/Final EIS. Comments, including names and addresses of the respondents, may be published as part of the RMPR/EIS. Individual respondents may request confidentiality. If you wish to withhold your name or street address from public review or disclosure under the Freedom of Information Act, you must state this prominently at the beginning of your written comment. Such requests will be honored to the extent allowed by law. All submissions from organizations and businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, will be made available for public inspection in their entirety.

We welcome your comments on this document.

Sincerely,

John L. Merino, Manager
Socorro Field Office

Enclosure

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ACRONYMS AND ABBREVIATIONS

^{o}F	Degrees Fahrenheit
$\mu g/m^3$	micrograms per cubic meter
AADT	annual average daily traffic
ACEC	Area of Critical Environmental Concern
AD	after death
APHIS-WS	Animal Plant Health Inspection Services-Wildlife Services
AUM	Animal Unit Month
BEA	U.S. Department of Commerce Bureau of Economic Analysis
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BMP	best management practice
BPS	Budget Planning System
BPS/MIS	Budget Planning Systems / Management Information System
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CO_2	Carbon Dioxide
CRMP	Coordinated Resource Management Plan
CWA	Clean Water Act
dBA	A-weighted decibels
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ERMA	Extensive Recreation Management Area
ESA	Endangered Species Act of 1973
FIA	Forest Inventory and Analysis
FLPMA	Federal Land Policy and Management Act of 1976
Forest Service	U.S. Forest Service
FRCC	Fire Range Condition Class
FWIR	Final Wilderness Inventory Report
GIS	Geographic Information System
GPS	Global Positioning System
HCA	Head of Contracting Activity
HFRA	Healthy Forests Restoration Act
HMP	Habitat Management Plan
I-25	Interstate 25
IHICS	Integrated Habitat Inventory Classification System
IMPROVE	Integrated Monitoring of Protected Visual Environments
IWIR	Intensive Wilderness Inventory Report
KGRA	Known geothermal resource area

mg/L	milligrams per liter
mgd	million gallons per day
MLRA	major land resource area
MOU	Memorandum of Understanding
MSA	Management Situation Analysis
NAAQS	National Ambient Air Quality Standards
National Register	National Register of Historic Places
NBC	National Business Center
NEPA	National Environmental Policy Act of 1969
NFPORS	National Fire Plan Operations and Reporting Systems
NHPA	National Historic Preservation Act
NMCRIS	New Mexico Cultural Resource Information System
NMDGF	New Mexico Department of Game and Fish
NMED	New Mexico Environment Department
NMEMNRD	New Mexico Energy, Minerals, and Natural Resources Department
NMMNH&S	New Mexico Museum of Natural History & Science
NMWQCC	New Mexico Water Quality Control Commission
NO_2	nitrogen dioxide
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
OHV	off-highway vehicle
pH	The degree of acidity or alkalinity of a solution
PI	Project Inspector
PILT	Payments-in-lieu of taxes
P.L.	Public Law
PM_{10}	particulate matter equal to or less than 10 microns diameter
$PM_{2.5}$	particulate matter equal to or less than 2.5 microns diameter
ppm	parts per million
RCRA	Resource Conservation and Recovery Act
Reclamation	U.S. Department of the Interior, Bureau of Reclamation
RFD	Reasonably Foreseeable Development
Ridgeway	Ridgeway Arizona Oil Corporation
RMP	Resource Management Plan
RMPA	Resource Management Plan Amendment
RMPR	Resource Management Plan Revision
RMPR/EIS	Resource Management Plan Revision/Environmental Impact Statement
ROS	recreation opportunity spectrum
SAF	Society of American Forests
SCS	Soil Conservation Service
SHPO	State Historic Preservation Office
SMA	Special Management Area
SMZ	streamside management zone
SO_2	sulfur dioxide
SRMA	Special Recreation Management Area
State Engineer	New Mexico Office of the State Engineer

TDS	total dissolved solids
US	U.S Route
US 180	U.S. Highway 180
U.S.C.	U.S. Code
USDA	U.S. Department of Agriculture
USDI	U.S. Department of the Interior
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VRM	Visual Resource Management
WO	Washington Office
WSA	Wilderness Study Area

Executive Summary

EXECUTIVE SUMMARY

In accordance with the Federal Land Policy and Management Act of 1976, the Bureau of Land Management (BLM) is responsible for management of public land and its resources based on the principles of multiple use and sustained yield, diversity, and productivity of public lands for present and future generations. Management direction is provided by land use plans, which are used to determine appropriate multiple uses and allocate resources, develop strategy to manage and protect resources, and establish systems to monitor and evaluate status of resources and the effectiveness of management programs over time. The Socorro Field Office of the BLM has prepared this Resource Management Plan Revision (RMPR) and Environmental Impact Statement (EIS) to analyze and update BLM's management of public land in Socorro and Catron Counties, New Mexico. The purpose of the RMPR is to provide a comprehensive framework for managing public land and allocating resources. The RMPR will update the 1989 Socorro Resource Management Plan (RMP). The EIS prepared with the RMPR is intended to satisfy the requirements of the National Environmental Policy Act (NEPA), Council on Environmental Quality regulations implementing NEPA (40 Code of Federal Regulations 1500-1508), and other associated regulations.

Socorro and Catron Counties are located in the west-central portion of New Mexico. Public land (BLM-administered land) in the two counties includes approximately 1.5 million surface acres and 6 million acres of Federal mineral estate. While BLM can make decisions related only to public land and its resources, BLM is responsible for collaboratively planning with adjacent jurisdictions and the public to encourage compatible land uses within a regional context, and for considering potential impacts on all resources within the Planning Area regardless of ownership or management. The Planning Area referred to in this document includes all land within Socorro and Catron Counties; the term Decision Area is used to describe public land and its resources that are managed by the BLM, including Federal mineral estate, within the two counties. The term "BLM-managed surface estate" refers to the 1.5 million acres of surface land managed by BLM, exclusive of areas of Federal mineral estate that underlie land owned or managed by other entities.

Circumstances have changed within the Planning Area since the last RMP was developed. Some of the original goals and supporting management decisions are no longer adequate to address the demographics, resource conditions, policies, and other circumstances that have changed over the years. Though BLM intends to carry forward the management strategies that have proven to be successful and are still vitally relevant, these changes warrant analysis of BLM's current management direction.

The planning process to revise the RMP was initiated in 2002 with the scoping phase, which included public meetings, the distribution of newsletters, and other activities to identify issues early in the analysis. The results of scoping are documented in the Scoping Report, dated August 2002 (available at the Socorro Field Office and online at www.nm.blm.gov/sfo/sfo_home.html). Issues identified through scoping for consideration include special designations, watersheds, mineral development, land use allocations, transportation and access, and cultural and recreational opportunities. Diverse opinions about off-highway vehicle (OHV) use were expressed at all of the scoping meetings. To gain a better understanding of public sentiment regarding OHV use on public land, BLM conducted workshops specific to this topic in March and April 2003. The results of the OHV workshops are documented in the Off-Highway Vehicle Use: Public Workshops Report, dated August 2003 (available at the Socorro Field Office and online at www.nm.blm.gov/sfo/sfo_home.html). In addition, the BLM identified management concerns to be addressed through the RMPR, such as threatened and endangered species, wild horses, forest and woodland management, noxious weeds, and lands and realty management including right-of-way avoidance and exclusion areas.

A Management Situation Analysis was prepared to compile available resource data and analyze the opportunities for changes to management of BLM's Decision Area within Socorro and Catron Counties. Alternative management plans that were evaluated in the EIS were derived from this Management Situation Analysis, broad objectives (or desired future conditions) that were established for each resource or resource use, and the issues and concerns that were identified throughout scoping and the planning process.

Alternatives for management of BLM's Decision Area are discussed in Chapter 2 of the RMPR/EIS. Chapter 3 provides a characterization of the existing environment. The analysis of impacts, conducted to evaluate the potential impacts that would result from each alternative, and cumulative impacts that also consider past, present, and reasonably foreseeable future actions, is provided in Chapter 4 of the EIS.

ALTERNATIVES

Four alternatives are considered in this RMPR/EIS. Under the No-Action Alternative (Alternative A), management decisions and guidance would continue as directed in the 1989 RMP and subsequent amendments published since the approval of the 1989 RMP. Alternatives B, C, and D represent variations from existing management. Overall, the alternatives may be distinguished generally as follows:

- No Action Alternative (Alternative A), which represents the continuation of existing management plans, policies, and decisions as established in the 1989 Socorro RMP and applicable amendments
- Alternative B, which represents a balance of resource use and conservation and is the preferred alternative at the time of this Draft RMPR/EIS
- Alternative C, which provides an emphasis of resource conservation, protection, and enhancement of natural and cultural resources
- Alternative D, which emphasizes resource use and production

The alternatives are primarily distinguished by the degree of protection or use of the resources, with Alternative C providing the greatest potential for resource protection, Alternative D emphasizing resource use, and Alternative B providing a balance between the two.

A major consideration within each alternative is the identification and management of special designations. The size and type of designation for areas of critical environmental concern (ACECs), special management areas (SMAs), and special recreation management areas (SRMAs) varies among alternatives. Alternative C generally allows for the largest number of acres and the most restrictions on resource uses within special designations and overall; Alternatives B and D offer progressively smaller acreage and less restrictive management prescriptions. Management prescriptions for the special designations typically address motorized vehicle use, right-of-way and other land use authorizations, and minerals management as well as other resource considerations.

Other key areas of comparison among the alternatives include:

- At least one utility corridor is identified under all action alternatives; the 1989 RMP had not addressed utility corridors.
- The extent and type of management applied to potential aplomado falcon habitat areas in southern Socorro County varies among the action alternatives.

- Discretionary closures and additional stipulations on fluid minerals leasing are considered in different locations throughout the alternatives[1].

Several alternatives were considered but eliminated from detailed analysis. A variety of areas were considered for special designations; however, only those areas meeting the BLM criteria for ACECs of relevance, importance, and need for special management were carried forward under the alternatives. Some alternative management strategies were considered including various best management practices, development of watershed management plans, and development of partnerships. These decisions can be implemented at any time without amending or revising the RMP; therefore, they were not included in the alternatives. Other proposed management strategies, such as maintaining vegetative cover and soil conditions, are managed under the New Mexico Standards for Public Land Health and Guidelines for Livestock Grazing Management (hereafter New Mexico Standards and Guidelines) and do not require separate management decisions. Lastly, some management strategies were considered but eliminated because they were outside BLM's jurisdiction.

AFFECTED ENVIRONMENT

To document the existing conditions on public land in Socorro and Catron Counties and establish a baseline for evaluating potential impacts, the current resources and land uses and their conditions are described in Chapter 3. The majority of the information was gathered from existing data maintained by BLM. The discussion is organized by resource and resource use, and includes the following sections:

- Air Quality
- Geology
- Soil Resources
- Water Resources
- Vegetation
- Wildlife and Riparian Habitat
- Special Status Species
- Wild Horses
- Wildland Fire Ecology and Management
- Cultural Resources
- paleontological Resources
- Cave and Karst Resources
- Wilderness Characteristics
- Lands Use and Facilities
- Forestry and Woodland Products
- Rangeland Management
- Minerals
- Recreation
- Renewable Energy
- Transportation and Travel Management
- Utility Corridors and Communication Sites
- Land Tenure
- Hazardous Materials
- Special Designations
- Social and Economic Conditions

ENVIRONMENTAL CONSEQUENCES

The predicted consequences, or potential effects, on the environment that would result from the implementation of the alternative management strategies were identified. An impact, or effect, is defined as a modification to the environment as it presently exists, that is brought about by an outside action. Impacts can vary in significance from no change or only slightly discernible change, to a full modification or elimination of the environmental condition. The following sections summarize the results from the impact analysis for each alternative.

[1] Nondiscretionary closures to fluid mineral leasing are beyond the discretion of the BLM, and would be observed under all alternatives. In the Planning Area, these closures include all wilderness study areas (WSAs); the White Sands Missile Range and other military installations; National Park Service land; land managed by U.S. Fish and Wildlife Service and the New Mexico Department of Game and Fish; and towns, villages, and incorporated cities.

Alternative A

In general, the management of soils, water and watershed resources, and vegetation would be expected to result in reduced potential for soil erosion and vegetation loss, and increased control of noxious weeds over time, as actions are taken to meet public land health standards in areas that are not currently achieving them and through protective management of more sensitive resources within special designations. Surface disturbance due to resource uses (such as mineral development, OHV use, or construction of right-of-way or other land use authorizations) could have localized effects on soil, water, and vegetation resources, including soil compaction and soil loss due to vegetation removal in the areas where the disturbance occurs. These impacts may be temporary if associated with construction activities, and the extent of long-term effects would be influenced by the intensity, frequency, and type of use in a specific area. These types of impacts would be most likely to occur outside of the restrictive land use allocations listed in Table S-1.

TABLE S-1
COMPARISON OF LAND USE ALLOCATIONS FOR THE ALTERNATIVES

	Alternative A	Alternative B	Alternative C	Alternative D
Acres of BLM-managed surface estate within discretionary special designations (ACECs, SMAs, SRMAs)	238,936[1]	297,555	336,609	149,478
Acres of BLM-managed surface estate within right-of-way exclusion areas	39,148	402,758	716,100	301,081
Acres of BLM-managed surface estate within right-of-way avoidance areas	458,996	349,343	419,120	117,290
Acres of BLM-managed surface estate identified for potential disposal	86,458	91,599	42,913	212,323
Acres of BLM-managed surface estate within closed OHV use area designations	29,117	117,921	139,971	0
Acres of BLM-managed surface estate within limited OHV use area designations	562,901	1,389,624	1,366,866	1,504,540
Acres of BLM-managed surface estate within open OHV use area designations	851,234		0	0
Acres of Federal mineral estate within areas closed to fluid mineral leasing	1,418,415	1,543,095	1,856,116	1,423,893
Acres of Federal mineral estate that would be petitioned for withdrawal from location and entry under mining laws	1,508	72,369	497,391	0
Acres of BLM-managed surface estate excluded from mineral material disposals	0	340,066	484,133	291,859
Acres of BLM-managed surface estate designated VRM Class I	30,343	28,533	27,093	0
Acres of BLM-managed surface estate designated VRM Class II	385,781	488,339	715,706	354,222
Acres of BLM-managed surface estate designated VRM Class III	299,741	480,595	249,953	106,277
Acres of BLM-managed surface estate designated VRM Class IV	774,170	509,432	513,997	1,046,399

NOTE: [1] This total includes an overlap between WSAs and ACECs. This type of overlap has been eliminated in all the action alternatives.

Special designations generally limit surface disturbance through a variety of land use restrictions; under Alternative A, a total of 238,936 acres in BLM's Decision Area would be managed as discretionary

special designations (ACECs, SMAs, SRMAs) to protect watershed, vegetation, wildlife, and cultural resources. An additional 291,826 acres would be managed within WSAs in accordance with the Interim Management Policy for Lands Under Wilderness Review, which requires nonimpairment of wilderness values, with the effect of supporting the maintenance and enhancement of native vegetation and wildlife habitat, scenic resources, and primitive recreational settings in those areas.

General impacts on wildlife would be closely correlated with impacts on vegetation, which provides forage and cover. Generally, Alternative A would be expected to result in localized effects on wildlife due to surface-disturbing activities or in areas where land disposals cause effects such as habitat fragmentation or disruption of wildlife movement corridors. The aplomado falcon, a federally listed species, has been elevated as a species of concern in the Planning Area. Under Alternative A, no specific management decisions related to the aplomado falcon would be proposed; however, in the event of a proposed action, the legal provisions of the Endangered Species Act and NEPA would provide protection of the falcon from incidental takes and would require consideration and mitigation of potential effects to the species.

Under Alternative A, damage to cultural and paleontological resources from permitted activities would be minimized through legally required site-specific environmental analysis, including inventory and evaluation. Damage to these resources would continue, however, from activities that do not require a permit, such as non-permit-related OHV use in areas open to cross-country travel. Known cultural resources that are sensitive or unique have been identified within special designations; a total of 20,450 BLM-managed surface acres are identified for protection of cultural resources through special designations under Alternative A. These resources would be exposed to less potential for degradation due to disturbance as a result of management to minimize surface disturbance, typically a combination of restrictions on land use authorizations, mineral development activities, and motorized travel. Potential impacts under Alternative A to known sensitive cultural resources include continued vandalism as a result of access to the Newton Site. The Zuni Salt Lake also has been identified as a sensitive resource, and would be managed within a 4,839-acre SMA to regulate surface-disturbing activities. Under all alternatives, water quantity and quality within the lake, which is considered to be of significant religious and cultural value to the Zuni and other Tribes, would be evaluated continually through measures intended to regulate environmental impacts on a site- and project-specific basis in accordance with NEPA and other Federal and State laws. Because the Zuni Tribe has senior rights to the waters of the lake, any new diversion of ground or surface water would require that these rights not be impaired and the Tribe could protest any new application for water use filed by either BLM or a private party.

Under Alternative A, 851,234 acres would be managed as open to cross-country, motorized travel. Generalized impacts from OHV use could include increased particulate and engine exhaust emissions; increased potential for soil erosion, sediment transport across public land and water quality degradation, and vegetation loss; damage to cultural and paleontological resources; and greater potential for conflicts with wildlife or habitat degradation. OHV use also may affect opportunities for solitude and primitive recreation through the introduction of noise and dust. However, impacts associated with OHV use could vary depending on the intensity and frequency of use as well as the type of vehicle and the type of soils in a particular location.

The management of resource uses under Alternative A would accommodate diverse uses as required by BLM's mandate to manage for multiple uses, including mineral exploration and development, developed and primitive recreation uses, grazing, and commodity production associated with woodcutting and plant material sales. Potential impacts on these resource uses would result from localized changes to access to achieve other resource objectives, although overall travel throughout the Planning Area and the overall balance of recreation opportunities would not be impaired or affected by the proposed management. Controlled surface use lease stipulations and limits on surface occupancy would curtail fluid mineral leasing and development activities if restrictions increase the cost and difficulty of exploration for and

development of mineral resources such that these activities cease to be economically feasible. The potential for this impact to occur would fluctuate depending on the variable price of minerals over time and the potential for the resource in a particular area, both of which influence economic feasibility of exploration and development.

Alternative B

Some of the impacts that would be expected under Alternative B are the same as Alternative A. Reduced potential for soil erosion and vegetation loss, and increased control of noxious weeds over time would be expected to result as actions are taken to meet public land health standards in areas that are not currently achieving them and through protective management within special designations. However, the distribution of this protective management varies from Alternative A; generally this management would be applied to more acres in BLM's Decision Area, increasing protection of resources as compared with Alternative A. Under Alternative B, acreages that would be managed to minimize various types of surface disturbance area identified in Table S-1.

Public land that would be managed within discretionary special designations, and typically would be managed with a combination of the types of restrictive management included in Table S-1, would include 297,555 acres to protect watershed, vegetation, wildlife, and cultural resources. An additional 291,826 acres also would be managed within WSAs; the boundaries and management of WSAs would not vary among the alternatives.

Expanded areas that would be managed to minimize surface disturbance, with the effect of reduced potential for soil erosion and loss of vegetation, also would influence the availability of habitat and forage for wildlife and reduce opportunities for noxious weed infestation. Compared to Alternative A, the areas that would be expected to experience these effects are in the Horse Mountain ACEC, Ladron Mountain-Devil's Backbone Complex ACEC, Pelona Mountain ACEC, Cerro Pomo ACEC, Zuni Salt Lake ACEC, Tinajas ACEC, and Newton Site SMA. In the case of the Newton Site SMA, reduced access is expected to result in less degradation to resources due to vandalism.

Under Alternative B, the Walnut Canyon SMA would be eliminated; this area contains habitat that supports a variety of species, including golden eagles, prairie falcons, and great horned owls. Since Alternative B continues the same type of OHV area designation and management of fluid minerals, no effect is anticipated to result from the change in designation. In addition, no distinct effects on natural or cultural resources would be expected to result from the elimination or reduction in size of other special designations that are proposed under Alternative B. This is because (1) land would be absorbed into a different special designation with management that restricts uses (i.e., Agua Fria ACEC, Fence Lake SMA, Mogollon Pueblo SMA, San Lorenzo SMA); (2) previously protected species have been de-listed, and special management beyond future NEPA compliance is not required to avoid losses of those species (i.e., Taylor Canyon, Iron Mine Ridge); and (3) sensitive areas would still be encompassed within smaller designations (i.e. Penjeacu SMA, Stallion SMA).

Under Alternative B, measures have been proposed to reduce the possibility of surface disturbance on up to 43,952 acres of Federal mineral estate (including 40,104 acres of BLM-managed surface land) of the Chihuahuan semi-desert grasslands, which is the major portion of the Chihuahuan Desert Ecoregion and provides habitat for several raptor species. One of these species is the aplomado falcon and there is potential aplomado falcon habitat in southern Socorro County. These measures include closure to fluid mineral leasing, exclusions of mineral material disposals, and petitioning to withdraw the area from location and entry under the mining laws. OHV use also would be limited in these areas. These measures would impact habitat by minimizing loss of forage from resource uses, directly addressing the primary

threat to this species. These actions would be expected to contribute to the recovery of the species beyond what is proposed in Alternative A by implementing additional and proactive protection for the species.

Similar to Alternative A, damage to cultural and paleontological resources from permitted activities would be minimized through site-specific environmental analysis. However, under Alternative B special designations to protect cultural resources would be expanded to 62,583 acres, primarily due to the expansion of the Zuni Salt Lake ACEC. The elimination of open OHV areas would reduce impacts from non-permit-related OHV use.

Management under this alternative would still accommodate diverse resource uses, although potential impacts on mineral development are anticipated. The acreage that would be closed to fluid mineral leasing includes areas of high potential for carbon dioxide and helium resources. In addition, if proposed mineral withdrawals are completed, some areas with high mineral resource potential would be unavailable for mineral development. If a no-surface-occupancy stipulation covers extensive acreage, the ability to target a fluid mineral resource using directional drilling technology becomes restricted or infeasible, effectively closing the land to fluid mineral development.

Under Alternative B, a total of 100,358 BLM-managed surface acres would be designated as special designations (ACECs, SMAs, and SRMAs) to manage recreation uses. The management of public land within special recreation management areas would be expected to have the effect of increasing visitation, which typically occurs with the presence of developed facilities, improved recreation settings, and public knowledge that a particular area is an intended recreation destination. Increased visitation and recreational use can result in damage to cultural resource sites. Site hardening measures and access restrictions may be considered to reduce these impacts. Visitation could contribute to local economies that support visitation, particularly in service and retail industries, although the extent of this impact is difficult to predict due to the wide variety of factors influencing visitation trends and local economies.

Alternative C

Under Alternative C, management to minimize surface disturbance would be expanded, largely in the northwestern corner of Catron County. Generally, Alternative C includes the most restrictive management, in that more resource uses (i.e., mineral extraction, OHV use) are excluded or limited over a larger area. Acreages that would be managed to minimize various types of surface use are identified in Table S-1. The effects of this management on natural resources would include localized and overall reduced soil and vegetation loss, which would contribute to the maintenance or enhancement of habitat and reduce damage to cultural resources. In addition, actions to meet public land health standards in areas that are not currently achieving them would provide increased control of noxious weeds and reduced potential for soil erosion and vegetation loss over time. Reduced surface disturbance also would result in less habitat degradation, habitat fragmentation, or disturbance to wildlife movement corridors.

The acreage that would be managed within discretionary special designations to protect natural and cultural resources would be expanded to a total of 336,609 acres. The primary variable in this increase over Alternative B is the expansion of the Zuni Salt Lake ACEC to 156,601 acres of BLM-managed surface estate. The impacts of the expanded Zuni Salt Lake ACEC include reduced potential for soil erosion and vegetation loss over Alternatives A and B. It is unclear whether the larger ACEC would have an incremental protective effect on groundwater resources over what is proposed in Alternative B due to a lack of knowledge regarding the hydrogeology of the area. Since public land within this ACEC would be closed to fluid mineral leasing, valuable carbon dioxide and helium resource would not be developed on public land. In addition, the closed mineral estate includes areas of moderate potential for oil and gas resources, which would not be available for leasing and development. The impacts of management of minerals in this area would include lost opportunities for wage income, induced income as wages

circulate through local economies, revenue for the State of New Mexico and the U.S. General Fund from royalties, and tax revenue generation for local jurisdictions.

Alternative C would increase the area of potential aplomado falcon habitat that would be managed to reduce the possibility of surface disturbance from minerals exploration and development and OHV use. This management would expand the effects that would occur in Alternative B over a larger area, and indirectly would maintain or enhance all wildlife habitat in those areas through protection from uses that could affect soil erosion potential, vegetation loss, or introduce more intense activity such as facility construction or extensive motorized travel.

Management under this alternative still would accommodate diverse uses, although potential impacts on mineral development are anticipated. The types of impacts on minerals would be similar to Alternative B, except the restrictions associated with the Zuni Salt Lake ACEC would inhibit fluid minerals leasing and locatable minerals development over a larger area. The expanded acreage managed within special designations (and therefore typically subject to a combination of the restrictive management listed in Table S-1) would support the maintenance or enhancement of primitive and semi-primitive recreation settings over a greater area. In addition, localized effects would occur as opportunities for motorized recreation would be diminished due to more closures to OHV use as compared with Alternatives A and B.

Under Alternative C, a total of 27,780 BLM-managed surface acres would be designated as special designations to manage recreation uses. The change in acreage from Alternative B is due to smaller special recreation management areas and a substantial reduction in size of the Continental Divide SMA. The effects of recreation management under Alternative C would be similar to Alternative B, although there could be additional dispersed recreational use under Alternative C. However, the designations would have the same type of localized effect with regard to increasing visitation as the result of the presence of developed facilities, improved recreation settings, and public knowledge that a particular area is an intended recreation destination.

Alternative D

Alternative D is most oriented towards commodity production in BLM's Decision Area. Actions taken to meet public land health standards in areas that are not currently achieving them would reduce soil erosion, vegetation loss, and wildlife habitat. Areas within special designations would receive additional protection; acreages that would be managed to minimize various types of surface use are identified in Table S-1.

Generally, the effects of minimizing surface disturbance through these land use allocations would occur over a much smaller area in Alternative D than in Alternative B or C. Compared to Alternative A, Alternative D has no closed OHV areas, no areas open to cross-country travel, and expanded right-of-way exclusion areas. Special designations to protect cultural resources are expanded in Alternative D over Alternative A, with the expanded Cerro Pomo ACEC and Newton Site SMA. Several impacts would be expected as the result of these variations. Impacts that could result from overall increases in areas where motorized travel is permitted over Alternatives B and C could result in increased particulate and engine exhaust emissions; increased potential for soil erosion, sediment transport across public land and water quality degradation, vegetation loss, and damage to cultural resources; and greater potential for conflicts with wildlife. However, impacts associated with OHV use could vary depending on the intensity and frequency of use as well as the type of vehicle and the type of soils in a particular location. The expansion of protective management over Alternative A would reduce access and subsequently the potential for vandalism at Newton Site, and reduce access to the pueblos and other cultural resources within Cerro Pomo.

Management of aplomado falcon habitat would be similar to Alternative A, with protection occurring largely through statutory compliance. In addition, establishment of additional utility corridors under this alternative could increase the potential for loss of raptor or migratory bird species over Alternatives B and C if linear facilities are built in multiple locations throughout the Planning Area. The higher acreages of Federal land identified for disposal could result in increased land use intensity and edge effects if more land is actually disposed, which in turn may result in habitat fragmentation, degradation, and disruption of wildlife movement corridors.

Similar to the other alternatives, the management under Alternative D still would accommodate diverse resource uses. Access for motorized recreation would be most extensive under Alternative D. Overall, this would enhance recreation opportunities for OHV users and others who use OHV (such as hunters), and primitive and semi-primitive settings still would be available throughout the Planning Area.

Cumulative Effects

Cumulative effects are the effects that result from the incremental effect of an action when added to other past, present, or reasonably foreseeable future actions. The results of the cumulative effects assessment do not vary appreciably between the alternatives. The majority of the impacts identified for each alternative would be localized, and occur at a small scale relative to the size of BLM's Decision Area. There may be cumulative impacts associated with clustering of these localized impacts in the same area, for example aggregate unpaved road development that could result in increases in inhalable particulate concentrations and public access throughout the Planning Area. Mineral development or other surface-disturbing activities on State or private land that is adjacent to BLM's Decision Area could trigger edge effects on wildlife, visual impacts, or proliferation of public access.

This RMPR/EIS evaluates broad management objectives and management actions, and the alternatives do not include project- or site-specific actions that might occur in the future or would lead directly to surface-disturbing activities. More specific mitigation measures or additional NEPA analysis may be required for some future proposed uses and actions, and would be assessed on a case-by-case basis in accordance with the management framework provided in this RMPR and any applicable statutes.

CONSULTATION AND COORDINATION

This RMPR/EIS was completed in consultation other agencies, State, tribal, and local governments, and the public. These activities and participants are discussed in Chapter 5 of the RMPR/EIS. Consultation has been initiated with the U.S. Fish and Wildlife Service, and a Biological Assessment will be completed prior to the Proposed RMPR/Final EIS. The New Mexico Department of Game and Fish and State Historic Preservation Office also have been contacted regarding this RMPR/EIS. BLM also contacted local tribes and government officials to inform them of the planning effort, request the identification of traditional cultural places and resources that should be considered, and invite them to participate in the preparation of the RMPR/EIS. The Zuni Pueblo and Catron County are participating in this effort as cooperating agencies. These cooperating agencies are playing a critical role in development of the RMPR/EIS and have been involved throughout the process by sharing information, participating in RMPR development, and reviewing draft documents.

The Zuni Tribe participated in the ACEC identification process by proposing areas for special designation. BLM and the Zuni Tribe coordinated closely to determine the relevance, importance, need for special management, and appropriate size for the proposed Zuni Salt Lake ACEC; and also worked closely to determine the boundaries and recommended management strategies.

The Draft RMPR/EIS will be distributed to agencies and the interested public for review and comment. About midway through the 90-day review period, BLM will conduct public hearings to listen to and understand the public's comments on the Draft RMPR/EIS. All input on the Draft will be considered and addressed in the Proposed RMPR/Final EIS.

Chapter 1 - Introduction

1.0 INTRODUCTION

1.1 PURPOSE AND NEED FOR THE PLAN

A resource management plan (RMP) provides a comprehensive framework for managing public land and allocating resources. Periodically, it becomes necessary to conduct a thorough review of the existing situation to examine the conditions of resources on public land, determine whether they are being managed to fulfill the principles of multiple use and sustained yield of public lands as originally set forth in the Federal Land Management and Policy Act (FLMPA), and to evaluate the effects of current management. The Bureau of Land Management (BLM) Socorro Field Office completed an RMP in 1989 and since then it has been providing management direction for public land in Socorro and Catron Counties, New Mexico. Time and experience have demonstrated the success and the continuing relevance and effectiveness of some elements of the RMP. This is also due in no small part to the cooperation of other Federal, State, county, and local agencies, and Tribes, organizations, and individuals, who have contributed greatly to the RMP's success.

However, circumstances have changed over the last 20 years. Some of the original goals and supporting management decisions are no longer adequate to address the demographics, resource conditions, policies, and other circumstances that have changed over the years. Though BLM intends to carry forward the management strategies that have proven to be successful and are still vitally relevant, these changes warrant analysis of BLM's current management direction.

The population growth in the Planning Area and statewide has placed increasing and often conflicting demands on the public lands managed by the BLM Socorro Field Office. This requires a different management approach in several management categories. For example, recreation such as off-highway vehicle (OHV) use is expected to increase even more than it has already over the past 20 years, and fire management becomes of increasing concern as populations move closer to the rural open space of public lands. In addition, the public lands managed by the Socorro Field Office hold potential for energy development (for example, carbon dioxide, helium, oil and gas, coal, biomass) that may support increasing demand. At the same time and in response to circumstances, BLM is increasing its policy emphasis on control of noxious weeds and invasive species, fire management, and other resource and land use management programs. In this RMP Revision (RMPR), BLM will also consider land exchanges, updated listings of threatened and endangered species, and updated resource inventory information.

The purpose of revising an RMP is to re-evaluate existing conditions and reconsider an appropriate mix of multiple uses and appropriate levels of resource allocations in accordance with the Federal Land Policy and Management Act of 1976 (FLPMA) and other applicable statutes. As with all RMPs, the BLM is charged with the task of balancing resource development with resource protection as it seeks to determine a reasonable course between the two. It is necessary to watch over the often precarious balance by monitoring the status of resources and evaluating the effectiveness of the management programs over time. A range of possible resource management strategies were identified as part of this planning effort, and this RMPR/Environmental Impact Statement (EIS) describes and evaluates those alternatives.

This EIS will identify the potential impacts that implementation of the RMPR could have and the appropriate measures to mitigate those impacts. The primary purpose of this EIS is to analyze and document the direct, indirect, and cumulative impacts of the reasonably foreseeable future actions resulting from BLM's management decisions. By law, these impacts must be analyzed before BLM makes an irreversible commitment of public land resources. This EIS is intended to satisfy the requirements of the National Environmental Policy Act of 1969 (NEPA), Council on Environmental Quality regulations implementing NEPA (40 CFR 1500-1508), FLPMA, and other associated regulations.

1.2 PLANNING AREA DESCRIPTION

1.2.1 Planning Area Location

The public land managed by the BLM Socorro Field Office is located in the west-central portion of New Mexico within Socorro and Catron Counties (Map 1-1, Surface Management). Generally, public lands are consolidated in the Quemado, Pelona Mountain, Ladron, and Stallion areas. However, in large portions of the two counties, public land is isolated and scattered. The Planning Area referred to in this document includes all land—both public and private—within Socorro and Catron Counties. The BLM considers potential impacts on all resources within this inclusive Planning Area, regardless of jurisdiction or ownership. The term Decision Area is used to describe public land and Federal mineral estate administered by BLM within the two counties; Decision Area can refer to both surface acres and subsurface acres of Federal mineral estate. Use of the term "BLM-managed surface estate" refers to the surface acres managed by BLM, exclusive of acres of Federal mineral estate that underlie land owned or managed by other entities. While BLM's jurisdiction is restricted to the Decision Area, it is responsible for collaboratively planning with adjacent jurisdictions and the public to encourage compatible land uses within a regional context.

1.2.2 Land Management Status in the Planning Area

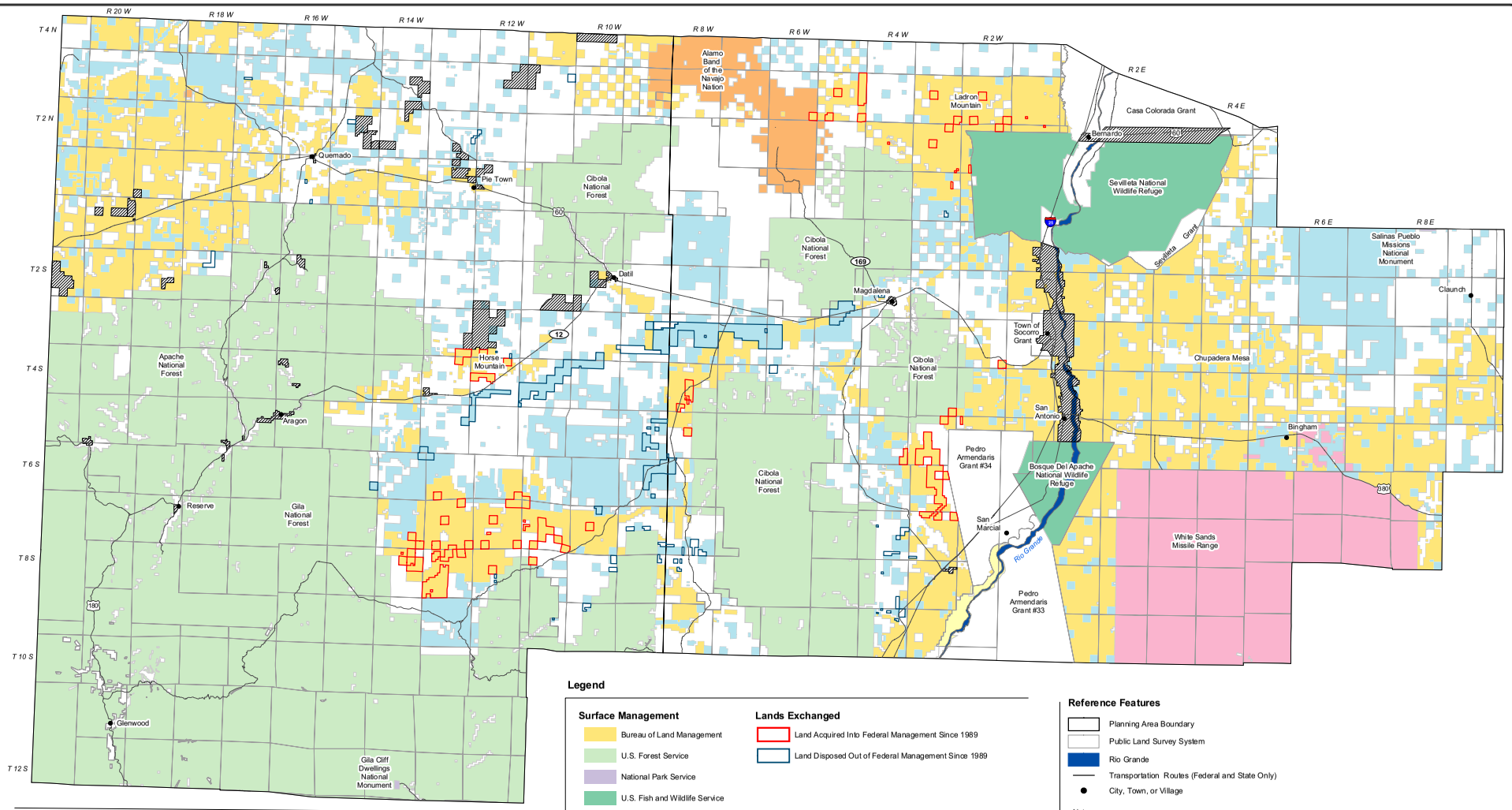
Based on the existing ownership and management patterns, BLM currently administers approximately 1.5 million acres[2] of surface land in Socorro and Catron Counties. Agencies other than BLM that administer Federal land within the Planning Area include the U.S. Department of the Army, U.S. Department of Agriculture Forest Service, U.S. Department of the Interior Fish and Wildlife Service, National Park Service, and Bureau of Reclamation (Map 1-1). A large amount of private land is found within large land grants, which generally include the lowlands of the Rio Grande Valley (e.g., Town of Socorro Grant, Sevilleta Grant, Casa Colorada Grant, and Pedro Armendaris Grant) (Bell 2003; BLM 1989a).

BLM manages approximately 6 million acres of mineral estate within the two counties. This acreage includes mineral estate exchanges that have occurred within the Planning Area since adoption of the 1989 RMP. BLM is responsible for administering the Federal mineral estate underlying land managed by other Federal agencies in consultation with those agencies. Tables 1-1 and Table 1-2 show the surface owner or administrator associated with surface and mineral estate acreage in Socorro and Catron Counties.

1.3 ISSUES TO BE ADDRESSED IN THE RMPR

The BLM interdisciplinary team, cooperating agencies, other State and Federal agencies, and the general public raised a number of issues and concerns to be addressed in the RMPR. The BLM land use planning process is issue-driven in that it is undertaken to resolve resource management problems and take advantage of management opportunities. The following sections summarize the broad scope of the issues and management concerns that determined the alternatives and the scope of analysis for this RMPR/EIS.

[2] Unless otherwise noted, geographic information system calculations of acreages based on best available data are used in this document and for analysis.



Surface Management

Socorro RMPR/EIS

October 2006

Universal Transverse Mercator
Zone 13, Units Meters
GRS 1980 Spheroid
NAD83 Datum

N
W E
S

Miles
0 2.5 5 10 15 20

Kilometers
0 2.5 5 10 15 20

Location in New Mexico

P:\BLM\Socorro RMPR_EIS\GIS\plots\Draft-RMPREIS\Chap_1\Jurisdiction.pdf

Legend

Surface Management

- Bureau of Land Management
- U.S. Forest Service
- National Park Service
- U.S. Fish and Wildlife Service
- Bureau of Reclamation
- Department of Defense
- Tribal Lands
- State Trust Lands
- Private
- Proposed Urban Development

Lands Exchanged

- Land Acquired Into Federal Management Since 1989
- Land Disposed Out of Federal Management Since 1989

Reference Features

- Planning Area Boundary
- Public Land Survey System
- Rio Grande
- Transportation Routes (Federal and State Only)
- City, Town, or Village

Note:
The locations of proprietary specially designated areas have not been mapped to ensure protection of sensitive resources.

Source:
Base Map Information: BLM, Socorro Field Office 2003
Jurisdiction Information: BLM, Socorro Field Office 2003

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data, or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification.

Map 1-1

TABLE 1-1
SURFACE MANAGEMENT IN SOCORRO AND CATRON COUNTIES

Surface Administrator/Owner	Socorro County (acres)	Catron County (acres)	Total (acres)	Percent of Planning Area
Bureau of Land Management	920,410	586,094	1,506,504	17.3
Forest Service	614,660	2,193,982	2,808,642	32.3
National Park Service	373	407	780	0.0
Bureau of Reclamation	14,055	0	14,055	0.2
U.S. Fish and Wildlife Service	284,721	0	284,721	3.3
Department of Defense	442,090	0	442,090	5.1
American Indian Reservations	106,852	13,126	119,978	1.4
State of New Mexico	529,814	511,764	1,041,578	12.0
Private	1,339,830	1,135,282	2,475,112	28.5
Totals	**4,252,805**	**4,440,655**	**8,693,460**	**100.0**

SOURCE: Derived from BLM 2003a
NOTES: Acreage based on best available GIS data

TABLE 1-2
FEDERAL MINERAL ESTATE ACREAGES BY SURFACE MANAGEMENT RESPONSIBILITY IN SOCORRO AND CATRON COUNTIES

Administrator/Owner	Socorro County (acres)	Catron County (acres)	Total (acres)	Percent of Federal Mineral Estate
Bureau of Land Management	900,992	540,994	1,441,986	23.7
Forest Service	612,492	2,180,935	2,793,427	45.8
U.S. Fish and Wildlife Service	227,599	0	227,599	3.7
Department of Defense	441,507	0	441,507	7.2
Bureau of Reclamation	1,046	0	1,046	0.0
National Park Service	375	407	782	0.0
American Indian Reservations	48,722	4,187	52,909	0.9
State of New Mexico	51,425	18,222	69,647	1.1
Private	490,557	575,963	1,066,520	17.5
Totals	**2,774,715**	**3,320,708**	**6,095,423**	**100.0**

SOURCE: Derived from BLM 2003a
NOTES: Acreage based on best available GIS data

1.3.1 Planning Issues

An issue can be defined as an opportunity, conflict, or problem regarding the use or management of public land and resources. The following six broad issues and supporting sub-issues or questions represent the ideas discussed among the agencies and public throughout scoping and the subsequent planning process.

Issue 1: Which areas, if any, should be designated for special management, what designations should apply (areas of critical environmental concern [ACEC], special management areas [SMA], or other), and how should these areas be managed?

The special designations established in the 1989 RMP were reviewed to evaluate whether each designation met its objectives. New information on the habitat and resource needs of species have been identified since the 1989 RMP and should be incorporated into existing special designations. Additional areas have been identified that may be suitable for a special designation.

Questions to be considered in resolving Issue 1:

- Which areas should be designated as ACECs, SMAs, research natural areas, or other designation and how should they be managed in both the short term and long term?
- Should any existing designations be dropped?
- Which areas should be designated special recreation management areas (SRMAs) and how should they be managed?
- Do special management areas require additional facilities to meet public demands and/or public safety issues, and if so, which areas and what type of facilities?
- Which areas provide recreation experiences close to communities and which areas provide more remote, extensive recreation experiences and how should these areas be managed?
- How should areas, including acquired lands that have been identified as having naturalness, solitude, and primitive recreation character, be managed?
- Which river segments should be studied for wild, scenic, or recreation river designation?
- Do significant caves and karst resources exist in the Decision Area, and if so, how should they be managed?
- What would be the economic consequences of special designations to local communities in the Planning Area?
- What areas should be identified as Traditional Cultural Properties and how should they be managed?

Issue 2: What type of management should be undertaken at the watershed level to improve soil and vegetation condition?

Watershed concerns include non-point source pollution from watersheds that impact New Mexico designated impaired streams (303d list), designated priority subbasins, watersheds dominated by karst topography, watersheds that contain problem erosion areas, and woodlands that have high fuel loads due to fire suppression. Impaired steams that may be impacted by the Decision Area include Alamosa Creek near Montecello and the East Fork of the Gila River. Designated priority subbasins are essentially all the watersheds in Socorro County that drain into the Rio Grande.

Questions to be considered in resolving Issue 2:

- How can fire and fuels management, range management, wildlife habitat management, and the management of other resources be best combined for desired resource conditions at the watershed level?

- What are the desired levels of resource use and what types of constraints, if any, should be placed on resource use?
- What is the desired vegetation and what is the best means to achieve it?
- How should vegetation be managed to provide forage for livestock, wildlife, and wild horses (where they occur) as well as provide wildlife cover and watershed protection?
- How should watersheds be prioritized and at what hydrologic unit level for treatment and improvement over the life of the plan?
- Which best management practices should be implemented to improve soil and vegetation conditions at the watershed level?

Issue 3: How should energy, fluid, and solid mineral development in the Decision Area be managed?

The National Energy Policy and various Executive orders influence the management and development of these resources on public lands. These policies will be applied in resolving this issue. The 1989 RMP only addressed leasing of oil and gas in Socorro and Catron Counties and did not address any aspects of development. Conditions of approval will be developed in this RMPR. Locatable minerals management on acquired lands will be addressed, as well as reclamation of abandoned mine lands. The demand for saleable minerals has remained moderately high in the past several years.

Questions to be considered in resolving Issue 3:

- What is the potential for development of carbon dioxide and helium and how should development of these resources be managed?
- How should BLM address correlative rights for helium production?
- How should BLM manage any potential oil or natural gas production that might occur in the Zuni Salt Lake area while protecting the natural and cultural values associated with that area?
- What would be the economic consequences of fluid and other mineral development on the local communities in the Planning Area?
- What are the best opportunities for the development of alternative energy sources such as biomass use, wind, solar, geothermal, and others?
- What areas should be closed to the extraction of saleable minerals?

Issue 4: How should travel and transportation—including motorized vehicle use, OHV use, mountain biking, hiking, horseback riding and others—be managed to satisfy public demand while protecting the natural and cultural values of the public land?

OHV, mountain biking, and other trail uses are increasing in the Planning Area. The 1989 RMP decisions regarding OHV designations are no longer consistent with current BLM policy. Public accessibility for both motorized and non-motorized recreation is a major concern for many outdoor recreationists in the Planning Area. Other concerns include how travel management in general may affect other public land resources.

Questions to be considered in resolving Issue 4:

- Which areas should be designated open, closed, or limited for OHV use?

- Which vehicle routes in special management areas (including ACECs and wilderness study areas [WSAs]) should be designated closed or limited and what limitations (i.e., season of use, type of vehicle) should be applied?
- Are there routes outside of SMAs, ACECs, SRMAs, or WSAs that should be closed?
- What process will be used for designating the remainder of all routes in the Planning Area that are not designated in the RMPR?
- Where is legal and physical public access to public lands needed and how should it be acquired?
- Are new trails for OHV use, mountain biking, hiking, horseback riding, etc. needed to meet public demand and, if so, in what general locations?

Issue 5: What land use allocations or initiatives need to be addressed in the RMPR to accommodate the effective management and support of other resource uses, both internal and external, within the Planning Area?

Since the 1989 RMP was completed, the Socorro Field Office has consummated a number of land exchanges resulting in the exchange of about 127,000 acres of lands in and out of Federal ownership. Several new resource findings, issues, and concerns have been identified that require BLM to consider future appropriateness of the land tenure adjustment designations, right-of-way exclusion and avoidance area designations, and other land use appropriations such as land withdrawals. Current considerations for identifying lands for tenure adjustments, either acquisitions or disposals, include listing of new threatened or endangered species, rural subdivision development and associated impacts, mineral potential, cultural resource inventories, and other resource inventories. The White Sands Missile Range Safety Evacuation Areas to the north and west of the range are used on a regular basis by the military. This use needs to be addressed in terms of meeting military needs while providing for public access and safety, and the RMPR must consider how such use fits with BLM management of the Decision Area.

Questions to be considered in resolving Issue 5:

- Which lands or interests in lands, if any, should be identified for acquisition in support of resource programs or special designated areas?
- What lands within the Decision Area should be identified for disposal, retention, and acquisition in order to improve development and manageability of BLM's land ownership pattern to effectively manage its resource programs?
- Which areas should be designated as right-of-way corridors and which areas should be designated for avoidance or exclusion of right-of-way?
- How should the White Sands Missile Range Safety Evacuation Areas be managed to meet the needs of the military as well as provide for safety and access of the public land users?
- What are the implications of urban expansion and remote subdivision growth on management of resources on adjacent public lands, and how can BLM work to minimize negative effects on public lands and resources in these areas?
- What are the economic impacts of land tenure adjustments and what can be done to lessen adverse impacts and increase beneficial impacts on local economies?

Issue 6: How should BLM best pursue cultural and recreational initiatives to provide the public with quality tourism and heritage tourism opportunities?

BLM and the State of New Mexico have partnered in the construction and management of El Camino Real International Heritage Center to interpret and commemorate the Spanish, Mexican, American Indian, and United States history of the trail as well as the central New Mexico area. The Socorro Field Office of BLM is centrally located along the trail and the Rio Grande, which it follows. BLM has been and will continue to be involved with numerous activities related to the center and the trail. Fort Craig, a nineteenth century military fort, is a few miles north of the center. The management of important, publicly owned cultural sites in the Planning Area needs to be reviewed in regard to increased visitation and interest in cultural tourism. The New Mexico State Office of BLM has embarked upon a project to determine the feasibility of promoting cultural tourism on BLM lands in rural counties in the State.

Questions to be considered in resolving Issue 6:

- What should be BLM's role in promoting heritage tourism in the Planning Area?
- What are the economic benefits that can accrue from heritage tourism and how can they best be realized within BLM's multiple-use management?
- How can the public best benefit from BLM's partnership in regional tourism opportunities, such as Boots and Saddles, Magdalena Trail Project, and activities associated with the operation of the El Camino Real International Heritage Center?
- What historical and/or recreational interpretation, if any, should BLM develop along the Continental Divide National Scenic Trail, Quebradas Backcountry Byway, and the El Camino Real de Tierra Adentro National Historic Trail?
- How can BLM's outdoor recreation program provide economic benefit to local communities?

1.3.2 Management Concerns

Management concerns are defined as concerns not included in the list of scoping issues, but still needing to be addressed through the land use planning process. Management concerns focus on use conflicts, requirements, or conditions that cannot be resolved administratively and were not raised as planning issues during scoping, but still require a resolution through the planning process.

Threatened and Endangered Species: Currently there are 19 federally listed species, 42 State-listed species, and 50 BLM sensitive species that need to be considered in this RMPR/EIS. A number of areas have been identified that need to be analyzed to determine if they should be designated as an ACEC or SMA. In addition, several species have been delisted since the 1989 RMP.

Wild Horses: The Bordo Atravesado Wild Horse Herd Management Area Plan will be revised to address habitat and population objectives, giving consideration to topics such as age structure, sex ratio, fertility control, and genetic viability.

Forest and Woodland Management: The woodland portions of the Socorro Field Office Decision Area are primarily piñon-juniper, with some forest adjacent to Forest Service land, in WSAs, and isolated tracts, mainly ponderosa pine. Fuelwood is the main wood product produced from the woodlands and forests in the Socorro Field Office. Since the Field Office is located in the arid southwestern region of the United States, growth rates in woodlands and forests are slow, so careful consideration will have to be applied to ensure sustainable harvest of wood products. The Socorro Field Office will strive to provide

commercial opportunity for local industry with commercial fuelwood areas and other potential wood products, accessible public fuelwood areas, Christmas tree collection sites, and plant adoption sites. Partnerships and working relationships with local communities and State and Federal agencies should continue and expand to accomplish woodland and forest health goals.

Noxious Weeds: The invasion of noxious weeds is becoming a critical concern throughout the West. Of primary concern is the transmission of seeds related to surface disturbance. Management practices need to be incorporated into all activities on BLM lands in an overall integrated pest management program with the aim of expanding inventory, treatment, monitoring, and education. Noxious weed infestations need to be identified in the Planning Area, control means must be applied, and follow-up monitoring is necessary to determine the efficacy of these treatments. BLM will continue working with all affected parties in applying a coordinated and integrated pest management program to the noxious weed problem.

Lands and Realty: Right-of-way avoidance and exclusion areas and designated corridors need to be determined for a variety of facilities such as power lines, pipelines, access routes, communication sites, radio towers, above-ground storage tanks, and other energy facilities (i.e., wind energy). In addition, there is a need to identify land tenure adjustments to consolidate public land and serve community needs, and determine land withdrawals necessary to support special designations and protect sensitive resources such as cultural sites and sensitive species habitat.

In addition, Catron County, a cooperating agency on this planning effort, provided a statement of issues, as follows:

> Catron County is concerned with the resource, economic and social health within the county boundaries. The lack of land stewardship and flexibility has resulted in the loss of economic stability, economic activity, and tax base and therefore the loss of custom and culture. It is in light of these concerns that the county must emphasize that the BLM consider the impacts of its planning and manage the land it is entrusted with to contribute to the stability of the county economy. The county requests that decisions be made that will enhance, not diminish, the natural resource industries within the county and that the frailness of these industries be weighed in all planning alternatives. Adaptive management should also be an important aspect of all alternatives, allowing the flexibility to adjust management decisions when are not effective.

1.3.3 Issues Eliminated from Detailed Study

During the scoping process and the initial phases of plan development, a number of potential alternatives and issues were identified. However, after internal discussion and review, some of these issues were eliminated from further consideration.

WSA Designations: During public scoping, it was suggested that BLM consider designating additional lands with wilderness values as WSAs. However, BLM policy does not allow for the designation of WSAs through the land use planning process. Therefore, designation of WSAs was not considered in the RMPR. Any areas with wilderness characteristics—such as being essentially natural or providing opportunities for primitive and unconfined recreation—may be managed under another designation such as ACEC or SMA.

Bioaccumulation of Contaminates in Fish and Wildlife Species: Bioaccumulation of contaminates in fish and wildlife species as a result of power plant emissions was raised as a concern during public scoping. This was not addressed as an issue in the RMPR for a number of reasons. At this time there is no proposal for the development of a coal-fired power plant anywhere in the Planning Area. Power plants outside of the Planning Area are beyond the scope of this RMPR and therefore cannot be addressed, even

though emissions from those plants may have an effect on resources within the Planning Area. If a proposal for a power plant in the Decision Area were to come forth at some time in the future, an EIS would be required as part of the permitting process. Such an EIS would consider all possible impacts from the plant, including emissions. Public Service Company of New Mexico is considering siting a biomass-fired power plant somewhere in the Planning Area within the next 10 years. A biomass plant would have different kinds of emissions than a coal-fired plant. If the Public Service Company of New Mexico does go forward with the proposal and a Federal action is required, an EIS or other NEPA document would be prepared to analyze possible impacts before a decision would be made regarding the proposed plant.

Urban Interface Problems: During the scoping process, urban interface problems were raised as a possible issue. These issues centered on the second home/retirement home subdivisions in Catron County. In analyzing this concern, the planning team determined it is primarily a recreation issue. It was concluded that these problems could be adequately addressed through special designation management, OHV management, and trail and access management.

Public Involvement: During scoping, some individuals expressed concern that perhaps BLM was not making a large enough effort to include or contact all concerned persons as part of the scoping process. Every effort was made to address as wide an audience as possible in gathering information, comments, and concerns during the public scoping effort. The next formal opportunity for the public to provide input is the public review period for this Draft RMPR/EIS. Again, BLM will make an effort to ensure that all who are interested will have an opportunity to read and comment on the document. A summary of public and agency input and collaboration that has occurred to date is provided in Chapter 5.

1.4 PLANNING PROCESS FOR THE RMPR/EIS

The RMPR process employs the nine basic steps of the BLM planning process, which are listed below and described in the planning regulations (BLM 2005):

- Identification of issues
- Development of planning criteria
- Data and information collection
- Management situation analysis
- Formulation of alternatives
- Estimation of effects of the alternatives
- Selection of the preferred alternative(s)
- Selection of the plan amendment
- Monitoring and evaluation

The process requires the use of an interdisciplinary team of resource specialists to complete each step.

1.4.1 Step 1 – Identification of Issues

Issues were identified through the scoping process at the beginning of the project. Scoping, and the RMPR/EIS process, began with the publication in the *Federal Register* of the Notice of Intent to revise the RMP, prepare an EIS, and conduct public scoping meetings. The Notice of Intent was published on

May 8, 2002. In addition to the notice, the BLM prepared a bulletin and scoping notice that was sent to approximately 1,465 individuals, agencies, and interested organizations in early August 2002. The BLM paid for advertisements to be published in local and regional newspapers. Also, a media release introducing the project and announcing the scoping meetings was prepared and issued by the BLM on June 11, 2002, to local and regional newspapers, television, and radio. A toll-free telephone line was established in mid-August 2002 for the public to request information, ask questions, or be added to the mailing list. A Web site (see http://www.nm.blm.gov) also provides project information.

Three public scoping meetings were conducted by the BLM in August 2002 in Socorro, Quemado, and Zuni, New Mexico. A total of 49 people attended the three meetings and 76 oral comments were received. In addition to the comments received during the meetings, a total of 214 comment forms and letters were submitted to the BLM. Scoping ended on September 13, 2002; however, additional comments continued to be accepted after that date.

All of the comments and questions received were compiled, reviewed, and analyzed to identify the issues to be addressed in the RMPR/EIS. Overall, comments highlighted concerns regarding the RMPR/EIS process and schedule, agency coordination, land use and access, SMAs, water resources, vegetation, wildlife, special status species, rangeland/livestock grazing, cultural resources, recreation and OHV, social and economic impacts, wilderness, hazardous materials, and fire management. The scoping process, including a summary of comments and issues, was documented in a Scoping Summary Report in September 2002 and sent to the interested parties on the mailing list. A complete record of scoping is on file at the BLM Socorro Field Office.

Based on the polarized nature of comments received during scoping, the BLM Socorro Field Office later held three focused meetings to solicit further comments from the public on issues and concerns related to OHV use in the Planning Area. Meetings were held during March 2003 in Datil, Albuquerque, and Socorro. The comments received from the public meetings primarily expressed concerns about OHV use and provided suggestions for future OHV management. Generally speaking, comments and suggestions received at the Datil meeting focused primarily on concerns ranchers have about damage to vegetation and ranch improvements (fences) caused by OHV use. In contrast, comments and suggestions received at the Albuquerque meeting focused primarily on concerns that OHV use will be further restricted in the future. In Socorro, comments and suggestions focused equally on ranching concerns, OHV user concerns, and general concerns about the health of the environment with regard to OHV use. More information on these meetings is provided in the OHV Baseline Report, available from the Socorro Field Office.

1.4.2 Step 2 – Development of Planning Criteria

Planning criteria are established to provide focus for data collection efforts, ensure compliance with legal mandates, and facilitate decision making. General and specific criteria that pertain to this RMPR/EIS are included in Appendix A, Planning Criteria.

1.4.3 Step 3 – Data and Information Collection

The majority of data and information were extracted from existing data on file at the BLM Socorro Field Office. Other data were obtained from relevant sources to update and/or supplement the BLM's data, as appropriate for each resource. Data included published and unpublished reports, maps, and digital format (geographic information systems). Resources, resource uses, and related issues that are addressed include the following:

- Air quality
- Geology and minerals
- Soil and watershed resources
- Vegetation
- Wildlife habitat
- Special status species
- Wild horses
- Fire management
- Cultural resources
- Paleontological resources
- Visual resources
- Cave and karst resources
- Wilderness characteristics
- Land use and facilities
- Forestry and woodland products
- Rangeland management
- Recreation
- Renewable energy
- Transportation and travel management (including OHV use)
- Utility sites and communication corridors
- Land tenure
- Hazardous materials and public safety
- Special designations (WSAs, ACECs, SMAs, SRMAs)
- Social and economic conditions

1.4.4 Step 4 – Management Situation Analysis

The purpose of the Management Situation Analysis is to conduct a deliberate assessment of the current situation as it relates to natural and cultural resource management and resource use on public lands within Socorro and Catron Counties. The documentation is not a compilation of all available data, but is, rather, information appropriate to address the planning issues identified during scoping. The Management Situation Analysis provides a profile of the resource concerns on public lands within Socorro and Catron Counties, a description of the existing management situation as it pertains to management of the resources, and an analysis of opportunities to modify the existing management situation. The Management Situation Analysis and accompanying resource maps are on file at the BLM Socorro Field Office. An OHV Baseline Report and Baseline Socioeconomic Conditions Report were completed in support of the Management Situation Analysis. These documents also are on file with the BLM Socorro Field Office.

1.4.5 Step 5 – Formulation of Alternatives

Four alternatives are examined in this Draft RMPR/EIS. These alternatives were developed to respond to issues identified through scoping and management concerns, explore alternatives to the existing management situation, comply with BLM's planning guidelines for fluid mineral resources (Handbook H-1624-1), and comply with the FLPMA requirement of managing for multiple use and sustained yield on public land.

1.4.6 Step 6 – Estimation of Effects of Alternatives

The predicted effects resulting from each of the alternatives were identified and evaluated. Mitigation measures also were considered in evaluating impacts. The baseline information that describes the existing environment in the Planning Area is included in Chapter 3, and potential environmental consequences are discussed in Chapter 4.

1.4.7 Step 7 – Selection of the Preferred Alternative

Based on the information generated in Step 6, the Socorro Field Manager identified and recommended Alternative B to the BLM State Director as the preferred alternative. The next step is to distribute the Draft RMPR/EIS to the public for review and comment. BLM is presently at this step of the process.

1.4.8 Step 8 – Selection of the Plan Amendment

Based on the results of public review and comments on this Draft RMPR/EIS, the Socorro Field Manager will recommend, and the BLM State Director will select, an alternative or a combination of the alternatives to be the Proposed RMPR, and will publish it along with the Final EIS. A final decision will be made after a 60-day Governor's Consistency Review and a 30-day protest period. A Record of Decision and Approved RMPR then will be published.

1.4.9 Step 9 – Monitoring and Evaluation

Over time, BLM will monitor and evaluate actions, resource conditions, and trends to determine if implementation of the RMPR is occurring as planned, management goals and objectives are being met, and whether there are unanticipated results from implementation. Monitoring and evaluation are essential components to an adaptive management approach, through which BLM can detect issues early enough to adjust implementation strategies as necessary to ensure that goals and objectives are achieved. The RMPR will be kept current through minor maintenance, amendments, or revisions as demands on resources change or new information is acquired.

1.5 RELATIONSHIP TO BLM POLICIES, PLANS, AND PROGRAMS

This RMPR/EIS has been prepared to reflect and be consistent with current laws, regulations, and supplemental land use guidance (BLM 2005) for resource management and provide the public the opportunity to provide input in the decision-making process. The RMPR/EIS provides a framework for management decisions; future site-specific projects may require additional study or approval in accordance with NEPA.

The 1989 Socorro RMP and subsequent amendments set forth decisions that have been evaluated to determine their appropriateness for continuation, and previous decisions will be incorporated as appropriate into the RMPR. Since 1989, the following documents that amend the RMP have been published:

- **Resource Management Plan Amendment (RMPA) and Environmental Assessment (EA) for the Continental Divide National Scenic Trail** was published in 1993. This amendment provided for the route selection for the Continental Divide National Scenic Trail between Pie Town and Cuba in Catron, Cibola, McKinley, and Sandoval Counties, New Mexico.
- The **El Camino Real International Heritage Center RMPA/EA** provided for the construction and management of the El Camino Real International Heritage Center. Under this 2001 amendment, ownership of approximately 120 acres of public land was transferred to New Mexico for construction and operation of the interpretive center.
- The **El Camino Real Tierra Adentro National Historic Trail Comprehensive Management Plan and Final EIS**, published in 2004, provides guidance for administering the trail and establishes a trail corridor of approximately 5 miles on either side of the historic trail route.
- The **New Mexico Standards for Public Land Health and Guidelines for Livestock and Grazing Management (New Mexico Standards and Guidelines)** also amended the 1989 RMP.

The standards of land health are expressions of physical and biological condition or functions required for healthy and sustainable ecosystems on public lands, and define the minimum resource conditions that must be achieved. The guidelines are only implemented for livestock grazing, if the standards are not being met and grazing is determined to be the cause for not meeting the standard. The process for assessing the condition of resources and evaluating attainment of standards and conformance to the guidelines is ongoing.

- The **Fire and Fuels Management Plan Amendment and EA for BLM Lands in New Mexico and Texas** was prepared by the New Mexico BLM State Office. This document amended fire management in all New Mexico BLM RMPs and RMPAs in September 2004. The **Programmatic Emergency Stabilization and Rehabilitation Plan and EA** was completed in 2005 to provide an integrated program for burned areas in New Mexico. The Plan includes descriptions of emergency stabilization and rehabilitation treatments that would be implemented under normal conditions in the event of a wildland fire.
- The **Final Programmatic Environmental Impact Statement on Wind Energy Development on BLM-Administered Lands in the Western United States** was published in June 2005. The applicable policies, best management practices, and programmatic mitigation identified in this document have been incorporated into this RMPR.

In addition, the **RMPA/EA for the Devil's Backbone Desert Bighorn Sheep Habitat Area** was published in 1998 and proposed the withdrawal from location and entry under mining laws of approximately 5,000 acres in the Devil's Backbone area for the protection of State-listed endangered desert bighorn sheep. However, the Record of Decision was not completed for this EA.

Thirteen WSAs are located within the Planning Area and are associated with additional management guidance. WSAs are designated by Congress and managed in accordance with the Interim Management Policy and Guidelines for Land Under Wilderness Review (BLM 1995), which allows some recreation and other uses and requires protection of wilderness values. If formally added to the Wilderness Preservation System, these areas would be managed in accordance with BLM regulations for wilderness management in 43 CFR 6300. If a WSA is released by Congress from consideration for wilderness designation, the area would be managed in accordance with this RMPR/EIS.

Other agencies in the area with land use plans include Socorro County (1998) and Catron County (1992). Catron County has served as a cooperating agency during preparation of this RMPR/EIS. No inconsistencies were identified with state or local land use plans in relation to this RMPR/EIS.

1.6 OVERALL VISION FOR THE RMPR/EIS

Since the RMPR is intended to guide future management, a long-term view of resource goals and the overall vision for management of public land underlies the planning process. The establishment of an overall vision ensures that the resource-specific steps taken during implementation of the RMPR contribute to the larger goals for management of public lands, and that management direction in the Planning Area is consistent and mutually supportive with public land management throughout the State and agency. The overall vision for this RMPR is provided by the BLM Strategic Plan, State Director priorities, and goals that are specifically identified for this RMPR.

1.6.1 BLM Strategic Plan

The mission of BLM is to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations. In order to accomplish that mission, BLM has developed a

strategic plan (BLM 1997a) containing a comprehensive set of broad goal statements and a subset of mission goals. The complete BLM Strategic Plan 2000-2005, the current plan at the time of this draft, is available at the BLM Web site: www.blm.gov/nhp/info/stratplan. Two goal statements with their corresponding subset of mission goals related to public land management are as follows:

- **Goal 1:** Serve Current and Future Publics
  - Provide opportunities for environmentally responsible recreation
  - Provide opportunities for environmentally responsible commercial activities
  - Preserve natural and cultural heritage resources
  - Reduce threats to public health, safety, and property
  - Provide land, resource, and title information
  - Provide economic and technical assistance
- **Goal 2:** Restore and Maintain the Health of the Land
  - Understand and plan for the condition and use of the public lands
  - Restore at-risk resources and maintain functioning systems

1.6.2 State Director Priorities

The State Director has identified several priorities for the management of BLM-administered lands in New Mexico to be accomplished over the next several years:

- Restore watershed health
- Protect special landscapes
- Reclaim "legacy" lands (lands that have been damaged by historic use or extraction of public resources)
- Help communities meet future needs
- Enhance habitat for special status species
- Consolidate land ownership patterns
- Resolve mineral conflicts
- Develop business solutions to benefit tomorrow's customers

1.6.3 RMPR Goals

Based on the BLM Strategic Plan, the State Director's priorities, and the specific issues identified for this RMPR/EIS, the following goals were developed for this RMPR:

- Manage for long-term sustainability and, where necessary, restore the health of the woodland, rangeland, and riparian landscapes in the Planning Area
- Manage sensitive species and communities to ensure long-term viability, and promote delisting of threatened or endangered species

- Within the capability of the Planning Area's natural and cultural resources, provide tourism, recreational, educational, and research opportunities
- Within the capability of the Planning Area resources, provide a predictable, sustained flow of economic benefits to individuals and local communities
- Work with local American Indian Tribes and local communities to meet their needs within the mission of BLM

These goals are incorporated into the range of management alternatives to be evaluated in this RMPR/EIS. The following chapter describes each of the alternatives.

Chapter 2 - Alternatives

2.0 ALTERNATIVES

2.1 INTRODUCTION

The land use planning process is an opportunity for the Bureau of Land Management (BLM) Socorro Field Office to re-evaluate the way in which it manages the resources, resource uses, and other programs on public land within the Planning Area of Socorro and Catron Counties. As part of this Resource Management Plan Revision (RMPR) process, the BLM Socorro Field Office developed alternative land-management strategies to address the issues that were identified early in the planning process (see Chapter 1) and to achieve resource goals and objectives. The potential environmental consequences of these management alternatives, as well as a No-Action Alternative that represents the continuation of existing management, were evaluated (see Chapter 4).

All alternatives are composed of land use plan-level decisions as defined in the BLM Land Use Planning Handbook H-1601-1 (dated March 2005). Future proposals for site-specific actions may require more detailed environmental review in compliance with the National Environmental Policy Act of 1969 (NEPA) .

This chapter describes the alternatives analyzed as part of this planning process. The following discussion is organized to provide (1) a general description of the alternatives, (2) the common elements among the alternatives (i.e., continuing management guidance and management common to all alternatives), (3) detailed descriptions of alternatives, (4) alternatives considered but not analyzed in detail, (5) a summary comparison of the potential impacts associated with each alternative, and (6) monitoring of the RMPR.

2.2 GENERAL DESCRIPTION OF THE ALTERNATIVES

Four alternatives are evaluated in this Environmental Impact Statement (EIS). A summary of the management goals, land use allocations, and key management decisions for the alternatives is provided in Table 2-1, Alternatives Matrix, which is located at the end of this chapter.

The **No-Action Alternative (or Alternative A)** represents the continuation of existing management, which is defined by the 1989 Resource Management Plan (RMP) and subsequent amendments. Under Alternative A, resource values or sensitive habitats would receive emphasis at present levels, and current management strategies would continue to be applied. Decisions from the 1989 RMP that have been implemented would continue, and those that have not been implemented would be carried forward in the future.

Three action alternatives (Alternatives B, C, and D) provide variations on the existing management strategy, and were developed to address current issues and concerns in the Planning Area (described in Chapter 1). In general, the three action alternatives range in emphasis from resource protection to resource use.

Alternative B is the preferred alternative at the time of this draft. The overall goal of this alternative is to provide a balance between resource use and protection. Management under this alternative would balance the need to protect, restore, and enhance natural values with the need to provide for the production of food, fiber, and minerals, and to provide recreation, heritage tourism, and other services on public land. This balance would be achieved within the limits of the ecosystem's ability to provide resources on a sustainable basis and within the constraints of applicable laws and regulations. Measures to protect sensitive resources would be implemented, but they would be less restrictive than under Alternative C.

Alternative C provides greater emphasis on resource protection than Alternative B. This would be achieved primarily through more management emphasis on protection of resource values associated with special designations and special status species. In some areas, commodity production would be excluded to protect sensitive resources.

Alternative D emphasizes commodity production and use, including mineral leasing and mineral material sales, grazing, commercial recreation and tourism, and woodland-products harvesting. Under Alternative D, constraints on commodity production would be the least restrictive while still complying with applicable law, regulation, and BLM policy. Potential impacts on sensitive resources would be evaluated on a case-by-case basis.

2.3 CONTINUING MANAGEMENT GUIDANCE AND MANAGEMENT COMMON TO ALL ALTERNATIVES

This section describes the legal and policy guidance, objectives for resource conditions and programs, and decisions that would apply to management by the Socorro Field Office under all alternatives. The section for each resource or program addresses both (1) continuing management guidance, or the applicable laws, regulations, and policy guidance with which BLM must comply; and (2) management decisions common to all alternatives, which are discretionary actions or decisions carried forward from previous planning documents that would be implemented under each alternative. Management for some resources and resource uses is described entirely in this section and not addressed in the alternatives descriptions in Section 2.4, as management would not change across alternatives. These resources include fire management, air quality, noxious weeds and invasive species, wild horses, caves and karst, and renewable energy. Additional information on applicable laws and policy is provided in Appendix B, Legal Authorities and Mandates and in the Management Situation Analysis, available at the Socorro Field Office.

2.3.1 Air Quality

2.3.1.1 Continuing Management Guidance

BLM actions and use authorizations that may affect air quality must comply with applicable local, State, Tribal, and Federal air quality laws, statutes, regulations, standards, and implementation plans. The State of New Mexico air quality regulations are provided in the New Mexico Administrative Code, Title 20, Chapter 2. These regulations establish New Mexico Ambient Air Quality Standards that are equal to or more stringent than the National Ambient Air Quality Standards. In addition to the criteria pollutants covered by the National Standards, New Mexico has promulgated ambient air quality standards for total suspended particulate and hydrogen sulfide, and added a 24-hour nitrogen dioxide standard. New Mexico also requires that all pollutant concentrations be expressed in parts per million and adjusted for altitude and temperature at the measurement location. The New Mexico Environment Department (NMED) also regulates smoke management through requirements for the use of prescribed fires (Title 20, Chapter 2, Part 65 of the New Mexico Administrative Code).

2.3.1.2 Management Common to All Alternatives

Air quality issues in the Planning Area generally are related to fire management. Best management practices related to air quality are prescribed in the 2004 Fire and Fuels Management Plan Amendment and Environmental Assessment for Public Lands in New Mexico and Texas (also referred to as the Statewide Fire and Fuels Management Plan Amendment) and BLM Manual 7000, and are common to all alternatives (Appendix C, Best Management Practices).

2.3.2 Soil and Water Resources

2.3.2.1 Continuing Management Guidance

Water Quantity

All water rights are acquired in accordance with New Mexico substantive and procedural law, except where Congress or the Executive Branch has created a Federal reservation with a reserved water right. Surface water rights in New Mexico are based upon the principles of beneficial use and first appropriation, meaning that water rights are ranked in priority according to first beneficial use, and all unappropriated water belongs to the State. The New Mexico Office of the State Engineer (State Engineer) administers water rights for the use of ground and surface water in New Mexico. To ensure orderly development of groundwater resources, the State Engineer designates groundwater basins as declared or undeclared. Within a declared groundwater basin, an application to appropriate groundwater must be filed with and approved by the State Engineer. In an undeclared groundwater basin, water is not appropriated and wells may be drilled without approval from the State Engineer. The State Engineer assists the court in the determination of surface water rights and administers water conservation programs.

Water Quality

The Clean Water Act is the primary law in controlling water quality (see Appendix B), and provides instream water quality standards and maximum permissible pollution discharge levels. In New Mexico, water quality authority is vested in the New Mexico Water Quality Control Commission and primarily administered by the various units of the NMED. Surface water quality standards are established by NMED and approved by the Environmental Protection Agency. Under Section 401 of the Clean Water Act, the State can deny certification of Federal permits based on anticipated water quality impacts. The BLM manages its resources to ensure that development practices comply with State water quality standards.

The BLM partners with New Mexico to control nonpoint-source pollution in accordance with the State's Nonpoint Source Management Program (NMED 1999), which emphasizes the improvement of water quality in degraded stream systems. A memorandum of understanding between the BLM and State of New Mexico confirms that the BLM is the agency designated by the State of New Mexico for the reduction of nonpoint-source pollution on and from public land. The RMPR is the primary document establishing BLM compliance with the New Mexico nonpoint-source program. In the past, the Socorro Field Office has met this obligation by committing to specific watershed management programs and by a general policy of preventing excess erosion and sediment transport off public land. Nonpoint-source pollution is seen as optimally controlled by a spectrum of best management practices as prescribed by the Clean Water Act (see Appendix C).

Riparian restoration in New Mexico, where not driven by the Endangered Species Act, is accomplished primarily under a variety of State-regulated Clean Water Act programs. The BLM is a major independent contributor to Clean Water Act-related restoration projects. Riparian sites must meet the riparian standard as outlined in the New Mexico **Standards for Public Land Health and Guidelines for Livestock Grazing Management (New Mexico Standards and Guidelines)**. Standards of land health are expressions of physical and biological condition or degree of function required for healthy and sustainable lands, and defines minimum resource conditions that must be achieved. Public land will be assessed to determine if the land is meeting the standard, moving toward the standard, or not achieving or moving toward the standard. Assessments will rely upon the best data and information available. The standards for the Field Office are described in Appendix H, Rangeland Management, and include the upland, riparian, and biotic standard. These standards apply to all resource uses on public land.

Soils and Watershed

The BLM's soil and watershed program emphasizes preventing or avoiding further degradation of soil and water resources, and managing for their conservation. The program supports and influences, and is influenced by other resource programs (i.e., range management, vegetation, and habitat). Policy and guidance for the management of both soil and water resources associated with land administered by the BLM are provided in Manual Sections 7000 and 7100.

2.3.2.2 Management Common to All Alternatives

Under all alternatives, BLM would continue to monitor and assess public land health in accordance with the New Mexico Standards and Guidelines (see Appendix B). The 1989 RMP included a decision to monitor and restrict surface-disturbing activities on land where potential erosion is a critical concern, and to reduce erosion on allotments. This decision would be carried forward, primarily through the implementation of the New Mexico Standards and Guidelines.

The BLM's general policy of preventing excess erosion and sediment transport off public land would be realized primarily through the implementation of best management practices (see Appendix C). In addition, BLM would continue the 1989 RMP decision to control water runoff by constructing detention dams, diversions, water spreaders, weirs, and wire checks as needed to reduce erosion.

2.3.3 Vegetation

2.3.3.1 Continuing Management Guidance

All BLM activities are expected to meet the New Mexico Standards and Guidelines (see Appendix B). These standards describe conditions needed for healthy sustainable public land and must be maintained by all users of the public land. They provide the measures of resource quality, condition, or function by which public land health will be assessed. These standards describe the conditions needed for healthy public land under three categories: upland sites, biotic communities, and riparian sites. In accordance with BLM policy, the Socorro Field Office must evaluate activities on public land against indicators developed for each standard.

For example, standards for riparian sites indicate that these areas should be in a "productive, properly functioning, and sustainable condition, within the capability of that site" and should consist of "adequate vegetation of diverse age and composition." Indicators for these standards include factors that determine stream channel morphology and stability, streambank stability, and structural diversity of vegetation.

Guidelines are either activity-specific or use-specific. Guidelines for livestock grazing are management tools, methods, strategies, and techniques designed to maintain or achieve standards. The guidelines apply to all programs and activities, which should be managed to ensure that standards are being met or areas are moving towards the standards. If current grazing practices are preventing an area from moving toward or reaching the standard, then the livestock guidelines would be utilized. When activities other than grazing are determined to be the factor in an area not moving toward or reaching the standard, then the BLM utilizes existing policy and manuals from its programs to implement corrective practices.

2.3.3.2 Management Common to All Alternatives

Objectives for vegetation management are established in the Socorro Field Office and are described in general terms as kinds, types, amount, or appearance of vegetation that will provide the goods, values, and services needed in a geographic area. Specific objectives for monitoring, resource objectives, and

management of sensitive areas are developed at the activity plan level (e.g., allotment management plan, habitat management plan, fire management plan, etc.). The ecological site descriptions would provide the template for determining the appropriate amount, type, and distribution of vegetation reflecting the desired plant community.

The standard practices that would be employed to meet vegetation objectives are as follows:

- Maintain average utilization levels at or below 50 percent of annual production of key species.
- Construct projects such as fences, water developments, and erosion control structures.
- Implement grazing management treatments such as changes in season of use, class of livestock, or stocking rates.
- Implement vegetation treatments, including prescribed fire, fuelwood sales, or chemical or mechanical treatments.

Plant communities would be managed to achieve multiple-use goals and meet or move toward the upland standard. The description of plant communities would be developed by the Socorro Field Office by using ecological site descriptions developed by the Natural Resource Conservation Service. The plant communities would be based on the soil unit and associated ecological site description and other variables such as fire regime and others as needed. Plant communities may combine several ecological sites with similar characteristics and would be developed through consultation with interested public, local governments, and public-land users and during the activity plan process.

2.3.4 Noxious Weeds and Invasive Species

2.3.4.1 Continuing Management Guidance

Executive Order (EO) 13112, Invasive Species; the Federal Noxious Weed Act of 1974; the New Mexico Noxious Weed Management Act of 1978; and the Federal Plant Protection Act of 2000 require the development of a weed management program. This program focuses on the inventory of existing infestations, prevention of noxious weed invasion, monitoring revegetation efforts for invasive weeds, and assessment of the success of weed control efforts.

EO 13112 also requires Federal agencies to (1) identify actions that may affect invasive species; (2) use relevant programs to prevent introduction of invasive species; (3) detect, respond, and control such species; (4) monitor invasive species populations; (5) provide for restoration of native species; (6) conduct research on invasive species; and (7) promote public education.

2.3.4.2 Management Common to All Alternatives

Under all alternatives, management of noxious weeds would include (1) conducting field searches and inventories of invasive and noxious weeds throughout the year, (2) preventing the establishment of new infestations by closely monitoring newly disturbed and burn areas, (3) using an integrated weed-management approach that includes best management practices to prevent and control weed infestations, and (4) developing and continuing public outreach programs for invasive and noxious weed management.

Noxious weed management would continue under the guidelines established in the following governing instruments:

- Socorro County Voluntary Noxious Plant Control Program

- Memorandum of Understanding among many parties, including the City of Socorro, Socorro County Commissioners, Socorro Soil and Water Conservation District, Natural Resource Conservation Service, BLM, New Mexico Highway Department, New Mexico State Land Office, and Cooperative Extension Service
- Assistance Agreement between the Socorro Soil and Water Conservation District and the BLM
- Socorro County's Integrated Weed Management Plan for the Control and Management of Invasive/Noxious Weeds
- Socorro County's Invasive/Noxious Weed Rapid Response Plan

2.3.5 Wildlife, Riparian Habitat, and Special Status Species

2.3.5.1 Continuing Management Guidance

Wildlife and Riparian Habitat

Federal legislation provides guidance and direction to the BLM on the management of public land and its natural resources. Legislation directs that the BLM is responsible primarily for protecting and improving wildlife habitat on public land. On the other hand, management of resident fish and wildlife species (with the exception of migratory birds and threatened and endangered species) is by the appropriate State agencies. This requires close cooperation between the two agencies. Memorandum of Understanding No. NMSO-41 between the BLM and New Mexico Department of Game and Fish (NMDGF) provides for the cooperative development of fish and wildlife resource plans, sets forth responsibilities for coordination, identifies issues of concern, and establishes methods of coordination. The Socorro Field Office identifies opportunities to maintain, improve, and expand wildlife habitat on public land. This is generally guided by NMDGF big game and nongame species management plans, in a manner consistent with the principles of multiple use management. The New Mexico Habitat Stamp Program is a process authorized under the Sikes Act (Public Law 93-452) and establishes a mechanism to fund projects and programs to achieve the conservation, rehabilitation, and ecological diversification of wildlife habitats on land administered by the U.S. Forest Service and BLM. The New Mexico Habitat Stamp Program is the primary funding source for habitat enhancement projects on public land within the Socorro Field Office. Under the BLM's multiple use management, program activities can affect the quality and health of riparian areas that are important to fish and wildlife. BLM management of riparian areas has the objective of restoring and protecting these areas within the context of authorizing other land management activities.

Special Status Species

The Endangered Species Act requires special protection and management for federally listed threatened and endangered species, species proposed to be listed as threatened and endangered, and designated and proposed critical habitat. The act also requires the development and implementation of recovery plans for the conservation and survival of threatened and endangered species.

The BLM special status species policy applies to management for Endangered Species Act listed, proposed, or candidate species; BLM sensitive species; and State-listed species as directed in BLM Manual 6840. In accordance with BLM Manual 6840, State-listed species should be managed to the level of protection required by State law or under the BLM policy for species of concern (formerly known as candidate species) under the Endangered Species Act, whichever would provide the better opportunity for conservation. Although BLM sensitive and candidate species have no legal status or protection under the Endangered Species Act, it is BLM policy to manage such species to ensure that actions authorized, funded, or carried out by the BLM do not contribute to the need to list those species.

State laws protecting State-listed species apply to all BLM programs and actions to the extent that they are consistent with Federal authority. Applicable State legislation in the Planning Area includes the New Mexico Endangered Plant Species Act and the Wildlife Conservation Act. In accordance with these laws, lists of species that require protective measures are maintained by the State.

Federal legislation requires actions by Federal agencies to protect other protected, nonfederally listed species and habitats. Executive Order 13186 "Responsibilities of Federal Agencies to Protect Migratory Birds," highlights the need for Federal agencies, including BLM, to conserve migratory birds protected by the migratory bird conventions such as the Migratory Bird Treaty Act (Title 16, Parts 703-711 of the United States Code [16 USC 703-711]), the Bald and Golden Eagle Protection Acts (16 USC 668-668d), and the Fish and Wildlife Coordination Act (16 USC 661-666c). This responsibility includes the need to ensure that environmental analyses of Federal actions evaluate the effects of actions on migratory birds, with special emphasis on species of concern as identified in the periodic report ''Migratory Nongame Birds of Management Concern in the United States,'' priority migratory bird species as documented by established plans (such as Bird Conservation Regions in the North American Bird Conservation Initiative or Partners in Flight physiographic areas), and those species listed in 50 CFR 17.11.

2.3.5.2 Management Common to All Alternatives

Wildlife and Riparian Habitat

The objective of the Socorro Field Office's wildlife management program is to facilitate the maintenance, restoration, and enhancement of all wildlife populations and habitat on public land through management plans and actions integrated with other uses of public land. In accordance with the New Mexico Standards and Guidelines (see Section 2.3.3), BLM actions should promote progress towards improved public land health through management that restores, protects, and enhances the resources necessary to support native wildlife species and their associated habitats in their historical proportions (as site potential allows). Under all alternatives, the Socorro Field Office would continue to implement habitat enhancement projects in cooperation with NMDGF and other partners including the Rocky Mountain Elk Foundation, National Wild Turkey Federation, Foundation for North American Wild Sheep, Quail Unlimited, and the Mule Deer Foundation. These projects include, but are not limited to, vegetative treatments (prescribed fire, mechanical and chemical treatments), watershed protection and restoration, riparian protection and restoration, wildlife transplants, wildlife watering facilities, environmental education, public access enhancement, fence modification, and wildlife project maintenance.

The Socorro Field Office will continue the 1989 RMP decision to develop, implement, and maintain wildlife habitat management plans (HMPs) and Coordinated RMPs for the benefit of wildlife, special status species, and riparian areas. Other management direction that would be carried forward include developing new projects to benefit wildlife or improve wildlife habitat, modifying existing projects to benefit wildlife, and continuing studies, surveys, and inventories to identify and protect crucial habitats.

Animal damage control on BLM-administered land is conducted by U.S. Department of Agriculture Animal Plant Health Inspection Services-Wildlife Services (APHIS-WS) in accordance with a national-level Memorandum of Understanding between APHIS-WS and the BLM. Department of the Interior policy and the annual Animal Damage Control Plan for the Socorro Field Office, prepared jointly by the APHIS-WS and the BLM, guide animal damage control activities on public land within the Planning Area. The APHIS-WS has overall responsibility for the program and supervises all control activities. The BLM has approval responsibility for the specific control actions on public land. BLM and APHIS-WS will continue to meet annually to develop and implement a work plan for the Socorro Field Office.

The goal of the Socorro Field Office's riparian monitoring is to document the progress toward achieving and then maintaining proper functioning condition while being managed under multiple use and adaptive management concepts (Appendix D, Monitoring). Riparian and wetland areas are considered to be functioning properly when adequate vegetation, landform, or large woody debris are present to dissipate the stream energy associated with high water flows, thereby reducing erosion and improving water quality.

There are a number of conditions related to wildlife habitat that would be applied under all alternatives for approval of permits to extract resources including fluid mineral leasing. These measures, in addition to appropriate best management practices (see Appendix C), would be implemented under all alternatives.

Special Status Species

Federal- and State-listed species are protected by requiring site-specific evaluations and clearances and by applying more stringent management prescriptions in areas that have been specially designated to protect target species. The Socorro Field Office maintains a map that identifies the locations of listed species or potential habitat. This map is updated as new species are identified as threatened, endangered, or proposed for listing under the Endangered Species Act. When a proposed project is located within habitat that has been designated as having the potential to support a protected species, a field survey is required prior to authorization of the project. Any action that may affect federally listed species also requires consultation with the USFWS under Section 7 of the Endangered Species Act.

2.3.6 Wild Horses

2.3.6.1 Continuing Management Guidance

The Wild and Free-Roaming Horses and Burros Act of 1971 (Public Law 92-195) requires BLM to protect and manage wild horses in the areas where they were found at the time of the Act, in a manner designed to achieve a thriving natural ecological balance in keeping with the multiple-use management concept of the public land. A wild horse or burro herd area is the public land identified as having been used by a herd as its habitat at the time of the passage of the Wild and Free-Roaming Horses and Burros Act (December 15, 1971). A herd management area is that portion of a herd area identified for maintenance or management of wild horses or burros. The BLM manages wild horses and burros in designated herd areas as free-roaming, self-sustaining populations that contain the optimum number of animals in a thriving natural ecological balance with other multiple-use resource components. This is determined through a manageability determination based on monitoring, research, and analysis of resource use.

2.3.6.2 Management Common to All Alternatives

Under all alternatives, the Bordo Atravesado Wild Horse Herd Management Area would be managed pursuant to decisions established in the Herd Management Area Plan. Under all alternatives, at some point in the future, the Bordo Atravesado Wild Horse Herd Management Plan would be revised to address habitat and population objectives, giving consideration to topics such as age structure, sex ratio, fertility control, and genetic viability. Under all alternatives the appropriate management level range is 40 to 60 adult horses. Genetic diversity can be increased in the small herd by introducing one to two outside mares, preferably from the Bookcliff Herd near Grand Junction, Colorado, on a cycle appropriate to herd conditions (approximately every 10 years is considered sufficient to maintain genetic variability) (Coates-Markle 1999).

2.3.7 Wildland Fire Ecology and Management

2.3.7.1 Continuing Management Guidance

BLM policy, described in Manual 9211, provides guidance for identifying resource management objectives that consider and take advantage of natural processes, particularly fire. Fire Management Plans must be completed for all burnable acres in accordance with Federal fire policy. In 2004, the BLM New Mexico State Office prepared the Statewide Fire and Fuels Management Plan Amendment, which amends all of BLM's New Mexico RMPs. The purpose of the amendment is to incorporate current fire management policy into RMPs, restore fires as an integral part of fire-adapted ecosystems in order to meet resource management objectives, improve the protection of human life and property through the reduction of hazardous fuels, and establish consistent methods of managing fire and fuels on public land in New Mexico and Texas. The amendment establishes objectives for fire and fuels management, delineates fire management categories (as defined in Appendix A.2 of the Resource Management Plan Amendment for Fire and Fuels Management on Public Land in New Mexico and Texas), identifies broad vegetation treatments, identifies general restrictions on fire management practices, and determines criteria for changing Fire Management Units.

2.3.7.2 Management Common to All Alternatives

Fire management strategies would be guided by the resource objectives set forth in the RMPR. Overall goals for fire management are to reduce the risk to human life and property from wildland fire; reduce the risk and cost of fire suppression in areas of hazardous fuels buildup; and improve landscape health by returning fire to its natural role in the ecosystem. Under all alternatives, fires on public lands within the Planning Area would be managed according to the Statewide Fire and Fuels Management Plan Amendment and to meet resource objectives. The amendment prescribes a range of proactive and preventative measures for the incidence of fire on public land including prescribed fire to achieve resource objectives, fire suppression, and reduction of fuels to diminish the severity of wildland fires and control prescribed burns. Remedies for fuel build-up include manual, mechanical, and chemical means, depending on the need and circumstance (e.g., chemical treatment is preferred where other treatment would encourage expansion of noxious weeds or other invasive species). Methods to reduce density of trees and wildland fuels can include commercial thinning.

Decisions are guided by annual assignment of lands to fire management units (areas identified by geographic, social, and political characteristics with specific objectives for fire and fuels management) with specific fire management categories that dictate a management approach for each unit. Fire Management Plans must be completed prior to use of wildland fire for resource benefit. A site-specific fire prescription would be prepared prior to the use of prescribed fires, and emergency stabilization treatments implemented and completed within 1 calendar year from the date of the control of fire. Plans for rehabilitation of wildland fires must be completed within 3 years of the date of the control of fire with funding for rehabilitation prioritized using common criteria (BLM 1999c). Wildland and prescribed fires are monitored according to variables described in the Monitoring and Adaptive Management Plan for the Statewide Fire and Fuels Management Plan.

2.3.8 Cultural Resources

2.3.8.1 Continuing Management Guidance

BLM complies with numerous Federal laws, regulations, EOs, and other directives regarding cultural resources and historic preservation (see Appendix B). The requirement to appropriately manage cultural resources was incorporated into the Federal Land Policy and Management Act of 1976 (FLPMA), and

this law remains the primary basis for BLM's program for managing cultural resources in conjunction within the agency's mandate to promote multiple, sustainable uses of resources on public land.

Section 106 of the National Historic Preservation Act stipulates that Federal agencies give due consideration to historic properties (e.g., resources eligible for the National Register of Historic Places [National Register]) as Federal undertakings (i.e., Federal projects or federally funded or licensed projects) are planned and implemented. Regulations for Protection of Historic Properties (Title 36, Code of Federal Regulations, Part 800 [36 CFR 800] define a process for consulting with State Historic Preservation Officers, the Federal Advisory Council on Historic Preservation, and other interested organizations and individuals. In 1997, the BLM negotiated a National Programmatic Agreement with the Advisory Council on Historic Preservation and the National Conference of State Historic Preservation Officers regarding the manner in which the BLM will comply with the National Historic Preservation Act. This nationwide agreement replaced a similar, earlier, State-level agreement that was in place when the 1989 RMP was prepared. The National Programmatic Agreement is implemented through a state-specific protocol negotiated with the State Historic Preservation Officer.

Because the vast majority of the cultural resources in the BLM's Decision Area are archaeological sites, the Archaeological Resources Protection Act is an important basis for the Socorro Field Office cultural resource program. This Act and implementing regulations (43 CFR 296) gives the BLM permitting authority to restrict access to archaeological resources on public land and specifies that such permits can only be issued for scholarly research or resource preservation. Human remains, funerary objects, sacred objects, and objects of cultural patrimony affiliated with American Indians are sometimes associated with archaeological sites. The Native American Graves Protection and Repatriation Act stipulates how such remains and objects on Federal land are to be treated.

The BLM applies a "rule of reason" in considering how potential effects of BLM actions on cultural resources will be considered on non-Federal land, as directed by BLM Manual 8100.07 and the National Programmatic Agreement. Under this policy, the BLM inventories, evaluates, and assesses potential effects on cultural resources on nonpublic land to the extent that effects stem from BLM decisions. These situations may arise for linear projects that cross land of various jurisdictions, including public land, or issuance of permits to drill on split-estate land. Cross-jurisdictional activities also may be subject to the New Mexico Cultural Properties Act, which addresses cultural resources on State land.

2.3.8.2 Management Common to All Alternatives

Cultural resource surveys would continue to be conducted prior to authorization of any ground-disturbing activity or land disposal, with the possible exception of land disposed of to the State of New Mexico under an existing memorandum of understanding. This would be done in accordance with the National Programmatic Agreement and New Mexico protocol. In accordance with the protocol, the BLM approves and proceeds with projects that do not affect properties listed on or identified as eligible for the National Register without consulting with the New Mexico State Historic Preservation Office (SHPO). The BLM submits documentation of such projects to the SHPO quarterly and also submits an annual report of the program.

Affiliated American Indian Tribes would be consulted for all actions that may affect their interests.

The BLM would continue to fund and conduct proactive cultural resource inventories in compliance with Section 110 of the National Historic Preservation Act and in accordance with cultural resource goals and evolving management priorities. Inventory would be conducted in the following areas, as funding is available:

- *High Priority* – Rural/urban interface areas and other areas identified as at-risk from vandalism or development (such as the Camino Real Corridor), areas where highly significant or vulnerable resources are suspected, survey necessary for understanding or identifying cultural landscapes, and other areas as identified based on evolving management priorities.
- *Medium Priority* – Assess potential value of unreported late-1970s Class II survey data and analyze, if warranted, areas in the vicinity of large prehistoric villages where other sites are likely to be concentrated; management areas designated by other resource programs with potential conflicts with cultural resource program goals; or other areas as identified based on evolving management priorities.
- *Low Priority* – Management areas designated by other resource programs with little potential for conflict with cultural resource program goals, and other areas as identified based on evolving management priorities.

BLM will partner with the State of New Mexico on regional tourism opportunities, including Boots and Saddles, Magdalena Trail Project, and activities associated with El Camino Real International Heritage Center. In addition, BLM will cooperate with the National Park Service, other agencies, Mexico, interested groups, and landowners in protecting and interpreting El Camino Real Adentro National Historic Trail in accordance with a comprehensive management plan (National Park Service and BLM 2004).

2.3.9 Paleontological Resources

2.3.9.1 Continuing Management Guidance

The BLM has developed objectives for paleontological resources (BLM Manual 8270, Paleontological Resource Management; BLM Handbook H-8270-1, General Procedural Guidance for Paleontological Resource Management) to provide protection of the resources. It is the policy of BLM to manage paleontological resources to facilitate research and scientific and/or authorized collection on public land, and to avoid or mitigate adverse impacts that could result from other activities.

The BLM State Office has an assistance agreement with the New Mexico Museum of Natural History and Science and the New Mexico Museum of Natural History Foundation to ensure the care, protection, and storage of paleontological resources collected from public land in New Mexico. The museum holds a statewide permit with the BLM for the collection of vertebrate fossils from public land.

Management Common to All Alternatives

The overall objectives for the paleontological resources program are to facilitate scientific, educational, and recreational uses of fossils, foster public awareness and appreciation for the area's paleontological heritage, and manage paleontological values to protect and preserve specimens that are present in the Planning Area. Under the revised RMP, BLM would continue to use existing partnerships and information collected from the paleontological collection permits to evaluate the importance of specific areas on public land in the Planning Area.

2.3.10 Visual Resources

2.3.10.1 Continuing Management Guidance

The BLM has developed a comprehensive system for visual resource management (VRM) for the purpose of carrying out NEPA- and FLPMA-prescribed visual management objectives and preserving the natural scenic quality of Federal land. The BLM's policy, described in BLM Manual Section 8400 – Visual

Resource Management, is that the BLM has a basic stewardship responsibility to identify and protect visual values on all BLM-managed public land.

BLM Handbook H-8410-1, Visual Resources Inventory, provides additional guidance on managing visual resources. The inventory consists of a scenic quality evaluation, a visual sensitivity level analysis, and a delineation of distance zones. Based on these three factors, BLM-administered land is placed into one of four visual resource inventory classes (Appendix E, Recreational Opportunity Spectrum Definitions and Visual Resource Management Class Objectives).

2.3.10.2 Management Common to All Alternatives

VRM classes have been applied to all land within the BLM's Decision Area under all alternatives. The acreage associated with the different management classes would vary, as described for each alternative. VRM classes acknowledge existing visual contrasts. More restrictive requirements would not be retroactively applied to existing projects should VRM classifications change as a result of this planning effort. New proposals would be managed to meet the intent of the VRM designations determined by this plan. Visual design considerations would be incorporated into all surface-disturbing projects regardless of size or potential impact and is a management responsibility shared by all resource management programs.

Portions of the El Camino Real National Historic Trail that are BLM-administered land within the Planning Area will continue to be managed as VRM Class I or II, as prescribed in the El Camino Real de Tierra Adentro National Historic Trail Comprehensive Management Plan and Final EIS.

2.3.11 Wilderness Characteristics

2.3.11.1 Continuing Management Guidance

WSAs will continue to be managed in accordance with the Interim Management Policy and Guidelines for Lands Under Wilderness Review until an area is either added to the National Wilderness Preservation System by Congress or released from further consideration. The purpose of BLM's 1995 Interim Management Policy is to protect existing wilderness values, and manage valid existing rights and grandfathered activities until final wilderness suitability determinations have been made. If an area is designated as wilderness, it would be managed in accordance with the Wilderness Act of 1964 and BLM Wilderness Management Regulations (43 CFR 6300 and 8560).

Section 603 of FLPMA authorized BLM to classify and recommend suitable BLM land for wilderness designation. As of 1993, BLM no longer has the authority to designate new WSAs administratively or manage additional land under the nonimpairment standard prescribed by Section 603 of FLPMA. Instruction Memoranda 2003-274 – BLM Implementation of the Settlement of Utah vs. Norton Regarding Wilderness Study, and 2003-275 – Change 1 Consideration of Wilderness Characteristics in Land Use Plans state that the management of WSAs that have already been established through the Section 603 and Section 202 processes and recommended by the President to Congress, or of WSAs that were established legislatively, are unaffected.

In accordance with Instruction Memorandum 2003-275 – Change 1 Consideration of Wilderness Characteristics in land use plans, wilderness characteristics may be protected administratively through the establishment of VRM classifications to guide the consideration of proposals that would adversely affect wilderness characteristics or guide the placement of roads, trails, and other facilities; protective conditions of use on permits, leases, or other use authorizations; or designating land as open, closed, or limited to off-highway vehicle (OHV) use. If appropriate, BLM also may designate areas of critical environmental

concern (ACECs), backcountry byways, watchable wildlife viewing sites, or other BLM administrative designations through the land use planning process in order to protect wilderness values.

2.3.11.2 Management Common to All Alternatives

The objective of the wilderness program is to protect WSAs in accordance with applicable laws and regulations. The Socorro Field Office currently manages 13 WSAs, totaling 291,826 acres. Under all alternatives, WSAs would be managed in accordance with the Interim Management Policy. Lands acquired since the 1989 RMP that were identified as having wilderness characteristics are included within ACECs (see Section 3.2.14), and would be managed in accordance with the prescriptions outlined in Table 2-2 (located at the end of this chapter). Any WSAs released from wilderness study would be managed as determined by the selected plan alternative as described in Table 2-3, which is located at the end of this chapter.

Other management to protect wilderness characteristics outside of designated WSAs (e.g., naturalness, solitude, opportunities for primitive recreation) is achieved through the management prescriptions associated with VRM and recreation opportunity spectrum classes.

2.3.12 Cave and Karst Resources

2.3.12.1 Continuing Management Guidance

The BLM manages caves and karst on public land according to the Federal Cave Resource Protection Act of 1988 (Title 16, United States Code, Sections 4301-4309 [16 U.S.C. 4301-4309]). The law is intended to (1) secure, protect, and preserve significant caves on Federal land and (2) foster collaboration and exchange of information between government authorities and those who use caves on Federal land for scientific, educational, or recreational purposes. The statute directs that significant caves be identified on public land, and that use of those significant caves be regulated as appropriate. The criteria for identifying significant caves are found in 43 CFR 37.11 (C). BLM has the authority to administratively designate significant caves based on those criteria and develop management plans for their protection. The Onshore Oil and Gas Order No. 1 also provides authority for protection of cave resources.

2.3.12.2 Management Common to All Alternatives

Eighteen significant caves have been identified consistent with the Federal Cave Resource Protection Act. A plan to manage caves and karst in BLM's Decision Area will be developed within 2 years of the Record of Decision for this RMPR/EIS.

2.3.13 Lands and Realty

2.3.13.1 Continuing Management Guidance

Land generally will remain in Federal ownership unless it meets specific criteria for disposal in FLPMA and existing land use plans. The primary mission of the lands and realty program in regard to land tenure is to conserve Federal ownership and consolidate administrative boundaries to create a more efficient and economical land ownership pattern. The acquisition of land that would enhance and protect important resources is an established priority for the Socorro Field Office. Land would be acquired only from owners willing to dispose of them. In addition, the exchange of land between BLM and the State of New Mexico would occur when the exchange improves the management potential of State and Federal land. Land identified for disposal prior to July 2000 may be sold in accordance with the Federal Land Transaction Facilitation Act. This Act allows BLM to retain the receipts from land sales that would be used to cover administrative costs and to acquire properties that would improve the nation's land

management pattern. Land identified for disposal in the 1989 RMP would be subject to the Act (see Map 3-17).

2.3.13.2 Management Common to All Alternatives

All land and mineral disposal actions would conform to the criteria established in the Land and Mineral Disposal Policy (Appendix F, Land and Mineral Disposal Policy and Plan for Right-of-Way Exclusion and Avoidance Areas). Proposed realty actions would be subject to additional NEPA analysis, which considers a number of resources and uses when considering the merits of any disposal or acquisition.

Under the authority of FLPMA and the Mineral Leasing Act of 1920 (see Appendix B), the Socorro Field Office would continue to grant right-of-way leases and permits to qualified individuals, businesses, and government entities for use of public land. Right-of-way grants would include authorizations for access, utilities and telephone lines, fiber optic lines, and other communication sites. All right-of-way applications would continue to receive environmental review on a case-by-case basis and would be coordinated, to the fullest extent possible, with all potentially affected interest groups and agencies.

All existing valid rights including leases, permits, easements, and withdrawals are recognized and would be carried forward in the Socorro RMPR.

In conformance with the selected alternative, acquisition of nonpublic land to support wildlife and other programs would occur as needed, such as land adjacent to HMP areas, ACECs, special management areas (SMAs), or other areas of concern.

Approximately 11,408 acres of land has been withdrawn from entry under all or some of the land or mining laws. In some cases withdrawals may transfer jurisdiction to another Federal agency. Under all alternatives, additional land with rare or sensitive resources may be identified for withdrawal if criteria are met (see Appendix F) and will be addressed on a case-by-case basis.

All withdrawals have been or will be reviewed according to the requirements of laws and existing guidance. The review is to ensure the reasons for the withdrawals are still valid; concurrence of appropriate agency or landowner; and the necessary acreage needed is retained in withdrawn status. All unused or unnecessary withdrawals will either be terminated or modified to reduce the affected area. Upon revocation or modification of a withdrawal, all or part of the withdrawn land could be restored to multiple uses.

2.3.14 Forestry and Woodland Management

2.3.14.1 Continuing Management Guidance

The Mineral Material Disposal Act of 1947, as amended, establishes the authority under which BLM disposes of timber and other forest products. The Mineral Material Disposal Act and FLPMA direct that ponderosa pine stands be managed on a multiple-use, sustained-yield basis (see Appendix B). In addition, the Departmental Manual Part 586, Forest Management, Section 1.3, Policy states “Forest lands are to be managed to yield the highest combination of products and benefits consistent with the purposes specified by Congress. All Forest management activities are directed in accordance with sound silvicultural practices, multiple uses, and environmental enhancement. The protection of streams, wildlife, and other forest values are taken into account in developing a forest management plan. Further under this section under C (2) Forest regeneration, “non-stocked forest lands resulting from harvesting or fire will be promptly regenerated. The method of regeneration may be natural or artificial seeding or planting. The tree species used for reforestation purposes should be suitable to the site and climatic conditions so as to

produce optimum growth and yield." Under Section 1.3 C (3), "Every reasonable effort will be made to protect forest values from destruction by fire, insects, diseases, and other destructive agents…." Other forest program information can be found in the Code of Federal Regulations at 43 CFR 5000.

Silvicultural practices in WSAs would conform with the 1995 Interim Management Policy. In accordance with this guidance, pruning, site preparation, and reforestation will be permitted only in cases that satisfy the nonimpairment criteria. Reforestation using native species may be done following fire or other natural disaster if natural seeding is not adequate. In 2001, the U.S. Congress funded the National Fire Plan to reduce hazardous fuel and restore forests and rangeland. In response, the Secretaries of Agriculture and the Interior, along with western Governors and other interested parties, developed a 10-year strategy and implementation plan for protecting communities and the environment. National plans, together with the Federal Wildland Fire Management Policy (2001), form a framework for Federal agencies, States, Tribes, local governments, and communities to reduce the threat of fire, improve the condition of the land, restore forest and rangeland health, and reduce risk to communities. Both the forestry and fire programs operate under the 2004 Statewide Fire and Fuels Management Plan Amendment (also see Section 2.3.8, Fire Management).

Several tools to attain management goals have been developed in two pieces of legislation passed since 2002. The Healthy Forest Initiative of 2002 expands stewardship contracting authority with communities, the private sector, and others to allow the BLM and U.S. Forest Service to enter into long-term contracts to meet land management objectives, including reducing wildland fire risk and improving forest and woodland health (Appendix G, BLM Stewardship Contracting Guidance). Among other things, the new stewardship contracting authority allows forest products to be exchanged for ecological restoration services, which may include thinning and removing brush and trees. The 2003 Healthy Forests Restoration Act contains a variety of provisions to expedite hazardous-fuel reduction and forest-restoration projects on specific types of Federal land that are at risk of wildland fire or insect and disease epidemics.

2.3.14.2 Management Common to All Alternatives

The forestry management program would maintain sustainable uses and improve woodland and forest health in the Socorro Field Office by implementing best management practices (see Appendix C), through application of the New Mexico Standards and Guidelines, and Fire Regime Condition Class (FRCC). FRCC is an interagency, standardized tool for determining the degree of departure from reference condition vegetation, fuels, and disturbance regimes. Assessing FRCC can help guide management objectives and set priorities for treatments. The forestry program will work with the fire management program to manage the use of fire in the woodland and forest ecosystems to achieve resource goals. The following objectives also would apply to all alternatives:

- Ensure forests and woodlands are healthy, functioning ecosystems that provide habitat for the wildlife species within New Mexico.
- Manage forests and woodlands within a historic range of density and structure to achieve healthy and productive watersheds.
- Return woodland stands to a condition where ecological processes, such as fire and insects, can exist without uncharacteristic effects.
- Provide local communities with special forest products and business opportunities, while protecting cultural and other natural resources.

- Utilize management tools to implement the Healthy Forest Restoration Act of 2003, the National Fire Plan, and the President's Healthy Forests Initiative and the BLM New Mexico Fire and Fuels Management Plan.
- Contribute to the Nation's energy supply consistent with the National Energy policy.

The Socorro Field Office vegetative sales program would strive to provide commercial opportunities for local industry with commercial fuelwood areas and other potential wood products, accessible public fuelwood areas, Christmas tree collection sites, and plant adoption sites. The vegetative material sales program would provide opportunities for vegetative sales to meet local and regional needs in a manner that minimizes impacts on resources. Vegetative materials may include fence posts, Christmas trees, piñon nuts, seeds, and wildlings (native perennial species such as yuccas, cactus species, etc.). A portion of wood harvested on BLM land annually could be used for biomass consumption for alternative energy development depending on demand and ecological site limitations.

Partnerships and working relationships with local communities would continue and increase, along with partnerships with State and Federal entities to accomplish woodland and forest health management. Stewardship and service contracts would be used whenever feasible, thereby encouraging local small business opportunities.

Under all alternatives, the Pie Town Fuelwood Area would be managed as a designated fuelwood cutting area as appropriate to conform with sustainable harvesting guidelines.

2.3.15 Rangeland Management

2.3.15.1 Continuing Management Guidance

Rangeland management is authorized by FLPMA, the Taylor Grazing Act of 1937, and the Public Rangelands Improvement Act of 1978 (see Appendix B).

Public rangeland would be managed to meet the standards of public land health as established in the New Mexico Standards and Guidelines (see Appendix H, Rangeland Management). If standards are not being met, the livestock grazing management guidelines offer tools to guide the Socorro Field Office in improving those areas. The livestock grazing guidelines are to be implemented at the watershed, allotment, or pasture level if it is determined that the standards are not being met, and that livestock grazing is the cause. Specific application of these guidelines occurs at the field office level in consultation, coordination, and cooperation with lessees, permittees, the interested public, and landowners. Guidelines for activities other than livestock grazing are not mandated through regulation; however, they may be developed should the need arise. If it is determined that the standards are not being met as a result of another activity (e.g., road placement, recreation, etc.), BLM resource specialists would determine the appropriate actions to ensure that standards can be met or that significant progress can be made towards meeting those standards.

2.3.15.2 Management Common to All Alternatives

All allotments have been placed into one of three management categories based upon the categorization criteria (see Appendix H). The allotments are prioritized within each management category based on similar resource characteristics, management needs, and resource and economic potential. The management categories would be maintained under all alternatives. However, allotments may be recategorized as additional resource information becomes available.

The three selective management categories are: Maintain (M), Improve (I), and Custodial (C). The "M" category allotments will be managed to maintain the current satisfactory condition. The "I" category allotments will be managed intensively to improve unsatisfactory condition and/or to resolve resource conflicts. The "C" category allotments will be managed to prevent resource degradation. They have a low potential for improved ecological condition, improvement is not economically feasible, and/or current management is satisfactory, considering the current resource conditions. Under all alternatives, initial categorization would be 46 "I", allotments, 201 "M" allotments, and 5 "C" allotments.

The 1989 RMP directed the development, review, and revision of allotment management plans; this decision would be carried forward in the Socorro RMPR. Under all alternatives, four areas totaling 3,610 acres would be maintained as unalloted to livestock grazing.

2.3.16 Minerals

2.3.16.1 Continuing Management Guidance

The BLM is responsible for managing all 6 million acres of subsurface Federal mineral estate within the Planning Area, including minerals underlying land managed by private, State, and other Federal agencies. BLM coordinates closely with other surface owners or managers to ensure surface resource issues are considered before Federal mineral development occurs on split estate land. It is BLM policy to make mineral resources available for disposal and to encourage development of mineral resources to meet national, regional, and local needs, consistent with the national objective of maintaining an adequate supply of minerals at reasonable market prices. In addition, BLM regulates mineral development to reduce environmental impacts in accordance with applicable law. Applicable laws are summarized in Appendix B.

Policy guidance for managing mineral resources is provided in several pieces of legislation as well as BLM Manuals and Handbooks. Many of these are described in Appendix B. The key directives are that (1) public land is to be managed for multiple use and (2) if it is determined to be necessary to place certain areas under special management, then that management must be the least restrictive necessary to protect the resource of concern to ensure that the area remains open to other uses.

Recent instruction memoranda have provided bureauwide guidance regarding management of abandoned mine land. These have provided specific instruction for State and field offices to develop work plans for abandoned mine land program activities to foster long-range planning for interagency program coordination, strategic program support, and budget justifications. In New Mexico, BLM works closely with the abandoned mine lands program in the State Energy Mineral and Natural Resources Department to reclaim abandoned mines on public land.

2.3.16.2 Management Common to All Alternatives

The planning analysis is based on the reasonable foreseeable development for leaseable, locatable, and saleable minerals, which includes forecasts of future exploration and development activity (BLM 2003g). If the actual level of intensity or amount or type of surface disturbance varies substantially from the forecasts, the Socorro Field Office may determine it is appropriate to amend the RMPR in the future and/or prepare additional NEPA documentation to analyze potential impacts of the variation in the forecasts.

In accordance with Instruction Memorandum 2005-219, the BLM New Mexico State Office would develop work plans for abandoned mine land program activities. Initial plans would cover an extended period from Fiscal Year 2007 through Fiscal Year 2013. These plans would determine the extent and type

of program regarding abandoned mine land that would be carried out in BLM's Decision Area under all alternatives. As noted above and contingent upon funding, work would continue to be done according to the Memorandum of Understanding between the BLM and the New Mexico Energy, Minerals and Natural Resources Department, Abandoned Mine Lands Bureau.

Leaseable Minerals

Leasable minerals include nonrenewable energy fluid minerals (oil and gas), nonrenewable energy solid minerals (coal), and nonrenewable nonenergy fluid minerals (carbon dioxide and helium). The BLM is responsible for managing all leaseable Federal mineral estate—approximately 6 million acres in the Planning Area—regardless of surface area management or ownership.

Nondiscretionary closures include land that is closed to fluid mineral leasing for reasons that are beyond the discretion of the BLM, and would be observed under all alternatives. In the Planning Area, these closures include all wilderness study areas (WSAs); the White Sands Missile Range and other military installations; National Park Service land; land managed by USFWS and NMDGF; and towns, villages, and incorporated cities. Nondiscretionary closures totaling 1,418,415 acres of Federal mineral estate would be common to all alternatives. BLM has proposed additional discretionary closures to fluid mineral leasing in Alternatives B, C, and D. Existing leases in areas identified as proposed for discretionary closure would not be renewed after the term of the lease is complete. Outside of the closures, public land is open to fluid mineral leasing under standard terms and conditions established in the lease unless additional stipulations are determined necessary to protect resources. A description of standard lease terms and conditions and stipulations are in Appendix I, Minerals Management. Under all alternatives, a total of 496,000 acres would be associated with NM-5, a lease notice for lessees in the White Sands Missile Range Evacuation Area (see Appendix I). In areas of split estate, the surface owner or manager is responsible for determining strategies to protect surface resources. Fluid leasing beneath Federal land other than those administered by BLM will be subject to land use planning determinations and/or withdrawal provisions. Federal mineral estate underlying land managed or owned by other entities would be managed by BLM in accordance with applicable plans and in cooperation with the surface owner or manager. Additional NEPA analysis may be required to address site-specific considerations related to a proposed action.

Surface and mineral estate withdrawals, disposals, or BLM development would be restricted within coal fields. Coal leasing would occur in accordance with applicable laws in areas identified as potentially suitable for coal leasing.

Locatable Minerals

Locatable mineral resources include metallic minerals (e.g., gold, silver, uranium) and nonmetallic minerals (e.g., gemstones, fluorspar, perlite). Unless identified as withdrawn to location and entry under the mining laws, public land would be open to mineral exploration and development activities in accordance with applicable laws. WSAs are managed for locatable minerals pursuant to 43 CFR 3802.

Saleable Minerals

Saleable mineral resources include sand, gravel, limestone, cinders, and building stone. Federal land in the Planning Area are important sources of mineral materials for construction projects in the region, including sand and gravel, rock and stone, and other fill materials. The Socorro Field Office issues Contracts and Free Use Permits for the removal of mineral materials managed under 43 CFR 3600. These contracts and permits can be issued for up to 5 years and 200,000 cubic yards of material per year, for a total contract quantity of 1 million cubic yards of material. Any material in excess of this quantity must be

offered through a competitive bid. A mining plan, reclamation plan, and weed management plan are required with the contract or permit application, and plans must conform to modern mining and reclamation standards. The proposed operation plan is analyzed through the NEPA process with the preparation of an environmental assessment. The Socorro Field Office is responsible for inspection and enforcement of all contracts and permits.

The 1989 decision to designate pits for the sale of sand and gravel, consistent with other resources, would be carried forward under all alternatives.

2.3.17 Recreation

2.3.17.1 Continuing Management Guidance

FLPMA provides for management of outdoor recreation on public land. Section 202(c)(9) calls for land use planning consistent with statewide outdoor recreation plans. Other national laws that govern recreation management in BLM's Decision Area include the National Trails System Act of 1968, Land and Water Conservation Fund of 1964, and Recreation and Public Purposes Act. The BLM's outdoor recreation program strives to provide a broad spectrum of resource-dependent recreation opportunities to meet the needs and demands of the public and visitors; to foster agency-wide efforts to improve services to the visiting public; to maintain high-quality recreation facilities to meet public needs and enhance the image of the agency; and to improve the public understanding and support of the BLM by effectively communicating the agency's multiple-use management approach to the recreation visitor.

Most public land is managed to maintain a freedom of recreational choice with a minimum of regulatory constraints. Current management direction for dispersed recreation is provided in 43 CFR 8300 and subsequent BLM manuals, guidance, and policy. The BLM's Priorities for Recreation and Visitor Services are described in the "Purple Book," dated May 2003, a work plan for fiscal years 2003-2007. Where the nature of the resource attracts intensive recreational use, public land may be managed as a special recreation management area (SRMA). Specific management direction in a SRMA is formulated by BLM to provide for resource protection and public health, safety, and enjoyment. Public land outside of SRMAs, where few BLM facilities or supervisory efforts exist, is referred to as an Extensive Recreation Management Area.

2.3.17.2 Management Common to All Alternatives

Recreation use in BLM's Decision Area would be managed to protect the health and safety of visitors; protect natural, cultural, and other resource values; facilitate public enjoyment of public land; and resolve or mitigate user conflicts. (Note: Management that is specific to access and OHV use is discussed in Section 2.3.19 below.) The recreation opportunity spectrum provides management objectives for different types of recreation settings, and public land would be managed in accordance with those classifications (see Appendix E).

The Socorro Field Office issues Special Recreation Permits to authorize certain recreational uses of land administered by the BLM. Authority to issue these permits is provided in 43 CFR 2932. Permits are issued for competitive events, commercial events, and educational use. Commercial use is recreational use of public land for business or financial gain. Competitive use is any formally organized or structured use, event, or activity on public land in which there are elements of competition between two or more contestants, registration of participants, and/or a predetermined course or area is designated. Competitive use also includes individuals contesting an established record such as speed or endurance. Educational use is an academic activity sponsored by an accredited institution of learning. Under all alternatives, the

Socorro Field Office would continue to issue special recreation permits after appropriate environmental assessment is completed.

Under the revised RMP, BLM will continue to cooperate with other agencies in the management of the El Camino Real de Tierra Adentro National Historic Trail in accordance with a comprehensive management plan (National Park Service and BLM 2004). Portions of the trail on land that are within BLM's Decision Area will be managed as VRM Class I or II, as prescribed in the El Camino Real de Tierra Adentro National Historic Trail Comprehensive Management Plan.

2.3.18 Renewable Energy

2.3.18.1 Continuing Management Guidance

In June 2005, the BLM published the Final Programmatic EIS on Wind Energy Development on BLM-Administered Lands in the Western United States. This project is a part of BLM's National Energy Policy Implementation Plan, an outgrowth of the President's National Energy Policy, which addresses both renewable and nonrenewable energy sources. Under the proposed action of the Final Programmatic EIS, BLM would develop a Wind Energy Development Program to establish comprehensive policies and best management practices for wind energy development, including right-of-way authorizations, on BLM land. The programmatic EIS applies to all BLM land use plans as they are amended or revised. The policies, guidance, and procedures contained in the programmatic EIS are hereby incorporated into this plan to guide development of any future wind energy project that may occur in the Decision Area.

2.3.18.2 Management Common to All Alternatives

Renewable energy projects may be proposed on BLM land in the future. These applications would undergo site-specific environmental analysis as part of the right-of-way or commercial lease process. Any proposed project could be tiered from the Final Programmatic EIS on Wind Energy Development. The policies, best management practices, and programmatic mitigation identified in the Final Programmatic EIS would apply to any proposed wind energy project in the Socorro Field Office Decision Area. The location of any potential wind energy projects would be determined by the wind resource level and by the location of avoidance and exclusion areas.

There is potential for future harvesting of woodland products on public land for biomass-fueled power generation. This project could occur under all alternatives; however, if such a project is proposed, it would undergo a site-specific environmental analysis as part of the project development process.

2.3.19 Transportation and Travel Management

2.3.19.1 Continuing Management Guidance

The policy set forth in 43 CFR 8340 provides for OHV use as a legitimate activity on public land wherever it is compatible with other resource management objectives. Additional policy guidance, definitions, and other information on OHV designations are provided in Appendix J, Off-Highway Vehicle Areas and Route Designations.

Management direction associated with access typically is intended to enhance land management and protect unique resources or values where BLM determines it necessary. BLM guidance for OHV designations in the land use planning process is provided in Appendix C of BLM Manual H-1601-1, Land Use Planning Handbook. BLM Manual 9113 – Roads provides guidelines and standards for the construction and maintenance of transportation system roads on public land.

2.3.19.2 Management Common to All Alternatives

OHV use would be managed in accordance with applicable laws, which include the designation of areas that are open, limited, or closed to OHV use. Additionally, 43 CFR 8341 prohibits the operation of an off-road vehicle (now referred to as an off-highway vehicle, or OHV) in violation of state laws and regulations relating to use, standards, registration, operation, and inspection of off-road vehicles. To the extent that state laws and regulations do not exist or are less stringent, the regulations in this part are controlling. The State of New Mexico passed legislation to require registration of OHV, successful completion an off-highway vehicle safety training course by persons under age 18, and provide regulations for safe operation of OHVs including requiring the use of safety helmets.

Cross-country use is permitted in areas designated as open for such travel; however, undue and unnecessary degradation of resources is not permitted on any area of public land under 43 CFR 8340. Exceptions may be made to OHV designations to accommodate emergency or permitted or authorized uses. This use is allowed for by the regulations governing OHV operations on public land. An off-road vehicle or OHV is defined by 43 CFR 8340.05 as any motorized vehicle capable of, or designed for travel on or immediately over land, water, or other natural terrain, excluding (1) any nonamphibious registered motorboat; (2) any military, fire, emergency, or law enforcement vehicle while being used for emergency purposes; (3) any vehicle whose use is expressly authorized by the authorized officer, or otherwise officially approved or permitted; (4) vehicles in official use by administering agencies such as BLM or other agency; and (5) any combat or combat support vehicle when used in times of national defense emergencies.

All public land is required to be designated for OHV use (43 CFR 8342.1). Areas must be classified as open, limited, or closed to motorized travel activities. These designations have been applied in all alternatives; the definitions for these designations are shown in Appendix J. Appendix C of H-1601-1, Land Use Planning Handbook, states that a defined travel management network must be completed during the development of the land use plan to the extent practical. If it is not practical to define or delineate the travel management network during the land use planning process, a preliminary network must be identified and a process established to select a final travel management network. In the case of this RMPR/EIS, the final travel management network would be deferred until after completion of the Record of Decision for the RMPR/EIS due to the fact that a definitive route inventory and route designation could not be completed except in the WSAs. The current route network is shown on Map 3-14. Until the final travel management network is established, motorized travel would be limited to existing routes within BLM's Decision Area as defined by Map 3-14, unless specifically identified otherwise within this RMPR/EIS.

As part of this planning process, a travel management network within the 13 WSAs in BLM's Decision Area would be identified (a range of alternatives for this network is evaluated as part of the alternatives). Under all alternatives, preliminary travel management plan networks would be developed for areas outside of WSAs within 5 years of the completion of the Record of Decision for this RMPR/EIS (contingent upon available funding and staff resources). Priority areas for completing these travel management plans are as follows: (1) Gordy's Hill, (2) ACECs, (3) SRMAs, (4) SMAs, and (5) all other BLM land.

2.3.20 Hazardous Materials and Public Safety

2.3.20.1 Continuing Management Guidance

The BLM Manual Section 1703, Hazardous Materials Management, provides a framework for hazardous materials management by describing BLM's objectives, defining policy and responsibilities, and citing authority for management of hazardous materials.

2.3.20.2 Management Common to All Alternatives

All alternatives would comply with Federal and State hazardous materials management laws and regulations (see Appendix B). Management priorities would include maintenance of the health of ecosystems through assessment, cleanup, and restoration of contaminated sites; management of hazardous materials related risks, costs, and liabilities; and integration of environmental protection and compliance with all environmental statutes into all BLM activities.

Adjacent to the north and west sides of the White Sands Missile Range in Socorro County, the U.S. Department of Defense has delineated and designated four areas as safety evacuation areas: e.g., areas evacuated of residents and nonresidents prior to and during missile firing on the White Sands Missile Range. These areas are a mix of public, State, and private lands.

Personnel of the White Sands Missile Range follow a number of stipulations to communicate with and protect residents within the safety evacuation areas. All persons within these safety evacuation areas would be evacuated for 12 hours during a missile firing. Currently, the notification process for residents and the BLM Socorro Field Office requires a notice 30 days in advance of the firing followed by a 10-day notice, both of which are delivered by mail. These notices are followed by a hand-delivered notice 3 days in advance of the firing to those living in the safety evacuation area and to the BLM Socorro Field Office. During the 12-hour evacuation period, all primary roads into the areas are blocked and no one, including BLM personnel, recreational users, OHV users and other publics, is allowed to enter the areas until the missile firing procedures have been completed.

While impacts off the Range are not intentional, these areas were imposed as safety fans in the event that missiles launched on the Range do result in impacts off the range. Procedures to handle such occurrences (e.g., impacts from projectiles or debris) have been established by the U.S. Department of Defense. The U.S. Department of Defense safety evacuation areas would be applicable to all of the alternatives and will be a part of the selected RMPR.

2.3.21 Special Designations

2.3.21.1 Continuing Management Guidance

BLM Manual 1613 and 43 CFR 1610.7-2 require that areas having potential for designation and protection as ACECs be identified and considered during the planning process. ACECs must meet relevance and importance criteria, and require special management to (1) protect the area and prevent irreparable damage to resources or the natural system or (2) protect life and promote safety in areas where natural hazards exist.

2.3.21.2 Management Common to All Alternatives

Under all alternatives, the Socorro Field Office would continue to designate ACECs, identify other SMAs and prescribe management to protect the resource values of those areas as described in Table 2-2.

SMAs are not provided for in the regulations as a specific designation. However, H-1601-1, Land Use Planning Handbook, provides for "other BLM administrative designations" in addition to ACECs, Wild and Scenic Rivers, Backcountry Byways, etc. SMAs are areas containing natural or cultural values that do not meet the ACEC or other regulatory or legislative criteria, but are areas that BLM wishes to identify in order to protect or manage the resources associated with the area. As with the management of ACECs and other designations and subject to valid existing rights, proposed actions that potentially would degrade the values within SMAs would be avoided.

2.3.22 Social and Economic Conditions

2.3.22.1 Continuing Management Guidance

Appendix D of the BLM Land Use Planning Handbook H-1601-1 addresses social science considerations in land use planning decisions and provides guidance on integrating social science information into the planning process.

BLM Instruction Memorandum 2002-164, Guidance to Address Environmental Justice in Land Use Plans and Related National Environmental Policy Act Documents, provides additional information concerning BLM's implementation of EO 12898, and replaces an earlier Instruction Memorandum providing policy and guidance for addressing environmental justice in land use planning. According to EO 12898, environmental justice demands that all people potentially impacted by environmental planning decisions, regardless of race, color, national origin, or income, are treated fairly and are given opportunity for meaningful involvement with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including racial, ethnic, or socioeconomic group should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of Federal, State, local, and Tribal programs and policies.

2.4 DETAILED DESCRIPTION OF ALTERNATIVES

2.4.1 No-Action Alternative (Alternative A)

Under the No-Action Alternative, management would continue in accordance with the 1989 RMP and any plan amendments and activity plans completed and approved since 1989. The continuing management guidance and management common to all alternatives described under Section 2.3 would apply. Additional resource-specific land allocations and management strategies under the No-Action Alternative are provided below. This alternative provides a baseline for comparison with other alternatives, and may not adequately resolve the issues identified in the RMPR/EIS (see Chapter 1).

A summary of the management goals, issues addressed by the actions, land allocations, and key management decisions under all alternatives is provided in Table 2-1. Table 2-2 provides additional detail on the management prescriptions for special designations. Tables and maps are located at the end of the chapter. Existing special designations are mapped in Maps 3-7, 3-12, and 3-18 through 3-37; maps of WSAs also are in Appendix J. Please note that certain special designations are proprietary in nature and their boundaries are not available for public viewing in this RMPR. Appendix K, Existing Special Designations and Justification for Proposed Special Designations, provides additional information on special designations.

2.4.1.1 Soils and Water Resources

Under the No-Action Alternative, watershed plans would be developed and watershed tillage practices would be implemented on grassland, treated rabbitbrush, and sagebrush areas. After identification of

suitable sites, piñon-juniper, rabbitbrush, greasewood, and sagebrush would be treated mechanically. This treatment would be followed with reseeding as necessary.

Three special designations would continue to be maintained to manage areas with soil stability and other watershed-related issues in critical watershed areas (see also Table 2-2, Map 3-12, and Appendix K). These include:

- Fence Lake SMA (25,453 acres)[1] (Map 3-25)
- Puertecito SMA (7,156 acres) (Map 3-29)
- Stallion SMA (19,702 acres) (Map 3-33)

2.4.1.2 Vegetation (including Special Status Species)

Under the No-Action Alternative, up to 244,170 acres would be treated to improve ecological conditions. Several special designations would continue to be maintained to protect special-status plant species:

- Sawtooth Proprietary ACEC (125 acres) – manage to protect the Zuni fleabane, a federally listed species.
- Iron Mine Ridge Proprietary SMA (1,386 acres) – manage to protect special status plant species that have been downlisted (i.e., it is no longer federally listed as threatened or endangered) since the 1989 RMP.
- San Pedro Proprietary ACEC (1,201 acres) – manage to protect Fugate's blue star (special status plant species).
- Soaptree SMA (1,296 acres) – manage to protect the soaptree yucca ecosystem (Map 3-32).
- Taylor Canyon Proprietary SMA (384 acres) – manage to protect plants that were identified as rare at the time of the 1989 RMP, but are no longer considered to be rare.
- Harvey Plot SMA (8 acres) – conduct research on vegetation (Map 3-27).

More information on special designations is provided in Table 2-2, Map 3-12 (proprietary designations are not shown), and Appendix K.

2.4.1.3 Wildlife (including Special Status Species)

Several special designations would continue to be maintained to protect and manage wildlife and habitat resources, and wilderness characteristics. These include:

- Agua Fria ACEC (9,571 acres) – manage to protect wildlife habitat, particularly raptor wintering and nesting habitats (Map 3-18).
- Horse Mountain ACEC (7,490 acres) – manage to protect wildlife values by reducing habitat fragmentation through access management. In addition, potential habitats for a federally listed threatened species (the bald eagle) and a federally listed species of concern (peregrine falcon) are present within the ACEC (Map 3-19).

[1] Throughout the description of alternatives, acreages are based on calculations using the best available geographic information system data. Acreage figures only include BLM-managed surface land.

- Ladron Mountain ACEC (57,195 acres) – manage to enhance and protect diverse wildlife habitat, with emphasis on habitat for desert bighorn sheep (Map 3-20).
- Pelona Mountain SMA (70,838 acres) – manage to protect diverse wildlife habitat. The SMA serves as an important wildlife corridor between BLM and Forest Service lands, and contains potential habitat for a federally listed threatened species (the bald eagle), a federally listed species of concern (peregrine falcon), and one of New Mexico's largest elk herds (Map 3-28).

More information on special designations is provided in Table 2-2, Map 3-12, and Appendix K.

2.4.1.4 Cultural Resources

Under the No-Action Alternative, inholdings within some special designations would be identified for acquisition to protect cultural resources (see Table 2-2). No specific heritage tourism plan would be developed. Cultural resources would be managed in accordance with the legal requirements and management guidance described in Section 2.3.8.

Several areas where sensitive or unique cultural resources exist would continue to be designated for special management. Generally, management prescriptions to protect resources in these areas would include reduced access and restrictions on surface-disturbing activities. Under the No-Action Alternative, the following special designations are specifically related to cultural resources management and protection:

- Rio Salado SMA (5,946 acres) (Map 3-30)
- Mockingbird Gap Proprietary SMA (8,685 acres)
- Fort Craig SMA (149 acres) (Map 3-26)
- Mogollon Pueblo Proprietary SMA (640 acres)
- Newton Site Proprietary SMA (37 acres)
- Playa Pueblos Proprietary SMA (203 acres)
- Town of Riley SMA (533 acres) (Map 3-35)
- Teypama SMA (37 acres)[2] (Map 3-34)
- Zuni Salt Lake Proprietary SMA (4,839 acres)

More information on special designations is provided in Table 2-2, Map 3-12 (proprietary designations are not shown), and Appendix K.

2.4.1.5 Paleontological Resources

The potential for paleontological resources would be evaluated on a case-by-case basis when site-specific actions are proposed. Any resources that are discovered would be handled in accordance with applicable laws and agreements (see Section 2.3.9).

[2] Note that the 1989 RMP states that Teypama SMA includes 17 acres, but the maps in the RMP show 37 acres within the SMA. The No-Action Alternative includes the entire 37 acres as mapped in the 1989 RMP.

2.4.1.6 Visual Resources

Under the No-Action Alternative, 30,343 acres (2 percent of the surface area managed by BLM) would be managed as VRM Class I; 385,781 acres (26 percent) as Class II; and 299,741acres (20 percent) as Class III. The remaining 774,170 acres (51 percent) would be managed as Class IV (see Map 3-5).

2.4.1.7 Lands and Realty

Right-of-way exclusion areas are closed to all forms of new right-of-way development, unless mandated by law. Right-of-way avoidance areas are areas where future rights-of-way may be granted only when no feasible alternative route is available. Under Alternative A, 39,148 acres of BLM-managed surface estate would be managed as right-of-way exclusion areas and 458,996 acres as right-of-way avoidance areas. These areas were established in the 1989 RMP and are illustrated in Map 3-16. No utility corridors would be designated under the No-Action Alternative.

Up to 86,458 acres of isolated parcels would be identified as suitable for disposal in accordance with the Land and Mineral Disposal Policy in Appendix G of the 1989 RMP (see Map 3-17). Approximately 1,418,685 acres would be identified as areas to be retained in Federal ownership (see Map 3-17) based on criteria including the (1) consolidation of land within SMAs, and (2) restriction of disposals in coal areas. Up to 40,920 acres of nonpublic land would be acquired from willing sellers to support wildlife habitat, cultural resources, and other management programs as needed within and adjacent to HMP areas, WSAs, ACECs, SMAs, and other areas of concern.

2.4.1.8 Forestry and Woodland Management

Under the No-Action Alternative, no woodcutting would be allowed in areas of potential for moderate or high soil erosion. Public land containing vegetative products such as firewood, fence posts, Christmas trees, and wildlings would continue to be considered and designated for harvest. At the time of the 1989 RMP, approximately 6,500 acres had been designated to meet the demand for vegetative products. However, it is estimated that no more than an average of 10 percent or 650 acres per year would be utilized.

2.4.1.9 Rangeland Management

Under the No-Action Alternative, range conditions would be improved in accordance with the direction in the 1989 RMP and the New Mexico Standards and Guidelines. Seeding trials of less than 2 acres each would be performed on 33 sites to determine the potential forage production of reseeding. In addition, Soaptree SMA (1,296 acres) would be managed for continued livestock grazing.

2.4.1.10 Minerals

Leasable Minerals

Under the No-Action Alternative, about 1,418,415 acres of Federal mineral estate (or 23 percent of Federal mineral estate in the Planning Area) would be closed nondiscretionarily to fluid mineral leasing (see Section 2.3.16). In accordance with the 1989 RMP and subsequent amendments, approximately 3,312,904 acres would be open to mineral leasing with standard terms and conditions, and approximately 736,000 acres would be open to leasing with stipulations in addition to the standard terms and conditions. Federal mineral estate underlying surface area managed or owned by private, State, or other Federal agencies would be managed in close coordination with the landowners or agencies.

In accordance with the 1989 RMP, 31,640 acres would be available for coal leasing. Any minerals development would be subject to additional NEPA analysis, as appropriate.

Locatable Minerals

Under existing management, there are 11,408 acres withdrawn from mineral entry on BLM-administered surface land, including the Sawtooth ACEC (125 acres) (see Appendix I for locations of these areas). Under the No-Action Alternative, BLM would petition to withdraw the following areas from location and entry under the mining laws: 1,500 acres within Tinajas ACEC and Harvey Plot SMA (8 acres). The remainder of public land within the Planning Area would be open for mineral location and entry unless restricted by law and policy.

Saleable Minerals

Areas that contain saleable resources would be identified and designated for future use. BLM's Decision Area would be open to mineral material disposal unless restricted by law or policy. Management plans would be completed for the establishment of community pits.

2.4.1.11 Recreation

The 1989 RMP designated one ACEC and identified six SMAs that should be managed primarily to achieve recreation use objectives, as follows:

- Tinajas ACEC (3,463 acres) (Map 3-21)
- Datil Well SMA (669 acres) (Map 3-37)
- The Box SMA (300 acres) (Map 3-22)
- San Lorenzo Canyon SMA (2,320 acres) (Map 3-31)
- Cerro Pomo SMA (8,784 acres) (Map 3-23)
- Walnut Canyon SMA (1,145 acres) (Map 3-36)
- Continental Divide National Scenic Trail SMA (7,680 acres) (Map 3-24)

Protection of primitive recreation resources also is noted as a management concern in the Horse Mountain ACEC, Ladron Mountain ACEC, Pelona Mountain SMA, and along the El Camino Real de Tierra Adentro National Historic Trail. The Quebradas Backcountry Byway would continue to be managed in accordance with existing guidance.

The Continental Divide National Scenic Trail would be managed for recreational use and to protect scenic values on the 34 miles of its length within the BLM's Decision Area. Access across non-Federal land within 50 miles of each side of the trail corridor would be pursued to the extent possible from willing sellers once a final route is determined.

More information on special designations is provided in Table 2-2, Map 3-12, and Appendix K.

2.4.1.12 Transportation and Travel Management

Under the No-Action Alternative, 851,234 acres would be managed as open to OHV use (see Map 3-15 for OHV areas under existing management). This constitutes approximately 56 percent of the surface area

managed by the BLM in the Planning Area. Motorized vehicle use would be limited to existing or designated trails and roads on 562,901 acres (approximately 37 percent). An additional 20,119 acres would be limited seasonally to protect natural resources. About 29,117 acres would be closed to motorized vehicle travel, and about 36 miles of routes would continue to be closed within WSAs. Approximately 40,809 acres are undesignated under the previous RMP, and would be designated as limited to existing roads and trails (as identified in Map 3-15) until travel management plans are completed (within 5 years of the completion of the RMPR).

Specific route designations were not identified in the previous RMP; however, they would be addressed as part of the travel management plans discussed in Section 2.3.19.

2.4.1.13 Special Designations

Under the No-Action Alternative, a total of 79,045 acres (about 5 percent of the surface area managed by the BLM in the Planning Area) would be designated as ACECs. A total of 159,891 acres (11 percent of BLM-managed surface area in the Planning Area) would be identified as SMAs. The specific acreages and management for each area with a special designation is described in the appropriate resource section above and summarized in Tables 2-1 and 2-2. Existing special designations are mapped on Maps 3-7 and 3-12.

2.4.2 Action Alternatives

The action alternatives represent different management strategies to achieve the resource objectives. The continuing management guidance and management common to all alternatives described under Section 2.3 would apply. Additional resource-specific land allocations and management strategies under the action alternatives are provided below. The management for some resources and programs is consistent for all the alternatives and, therefore, the management direction for those resources and programs is described entirely in Section 2.3. These resources include fire management, air quality, noxious weeds and invasive species, wild horses, and renewable energy.

A summary of the management goals, land allocations, and key management decisions under all alternatives is provided in Table 2-1. Table 2-2 provides additional detail on the management prescriptions for areas within special designations. In addition, Appendix K includes information on the features requiring special management within the proposed designations under each action alternative.

2.4.2.1 Alternative B (Preferred Alternative)

Soils and Water Resources

Two SMAs would be identified to manage uses and activities in critical watersheds to balance commodity production with provision for the attainment and maintenance of good watershed health and proper functioning conditions (see also Table 2-2, Map 2-1, and Appendix K). Under Alternative B, these SMAs include:

- Puertecito SMA (7,156 acres) (Map 2-2)
- Stallion SMA (10,883 acres) (Map 2-3)

In addition, watershed rehabilitation activities would be identified through assessment of the New Mexico Standards and Guidelines.

Vegetation (including Special Status Species)

Plant communities would be managed to achieve multiple use goals and to meet or move towards the upland, riparian, or biotic standard (for definitions, see Appendix H). The desired plant community would be identified based on ecological sites for the plant communities that are involved when developing activity plans to meet resource objectives. The goal of defining a desired plant community is to obtain the specific plant community that is possible on a site (defined by climate, soil type, and landform) to best meet a management plan's objectives, considering all the potential values and uses for that site (Council for Agricultural Science and Technology 1996). In all cases, an ecological site must be capable of attaining the desired plant community through natural succession, management action, or both.

Generally, special status plants would be managed through (1) conducting inventory and survey and (2) acquiring access for management purposes.

One ACEC would be designated and two SMAs identified to protect special-status plant species:

- Sawtooth Proprietary ACEC (125 acres) – manage to protect the Zuni fleabane, a federally listed species.
- San Pedro Proprietary SMA (1,201 acres) – manage to protect Fugate's blue star (special status plant species).
- Soaptree SMA (1,296 acres) – manage to protect the soaptree yucca ecosystem (Map 2-4).

More information on special designations is provided in Table 2-2, Map 2-1 (proprietary designations are not shown), and Appendix K.

Wildlife (including Special Status Species)

Three ACECs would be designated primarily for the management of wildlife habitat, wilderness characteristics, and special status species. These include:

- Horse Mountain ACEC (5,388 acres) – manage to protect wildlife values by reducing habitat fragmentation through access management. In addition, potential habitat for a federally listed threatened species (bald eagle) and a federally listed species of concern (peregrine falcon) is present within the ACEC (Map 2-5).
- Ladron Mountain-Devil's Backbone Complex ACEC (57,474 acres) – manage to enhance and protect diverse wildlife habitat, with emphasis on habitat for desert bighorn sheep. Under Alternative B, this ACEC is expanded from the No-Action Alternative to incorporate the former Rio Salado and San Lorenzo SMAs, and the Devil's Backbone and Polvadera Mountain areas (Map 2-6).
- Pelona Mountain ACEC (51,091 acres) – manage to protect diverse wildlife habitat, including a federally listed threatened species (the bald eagle), a federally listed species of concern (peregrine falcon), and one of New Mexico's largest elk herds (Map 2-7).

The land that was managed as part of the Agua Fria ACEC under Alternative A would be managed as part of the Cerro Pomo ACEC under this alternative (see Cultural Resources). More information on these ACECs is provided in Table 2-2, Map 2-1, and Appendix K.

To protect desert bighorn sheep, a 10-mile-wide special buffer would be established around occupied and historic habitat areas within which domestic sheep and goats would be excluded. In addition, the desert

bighorn sheep travel corridor between Ladron Mountain and the Devil's Backbone Mountains would be managed to reduce impacts to bighorn habitat resulting from access and surface disturbance.

Under Alternative B, approximately 26 miles of roads outside of special designations would be closed to address wildlife concerns.

Within the Chihuahuan semi-desert grasslands, approximately 37,254 acres of Federal mineral estate would be excluded from fluid mineral leasing (this includes 33,779 BLM-managed surface estate) for the protection of aplomado falcon habitat. These areas also would be excluded from mineral material disposals (except for areas within 0.5 mile of Highway 380) and right-of-way authorizations, OHV use would be limited to designated routes, and BLM would petition to withdraw the area from location and entry under the mining laws. The same management would be applied to an additional 6,698 acres of potential aplomado falcon habitat on Federal mineral estate (including 6,325 acres of BLM-managed surface estate) to support the release of an experimental, nonessential population of aplomado falcons. Under the 10j rule, captive-raised aplomado falcons would be released in southern New Mexico to establish a viable population.

Areas that meet the criteria for aplomado falcon habitat would be managed to minimize potential impacts from surface-disturbing activities. This management would include the implementation of fluid mineral leasing stipulations (see Map 2-8 and Appendix I) and other measures to regulate surface use and occupancy (as described in Appendix L, Wildlife and Special Status Species) in areas that are determined to be potential aplomado falcon habitat. Grazing allotments within areas identified as potential aplomado falcon habitat would be managed for a stable or increasing trend in range condition or desired plant community. Monitoring of trend plots would be prioritized in the area identified for special management for aplomado falcon. As additional data become available, these management prescriptions may be revisited to assess their effectiveness in protection of this species.

Cultural Resources

Under Alternative B, the cultural resources program would emphasize a balance between site protection and site use, for public enjoyment and economic benefit to communities. In addition to the management described as common to all alternatives (see Section 2.3.8), at least one new site would be developed for public visitation over the life of the plan, and some programs and products would be developed for sites already designated for public use, such as Fort Craig and Penjeacu.

Land acquisition may be pursued in support of cultural resource management goals as opportunities arise (some priorities are identified in Table 2-2). These opportunities would be evaluated according to the following criteria:

- Site significance
- Site management feasibility
- Partnership potential for site management
- Community/public support for acquisition
- Heritage tourism potential

Socorro Field Office would promote heritage tourism sites and projects to promote public awareness and appreciation for cultural resource values, provide for public enjoyment of cultural resources on public

land, and support rural economies. Potential heritage tourism sites and/or projects would be evaluated according to the following criteria:

- Degree of resource vulnerability to effects from heritage tourism
- Potential for site protection through physical "site hardening" measures, administrative measures, or other means of mitigation
- Community/public support and interest
- Partnership opportunities for site management

Current sites that are or could be managed for heritage tourism values and benefits include Magdalena Stock Driveway, Fort Craig, Camino Real National Historic Trail, and Penjeacu. Other sites may be identified over the life of this RMPR.

Several areas where sensitive or unique cultural resources have been identified would be managed under special designations. Generally, management would protect resources in these areas by reducing access and restricting surface-disturbing activities. Under Alternative B, the following special designations are specifically related to cultural resources management and protection:

- Zuni Salt Lake Proprietary ACEC (46,746 acres) – incorporates most of the former Fence Lake SMA
- Mockingbird Gap Proprietary ACEC (8,685 acres)
- Fort Craig SMA (149 acres) (Map 2-9)
- Newton Site Proprietary SMA (6,789 acres)
- Playa Pueblos Proprietary SMA (203 acres)
- Penjeacu SMA (11 acres) – formerly Teypama (Map 2-10)

More information on special designations is provided in Table 2-2, Map 2-1 (proprietary designations are not shown), and Appendix K. Some fluid mineral leasing stipulations (see Appendix I and Map 2-8) were developed in part for protection of cultural resources and would be applied as appropriate.

Paleontological Resources

To achieve resource protection under Alternative B, public land has been assigned to management classes related to the potential for paleontological resources based on geology. When surface-disturbing activities are proposed, appropriate management prescriptions would be applied for each potentially affected management class. A map of management classes and detailed information on management prescriptions is provided in Appendix M, Paleontological Resources Management. Mitigation for proposed actions would be addressed on a case-by-case basis, as needed.

Visual Resources

Under Alternative B, 28,533 acres (2 percent of the surface area managed by BLM) would be managed as VRM Class I; 488,339 acres (32 percent) as Class II; and 480,595 acres (32 percent) as Class III. The remaining 509,432 acres (34 percent) would be managed as Class IV (Map 2-11).

Caves and Karst Resources

Under Alternative B, caves and karst resources would be managed in accordance with the management plan identified in Section 2.3.12. Imminent threats from natural or human-caused deterioration, or potential conflict with other resource uses, would be reduced by identifying priority geographic areas for new field inventory, based on a probability for unrecorded significant resources. In addition, some areas are associated with stipulations on fluid minerals leasing for the purpose of protecting caves and karst regions (see Appendix I). Cave and karst resources would be delineated and mapped and a management plan would be prepared within 2 years of completion of this RMP revision.

Lands and Realty

Right-of-way exclusion areas are closed to all forms of new right-of-way development, unless mandated by law. Right-of-way avoidance areas are areas where future rights-of-way may be granted only when no feasible alternative route is available. A plan for managing right-of-way exclusion and avoidance areas is provided as part of Appendix F. Under Alternative B, 406,283 acres would be managed as right-of-way exclusion areas and 347,950 acres would be managed as right-of-way avoidance areas (Map 2-12). Land identified as exclusion areas is within WSAs or Class I VRM areas. Land identified as avoidance areas is within special designations other than WSAs and in VRM Class II areas. Under Alternative B, a total of 50 percent of BLM-managed surface land would be subject to restrictions on right-of-way development (either exclusion or avoidance).

A utility corridor that is generally 2 miles wide would be established along the Interstate 25 corridor (see Map 2-12). This corridor was one of the four recommended in the Western Utility Group Study (Michael Clayton and Associates 1992). Applicants requesting new rights-of-way would be encouraged to use this corridor.

Up to 89,447 acres of isolated parcels would be identified as suitable for disposal pending environmental analysis, in accordance with the Land and Mineral Disposal Policy in Appendix H (see Map 2-12). Approximately 1,412,057 acres would be identified as areas to be retained in Federal ownership (see Map 2-12). Nonpublic land would be acquired from willing sellers to the extent possible within WSAs, ACECs, SMAs, cultural resource sites, or other areas, as identified, to achieve resource objectives.

Forestry and Woodland Management

Under Alternative B, piñon-juniper, ponderosa, and mixed conifer cover types would be managed to improve ecological condition, provide the needs of local communities, and improve wildlife habitat. These cover types include potential old-growth stands (Appendix N, Old Growth Forest Definitions). High-tree-density woodland sites would be managed to reduce woody species and allow for increases in herbaceous understory. Savannah grassland sites would be treated to remove encroaching woody species, to restore them to the historical grassland reference condition based on potential from ecological site description. Dominance of ponderosa pine would be reestablished in the sites that would support it. Retention of larger, fire tolerant trees would be a management goal, along with uneven stand management. Woodland and forest sites would be evaluated for meeting standards for forest health and those identified as not meeting the standard would be managed in accordance with best management practices to become properly functioning (see Appendix C). Assessment also would utilize FRCC. FRCC is an interagency, standardized tool for determining the degree of departure from reference condition vegetation, fuels, and disturbance regimes. Assessing FRCC can help guide management objectives and set priorities for treatments. Treatment techniques may include wildland fire use, prescribed fire, mechanical treatment, chemical treatment, or biological treatment to achieve management goals for woodland and forest health.

The Socorro Field Office would exclude or restrict woodcutting and plant materials sales in special designations as identified in Table 2-2.
Areas would be designated for commercial and personal woodcutting based on the following criteria:

- Accessibility – For personal woodcutting, there must be a road into the site. For commercial woodcutting, there must be a road into the general area of the site, though not necessarily to the site itself; access may require building temporary roads that can be removed or rehabilitated when the project is completed.
- Site has been identified for treatment (using New Mexico Standards and Guidelines and Standard Forest Inventory).
- Stable soils (resilient to disturbance).
- Slopes of less than 40 percent.
- No woodcutting in excepted areas – areas identified for no woodcutting for the protection of other resources.

If public demand warrants, areas would be designated for personal-use plant or plant materials sales based on the following criteria:

- Accessibility.
- Availability of plant species.
- Type of removal work.
- Potential of other use areas – BLM may consider public salvage of native plant species from a proposed project area (gravel pit, etc.) depending on public demand, location of the particular project (accessibility), and staffing levels.
- No sales in excepted areas – areas identified for no plant collecting for the protection of other resources.

Rangeland Management

Under Alternative B, long-term increases in vegetation would be allocated to wildlife, watershed, and livestock based on monitoring and other studies to support such increases. The allocations typically would be 50 percent to wildlife/watershed and 50 percent to livestock. In addition, the Soaptree SMA (1,296 acres) would be managed for grazing use.

The first priority for funding new rangeland improvements would be given to those allotments that have been identified as not meeting the rangeland standard. The next priority would be given to allotments according to their categorization, beginning with “I” category, followed by “M” and “C” categories. On “I” category allotments that contain crucial wildlife habitat and/or critical watershed, the allocation may be greater than 50 percent for wildlife and watershed. Where forage increases occur on allotments with no resource problems or conflicts, the allocation of forage to livestorck may be greater than 50 percent. Each case will be handled individually based on site-specific analysis and to conform to the multiple-use objectives of the RMP.

Contributions for rangeland improvement work in the form of labor, material, equipment, and funding would be encouraged, and would be a factor in determining priority ranking for allocating funds.

Vegetative treatments would be conducted to control the growth and spread of undesirable vegetation or to increase the abundance of desirable vegetation. Vegetative treatments could include prescribed fire, mechanical treatment by hand (chain saws) or heavy equipment (chaining, mowing, mulching, grubbing, etc.), or chemical treatment. Areas that are potentially suitable for treatment would be analyzed in accordance with NEPA. All projects would be consistent with multiple-use objectives and this RMPR.

Allotment management plans would be developed as necessary to resolve identified resource problems or conflicts. The level of intensity and the suggested management actions for each allotment management plans would vary depending on the problems encountered and the objectives outlined for the allotment. Management actions may include proper placement of rangeland improvements, distribution of livestock, kind and class of livestock, salting, grazing systems, and vegetative land treatments. These plans would be prepared in accordance with Section 8 of the Public Rangeland Improvement Act of 1978, in "careful and considered, consultation, cooperation, and coordination" with affected allottees, affected interest and other interested parties (target group). Involvement of the target group will be at the request of the allottee. The target group consists of landowners, such as the State Land Commissioner or other lessees, New Mexico Department of Agriculture, NMDGF, Range Improvement Task Force, Natural Resource Conservation Service, the U.S. Forest Service, and other interested parties.

Allotment management plans would include a grazing system to provide periodic rest to plants from livestock grazing. The type of system implemented would be tailored to meet the needs of the allotment and would be developed through consultation with the allottee. Consideration would be given to allottee needs, level of management, vegetation objectives, the degree and type of resource conflicts, initial costs to implement the system, and other factors.

Grazing allotments within areas identified as potential aplomado falcon habitat would be managed for a stable or increasing trend in range condition or desired plant community. Monitoring of trend plots would be prioritized in the area identified for special management for aplomado falcon.

Minerals

Leasable Minerals

Under Alternative B, approximately 1,543,095 acres of Federal mineral estate would be closed to fluid mineral leasing to protect sensitive resources (Map 2-8). This includes 1,418,415 acres of Federal mineral estate that is closed nondiscretionarily. Approximately 3,035,925 acres would be open to mineral leasing with standard terms and conditions, and 1,516,824 acres would be open to leasing with stipulations in addition to the standard terms and conditions (see Map 2-8 and Appendix I). Federal mineral estate underlying surface area managed or owned by private, State, or other Federal agencies would be managed in close coordination with the landowners or agencies.

A total of about 3,200 acres in the BLM's Decision Area have been identified as not unsuitable for coal leasing (see Appendix I). Coal leasing in these areas would occur in accordance with applicable laws subject to surface owner consultation and additional NEPA analysis, as appropriate.

Locatable Minerals

A total of 11,408 acres of BLM-administered surface land would continue to be managed as withdrawn from mineral entry (see Appendix I). Under Alternative B, BLM would petition to withdraw an additional 72,369 acres of Federal mineral estate from location and entry under the mining laws as follows: a total of 43,952 acres within potential aplomado falcon habitat areas; 1,500 acres within and in the vicinity of Tinajas ACEC; 149 acres within the Fort Craig SMA; 23,567 acres of medium and high potential within

the Ladron Mountain ACEC; 2,881 acres within the Protection Zone of the Zuni Salt Lake ACEC; and an additional 320 acres within The Box SRMA. The remainder of public land within the Planning Area would be open for mineral entry unless restricted by law and policy.

Salable Minerals

On BLM-administered land, 340,066 acres would be excluded from mineral material disposals, which includes all WSAs and other special designations as indicated in Table 2-2. This total includes 40,104 acres of potential aplomado falcon habitat areas on BLM-managed surface estate that would be excluded from mineral material disposals with the exception of public land within 0.5 mile of existing highways. The remainder of BLM's Decision Area would be open for extraction of mineral material unless restricted by law or policy.

Recreation

To manage and protect recreational resources under Alternative B, five SRMAs and two ACECs would be designated and one SMA would be identified. These include those designations noted below. More information special designations is provided in Table 2-2, Map 2-1 (proprietary designations are not shown), and Appendix K.

- Datil Well SRMA (669 acres) – Manage to provide recreation opportunities (including day use, camping, and group outings), basic services including visitor safety and comfort, facility and grounds maintenance, coordination of employee and volunteer schedules and projects, and development and implementation of interpretation and environmental education programs (Map 2-13).
- The Box SRMA (1,107 acres) – Manage to enhance the areas unique recreational values, primarily rock climbing and bouldering, maintain the scenic quality and ensure protection for cultural sites as well as desert bighorn sheep and bats and their habitats (Map 2-14).
- Gordy's Hill SRMA (7,647 acres) – Manage for recreation uses, including OHV, races, and group events (Map 2-15).
- Quebradas Backcountry Byway SRMA (area within 0.25 mile of the Byway, or a total of 3,130 acres) – Manage for a variety of recreation opportunities and experiences such as driving for pleasure, high scenic quality, geologic sightseeing, interpretation and environmental education, mountain biking, and access to hiking areas such as Presilla and Sierra de las Cañas WSAs with an emphasis on the development of interpretation opportunities (Map 2-16).
- Socorro Nature Area SRMA (80 acres) – Manage for recreational use and to provide environmental education and interpretation opportunities; experiences would be primarily picnicking, hiking, sightseeing in Bosque Habitat, access to the Rio Grande, camping, and mountain biking (Map 2-17).
- Cerro Pomo ACEC (26,284 acres, includes the former Mogollon Pueblo SMA) – Manage to protect unique geologic features, paleontological resources, cultural resources, and high scenic quality while preserving appropriate recreation opportunities (Map 2-18).
- Tinajas ACEC (1,062 acres) – Manage to protect unique geologic features, cultural resources, and high scenic quality while preserving appropriate recreation opportunities (Map 2-19).
- Continental Divide National Scenic Trail SMA (60,379 acres) – Manage to meet the objectives of the enabling legislation, establish and maintain a trail route through the Planning Area that would

meet up with trail routes to the south and the north, and provide a long distance trail hiking experience for the users (Map 2-20).

Protection of primitive recreation resources is noted as a management concern in the Cerro Pomo ACEC, Ladron Mountain-Devil's Backbone Complex ACEC, and Pelona Mountain ACEC.

The Continental Divide National Scenic Trail would be managed for recreational use and to protect scenic values on the 34 miles of its length within the BLM's Decision Area. Trail corridors would be identified and legal access acquisition in the Pie Town and Quemado areas would be pursued to the extent possible from willing sellers. Acquisition of legal access would facilitate establishing an unbroken trail route throughout the state.

Transportation and Travel Management

For OHV area designations under Alternative B, 486,842 acres would be limited to existing routes, 902,782 acres would be limited to designated routes, and 117,921 acres would be closed to motorized travel (Map 2-21; for definitions, see Appendix J). No public land would be designated as open to cross-country travel.

Routes would be designated within WSAs as described in Table 2-4, located at the end of this chapter (see maps in Appendix J). Cross-country motorized travel would not be permitted within these areas, nor would motorized travel on unauthorized routes. Outside of WSAs, travel management would be managed and planned as described in Section 2.3.19.
Under Alternative B, approximately 26 miles of routes outside areas with special designations would be closed to address wildlife concerns. Where impacts to other resources are occurring as a result of roads or vehicle use, additional miles of roads could be closed as necessary to protect or recover resources.

Special Designations

Under Alternative B, a total of 196,855 acres (about 13 percent of the BLM-managed surface area in the Planning Area) would be designated as ACECs. The ACECs do not overlap with WSAs under this alternative, as occurs under Alternative A. A total of 12,633 acres (about 1 percent of the surface area managed by the BLM in the Planning Area) would be designated as SRMAs, and an additional 88,067 acres (6 percent) would be identified as SMAs. The specific acreages and management for each area with a special designation is described in the appropriate resource section above, and summarized in Tables 2-1 and 2-2. Proposed special designations under Alternative B are mapped on Map 2-1.

2.4.2.2 Alternative C

Soils and Water Resources

Two SMAs would be identified to manage uses and activities in critical watersheds to emphasize restoration, protection, or improvement of watershed function and processes, and deemphasize commodity production (see also Table 2-2, Map 2-22, and Appendix K). Under Alternative C, these SMAs include:

- Puertecito SMA (7,156 acres) (Map 2-23)
- Stallion SMA (10,883 acres) (Map 2-24)

In addition, watershed rehabilitation activities would be implemented through application of the New Mexico Standards and Guidelines.

Vegetation (including Special Status Species)

Plant communities would be managed to achieve multiple-use goals and to meet or move toward the upland, riparian, and biotic standards. The desired plant community would be identified based on ecological sites for the plant communities that are involved when developing activity plans to meet resource objectives.

One ACEC would be designated and two SMAs would be identified to manage for the protection of special-status plant species as follows:

- Sawtooth Proprietary ACEC (125 acres) – manage to protect the Zuni fleabane, a federally listed species.
- San Pedro Proprietary SMA (1,201 acres) – manage to protect Fugate's blue star (special status plant species).
- Soaptree SMA (1,296 acres) – manage to protect the soaptree yucca ecosystem (Map 2-25).

More information on special designations is provided in Table 2-2, Map 2-22 (proprietary designations are not shown), and Appendix K.

Wildlife (including Special Status Species)

Three ACECs would be designated primarily for the management of wildlife habitat, wilderness characteristics, and special status species. These include the following:

- Horse Mountain ACEC (5,388 acres) – Same as Alternative B, manage to protect wildlife values by reducing habitat fragmentation through access management. In addition, potential habitat for a federally listed threatened species (the bald eagle) and a federally listed species of concern (peregrine falcon) is present within the ACEC (Map 2-26).
- Ladron Mountain-Devil's Backbone Complex ACEC (57,474 acres) – manage to enhance and protect diverse wildlife habitat, with emphasis on habitat for desert bighorn sheep. Similar to Alternative B, this ACEC is expanded from the No-Action Alternative to incorporate the former Rio Salado and San Lorenzo SMAs, and the Devil's Backbone and Polvadera Mountain areas (Map 2-27).
- Pelona Mountain ACEC (52,336 acres) – manage to protect diverse wildlife habitat. The ACEC serves as an important wildlife corridor between BLM and Forest Service lands, and contains potential habitat for a federally listed threatened species (the bald eagle), a federally listed species of concern (peregrine falcon), and one of New Mexico's largest elk herds (Map 2-28).

The land that was managed as part of the Agua Fria ACEC under Alternative A would be incorporated into and managed as part of the Zuni Salt Lake ACEC under this alternative (see Cultural Resources). More information on these designations is provided in Table 2-2, Map 2-22, and Appendix K.

To protect desert bighorn sheep, a 20-mile-wide buffer would be established around occupied and historic habitat areas within which domestic sheep and goats would be excluded. In addition, the desert bighorn sheep travel corridor between Ladron Mountain and the Devil's Backbone Mountains would be managed to reduce impacts due to access and surface disturbance.

Similar to Alternative B, about 26 miles of roads outside of special designations would be closed to address wildlife concerns.

Approximately 68,679 acres of Federal mineral estate that are potential aplomado falcon habitat areas would be closed to fluid mineral leasing (this includes 63,808 BLM-administered surface acres). These areas also would be excluded from mineral material disposals (except areas within 0.5 mile of existing highways) and right-of-way authorizations, OHV use would be limited to designated routes, and the BLM would petition to withdraw the area from location and entry under the mining laws.

Areas that meet criteria for aplomado falcon habitat would be managed to minimize potential impacts from surface-disturbing activities. This management would include the implementation of fluid mineral leasing stipulations (see Map 2-29 and Appendix I) and other measures to regulate surface use and occupancy (see Appendix L) in areas that are determined to be potential aplomado falcon habitat. Grazing allotments within areas identified as potential aplomado falcon habitat would be managed for a stable or increasing trend in range condition or desired plant community. Monitoring of trend plots would be prioritized in the area identified for special management for aplomado falcon. As additional data become available, these management prescriptions may be revisited to assess their effectiveness in protection of this species.

Cultural Resources

Under Alternative C, program emphasis would be on-site protection and research, and a greater number of sites would receive protection by virtue of the land use restrictions associated with special designations.

Criteria for acquiring land to protect cultural resources and identifying heritage tourism sites would be the same as Alternative B. However, heritage tourism sites would be developed with an emphasis on site protection to facilitate visitation. Current sites that are or could be managed for heritage tourism values and benefits include Magdalena Stock Driveway, Fort Craig, and Penjeacu. Other sites may be identified over the life of this RMPR.

Several areas where sensitive or unique cultural resources have been identified would be managed under special designations. Generally, management prescriptions to protect resources in these areas would include reduced access and restrictions on surface-disturbing activities. Under Alternative C, the following special designations are specifically related to cultural resources management and protection:

- Zuni Salt Lake Proprietary ACEC (156,601 acres) – manage to protect Zuni Salt Lake (incorporates former Fence Lake SMA and Cerro Pomo ACEC).
- Mockingbird Gap Proprietary ACEC (8,685 acres)
- Fort Craig SMA (149 acres) (Map 2-30)
- Newton Site Proprietary SMA (6,789 acres)
- Playa Pueblos Proprietary SMA (203 acres)
- Penjeacu SMA (11 acres) – formerly Teypama (Map 2-31)
- Town of Riley SMA (533 acres) (Map 2-32)

The Cerro Pomo ACEC, which was included in Alternative B, is incorporated into and managed as a part of the Zuni Salt Lake Proprietary ACEC under this alternative. More information on special designations

is provided in Table 2-2, Map 2-22 (proprietary designations are not shown), and Appendix K. Some fluid mineral leasing stipulations were developed (see Appendix I and Map 2-29) in part for protection of cultural resources and would be applied as appropriate.

Paleontological Resources

Same as Alternative B.

Visual Resources

Under Alternative C, 27,093 acres (about 2 percent of the surface area managed by the BLM) would be managed as VRM Class I; 715,706 acres (48 percent) as Class II; and 249,953 acres (17 percent) as Class III. The remaining 513,997 acres (34 percent) would be managed as Class IV (Map 2-33).

Caves and Karst Resources

Same as Alternative B.

Lands and Realty

Under Alternative C, 716,100 acres would be managed as right-of-way exclusion areas and 419,120 acres as right-of-way avoidance areas (see Map 2-34). Under Alternative C, a total of 75 percent of BLM's Decision Area would be subject to restrictions on right-of-way authorizations (either exclusion or avoidance).

A utility corridor would be established along the Interstate 25 corridor (Map 2-34). This is a preliminary corridor under consideration in the West-wide Energy Corridor Programmatic EIS project. Applicants requesting new rights-of-way would be encouraged to use this corridor. Up to 42,913 acres of isolated parcels would be identified as suitable for disposal in accordance with the Land and Mineral Disposal Policy in Appendix F (Map 2-34). Approximately 1,461,191 acres would be identified as areas to be retained in Federal ownership (see Map 2-6). Nonpublic land would be acquired from willing sellers within WSAs, ACECs, SMAs, cultural resource sites, or other areas as identified to achieve resource objectives.

Forestry and Woodland Management

Similar to Alternative B, piñon-juniper, ponderosa, and mixed conifer cover types would be managed to improve ecological condition, provide the needs of local communities, and improve or maintain wildlife habitat. However, to achieve management objectives, emphasis would be placed on wildland fire use and prescribed fire, although mechanical treatment, chemical treatment, or biological treatment may be considered to achieve the goals of woodland and forest health.

Criteria for woodcutting would be the same as Alternative B, except that vehicle travel would be limited to existing roads (no new roads would be allowed) for commercial and personal woodcutting. The sale of plants would be limited to designated plant collection areas and specified salvage areas. Exclusions or restrictions of these activities in special designations would occur as identified in Table 2-2.

Rangeland Management

Increases in forage would be reserved for wildlife habitat and watershed needs. Increases in livestock use would be secondary after other resource objectives had been met. Range improvements would be

designed primarily to benefit wildlife and watershed resources and to move towards meeting the upland, riparian, or biotic standard.

Grazing allotments within areas identified as potential aplomado falcon habitat would be managed for a stable or increasing trend in range condition. Monitoring of trend plots would be prioritized in the area identified for special management for aplomado falcon.

Minerals

Leasable Minerals

Under Alternative C, approximately 1,856,116 acres of Federal mineral estate would be closed to fluid mineral leasing to protect sensitive resources (Map 2-29). This total includes 1,418,415 acres of Federal mineral estate closed nondiscretionarily. Approximately 3,296,806 acres would be open to mineral leasing with standard terms and conditions and 947,044 acres would be open to leasing with stipulations in addition to the standard terms and conditions (see Map 2-29 and Appendix I). Federal mineral estate underlying surface area managed or owned by private, State, or other Federal agencies would be managed in close coordination with the landowners or agencies.

Areas determined to be not unsuitable for coal leasing would be the same as in Alternative B.

Locatable Minerals

Management of locatable minerals would be the same as under Alternative B, except that BLM would petition for withdrawal from location and entry under the mining laws for the following additional areas: 68,679 acres of Federal mineral estate within potential aplomado falcon habitat; Zuni Salt Lake Proprietary ACEC, Mesita Blanca WSA, and Eagle Peak WSA (315,490 acres of Federal mineral estate); and a total of 400 acres from The Box SRMA (an increase from the 320 acres in Alternative B).

Salable Minerals

On BLM-administered land, 484,133 acres would be excluded from mineral material disposals within WSAs and other special designations as indicated in Table 2-2. This total includes 63,808 acres of BLM-managed surface estate within potential aplomado falcon habitat, which would be excluded from mineral material disposals with the exception of public land within 0.5 mile of Highway 380. The remainder of the BLM's Decision Area would be open for extraction of mineral materials unless restricted by law or policy.

Recreation

To manage and protect recreational resources under Alternative C, five SRMAs and one ACEC would be designated, and one SMA would be identified (see Map 2-22). These include:

- Datil Well SRMA (669 acres) – Manage to provide recreation opportunities (including day use, camping, and group outings), basic services including visitor safety and comfort, facility and grounds maintenance, coordination of employee and volunteer schedules and projects, and development and implementation of interpretation and environmental education programs (Map 2-35).
- The Box SRMA (1,501 acres) – Manage to enhance the areas unique recreational values, primarily rock climbing and bouldering, maintain the scenic quality and ensure protection for cultural sites as well as desert bighorn sheep and bats and their habitats (Map 2-36).

- Gordy's Hill SRMA (2,876 acres) – Manage for recreation uses, including OHV, races, and group events (Map 2-37).
- Quebradas Backcountry Byway SRMA (3,130 acres) – Manage for a variety of recreation opportunities and experiences such as driving for pleasure, high scenic quality, geologic sightseeing, interpretation and environmental education, mountain biking, and access to hiking areas such as Presilla and Sierra de las Cañas WSAs with an emphasis on the development of interpretation opportunities (Map 2-38).
- Socorro Nature Area SRMA (80 acres) – Manage for recreational use and to provide environmental education and interpretation opportunities; experiences would be primarily picnicking, hiking, sightseeing in Bosque Habitat, access to the Rio Grande, some camping, and mountain biking (Map 2-39).
- Tinajas ACEC (7,767 acres) – Manage to protect unique geologic features, cultural resources, and high scenic quality while preserving appropriate recreation opportunities (Map 2-40).
- Continental Divide National Scenic Trail SMA (11,757 acres) – Manage to meet the objectives of the enabling legislation, establish and maintain a trail route through the Planning Area that would meet up with trail routes to the south and the north, and provide a long distance trail hiking experience for the users (Map 2-41).

Protection of primitive recreation resources is noted as a management concern in the Ladron Mountain-Devil's Backbone Complex ACEC, Pelona Mountain ACEC, and Tinajas ACEC.

The Continental Divide National Scenic Trail would be managed for recreational use and to protect scenic values on the 34 miles of its length within the Decision Area. Trail corridors would be identified and legal access acquisition in the Pie Town and Quemado areas would be pursued to the extent possible from willing sellers. Acquisition of legal access would facilitate establishing an unbroken trail route throughout the state.

More information on special designations is provided in Table 2-2, Map 2-22, and Appendix K.

Transportation and Travel Management

For OHV area designations under Alternative C, 476,908 acres would be limited to existing routes, 889,958 acres would be limited to designated routes, and 139,971 acres would be closed to motorized travel (Map 2-42; for definitions, see Appendix J). No public land would be designated as open to cross-country travel.

Routes would be designated within WSAs as described in Table 2-4 (see maps in Appendix J). Cross-country motorized travel is not permitted within these areas, and motorized travel on unauthorized routes is not permitted. Outside of WSAs, travel would be managed and planned as described in Section 2.3.19. Similar to Alternative B, approximately 26 miles of routes outside of areas with special designations would be closed to address wildlife concerns. Where impacts to other resources are occurring as a result of roads or vehicle use, additional miles of roads could be closed as necessary to protect or recover resources.

Special Designations

Under Alternative C, a total of 288,378 acres (19 percent of the surface area managed by BLM in the Planning Area) would be designated as ACECs. The ACECs do not overlap with WSAs under this

alternative, as occurs under Alternative A. A total of 8,256 acres (under one percent of the surface area managed by the BLM in the Planning Area) would be designated as SRMAs, and an additional 39,975 acres (3 percent) would be identified as SMAs. The specific acreages and management for each area with a special designation is described in the appropriate resource section above, and summarized in Tables 2-1 and 2-2. The proposed special designations are mapped on Map 2-22; proprietary designations are not mapped.

2.4.2.3 Alternative D

Soils and Water Resources

Three SMAs would be maintained to manage uses and activities in critical watersheds to emphasize commodity production while providing protection of watershed health (see also Table 2-2, Map 2-43, and Appendix K). Under Alternative D, these designations include the following:

- Fence Lake SMA (25,452 acres) (Map 2-44)
- Puertecito SMA (7,156 acres) (Map 2-45)
- Stallion SMA (10,883 acres) (Map 2-46)

In addition, watershed rehabilitation activities would be implemented through application of the New Mexico Standards and Guidelines.

Vegetation (including Special Status Species)

Plant communities would be managed to achieve multiple-use goals and to meet or move toward the upland standard (see Appendix H). The desired plant community would be identified based on ecological sites for the plant communities that are involved when developing activity plans to meet resource objectives.

One ACEC would be designated and two SMAs would be identified to protect special-status plant species:

- Sawtooth Proprietary ACEC (125 acres) – manage to protect the Zuni fleabane, a federally listed species.
- San Pedro Proprietary SMA (1,201 acres) – manage to protect Fugate's blue star (special status plant species).
- Soaptree SMA (1,296 acres) – manage to protect the soaptree yucca ecosystem (Map 2-47).

More information on special designations is provided in Table 2-2, Map 2-43 (proprietary designations are not shown), and Appendix K.

Wildlife (including Special Status Species)

Three ACECs would be designated primarily for the management of wildlife habitat, wilderness characteristics, and special status species (see Map 2-43). These include:

- Horse Mountain ACEC (2,596 acres) – manage to protect wildlife values by reducing habitat fragmentation through access management. In addition, potential habitat for a federally listed

threatened species (bald eagle) and a federally listed species of concern (peregrine falcon) is present within the ACEC (Map 2-48).

- Ladron Mountain ACEC (20,155 acres) – manage to enhance and protect diverse wildlife habitat, with emphasis on habitat for desert bighorn sheep (Map 2-49).
- Pelona Mountain ACEC (34,547 acres) – manage to protect diverse wildlife habitat, including habitat for a federally listed threatened species (bald eagle), a federally listed species of concern (peregrine falcon), and one of New Mexico's largest elk herds (Map 2-50).

More information on special designations is provided in Table 2-2, Map 2-43, and Appendix K.

The measures that would be implemented to protect desert bighorn sheep (establish buffer to exclude domestic sheep and goats, and manage travel corridor to reduce impacts) would be the same as in Alternative B.

Similar to Alternative B, about 26 miles of roads outside of special designations would be closed to address wildlife concerns.

Areas that meet criteria for aplomado falcon habitat would be managed to minimize potential impacts to surface-disturbing activities. This management would include the implementation of measures to regulate surface use and occupancy (see Appendix L) in areas that are determined to be potential aplomado falcon habitat. As additional data become available, these management prescriptions may be revisited to assess their effectiveness in protection of this species.

Cultural Resources

Under Alternative D, the cultural resources program emphasis would be on resource use for the economic benefit of surrounding communities. Other resource programs also would emphasize resource production and economic benefit by maintaining a minimum of limitations or restrictions on development. New sites would be designated for public use over the life of the plan as appropriate and feasible. Sites would be chosen based on community support and public involvement, as well as a site's appropriateness for visitation (based on an evaluation of the site's vulnerability to the effects of visitation). In addition to the new sites designated for public use, at least one new program or product per year would be developed for sites that are already designated, such as Fort Craig and Penjeacu.

Criteria for acquiring land to protect cultural resources and for identifying heritage tourism sites would be the same as Alternative B. However, heritage tourism sites would be developed with an emphasis on site hardening and other protective measures in accordance with Section 106 of the National Historic Preservation Act. Current sites that are or could be managed for heritage tourism values and benefits include Magdalena Stock Driveway, Fort Craig, Newton Site, and Penjeacu. Other sites may be identified over the life of this RMPR.

Several areas where sensitive or unique cultural resources have been identified would be managed under special designations. Generally, management prescriptions to protect resources in these areas would include reduced access and restrictions on surface-disturbing activities. Under Alternative D, the following special designations are specifically related to cultural resources management and protection:

- Cerro Pomo Proprietary ACEC (449 acres) – includes former Mogollon Pueblo SMA
- Zuni Salt Lake Proprietary ACEC (2,107 acres)

- Rio Salado SMA (5,946 acres) (Map 2-51)
- Mockingbird Gap Proprietary SMA (8,685 acres)
- Fort Craig SMA (149 acres) (Map 2-52)
- Newton Site Proprietary SMA (6,789 acres)
- Playa Pueblos Proprietary SMA (203 acres)
- Penjeacu SMA (11 acres) – formerly Teypama (Map 2-53)

More information on special designations is provided in Table 2-2, Map 2-43 (proprietary designations are not shown), and Appendix K. Some fluid mineral leasing stipulations (see Appendix I and Map 2-54) were developed in part for protection of cultural resources and would be applied as appropriate.

Paleontological Resources

Same as Alternative B.

Visual Resources

Under Alternative D, zero acres would be managed as VRM Class I; 354,222 acres (24 percent of the surface area managed by BLM) as Class II; and 106,277 acres (7 percent) as Class III. The remaining 1,046,398 acres (70 percent) would be managed as Class IV (Map 2-55).

Cave and Karst Resources

Same as Alternative B.

Lands and Realty

Under Alternative D, 301,081 acres would be managed as right-of-way exclusion areas and 177,290 acres as right-of-way avoidance areas (Map 2-56). Under Alternative D, about 32 percent of BLM-managed surface area would be subject to restrictions on right-of-way (either exclusion or avoidance).

All utility corridors recommended by the Western Utility Group Corridor Study would be established (Michael Clayton and Associates 1992). The proposed width of each corridor would be 2 miles, 1 mile to each side of the corridor centerline (see Map 2-56).

Up to 212,323 acres of isolated parcels would be identified as suitable for disposal in accordance with the Land and Mineral Disposal Policy in Appendix F (see Map 2-56). Approximately 1,292,952 acres would be identified as areas to be retained in Federal ownership (see Map 2-56). Nonpublic land would be acquired from willing sellers within WSAs, ACECs, SMAs, cultural resource sites, or other areas as identified to achieve resource objectives.

Forestry and Woodland Management

Similar to Alternative B, piñon-juniper, ponderosa, and mixed conifer cover types would be managed to improve ecological condition, provide the needs of local communities, and improve wildlife habitat. However, to achieve management objectives, emphasis would be placed on mechanical treatment, although wildland fire use and prescribed fire, chemical treatment, or biological treatment may be considered to achieve the goals of woodland and forest health.

Criteria for woodcutting and plant materials sales would be the same as Alternative B. Exclusions or restrictions of these activities in special designations would occur as identified in Table 2-2.

Rangeland Management

As forage increases become available, they would be allocated to livestock first and then to wildlife and watershed. Range improvements would be designed and constructed to benefit livestock grazing, and other resources would receive secondary consideration.

Minerals

Leaseable Minerals

Under Alternative D, 1,419,456 acres of Federal mineral estate would be closed to fluid mineral leasing to protect sensitive resources (Map 2-54). This includes 1,418,415 acres of Federal mineral estate closed nondiscretionarily. Approximately 3,888,528 acres would be open to mineral leasing with standard terms and conditions and 785,484 acres would be open to leasing with stipulations in addition to the standard terms and conditions (see Map 2-54 and Appendix I). Federal mineral estate underlying surface area managed or owned by private, State, or other Federal agencies would be managed in close coordination with the landowners or agencies.

Areas determined to be not unsuitable for coal leasing would be the same as in Alternative B.

Locatable Minerals

A total of 11,408 acres of BLM-administered surface land would continue to be managed as withdrawn from mineral entry (see Appendix D). The remainder of public land within the Planning Area would be open for mineral location and entry unless restricted by law and policy.

Salable Minerals

On BLM-administered land, about 291,859 acres would be excluded from mineral material disposals, including all WSAs, 22 acres within the Tinajas ACEC, and 11 acres in the Penjeacu SMA. The remainder of the BLM's Decision Area would be open for extraction of mineral material unless restricted by law or policy.

Recreation

To protect and manage recreational resources under Alternative D, six SRMAs and one ACEC would be designated and one SMA would be identified (see Map 2-43). These include:

- Datil Well SRMA (669 acres) – Manage to provide recreation opportunities (including day use, camping, and group outings), basic services including visitor safety and comfort, facility and grounds maintenance, coordination of employee and volunteer schedules and projects, and development and implementation of interpretation and environmental education programs (Map 2-57).
- The Box SRMA (300 acres) – Manage to enhance the area's unique recreational values, primarily rock climbing and bouldering, maintain the scenic quality and ensure protection for cultural sites as well as desert bighorn sheep and bats and their habitats (Map 2-58).

- Gordy's Hill SRMA (7,174 acres) – Manage for recreation uses, including OHV use, races, and group events (Map 2-59).
- Quebradas Backcountry Byway SRMA (3,130 acres) – Manage for a variety of recreation opportunities and experiences such as driving for pleasure, high scenic quality, geologic sightseeing, interpretation and environmental education, mountain biking, and access to hiking areas such as Presilla and Sierra de las Cañas WSAs with an emphasis on the development of interpretation opportunities (Map 2-60).
- Socorro Nature Area SRMA (80 acres) – Manage for recreational use and to provide environmental education and interpretation opportunities; experiences would be primarily picnicking, hiking, sightseeing in Bosque Habitat, access to the Rio Grande, some camping, and mountain biking (Map 2-61).
- San Lorenzo SRMA (2,320 acres) – Manage for diverse recreational opportunities, particularly day use, while protecting wildlife habitat, cultural resources, and scenic values (Map 2-62).
- Tinajas ACEC (22 acres) – Manage to protect unique geologic features, cultural resources, and high scenic quality while preserving appropriate recreation opportunities (Map 2-63).
- Continental Divide National Scenic Trail SMA (8,703 acres) – Manage to meet the objectives of the enabling legislation, establish and maintain a trail route through the Planning Area that would meet up with trail routes to the south and the north, and provide a long distance trail hiking experience for the users (Map 2-64).

Protection of primitive recreation resources is noted as a management concern in the Horse Mountain ACEC, Ladron Mountain ACEC, and Pelona Mountain ACEC.

The Continental Divide National Scenic Trail would be managed for recreational use and to protect scenic values on the 34 miles of its length within the Decision Area. Trail corridors would be identified and legal access acquisition in the Pie Town and Quemado areas would be pursued to the extent possible from willing sellers. Acquisition of legal access would facilitate the establishment of an unbroken trail route throughout the State.

More information on special designations is provided in Table 2-2, Map 2-43, and Appendix K.

Transportation and Travel Management

For OHV area designations under Alternative D, 799,757 acres would be designated as limited to existing routes and 704,783 acres would be limited to designated routes (Map 2-65; for definitions, see Appendix J). No public land would be designated as open to cross-country travel.

Routes would be designated within WSAs as described in Table 2-4 (see maps in Appendix J). Cross-country motorized travel is not permitted within these areas, and motorized travel on unauthorized routes is not permitted. Outside of WSAs, travel management would be managed and planned as described in Section 2.3.19.

Similar to Alternative B, approximately 26 miles of routes outside of areas with special designations would be closed to address wildlife concerns. Where impacts to other resources are occurring as a result of roads or vehicle use, additional miles of roads could be closed as necessary to protect or recover resources.

Special Designations

Under Alternative D, a total of 60,002 acres (about 4 percent of the surface area managed by the BLM in the Planning Area) would be designated as ACECs. The ACECs do not overlap with WSAs under this alternative, as occurs under Alternative A. A total 13,004 acres (under 1 percent of the surface area managed by the BLM in the Planning Area) would be identified as SRMAs, and an additional 76,472 acres (5 percent) would be designated as SMAs. The specific acreages and management for each area with a special designation is described in the appropriate resource section above, and summarized in Tables 2-1 and 2-2. The proposed special designations are mapped on Map 2-43.

2.5 ALTERNATIVES CONSIDERED BUT NOT ANALYZED IN DETAIL

Some of the management strategies considered throughout the planning process were eliminated from detailed consideration in this RMPR/EIS. These include various ACECs, management strategies associated with special designations, and an east-west utility corridor. In addition, some of the proposed management strategies did not require RMP-level decisions and were therefore eliminated from further analysis. Management strategies outside BLM's jurisdiction also were eliminated.

Through this planning process, BLM considered and evaluated public land for ACEC designation. BLM policy (BLM Manual 1613 and 43 CFR 1610.7-2) requires that before an ACEC can be designated, it must meet certain criteria to establish the area's relevance and importance. If the area meets the relevance and importance criteria, it must then be demonstrated to require special management attention to protect the important and relevant values. That is, the area must require management prescriptions or measures to protect the important and relevant values from the potential effect of actions permitted by the RMP.

Initially, BLM identified broad areas of public land to evaluate under the ACEC designation criteria. These areas were identified by individual resource specialists under specific resource programs including wildlife, threatened and endangered species, cultural resources, and recreation. As the evaluation and coordination process progressed, multiple resource values were recognized in some areas, consolidating some ACEC designation proposals. During this process, some proposed ACEC areas were eliminated because they did not meet the ACEC designation criteria. Acreages and special management prescriptions were modified throughout the process with the goal of identifying only those areas most suitable for ACEC designation. These areas were carried forward under the alternatives.

Some of the management strategies considered, such as implementation of various best management practices, development of watershed management plans, and development of partnerships, do not require RMP-level decisions to implement. These decisions can be implemented at any time without amending or revising the RMP; therefore, they were not included in the alternatives descriptions. Other proposed management strategies, such as maintaining vegetative cover and soil conditions, are managed under the New Mexico Standards and Guidelines and do not require separate management decisions.

Lastly, some management strategies were considered but eliminated because they are outside of the BLM's jurisdiction. For example, requiring licenses and permits or imposing fees on OHV use is not within BLM's jurisdiction. Likewise, providing access across private land or authorizing or restricting activities on nonpublic land (except activities associated with Federal subsurface minerals) is not within BLM's jurisdiction.

2.6 COMPARISON OF IMPACTS

The analysis of impacts associated with each alternative is provided in Chapter 4. A summary of impacts is provided in Table 2-5, located at the end of this chapter.

2.7 MONITORING

The BLM planning regulations (43 CFR 1610.4-9) call for the monitoring of RMPs on a continual basis with a formal evaluation to be completed at 5-year intervals. The Socorro RMPR would be monitored on a continual basis to (1) ensure that decisions described in the RMPR are being implemented, (2) allow up-to-date evaluations, and (3) respond to changing situations. Management actions or projects arising either internally or externally would be evaluated to determine conformance with the RMPR. If the project is in conformance, it could proceed contingent upon environmental analysis or, if not in conformance, the project would be abandoned or the RMPR amended to allow the project or action.

A detailed monitoring and evaluation plan will be published with the Proposed RMPR/Final EIS. It will guide formal evaluations of the RMPR at intervals not to exceed 5 years. All plan monitoring would assess the following:

- Whether management actions are resulting in satisfactory progress toward management goals
- Whether actions are consistent with current policy
- Whether original assumptions were correctly applied and impacts correctly predicted
- Whether mitigation measures are satisfactory
- Whether the RMP is consistent with the plans and policies of state and local government, other Federal agencies, and American Indian Tribes
- Whether new data are available that would require alteration of the plan

Monitoring is an essential component of natural resource management because it provides information on the relative success of management strategies. Land use plan monitoring is the process of (1) tracking the implementation of land use planning decisions (implementation monitoring) and (2) collecting data/information necessary to evaluate the effectiveness of land use planning decisions (effectiveness monitoring).

Monitoring is integral to management approaches such as adaptive management. Monitoring results would provide managers with the information to determine whether an objective has been met, and whether to continue or modify the management direction. Findings obtained through monitoring, together with research and other new data, would provide a basis for adaptive management changes to the RMPR. The processes of monitoring and adaptive management share the goal of improving effectiveness and permitting dynamic response to increased knowledge and a changing landscape.

2.7.1 Implementation Monitoring

Implementation monitoring is the process of tracking and documenting the implementation (or the progress toward implementation) of land use decisions. This would be done annually throughout the life of the RMPR and would be documented in the form of a tracking log or report. The report would be available for public review (H-1601-1, Land Use Planning Handbook, BLM 2005).

The monitoring plan would be evaluated periodically to ascertain that the monitoring questions and standards are still relevant, and would be adjusted as appropriate. Some monitoring items may be discontinued and others may be added as knowledge and issues change with implementation. If monitoring and evaluation indicate that modifying an RMP is necessary, the RMP may be changed through the amendment process. Monitoring and evaluation findings, new data, and new or revised

policies will be evaluated to determine if there is a need for an amendment. Any changes in circumstances or conditions which affect the scope, terms, or conditions of the RMP may warrant an amendment. In all cases, a proposed action that does not conform to the RMP, or is not addressed by the RMP and warrants further consideration before an RMP revision is scheduled would require an amendment. Generally, an RMP amendment is site-specific or involves only one planning issue. An RMP revision, if necessary, would involve the preparation of a new RMP for the entire Planning Area.

Potential minor changes, refinements, or clarifications to the RMP may take the form of maintenance actions. Maintenance actions incorporate minor data changes and are usually limited to minor refinements and documentation such as correction of acreages or other numbers, clarifying language, refining known habitat of special status species addressed in the RMP and similar refinements (H-1601-1 Land Use Planning Handbook, BLM 2005). RMP maintenance would not result in expansion of the scope of resource uses or restrictions or change the terms, conditions and decisions of approved RMP. Maintenance actions are not considered plan amendments and do not require a formal public involvement and interagency coordination process.

RMP monitoring would be conducted at multiple levels and scales and in the most cost-effective manner. Monitoring would be conducted in a manner that allows localized information to be compiled and considered in a broader regional context, thereby address both local and regional issues. At project level, monitoring would examine how well specific management direction has been applied on the ground and how effectively it produces expected results. Monitoring at broader levels would measure how successfully projects and other activities have achieved the objectives for those management areas.

Monitoring would be coordinated with other appropriate agencies and organizations in order to enhance efficiency and usefulness of the results across a variety of administrative units and provinces. The approach would build on past and present monitoring work.

Monitoring results would be reported in an annual program summary (such as a Socorro Field Office Update), which would be published on the Field Office Web site, the second year following initial implementation of this RMP. The annual program summary would track and assess the process of RMP implementation, state the findings made through monitoring, specifically address the implementation monitoring questions posed in each section of this monitoring plan, and serve as a report to the public.

2.7.2 Effectiveness Monitoring

Effectiveness monitoring is the process of collecting data and information for specific resources or programs to determine whether or not desired outcomes (expressed as goals and objectives in the land use plan) are being met (or progress is being made toward meeting them) as the allowable uses and management actions are implemented. A brief discussion of the effectiveness monitoring that would be carried out for each resource or program to determine if the actions described in the RMPR are meeting or moving toward management goals is provided in Appendix D.

2.7.3 Evaluation

Land use plans are evaluated to determine if (1) decisions remain relevant to current issues, (2) decisions are effective in achieving (or making progress toward achieving) management goals, (3) any decisions need to be revised, (4) any decisions need to be dropped from further consideration, and (5) any areas require new decisions. The Socorro RMPR would be formally evaluated at least every 5 years. These evaluations may identify resource need and means for correcting deficiencies and addressing issues through plan maintenance, amendments, or new starts. Evaluations should also identify where new and emerging resource issues and other values have surfaced.

2.7.4 Adaptive Management

Adaptive management is a procedure in which decisions and changes in management are made as part of an ongoing process. It is a continuous process of planning, implementing, monitoring, evaluating, and incorporating new information into strategies to meet the goals and objectives of the management described in the RMP. This process builds on current knowledge, observation, experimentation, and learning from experience. A continuous feedback loop allows for mid-course corrections in management to meet goals and objectives. It also provides a model for adjusting goals and objectives as new information develops and public desires change.

The complex interrelationships of physical, biological, and social components of the ecosystem and how they react to land management practices are often not fully understood when a land use management plan is developed. To be successful, plans must have the flexibility to adapt and respond to new knowledge or conditions.

The following briefly describes the four parts of adaptive management:

- Planning/Decision – Plan development or revision is the process leading to decision making. It starts with issue identification and goal development. The next step is to gather information necessary to develop alternatives for management direction that address the issues and goals. The final stage is to develop alternative management strategies to address issues and meet the management goals, analyze the consequences of the alternatives, and choose a preferred alternative for implementation.
- Implementation – The process of putting a plan or decision into effect. Implementation includes short- and long-term actions. It is assumed that all management direction would be implemented within 10 years. Standards are defined addressing how to achieve management goals; standards can include requirements to refrain from taking action in certain situations.
- Monitoring – Detects changes so management activities can be modified to achieve management goals. Monitoring data provide information on the condition and trend of the ecosystem. Monitoring data would be collected to determine if plan objectives are being met. This is discussed further in Appendix D.
- Evaluation/Assessment – The point where plans and monitoring data are reviewed. This phase of adaptive management is used to judge the success of existing plans in meeting goals and objectives, and makes recommendations for corrections. The understanding gained through evaluations is critical to managing sustainable, healthy, and productive ecosystems. Evaluations are a key component of the adaptive management process. An evaluation may lead to a change in management actions.

As part of the Evaluation/Assessment section above and upon completion of periodic evaluations, the Socorro Field Office Manager would determine what, if any, changes are necessary to ensure that management actions are consistent with management goals. It is possible a plan amendment or revision may be initiated because of a need to consider monitoring findings, new data, new or revised policy, or a proposed action that may result in a change in the terms, conditions, or decisions of the approved RMP.

In developing the Socorro RMPR/EIS, the BLM used the best science and resource management information available. The staff also collaborated with other Federal, Tribal, State, and local government agencies, and involved the public. However, the agency's knowledge would change as local environmental conditions change, as new management techniques are learned, and as advances in science and technology are better understood. As a result, it is inevitable that in the future some of the

management direction in the RMP would be found to be inadequate or in need of update. To rectify such situations, implementation of the Socorro RMPR would occur through the use of an adaptive management approach in a continual process to modify management actions to incorporate new knowledge gained over time. New information also could cause a plan amendment or revision to be prepared.

TABLE 2-1 ALTERNATIVES MATRIX				
Resources and Planning Issues[3] Addressed	**Alternative A – No-Action Alternative**	**Alternative B (Preferred)**	**Alternative C**	**Alternative D**
SOIL AND WATER RESOURCES *Soils Management Goal*: Manage uses to minimize and mitigate disturbances to soils and loss of soil sediments from erosion. Maintain soil stability to protect soil ecological health and long-term productivity. *Water Resources Management Goal*: Manage uses to maintain or improve overall watershed health by maximizing infiltration for groundwater recharge. Manage uses to maintain or improve surface water quality in watersheds, and watersheds that affect streams that are listed as water quality limited under the Clean Water Act, Section 303 (d). Manage resources to maintain or reduce salinity loading in accomplishing the goals and objectives outlined in the Colorado River Salinity Control Act. *Surface Water Objective*: Maintain and enhance the existing beneficial uses of surface water and protect the function of watersheds for habitat, grazing, and other ecological needs.				
Watershed rehabilitation Issue 2	Control water runoff on approximately 80,695 acres through a variety of means. Develop watershed plans. Maintain three SMAs to manage critical watersheds (Puertecito, Fence Lake, Stallion). Implement watershed tillage practices on grassland, treated rabbitbrush and sagebrush areas. After identification of suitable sites, mechanically treat piñon-juniper rabbitbrush, greasewood, and sagebrush. Follow with reseeding when needed.	Identify Puertecito and Stallion SMAs to manage use and activities in critical watersheds. Designate Zuni Salt Lake ACEC to protect resources associated with Zuni Salt Lake. Management would be implemented with the objective of balancing commodity production with providing for the attainment and maintenance of good watershed health, and proper functioning conditions. Watershed rehabilitation activities would be implemented in areas identified as priority areas through Standard Assessments, and site-specific analysis would be completed.	Identify Puertecito and Stallion SMAs to manage use and activities in critical watersheds. Designate Zuni Salt Lake ACEC to protect resources associated with Zuni Salt Lake. Management would emphasize restoration, protection, or improvement of watershed function and processes, and deemphasize commodity production. Watershed rehabilitation activities would be implemented in areas identified as priority areas through Standard Assessments, and site-specific analysis would be completed.	Identify Puertecito, Stallion, and Fence Lake SMAs to manage use and activities in critical watersheds. Designate Zuni Salt Lake ACEC to protect resources associated with Zuni Salt Lake. Management would emphasize commodity production while providing protection of watershed health. Watershed rehabilitation activities would be implemented in areas identified as priority areas through Standard Assessments, and site-specific analysis would be completed.

[3] Issues are numbered and described in Chapter 1.

TABLE 2-1 ALTERNATIVES MATRIX				
Resources and Planning Issues[3] Addressed	**Alternative A – No-Action Alternative**	**Alternative B (Preferred)**	**Alternative C**	**Alternative D**
VEGETATION (INCLUDING SPECIAL STATUS SPECIES) *Management Goal*: Achieve healthy, productive, and sustainable upland and riparian communities within the capability of a site through best management practices and appropriate public use. Vegetation will be managed to achieve the type, amount, and/or pattern of vegetation that minimizes erosion and assists in meeting rangeland health standards and State and Tribal water quality standards. Desired conditions for upland plant communities include soils that are stabilized and exhibit infiltration and permeability rates that are appropriate for the soil type, climate, and landform. Riparian vegetation will be managed to achieve a diverse age and structural composition that withstands high stream flows, captures sediment, recharges groundwater, and provides high-quality habitat for wildlife.				
Vegetation Issue 2	Treat up to 244,170 acres to improve ecological condition.	Manage plant communities to achieve multiple use goals and meet or move toward the upland standard. Manage some special status species through special designations	Same as Alternative B.	Same as Alternative B.
Desired plant community Issue 2	No desired plant community decision identified. Vegetation management would occur in accordance with New Mexico Standards and Guidelines.	Identify desired plant community based on ecological sites for plant community involved when developing activity plans to meet resource objectives.	Same as Alternative B.	Same as Alternative B.
Special status species Issues 1, 2, 3, 4, and 5	Maintain two ACECs and four SMAs to manage for the protection of special status or rare species.	Designate one ACEC and identify two SMAs to manage for protection of special status species.	Designate one ACEC and identify two SMAs to manage for protection of special status species.	Designate one ACEC and identify two SMAs to manage for protection of special status species.
WILDLIFE (INCLUDING SPECIAL STATUS SPECIES) *Management Goal*: Ensure optimum populations of and a natural abundance and diversity of wildlife resources on public land by restoring, maintaining, and enhancing habitat conditions through management plans and actions integrated with other uses of public land through coordination with other programs, management initiatives, and habitat enhancement projects, while mitigating and/or reducing adverse impacts of other resource uses and human-wildlife interactions.				
Wildlife habitat	No specific management decisions identified.	Enhance and protect wildlife in priority areas (including ACECs and SMAs).	Same as Alternative B.	Same as Alternative B.
Bighorn sheep Issues 1, 2, 3, 4, and 5	No specific management decisions identified.	To protect desert bighorn sheep, establish a 10-mile special buffer to exclude domestic sheep and goats from occupied and historic habitat areas. Manage resource uses to minimize surface disturbance and unnecessary human/wildlife interactions in the	To protect desert bighorn sheep, establish a 20-mile special buffer to exclude domestic sheep and goats from occupied and historic habitat areas. Manage resource uses to minimize surface disturbance and unnecessary human/wildlife interactions in the	Same as Alternative B.

TABLE 2-1 ALTERNATIVES MATRIX				
Resources and Planning Issues[3] Addressed	**Alternative A – No-Action Alternative**	**Alternative B (Preferred)**	**Alternative C**	**Alternative D**
		desert bighorn sheep corridor to reduce adverse impacts to desert bighorn sheep and their habitat.	desert bighorn sheep corridor to reduce adverse impacts to desert bighorn sheep and their habitat.	
Special Status Species Issues 1, 2, 3, 4, and 5	Manage special status species to meet laws regulations, and policy. Aplomado falcons are not addressed under existing management. Maintain three ACECs and identify one SMA to manage wildlife habitat and special status species.	Close approximately 37,254 acres of Federal mineral estate (this includes 33,779 BLM-managed surface acres) within potential aplomado falcon habitats to fluid mineral leasing. In these areas, also exclude mineral material disposals (except within 0.5 mile of Highway 380) and right-of-way authorizations, limit OHV use to designated routes, and petition to withdraw from location and entry. On an additional 6,698 acres of potential aplomado falcon habitat on Federal mineral estate (this includes 6,325 acres of BLM-managed surface acres), close to fluid mineral leasing and exclude mineral material disposals (with the exception of areas within 0.5 mile of Highway 380) and rights-of-way. In addition, limit OHV use to designated routes, and petition to withdraw from mineral location and entry to support the release of an experimental, nonessential population of aplomado falcons. In areas that meet criteria for aplomado falcon habitat, apply fluid mineral leasing stipulations and other measures to regulate surface use and occupancy (see Appendix L). As additional data become available, these prescriptions may be revisited	Close approximately 68,679 acres of potential aplomado falcon habitats on Federal mineral estate (this includes 63,808 BLM-managed surface acres) to fluid mineral leasing. In these areas, also exclude mineral material disposals (except within 0.5 mile of Highway 380) and right-of-way authorizations, limit OHV use to designated routes, and petition to withdraw from mineral location and entry. Apply fluid mineral leasing stipulations and other measures to regulate surface use and occupancy (see Appendix L) in areas that meet criteria for aplomado falcon habitat. As additional data become available, these prescriptions may be revisited to assess their effectiveness in protection of this species. Designate three ACECs to manage wildlife habitat and special status species.	Apply measures to regulate surface use and occupancy (see Appendix L) in the areas that meet criteria for aplomado falcon habitat. As additional data become available, these prescriptions may be revisited to assess their effectiveness in protection of this species. Designate three ACECs to manage wildlife habitat and special status species.

TABLE 2-1 ALTERNATIVES MATRIX				
Resources and Planning Issues[3] Addressed	**Alternative A – No-Action Alternative**	**Alternative B (Preferred)**	**Alternative C**	**Alternative D**
		to assess their effectiveness in protection of this species. Designate three ACECs to manage wildlife habitat and special status species.		
CULTURAL RESOURCES *Management Goal*: Preserve, protect, study, and interpret significant cultural resources and ensure that they are available for appropriate uses by present and future generations. Imminent threats from natural or human-caused deterioration, or potential conflict with other resource uses, are reduced by identifying priority geographic areas for new field inventory, based on a probability for unrecorded significant resources and known or suspected risk factors.				
Land acquisition Issues 5 and 6	No areas are identified for acquisition nor acquisition criteria identified.	Acquire non-Federal cultural resource areas based on identified criteria: • Site significance • Site management feasibility • Partnership potential • Community/public support • Heritage tourism potential	Same as Alternative B.	Same as Alternative B.
Heritage tourism Issue 6	No specific heritage tourism plan identified or developed.	Promote heritage tourism at sites or areas that meet the following criteria: • Low resource vulnerability to effects from Heritage Tourism • Potential for site protection through physical "site hardening" measures, administrative measures or other means of mitigation • Community/public support and interest • Partnership opportunities	Same as Alternative B.	Same as Alternative B.
Cultural resources protection	Maintain nine SMAs to protect and manage cultural resources.	Designate two ACECs and identify four SMAs to protect and manage cultural resources.	Designate two ACECs and identify five SMAs to protect and manage cultural resources.	Designate two ACECs and identify six SMAs to protect and manage cultural resources.

TABLE 2-1 ALTERNATIVES MATRIX				
Resources and Planning Issues[3] Addressed	**Alternative A – No-Action Alternative**	**Alternative B (Preferred)**	**Alternative C**	**Alternative D**
PALEONTOLOGICAL RESOURCES *Management Goal*: Manage and protect paleontological resources found on public land.				
Paleontological resources Issue 5	No specific management decisions identified.	Locate and evaluate paleontological resources based on management prescriptions by class and potential for occurrence.	Same as Alternative B.	Same as Alternative B.
VISUAL RESOURCES *Management Goal*: Maintain the Visual Resource Management (VRM) database and the quality of visual values in accordance with VRM class objectives.				
VRM Classes Issue 5	Manage 30,343 acres as Class I; 385,781 acres as Class II; 299,741 acres as Class III; and the remaining 774,170 acres as Class IV.	Manage 28,533 acres as Class I; 488,339 acres as Class II; 480,595 acres as Class III; and the remaining 509,432 acres as Class IV.	Manage 27,093 acres as Class I; 715,706 acres as Class II; 249,953 acres as Class III; and the remaining 513,997 acres as Class IV.	Manage zero acres as Class I; 354,222 acres as Class II; 106,277 acres as Class III; and the remaining 1,046,399 acres as Class IV.
CAVES AND KARST RESOURCES *Management Goal*: Protect, preserve, study, and identify karst features and significant caves, and ensure that they are available for appropriate uses by present and future generations.				
Significant Caves and Karst Features Issues 1 and 5	Manage according to Federal Cave Resource Protection Act of 1988, and BLM policy.	A plan to manage caves and karst will be developed within 2 years of the Record of Decision for this RMPR.	Same as Alternative B.	Same as Alternative B.
LANDS AND REALTY *Management Goal*: Respond to public requests for land use authorization, sales, and exchanges; support the multiple-use management goals and objectives of other resource programs as they relate to land and realty actions; and acquire access to provide continuing administrative and public needs and to facilitate the acquisition and disposal of public land, or interests in public land, in order to promote enhanced management and multiple uses of resources.				
Right-of-way avoidance and exclusion areas Issues 4 and 5	Manage 39,148 acres as right-of-way exclusion areas, and 458,996 acres as right-of-way avoidance areas.	Manage 406,283 acres as right-of-way exclusion areas, and 349,343 acres as right-of-way avoidance areas.	Manage 716,100 acres as right-of-way exclusion areas, and 419,120 acres as right-of-way avoidance areas.	Manage 301,081 acres as right-of-way exclusion areas, and 177,290 acres as right-of-way avoidance areas.
Utility corridors Issue 5	No utility corridors are identified.	Designate one north-south utility corridor. The proposed width of the corridor would be 1 mile on each side of centerline of the proposed corridor.	Designate one north-south utility corridor as identified by theWestern Utility Group Corridor study. The proposed width of the corridor would be 1 mile on each side of centerline of the proposed corridor.	Designate four utility corridors as identified by the Western Utility Group Corridor study. The proposed width of the corridors would be 1 mile on each side of centerline of the proposed corridor.
Land tenure Issue 5	Identify up to 86,458 acres in isolated parcels as suitable for disposal in accordance with the Land and Mineral Disposal Policy in	Identify up to 89,447 acres as suitable for disposal in accordance with the Land and Mineral Disposal Policy (Appendix F). Retain	Identify up to 42,913 acres as suitable for disposal in accordance with the Land and Mineral Disposal Policy (Appendix F). Retain	Identify up to 212,323 acres as suitable for disposal in accordance with the Land and Mineral Disposal Policy (Appendix F); retain

TABLE 2-1 ALTERNATIVES MATRIX				
Resources and Planning Issues[3] Addressed	**Alternative A – No-Action Alternative**	**Alternative B (Preferred)**	**Alternative C**	**Alternative D**
	Appendix G of the 1989 RMP. Retain 1,418,685 acres in Federal ownership based on criteria including (1) consolidating land within SMAs and (2) restricting disposals in coal areas.	approximately 1,412,057 acres in Federal ownership.	approximately 1,461,191 acres in Federal ownership.	approximately 1,292,952 acres in Federal ownership.
Acquisition Issues 4 and 5	Acquire up to 40,920 acres non-public land to support wildlife habitat, cultural resources, and other management programs where needed within and adjacent to WSAs, HMP areas, ACECs, SMAs, and other areas of concern.	Acquire non-Federal land from willing sellers within WSAs, ACECs, special management areas, cultural resource sites, or other areas that are identified based on resource and program objectives. Acquire legal access as needed throughout the planning area based on resource objectives as acquisition opportunities arise to support all resource programs.	Same as Alternative B.	Same as Alternative B.
FORESTRY AND WOODLAND MANAGEMENT *Management Goal*: Maintain sustainable uses and improve woodland and forest health by implementing best management practices. Employ silvicultural practices that will reduce encroachment of woodland species, encourage natural regeneration, and increase individual tree vigor.				
Woodland Management Issues 2 and 5	No specific forest and woodland management decisions.	Manage piñon-juniper, ponderosa, savannah, and mixed conifer cover types to improve ecological condition, provide for needs of local communities, and improve wildlife habitat.	Same as Alternative B.	Same as Alternative B.
Commercial wood cutting and personal fuel-wood cutting Issues 2 and 5	Wood cutting would be restricted on soils in moderate or high erosion areas. Establish three forest and four woodland monitoring areas.	Permit commercial woodcutting in areas that meet following criteria: • Accessibility – There must be a road into the general area of the site, though not necessarily to the site itself; access may require building temporary roads that can be removed or rehabilitated when the project is completed. • Site has been identified for treatment (using New Mexico	Same as Alternative B, except that no new roads are permitted for personal or commercial woodcutting.	Same as Alternative B.

TABLE 2-1 ALTERNATIVES MATRIX				
Resources and Planning Issues[3] Addressed	**Alternative A – No-Action Alternative**	**Alternative B (Preferred)**	**Alternative C**	**Alternative D**
		Standards and Guidelines and Standard Forest Inventory) • Stable soils (resilient to disturbance) • Slopes of less than 40 percent • Excepted areas – areas identified for no woodcutting Permit personal-use woodcutting in areas according to the same criteria, except that there must be a road into the site. Silvicultural practices in WSAs would conform to the Interim Management Policy (see Section 2.3.15).		
Plant or plant materials sales areas Issues 2 and 5	Public land containing vegetative products such as firewood, fence posts, Christmas trees, and wildlings will continue to be considered and designated for harvest.	Permit personal-use plant or plant materials sales if public demand warrants, in areas that meet identified criteria: • Accessibility • Availability of plant species • Type of removal work • Potential of other use areas – BLM may consider public salvage of native plant species from a proposed project area (gravel pit, etc.) depending on public demand, location of the particular project (accessibility), and staffing levels. • Excepted areas – areas identified for no plant collecting.	Personal use plant or plant material sales would be permitted in designated areas and salvage areas only.	Same as Alternative B.

TABLE 2-1 ALTERNATIVES MATRIX				
Resources and Planning Issues[3] Addressed	**Alternative A – No-Action Alternative**	**Alternative B (Preferred)**	**Alternative C**	**Alternative D**
RANGELAND MANAGEMENT *Management Goal*: Manage the rangeland in an efficient manner by providing effective management on those allotments where it is needed most to maintain, improve, and monitor the rangeland health. The program will follow current BLM policy, regulation, and law.				
Rangeland Management Issues 2 and 5	Maintain or improve range conditions. Establish seeding trials. Perform seeding trials, of not less than 2 acres each, in each of 33 sites to determine potential forage production by reseeding.	Allocate long-term increases in vegetation to wildlife, watershed, and livestock. The allocations would usually be 50 percent to wildlife/watershed and 50 percent to livestock. Conduct rangeland improvements and vegetation treatments to meet BLM policy and resource objectives. Develop allotment management plans to resolve identified resource problems or conflicts.	Forage increases would be reserved for wildlife and watershed needs. Increases to livestock use would be secondary after other resource objectives had been met. Range improvements would be designed primarily to benefit wildlife and watershed resources.	Forage increases become available, they would be allocated to livestock first and then to wildlife and watershed. Range improvements would be designed and constructed to benefit livestock grazing and other resources would receive secondary consideration.
Unalloted Areas Issue 2	Maintain four areas totaling 3,610 acres as unalloted to livestock grazing.	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.
MINERALS *Management Goal*: Make mineral resources available for development or extraction and encourage development of these resources to meet national, regional, and local needs, consistent with national objectives of an adequate supply of minerals at market prices. At the same time, strive to assure that mineral development is carried out in a manner that reduces environmental impacts and provides for the reclamation of affected land.				
Fluid mineral leasing Issues 2 and 3	1,418,415 acres would be closed nondiscretionarily to fluid mineral leasing. 3,312,904 acres would be open to leasing with standard terms and conditions; and about 736,000 acres would be open to leasing with stipulations in addition to the standard terms and conditions.	1,543,095 acres would be closed to fluid mineral leasing (which includes 1,418,415 acres of nondiscretionary closures). 3,035,925 acres would be open to leasing with standard terms and conditions; and about 1,516,824 acres would be open to leasing with stipulations in addition to the standard terms and conditions.	1,856,116 acres would be closed to fluid mineral leasing (which includes 1,418,415 acres of nondiscretionary closures). 3,296,806 acres would be open to leasing with standard terms and conditions; and about 947,044 acres would be open to leasing with stipulations in addition to the standard terms and conditions.	1,419,456 would be closed to fluid mineral leasing (which includes 1,418,415 acres of nondiscretionary closures). 3,888,528 acres would be open to leasing with standard terms and conditions; and about 785,484 acres would be open to leasing with stipulations in addition to the standard terms and conditions.
Coal leasing Issues 2 and 3	In accordance with the 1989 RMP, 31,640 acres would be available for coal leasing subject to additional National Environmental Policy Act (NEPA) analysis, as appropriate.	Coal leasing could occur on about 3,200 acres in accordance with applicable laws subject to surface owner consultation and additional NEPA analysis, as appropriate.	Same as Alternative B.	Same as Alternative B.

TABLE 2-1 ALTERNATIVES MATRIX				
Resources and Planning Issues[3] Addressed	**Alternative A – No-Action Alternative**	**Alternative B (Preferred)**	**Alternative C**	**Alternative D**
Saleable minerals Issues 2 and 3	Identify and designate areas that contain saleable resources for future use. Complete management plans for designated material disposal sites.	About 340,066 acres would be excluded from mineral material disposals in special designations.	About 484,133 acres would be excluded from mineral material disposals.	About 291,859 acres would be excluded from mineral material disposals.
Mineral withdrawal Issues 1, 2, and 3	Manage 11,408 acres currently withdrawn from mineral entry. Petition to withdraw 1,508 acres from location and entry under the mining laws.	Manage 11,408 acres currently withdrawn from mineral entry. Petition to withdraw 72,369 acres of Federal mineral estate from location and entry under the mining laws.	Manage 11,408 acres currently withdrawn from mineral entry. Petition to withdraw 497,391 acres of Federal mineral estate from location and entry under the mining laws.	Manage 11,408 acres currently withdrawn from mineral entry.
RECREATION *Management Goals*: Provide for a wide range of highly desirable recreation experiences commensurate with demand, both non-motorized and motorized, for visitor and community residents, while protecting other resource values. Manage recreational use to protect the health and safety of visitors and resolve user conflicts. Capitalize on the unique resources and diverse management situations of the Field Office by providing uncommon recreation opportunities and experiences.				
SRMAs and other special designations Issue 1	Maintain one ACEC and six SMAs (24,361 acres total) to manage for recreation use.	Designate five SRMAs (12,633 acres total) and two ACECs to manage for recreation use. Identify one SMA to manage for recreation use.	Designate five SRMAs (8,256 acres total) and one ACEC to manage for recreation use. Identify one SMA to manage for recreation use.	Designate six SRMAs (13,673 acres total) and one ACEC to manage for recreation use. Identify one SMA to manage for recreation use.
TRANSPORTATION AND TRAVEL MANAGEMENT *Management Goals*: Manage OHV use to protect resource values, promote public safety, provide OHV use opportunities where appropriate, and minimize conflicts among various users. Address all resource use aspects and accompanying modes and conditions of access and travel across public land; including motorized, non-motorized, and mechanized forms of travel.				
OHV Area Designations Issues 2 and 4	Maintain the following OHV use area designations: 29,117 acres would be closed to OHV use; 562,901 acres would be limited to existing or designated routes; 20,120 acres would be limited seasonally; and 851,234 acres would be open to cross-country travel. About 40,809 acres that were undesignated in the 1989 RMP would be managed as limited to existing roads and trails until travel management plans are completed.	Designate 117,921 acres as closed to motorized travel; 486,842 acres as limited to existing routes; and 902,782 acres limited to designated routes. No public land would be designated as open to cross-country travel.	Designate 139,971 acres as closed to motorized travel; 476,908 acres as limited to existing routes; and 889,958 acres as limited to designated routes. No public land would be designated as open to cross-country travel.	Designate 799,757 acres as limited to existing routes; and 704,783 acres as limited to designated routes. No public land would be designated as open to cross-country travel.

TABLE 2-1 ALTERNATIVES MATRIX				
Resources and Planning Issues[3] Addressed	**Alternative A – No-Action Alternative**	**Alternative B (Preferred)**	**Alternative C**	**Alternative D**
Routes Designations within WSAs Issues 1, 2, and 4	36 miles of routes closed in certain WSAs since 1989 RMP.	Within WSAs, designate 102.75 miles of routes as open; designate 75.70 miles as closed (except for authorized uses); and designate 86.45 miles as closed and rehabilitated.	Within WSAs, designate 73.75 miles of routes as open; designate 83.5 miles as closed (except for authorized uses); and designate 100.2 miles as closed and rehabilitated.	Within WSAs, designate 198.25 miles of routes as open; designate 14 miles as closed (except for authorized uses); and designate 43.2 miles as closed and rehabilitated.
Route closures outside of WSAs Issues 2 and 4	No previous decisions identified.	Close approximately 26 miles of routes outside of SMAs to address wildlife concerns	Same as Alternative B.	Same as Alternative B.
SPECIAL DESIGNATIONS – WSAs, ACECs, SMAs, National Trails, Backcountry Byways, SRMAs *Wilderness Management Goal*: Manage WSAs in accordance with the Interim Policy and Management Guidelines for Lands Under Wilderness Review. Manage WSAs in a manner that does not impair their suitability for designation as wilderness; subject to valid existing rights. *ACECs Management Goal*: Identify and designate areas on public land where special management attention is required to protect and prevent irreparable damage to important historic, cultural, paleontologic, or scenic values, fish and wildlife resources, or other natural system or processes, or to protect life and safety from natural hazards. *SMAs Management Goal*: Identify and designate areas on public land that requires special management by BLM to protect one or more resource values. SMAs may include nonpublic land that BLM wishes to acquire or bring under a Cooperative Management Agreement to manage the valued resource better. *Trails Management Goal*: Provide a variety of diverse motorized and nonmotorized opportunities along trails, which may include recreational, scenic, historic or cultural values. *Backcountry Byway Management Goal*: Provide backcountry areas where people can drive for pleasure to experience scenic corridors and a variety of outdoor activities. *SRMAs Management Goal*: Provide opportunities for a variety of outdoor recreation opportunities in designated areas while protecting other resources.				
Wilderness Study Areas				
WSAs Issue 1	Manage all 13 WSAs totaling 291,826 acres according to the Interim Management Policy. Any WSAs released from wilderness review would be managed as described in Table 2-3 for the appropriate alternative.	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.

TABLE 2-1 ALTERNATIVES MATRIX				
Resources and Planning Issues[3] Addressed	**Alternative A – No-Action Alternative**	**Alternative B (Preferred)**	**Alternative C**	**Alternative D**
Areas of Critical Environmental Concern[4]				
Proposed ACECs	Designate a total of 79,045 acres of BLM-managed surface estate as ACECs.	Propose a total of 196,855 acres of BLM-managed surface estate for designation as ACECs.	Propose a total of 288,378 acres of BLM-managed surface estate for designation as ACECs.	Propose a total of 60,002 acres of BLM-managed surface estate for designation as ACECs.
Agua Fria ACEC Issues 1 and 6	Manage 9,571 acres as the Agua Fria ACEC for the protection and management of wildlife habitat.	Eliminate the Agua Fria ACEC and incorporate the area into the Cerro Pomo ACEC.	Eliminate the Agua Fria ACEC and incorporate the area into the Zuni Salt Lake ACEC.	Eliminate the Agua Fria ACEC designation.
Cerro Pomo SMA Issues 1 and 6	Manage 8,784 acres as the Cerro Pomo SMA for the protection and management of recreation and cultural resources.	Designate 26,284 acres as the Cerro Pomo ACEC for protection and management of recreational, cultural, and other resources.	Eliminate the Cerro Pomo SMA and incorporate the area into the Zuni Salt Lake ACEC.	Designate 449 acres as the Cerro Pomo Proprietary ACEC to protect and manage cultural resources.
Horse Mountain ACEC Issue 1 and 5	Manage 7,490 acres as the Horse Mountain ACEC for the protection and management of wildlife habitat and recreation resources.	Designate 5,388 acres as Horse Mountain ACEC for the protection and management of wildlife habitat and recreational resources.	Same as Alternative B.	Designate 2,596 acres as Horse Mountain ACEC for the protection and management of wildlife habitat and recreational resources.
Ladron Mountain-Devil's Backbone Complex ACEC Issues 1 and 5	Manage 57,195 acres as the Ladron ACEC for the protection and management of wildlife habitat.	Designate 57,474 acres as Ladron Mountain-Devil's Backbone Complex ACEC for the protection and management of wildlife habitat, scenic resources and cultural resources.	Same as Alternative B.	Designate 20,155 acres as the Ladron Mountain ACEC for the protection and management of wildlife habitat.
Mockingbird Gap ACEC Issues 1 and 6	Manage 8,685 acres as the Mockingbird Gap SMA for the protection and management of cultural resources.	Manage 8,685 acres as the Mockingbird Gap proprietary ACEC for the protection and management of cultural resources.	Same as Alternative B.	Same as Alternative A.
Pelona Mountain ACEC Issues 1 and 5	Manage 70,838 acres as the Pelona Mountain SMA for the protection and management of wildlife habitat and recreation resources.	Designate 51,091 acres as the Pelona Mountain ACEC for the protection and management of wildlife habitat, recreation, and other resources.	Designate 52,336 acres as the Pelona Mountain ACEC for the maximum protection of wildlife, recreation, and other resources.	Designate 34,547 acres as the Pelona Mountain ACEC for the protection and management of the most important wildlife habitat and recreation resources.
Sawtooth ACEC Issues 1 and 5	Manage 125 acres as the Sawtooth ACEC for the protection and management of special status plant species.	Designate 125 acres as the Sawtooth Proprietary ACEC to protect and manage special status plants.	Same as Alternative B.	Same as Alternative B.

[4] This table highlights the differences in land allocations (i.e., the amount of acreage that would be designated) across the range of alternatives. Management prescriptions associated with each area under the alternatives are described in Table 2-2.

TABLE 2-1 ALTERNATIVES MATRIX				
Resources and Planning Issues[3] Addressed	**Alternative A – No-Action Alternative**	**Alternative B (Preferred)**	**Alternative C**	**Alternative D**
Tinajas ACEC Issues 1 and 6	Manage 3,463 acres as the Tinajas ACEC for the protection and management of cultural and recreation resources.	Designate 1,062 acres as the Tinajas ACEC for the protection and management of cultural, scenic, geologic, and recreation resources.	Designate 7,767 acres as the Tinajas ACEC for the maximum protection of cultural, scenic, geologic, and recreation resources in the area.	Designate 22 acres as the Tinajas ACEC for the protection of cultural and recreation resources.
Zuni Salt Lake ACEC Issues 1, 3, 5, and 6	Manage 4,839 acres as the Zuni Salt Lake SMA for the protection and management of cultural and hydrologic resources.	Designate 46,746 acres as the Zuni Salt Lake ACEC for the protection and management of cultural resources, sacred sites, and hydrologic resources.	Designate 156,601 acres as the Zuni Salt Lake ACEC for maximum protection and management of the cultural resources, sacred sites, and hydrologic resources.	Manage 2,107 acres as the Zuni Salt Lake ACEC for the management of cultural and hydrologic resources.
Special Recreation Management Areas[5]				
Proposed SRMAs	No SRMAs.	Designate a total of 12,633 acres of BLM-managed surface estate as SRMAs.	Designate a total of 8,256 acres of BLM-managed surface estate as SRMAs.	Designate a total of 13,004 acres of BLM-managed surface estate as SRMAs.
The Box SMA/SRMA Issue 1	Manage 300 acres as The Box SMA for the protection and management of recreation resources.	Designate 1,107 acres as The Box SRMA for the protection and management of recreation, wildlife, and cultural resources.	Designate 1,501 acres as The Box SRMA for the maximum protection of recreation, wildlife, and cultural resources.	Designate 300 acres as The Box SRMA for protection and management of the highest value recreation, wildlife, and cultural resources.
Datil Well SRMA/SMA Issue 1	Manage 669 acres as the Datil Well SMA for the protection and management of recreation and cultural resources.	Designate 669 acres including the campground as the Datil Well SRMA for the protection and management of recreation and cultural resources.	Same as Alternative B.	Same as Alternative B.
Gordy's Hill SRMA Issues 1 and 4	Manage 1,200-acre area as open to cross-country travel.	Designate 7,647 acres as the Gordy's Hill SRMA for management of recreational uses, including OHV.	Designate 2,876 acres as the Gordy's Hill SRMA for management of recreational uses, including OHV.	Designate 7,174 acres as the Gordy's Hill SRMA for management of recreational uses, including OHV.
Quebradas Back Country Byway SRMA Issues 1 and 4	Manage as a designated backcountry byway.	Designate 24 miles of road and 3,130 acres as the Quebradas Back Country Byway SRMA for management of recreation and scenic resources.	Designate 24 miles of road and 2,919 acres as the Quebradas Back Country Byway SRMA for management of recreation and scenic resources.	Same as Alternative B.

[5] This table highlights the differences in land allocations (i.e., the amount of acreage that would be designated) across the range of alternatives. Management prescriptions associated with each area under the alternatives is described in Table 2-2.

TABLE 2-1 ALTERNATIVES MATRIX				
Resources and Planning Issues[3] Addressed	**Alternative A – No-Action Alternative**	**Alternative B (Preferred)**	**Alternative C**	**Alternative D**
Socorro Nature Area Issue 1	No existing designation. Manage in accordance with the 1989 RMP.	Designate 80 acres as the Socorro Nature Area SRMA for protection and management of recreation resources and environmental education purposes.	Same as Alternative B.	Same as Alternative B.
Special Management Areas[6]				
Proposed SMAs	Identify a total of 159,891 acres of BLM-managed surface estate as SMAs.	Identify a total of 88,067 acres of BLM-managed surface estate as SMAs.	Identify a total of 39,975 acres of BLM-managed surface estate as SMAs.	Identify a total of 76,472 acres of BLM-managed surface estate as SMAs.
Continental Divide National Scenic Trail SMA Issues 1 and 4	Manage 34 miles of the trail (7,680 acres) on BLM land for recreation use and to protect scenic values. Pursue access (from willing sellers) on approximately 50 miles of non-BLM land.	Designate 57,663 acres as the Continental Divide National Scenic Trail SMA and establish corridors to pursue legal access (from willing sellers) in the Pie Town and Quemado areas.	Designate 11,755 acres as the Continental Divide National Scenic Trail SMA and establish corridors to pursue legal access (from willing sellers) in the Pie Town and Quemado areas.	Designate 8,703 acres as the Continental Divide National Scenic Trail SMA and establish corridors to pursue legal access (from willing sellers) in the Pie Town and Quemado areas.
Fence Lake SMA Issues 1 and 2	Manage 25,453 acres as the Fence Lake SMA for the protection and management of critical watershed.	Eliminate the Fence Lake SMA and incorporate the area into the Zuni Salt Lake ACEC.	Same as Alternative B.	Same as Alternative A.
Fort Craig SMA Issues 1 and 6	Manage 149 acres as the Fort Craig SMA to protect, preserve, and interpret the Fort Craig Historical Site.	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.
Harvey Plot Issue 1	Manage 8 acres as the Harvey Plot SMA for protection and management of vegetation resources.	Eliminate the Harvey Plot SMA designation.	Same as Alternative B.	Same as Alternative B.
Iron Mine Ridge SMA Issue 1	Manage 1,386 acres as the Iron Ridge SMA for the protection and management of wildlife habitat and special status plants.	Eliminate the Iron Mine Ridge SMA due to downlisting of special status plant species.	Same as Alternative B.	Same as Alternative B.
Mogollon Pueblo SMA Issues 1 and 6	Manage 640 acres as the Mogollon Pueblo SMA for protection and management of cultural resources.	Eliminate the Mogollon Pueblo SMA designation, and incorporate the site into the Cerro Pomo ACEC.	Eliminate the Mogollon Pueblo SMA designation, and incorporate the site into the Zuni Salt Lake ACEC.	Same as Alternative B.

[6] This table highlights the differences in land allocations (i.e., the amount of acreage that would be designated) across the range of alternatives. Management prescriptions associated with each area under the alternatives is described in Table 2-2.

TABLE 2-1 ALTERNATIVES MATRIX				
Resources and Planning Issues[3] Addressed	**Alternative A – No-Action Alternative**	**Alternative B (Preferred)**	**Alternative C**	**Alternative D**
Newton Site SMA Issues 1 and 6	Manage 37 acres as the Newton site SMA for the protection and management of cultural resources.	Designate 6,789 acres as the Newton Site Proprietary SMA for the protection and management of cultural resources.	Same as Alternative B.	Same as Alternative B.
Playa Pueblos SMA Issues 1 and 6	Manage 203 acres as the Playa Pueblos SMA for the protection and management of significant cultural sites.	Identify 203 acres as the Playa Pueblos Proprietary SMA to protect cultural resources.	Same as Alternative B.	Same as Alternative B.
Puertecito SMA Issues 1 and 2	Manage 7,156 acres as the Puertecito SMA for the management of critical watershed.	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.
Rio Salado SMA Issues 1, 2, and 6	Manage 5,946 as the Rio Salado SMA for the protection and management of cultural resources.	Eliminate the Rio Salado SMA designation and incorporate the area into the Ladron Mountain-Devil's Backbone Complex ACEC.	Same as Alternative B.	Same as Alternative A.
San Lorenzo Canyon SMA Issues 1 and 5	Manage 2,320 acres as the San Lorenzo Canyon SMA for the protection and management or recreation resources.	Eliminate the San Lorenzo Canyon SMA designation and incorporate the area into the Ladron Mountain-Devil's Backbone Complex ACEC.	Same as Alternative B.	Designate 2,320 acres as the San Lorenzo Canyon SRMA for the protection and management or recreation resources.
San Pedro SMA Issue 1	Manage 1,201 acres as the San Pedro Proprietary ACEC for the protection of special status plants.	Manage 1,201 acres as the San Pedro SMA for the protection of special status plants.	Same as Alternative B.	Same as Alternative B.
Soaptree SMA Issues 1 and 2	Manage 1,296 acres as the Soaptree SMA for the protection and management of vegetation resources.	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.
Stallion SMA Issues 1 and 2	Manage 19,702 acres as the Stallion SMA for the management of watershed resources.	Designate 10,883 acres as the Stallion SMA for the management of watershed resources.	Same as Alternative B.	Same as Alternative B.
Taylor Canyon SMA Issues 1 and 5	Manage 384 acres as the Taylor Canyon SMA for the protection and management of wildlife habitat and sensitive plant species.	Eliminate Taylor Canyon SMA due to downlisting of special status plant species.	Same as Alternative B.	Same as Alternative B.
Town of Riley Issues 1 and 6	Manage 533 acres in and around the Town of Riley as an SMA for protection and management of cultural resources.	Eliminate Town of Riley SMA designation.	Same as Alternative A.	Same as Alternative B.

TABLE 2-1 ALTERNATIVES MATRIX				
Resources and Planning Issues[3] Addressed	**Alternative A – No-Action Alternative**	**Alternative B (Preferred)**	**Alternative C**	**Alternative D**
Teypama/ Penjeacu SMA Issues 1 and 6	Manage 37 acres as the Teypama SMA for the protection and management of cultural resources.	Designate 11 acres as the Penjeacu SMA for the protection and management of cultural resources.	Same as Alternative B.	Same as Alternative B.
Walnut Canyon SMA Issue 1	Manage 1,145 acres as Walnut Canyon SMA for protection and management of recreation and wildlife resources.	Eliminate Walnut Canyon SMA designation.	Same as Alternative B.	Same as Alternative B.

TABLE 2-2 MANAGEMENT PRESCRIPTIONS IN ACECS AND SMAS			
No-Action Alternative[7] (Alternative A)	**Alternative B (Preferred)**	**Alternative C**	**Alternative D**
Areas of Critical Environmental Concern			
Agua Fria ACEC (9,571 acres, includes 8,626 acres of overlap with WSAs)			
1. Limit vehicle use to existing roads and trails. 2. Avoid the authorization of rights-of-way and leases. 3. Exclude from woodcutting. 4. Limit mineral material disposal. 5. Acquire non-Federal land. 6. Apply fluid mineral leasing stipulation SRA-2, seasonal restrictions.	Eliminate the Agua Fria Area of Critical Environmental Concern (ACEC) designation, and incorporate the area into the Cerro Pomo ACEC.	Eliminate the Agua Fria ACEC, and incorporate the area into the Zuni Salt Lake ACEC.	Eliminate the Agua Fria ACEC.
Cerro Pomo Special Management Area (SMA) (8,784 acres, all overlapping with WSAs)	**Cerro Pomo ACEC (26,284 acres)**		**Cerro Pomo Proprietary ACEC (449 acres)**
1. Limit motor vehicles to existing roads and trails. 2. Restrict authorization for rights-of-way and leases. 3. Restrict mineral material disposals. 4. Apply fluid leasing stipulation SRA-1, special values or special management. 5. Develop Cerro Pomo cultural site. 6. Exclude from woodcutting.	1. Limit motor vehicle use to designated routes. 2. Exclude the authorization of right-of-way within the ACEC. 3. Allow mineral material disposals within the ACEC contingent upon site-specific assessment of resources and mitigation as necessary. 4. Pursue acquisition of nonpublic land within and contiguous to the ACEC. 5. Apply fluid mineral leasing stipulation S-VRM-II within the ACEC. 6. Research, study, and protect cultural sites and apply Cultural Resource Use Allocation a. Scientific Use.	Eliminate the Cerro Pomo ACEC, and incorporate the area into the Zuni Salt Lake ACEC.	1. Limit motor vehicle use to designated routes. 2. Avoid the authorization of rights-of-way and leases. 3. Allow mineral material disposals contingent upon site-specific assessment of resources and mitigation as necessary. 4. Apply fluid mineral leasing stipulation S-CSU-C4. 5. Research, study, and protect cultural sites and apply Cultural Resource Use Allocation d. Public Use. 6. Permit commercial woodcutting only to support BLM-authorized projects to meet resource management objectives.

[7] All overlap between WSAs and ACECs has been eliminated under Alternatives B, C, and D. Any overlap under Alternative A is noted.

TABLE 2-2 MANAGEMENT PRESCRIPTIONS IN ACECS AND SMAS			
No-Action Alternative[7] (Alternative A)	**Alternative B (Preferred)**	**Alternative C**	**Alternative D**
	7. Permit commercial woodcutting only to support BLM-authorized projects to meet resource management objectives. 8. Provide opportunities for heritage tourism with appropriate mitigation measures as determined in coordination with SHPO and Tribes.		7. Provide opportunities for heritage tourism with appropriate mitigation measure as determined in coordination with SHPO and Tribes.
Horse Mountain ACEC (7,490 acres, includes 4,301 acres of overlap with WSAs)	**Horse Mountain ACEC (5,388 acres)**	**Horse Mountain ACEC (5,388 acres)**	**Horse Mountain ACEC (2,596 acres)**
1. Limit motor vehicles to existing roads and trails. 2. Close 2 miles of certain vehicle trails. 3. Exclude authorization for right-of-ways and leases. 4. Acquire nonpublic land. 5. Apply Fluid leasing stipulation SRA-3, no surface occupancy 6. Restrict mineral material disposals. 7. Exclude from woodcutting. 8. Implement fire management plan. 9. Restrict geophysical operations. 10. Close to domestic sheep and goats.	1. Limit motor vehicle use to designated routes within the ACEC. 2. Exclude the authorization of right-of-way and leases within the ACEC. 3. Pursue acquisition of nonpublic land within and contiguous to the ACEC. 4. Apply fluid mineral leasing stipulation S-NSO-W within the ACEC. 5. Allow mineral material disposals within the ACEC contingent upon site-specific assessment of resources and mitigation as necessary. 6. Permit commercial woodcutting only to support BLM-authorized projects to meet resource management objectives. 7. Exclude grazing on land that have not been allotted.	1. Limit motor vehicle use to designated routes within the ACEC. 2. Exclude the authorization of right-of-way and leases within the ACEC. 3. Pursue acquisition of nonpublic land within and contiguous to the ACEC. 4. Apply fluid mineral leasing stipulation S-NSO-W within the ACEC. 5. Allow mineral material disposals within the ACEC contingent upon site-specific assessment of resources and mitigation as necessary. 6. Exclude woodcutting. 7. Exclude vegetative material sales. 8. Exclude grazing on land that has not been allotted.	1. Limit motor vehicle use to designated routes. 2. Avoid the authorization of right-of-way and leases within the ACEC. 3. Pursue acquisition of nonpublic land within and contiguous to the ACEC. 4. Apply fluid mineral leasing stipulation S-VRM-II within the ACEC. 5. Allow mineral material disposals within the ACEC contingent upon site-specific assessment of resources and mitigation as necessary. 6. Permit commercial woodcutting only to support BLM-authorized projects to meet resource management objectives. 7. Exclude grazing on land that has not been allotted.
Ladron Mountain ACEC (57,195 acres, includes 35,114 acres of overlap with WSAs)	**Ladron Mountain-Devil's Backbone Complex ACEC (57,474 acres)**	**Ladron Mountain-Devil's Backbone Complex ACEC (57,474 acres)**	**Ladron Mountain ACEC (20,155 acres)**
1. Limit motor vehicles to existing roads and trails. 2. Close 18 miles of certain vehicle trails.	1. Limit motor vehicle use to designated routes within the ACEC. 2. Exclude the authorization of right-of-way and leases within the ACEC. Avoid the authorization of right-of-	1. Limit motor vehicle use to designated routes within the ACEC. 2. Exclude the authorization of right-of-way and leases within the	1. Limit motor vehicle use to designated routes. 2. Avoid the authorization of right-of-way and leases within the ACEC. Avoid the authorization of right-of-

TABLE 2-2 MANAGEMENT PRESCRIPTIONS IN ACECS AND SMAS			
No-Action Alternative[7] (Alternative A)	**Alternative B (Preferred)**	**Alternative C**	**Alternative D**
3. Restrict authorization for right-of-way and leases. 4. Apply fluid leasing stipulations SRA-1, special values or special management, and SRA-2, seasonal restrictions. 5. Limit fire suppression. 6. Exclude from woodcutting. 7. Restrict mineral material disposals. 8. Acquire nonpublic land. 9. Restrict geophysical operations. 10. Maintain closure of former allotment No. 1152 to grazing. 11. Close to domestic sheep and goats. 12. Reintroduce desert bighorn sheep.	way and leases within the Desert Bighorn Sheep Corridor. 3. Apply fluid mineral leasing stipulation S-NSO-W within the ACEC. 4. Allow mineral material disposals within the ACEC contingent upon site-specific assessment of resources and mitigation as necessary. 5. Pursue acquisition of nonpublic land within and contiguous to the ACEC. 6. Exclude grazing on land that has not been allotted. 7. Maintain and/or implement closure to domestic sheep and goats within 10 miles of bighorn habitat. 8. Maintain viable populations of desert bighorn sheep through activities such as habitat improvements and coordination with NMDGF on desert bighorn sheep reintroductions. 9. Withdraw from location and entry for locatable minerals under the mining laws all land with medium and high mineral potential (23,567 acres) for the protection of desert bighorn sheep within the ACEC (see Maps 3-9, 3-10, and 3-11). 10. Encourage inventory and research of cultural resource sites and apply Cultural Resource Use Allocation a. Scientific Use to cultural resource sites. 11. Permit commercial woodcutting only to support BLM-authorized projects to meet resource management objectives.	ACEC. Exclude the authorization of right-of-way and leases within the Desert Bighorn Sheep Corridor. 3. Exclude mineral leasing. 4. Exclude mineral material disposals. 5. Pursue acquisition of nonpublic land within and contiguous to the ACEC. 6. Exclude grazing on land that has not been allotted. 7. Maintain and/or implement closure to domestic sheep and goats within 20 miles of bighorn habitat. 8. Maintain viable populations of desert bighorn sheep through activities such as habitat improvements and coordination with NMDGF on desert bighorn sheep reintroductions. 9. Withdraw from location and entry for locatable minerals under the mining laws all land within the ACEC for the protection of desert bighorn sheep. 10. Encourage inventory and research of cultural resource sites and apply Cultural Resource Use Allocation a. Scientific Use. 11. Exclude woodcutting. 12. Exclude the San Lorenzo area from vegetative material sales, with the exception of exotic species. Allow vegetative sales elsewhere within the ACEC contingent upon site-specific assessment of resources and mitigation as necessary.	way and leases within the Desert Bighorn Sheep Corridor. 3. Apply fluid mineral leasing stipulation S-VRM-II within the ACEC. 4. Allow mineral material disposals within the ACEC contingent upon site-specific assessment of resources and mitigation as necessary. 5. Pursue acquisition of nonpublic land within and contiguous to the ACEC. 6. Exclude grazing on land that has not been allotted. 7. Maintain and/or implement closure to domestic sheep and goats within 10 miles of bighorn habitat. 8. Maintain viable populations of desert bighorn sheep through activities such as habitat improvements and coordination with NMDGF on desert bighorn sheep reintroductions. 9. Apply Cultural Resource Use Allocation a. Scientific Use to cultural resource sites. 10. Permit commercial woodcutting only to support BLM-authorized projects to meet resource management objectives. 11. Allow vegetative sales contingent upon site-specific assessment of resources and mitigation as necessary.

TABLE 2-2 MANAGEMENT PRESCRIPTIONS IN ACECS AND SMAS			
No-Action Alternative[7] (Alternative A)	**Alternative B (Preferred)**	**Alternative C**	**Alternative D**
	12. Exclude the San Lorenzo area from vegetative material sales, with the exception of exotic species. Allow vegetative sales elsewhere within the ACEC contingent upon site-specific assessment of resources and mitigation as necessary.		
Pelona Mountain SMA (70,838 acres, includes 39,730 acres of overlap with WSAs)	**Pelona Mountain ACEC (51,091 acres)**	**Pelona Mountain ACEC (52,336 acres)**	**Pelona Mountain ACEC (34,547acres)**
1. Limit motor vehicles to existing roads and trails. 2. Close 5 miles of certain vehicle trails. 3. Restrict authorization for right-of-ways and leases. 4. Apply fluid leasing stipulations SRA-1, special values or special management, and SRA-2, seasonal restrictions. 5. Exclude from woodcutting. 6. Acquire nonpublic land. 7. Implement fire management plan. 8. Restrict geophysical operations. 9. Develop Allotment Management Plans on all allotments. 10. Develop Bat Cave Cultural Site. 11. Close to domestic sheep and goats.	1. Limit motor vehicle use to designated routes within the ACEC. 2. Exclude authorization of right-of-way and leases within the ACEC. 3. Apply fluid mineral leasing stipulations S-CSU-W1 and S-VRM-II within the ACEC. 4. Pursue acquisition of nonpublic land within and contiguous to the ACEC. 5. Pursue legal access for the ACEC. 6. Allow mineral material disposals within the ACEC contingent upon site-specific assessment of resources and mitigation as necessary. 7. Permit commercial woodcutting only to support BLM-authorized projects to meet resource management objectives. 8. Apply Cultural Resource Use Allocation a. Scientific Use to Bat Cave Cultural Site.	1. Limit motor vehicle use to designated routes within the ACEC. 2. Exclude authorization of right-of-way and leases within the ACEC. 3. Apply fluid mineral leasing stipulations S-VRM–II and S-NSO-W within the ACEC. 4. Pursue acquisition of nonpublic land within and contiguous to the ACEC. 5. Pursue legal access for the ACEC. 6. Exclude mineral material disposals. 7. Exclude woodcutting. 8. Exclude vegetative material sales. 9. Apply Cultural Resource Use Allocation a. Scientific Use to Bat Cave cultural site.	1. Limit motor vehicle use to designated routes. 2. Avoid the authorization of right-of-way and leases within the ACEC. 3. Apply fluid mineral leasing stipulation S-VRM-II within the ACEC. 4. Pursue acquisition of nonpublic land within and contiguous to the ACEC boundary. 5. Pursue legal access for the ACEC. 6. Allow mineral material disposals within the ACEC contingent upon site-specific assessment of resources and mitigation as necessary. 7. Permit commercial woodcutting only to support BLM-authorized projects to meet resource management objectives. 8. Apply Cultural Resource Use Allocation a. Scientific Use to Bat Cave cultural site.

TABLE 2-2 MANAGEMENT PRESCRIPTIONS IN ACECS AND SMAS			
No-Action Alternative[7] (Alternative A)	**Alternative B (Preferred)**	**Alternative C**	**Alternative D**
Sawtooth ACEC (125 acres)	**Sawtooth Proprietary ACEC (125 acres)**	**Sawtooth Proprietary ACEC (125 acres)**	**Sawtooth Proprietary ACEC (125 acres)**
1. Limit motor vehicles to existing roads and trails. 2. Exclude authorization for right-of-way and leases. 3. Apply fluid leasing stipulation SRA-3, no surface occupancy. 4. Maintain withdrawal from locatable mineral entry. 5. Acquire legal access. 6. Initiate monitoring studies. 7. Develop an allotment management plan. 8. Designate as a fire suppression area.	1. Limit motor vehicle use to designated routes. 2. Exclude the authorization of right-of-way and leases. 3. Apply fluid mineral leasing stipulation S-NSO-T&E. 4. Maintain withdrawal from locatable mineral entry. 5. Acquire legal access. 6. Exclude from vegetative material sales. 7. Exclude mineral material disposals. 8. Develop an allotment management plan.	1. Limit motor vehicle use to designated routes. 2. Exclude the authorization of right-of-way and leases. 3. Exclude fluid mineral leasing. 4. Maintain withdrawal from locatable mineral entry. 5. Acquire legal access. 6. Exclude from vegetative material sales. 7. Exclude mineral material disposals. 8. Develop an allotment management plan.	1. Limit motor vehicle use to designated routes. 2. Avoid the authorization of right-of-way and leases. 3. Apply fluid mineral leasing stipulation S-NSO-T&E. 4. Maintain withdrawal from locatable mineral entry. 5. Acquire legal access. 6. Allow vegetative material sales contingent upon site-specific assessment of resources and mitigation as necessary.
Tinajas ACEC (3,463 acres, includes 3,423 acres of overlap with WSAs)	**Tinajas ACEC (1,062 acres)**	**Tinajas ACEC (7,767 acres)**	**Tinajas ACEC (22 acres)**
1. Restrict authorization for right-of-way and leases. 2. Restrict mineral material disposals. 3. Withdraw 1,500 acres from locatable mineral entry. 4. Limit motor vehicles to existing roads and trails. 5. Close 2 miles of motor vehicle routes. 6. Increase size of management area. 7. Apply fluid leasing stipulation SRA-3, no surface occupancy, and NM-5, White Sands Missile Range Safety Evacuation Zone.	1. Close to motorized vehicle use. 2. Exclude the authorization of right-of-way and leases. 3. Exclude mineral material disposals. 4. Petition to withdraw 1,500 acres from entry and location under the mining laws. 5. Exclude mineral leasing. 6. Apply Cultural Resource Use Allocation C, Traditional Use, to Arroyo del Tajo Pictograph site.	1. Close to motorized vehicle use. 2. Exclude the authorization of right-of-way and leases. 3. Exclude mineral material disposals. 4. Petition to withdraw 1,500 acres from entry and location under the mining laws. 5. Exclude mineral leasing.	1. Close approximately 2 miles of existing routes to motor vehicle use. Limit motor vehicle use to designated routes. 2. Exclude the authorization of right-of-way and leases. 3. Exclude mineral material disposals.
Zuni Salt Lake Proprietary SMA (4,839 acres)	**Zuni Salt Lake Proprietary ACEC (46,746 acres)**	**Zuni Salt Lake Proprietary ACEC (156,601 acres)**	**Zuni Salt Lake Proprietary ACEC (2,107 acres)**
1. Limit motor vehicles to existing roads and trails.	1. Limit motor vehicle use to designated routes. Avoid designations that would impact the	1. Limit motor vehicle use to designated routes.	1. Limit motor vehicle use to designated routes.

TABLE 2-2 MANAGEMENT PRESCRIPTIONS IN ACECS AND SMAS			
No-Action Alternative[7] (Alternative A)	**Alternative B (Preferred)**	**Alternative C**	**Alternative D**
2. Restrict authorization for right-of-ways and leases. 3. Restrict mineral material disposals. 4. Apply fluid leasing stipulation SRA-1, special values or special management. 5. Restrict geophysical operations.	values of Zuni Salt Lake. 2. Avoid or mitigate actions that will impact the cultural resources (including TCPs) through consultation with SHPO and the Zuni Heritage and Historic Preservation Office. Avoid or mitigate actions that will impact natural resources. 3. Restrict actions that alter, in a way that degrades the uses and values of the Zuni Salt Lake, the quality and quantity of water resources that supply the lake. 4. Exclude fluid mineral leasing. 5. Withdraw locatable minerals within the 4,839-acre Zuni Salt Lake Protection Zone (a total of 2,881 acres of Federal mineral estate) from location and entry under the mining laws. 6. Exclude the authorization of right-of-way and leases within the Zuni Salt Lake Protection Zone (4,839 acres that surround the Salt Lake). Avoid the authorization of right-of-way and leases in the ACEC. 7. Allow geophysical, geologic, or hydrologic and related operations for research to understand and protect the Zuni Salt Lake or for regional scientific study. 8. Exclude mineral material disposals within the Zuni Salt Lake Protection Zone (4,839 acres that surround the Salt Lake). Allow mineral material disposals in the remainder of the ACEC contingent upon site-specific	2. Avoid or mitigate actions that will impact the cultural and natural resources associated with Zuni Salt Lake through consultation with SHPO, the Zuni, and other Tribes. A Memorandum of Understanding will be developed to detail the procedures for consultation with the Zuni Tribe. 3. Exclude fluid mineral leasing. 4. Petition to withdraw locatable minerals on 315,490 acres of Federal mineral estate from location and entry under the mining laws. 5. Exclude the authorization of right-of-way and leases. 6. Allow mineral material disposals within the ACEC contingent upon site-specific assessment of resources and mitigation as necessary. 7. Acquire nonpublic land within and contiguous to the ACEC boundary. 8. Research, study, and protect Cerro Pomo, Cox Ranch Pueblo, and related cultural sites and apply Cultural Resource Use Allocation a. Scientific Use. 9. Exclude woodcutting. 10. Provide opportunities for heritage tourism with appropriate mitigation measures as determined in coordination with SHPO and Tribes. 11. BLM will not grant permission as landowner for any new well applications for permits to use or appropriate groundwater within specified Eastern and Southern townships/ranges of ACEC. BLM	2. Avoid the authorization of right-of-ways and leases. 3. Allow mineral material disposals contingent upon site-specific assessment of resources and mitigation as necessary. 4. Acquire nonpublic land within and contiguous to the ACEC boundary. 5. Exclude woodcutting.

TABLE 2-2 MANAGEMENT PRESCRIPTIONS IN ACECS AND SMAS			
No-Action Alternative[7] (Alternative A)	**Alternative B (Preferred)**	**Alternative C**	**Alternative D**
	assessment of resources and mitigation as necessary. 9. BLM will consult with the Governor of Zuni and other tribes based on agreed provisions of a joint memorandum of understanding for any proposed actions within the ACEC, to be initiated by BLM within six months of the signing of the Record of Decision for this RMP. 10. Acquire nonpublic land within and contiguous to the ACEC. 11. Exclude woodcutting.	will grant permission as landowner for new stock well applications only, up to a total of 3 wells per township/range, 3 acre-feet per well, for remainder of the ACEC (OSE applications for permits to use or appropriate underground waters).	
Mockingbird Gap SMA (8,685 acres)	**Mockingbird Gap Proprietary ACEC (8,685 acres)**	**Mockingbird Gap Proprietary ACEC (8,685 acres)**	**Mockingbird Gap Proprietary SMA (8,685 acres)**
1. Limit motor vehicles to existing roads and trails. 2. Restrict authorization for right-of-ways and leases. 3. Restrict mineral material disposals. 4. Apply fluid leasing stipulation SRA-1, special values or special management, and NM-5, White Sands Missile Range Safety Evacuation Zone. 6. Nominate to National Register.	1. Limit motor vehicle use to designated routes. 2. Avoid the authorization of right-of-way and leases. 3. Allow mineral material disposals contingent upon site-specific assessment of resources and mitigation as necessary. 4. Apply fluid mineral leasing stipulations S-CSU-C3 and Lease Notice NM-5. 5. Apply Cultural Resource Use Allocation a. Scientific Use to cultural sites. 6. Research, study, and protect cultural resource sites.	1. Limit motor vehicle use to designated routes. 2. Exclude the authorization of right-of-way and leases. 3. Allow mineral material disposals contingent upon site-specific assessment of resources and mitigation as necessary. 4. Exclude mineral leasing. 5. Apply Cultural Resource Use Allocation a. Scientific Use to cultural sites. 6. Research, study, and protect cultural resource sites.	1. Limit motor vehicle use to designated routes. 2. Avoid the authorization of right-of-way and leases. 3. Allow mineral material disposals contingent upon site-specific assessment of resources and mitigation as necessary. 4. Apply fluid mineral leasing stipulations S-CSU-C2 and Lease Notice NM-5. 6. Apply Cultural Resource Use Allocation a. Scientific Use to sites in the Mockingbird Gap SMA. 7. Research, study, and protect cultural resource sites.

TABLE 2-2 MANAGEMENT PRESCRIPTIONS IN ACECS AND SMAS			
No-Action Alternative[7] (Alternative A)	**Alternative B (Preferred)**	**Alternative C**	**Alternative D**
Special Recreation Management Areas (SRMA)			
The Box SMA (300 acres)	**The Box SRMA (1,107 acres)**	**The Box SRMA (1,501 acres)**	**The Box SRMA (300 acres)**
1. Limit motor vehicles to existing roads and trails. 2. Restrict authorization for right-of-way and leases. 3. Withdraw 40 acres from locatable mineral entry. 4. Apply fluid leasing stipulation SRA-1, special values or special management.	1. Limit motor vehicle use to designated routes. 2. Exclude the authorizations of right-of-way and leases. 3. Maintain the existing 40-acre withdrawal from location and entry under the mining laws, and withdraw an additional 320 acres. 4. Apply fluid mineral leasing stipulation S-VRM-II. 5. Allow mineral material disposals contingent upon site-specific assessment of resources and mitigation as necessary. 6. Inventory for cultural resources. 7. Implement actions to protect significant at-risk cultural resources from other conflicting uses. 8. Maintain closure to shooting of weapons within SRMA. 9. Pursue renewal of the existing road easement across private land, and continue to maintain road.	1. Limit motor vehicle use to designated routes. 2. Exclude the authorizations of right-of-way and leases. 3. Maintain the existing 40-acre withdrawal from location and entry under the mining laws, and withdraw an additional 400 acres. 4. Apply fluid mineral leasing stipulation S-VRM-II. 5. Allow mineral material disposals contingent upon site-specific assessment of resources and mitigation as necessary. 6. Inventory for cultural resources for expanded acreage. 7. Emphasize cultural resource protection and recreational opportunities, and manage to minimize conflicts between recreational use and cultural resource protection. 8. Implement actions to protect significant at-risk cultural resources from other conflicting uses. 9. Pursue renewal of the existing road easement across private land, and continue to maintain road. 10. Maintain closure to shooting of weapons within SRMA.	1. Limit motor vehicle use to designated routes. 2. Avoid the authorization of right-of-way and leases. 3. Maintain the existing 40-acre withdrawal from location and entry under the mining laws. 4. Apply fluid mineral leasing stipulation S-VRM-II. 5. Allow mineral material disposals contingent upon site-specific assessment of resources and mitigation as necessary. 6. Apply Cultural Resource Use Allocation d. Public Use to cultural sites if research potential is realized or adequate protection provided for. 7. Pursue renewal of the existing road easement across private land, and continue to maintain road. 8. Maintain closure to shooting of weapons within SRMA.

TABLE 2-2 MANAGEMENT PRESCRIPTIONS IN ACECS AND SMAS			
No-Action Alternative[7] (Alternative A)	**Alternative B (Preferred)**	**Alternative C**	**Alternative D**
Continental Divide National Scenic Trail SMA (7,680 acres)	**Continental Divide National Scenic Trail SMA (57,663 acres)**	**Continental Divide National Scenic Trail SMA (11,755 acres)**	**Continental Divide National Scenic Trail SMA (8,702 acres)**
1. Limit motor vehicles to existing roads and trails. 2. Restrict authorization for right-of-way and leases. 3. Limit fire suppression. 4. Exclude from woodcutting. 5. Restrict mineral material disposals. 6. Apply fluid leasing stipulation SRA-1, special values or special management. 7. Implement decision in the Continental Divide National Scenic Trail Comprehensive Plan, 1985. 8. Acquire legal access (with concurrence from private and State landowners). 9. Restrict geophysical operations to nonvehicular methods.	1. Limit motor vehicle use to designated routes on the northern portion of the trail. On the southern portion of the trail, close to motor vehicle use within the Continental Divide WSA, and limit motor vehicle use to designated routes elsewhere in the SMA. 2. Exclude the authorization of right-of-way and leases within the WSA. Avoid the authorization of right-of-way and leases within the SMA and outside the WSA. 3. Outside of the WSA, permit commercial woodcutting within only to support BLM-authorized projects to meet resource management objectives. 4. Allow mineral material disposals contingent upon site-specific assessment of resources and mitigation as necessary. 5. Exclude mineral leasing in the Continental Divide WSA. Apply fluid mineral leasing stipulations S-VRM-II and Lease Notice NM-6 within the SMA and outside the WSA. 6. Pursue acquisition of legal access. 7. Retain all land within the corridors identified for the Continental Divide National Scenic Trail in the SMA.	1. Limit motor vehicle use to designated routes on the northern portion of the trail. On the southern portion of the trail, close to motor vehicle use within the Continental Divide WSA, and limit motor vehicle use to designated routes elsewhere in the SMA. 2. Exclude the authorization of right-of-way and leases within the WSA. Exclude the authorization of right-of-way and leases within the SMA and outside the WSA. 3. Exclude woodcutting. 4. Allow mineral material disposals contingent upon site-specific assessment of resources and mitigation as necessary. 5. Exclude fluid mineral leasing in Continental Divide WSA. Apply fluid mineral leasing stipulations S-VRM-II and Lease Notice NM-6 within the SMA and outside the WSA. 6. Pursue acquisition of legal access. 7. Retain all land within the corridors identified for the Continental Divide National Scenic Trail in the SMA.	1. Limit motor vehicle use to designated routes. 2. Exclude the authorization of right-of-way and leases within the WSA. Avoid the authorization of right-of-way and leases within the SRMA and outside the WSA. 3. Outside of the WSA, permit commercial woodcutting within only to support BLM-authorized projects to meet resource management objectives. 4. Allow mineral material disposals contingent upon site-specific assessment of resources and mitigation as necessary. 5. Exclude mineral leasing in Continental Divide WSA. Apply Lease Notice NM-6 within the SMA and outside the WSA. 6. Pursue acquisition of legal access. 7. Retain all land within the corridors identified for the Continental Divide National Scenic Trail in the SMA.

TABLE 2-2 MANAGEMENT PRESCRIPTIONS IN ACECS AND SMAS			
No-Action Alternative[7] (Alternative A)	**Alternative B (Preferred)**	**Alternative C**	**Alternative D**
Datil Well Campground SMA (669 acres)	**Datil Well SRMA (669 acres)**	**Datil Well SRMA (669 acres)**	**Datil Well SRMA (669 acres)**
1. Limit motor vehicles to existing roads and trails. 2. Restrict authorization for right-of-way and all leases. 3. Exclude from woodcutting. 4. Apply fluid leasing stipulation SRA-3, no surface occupancy. 5. Withdraw 80 acres from locatable mineral entry.	1. Limit motor vehicle use to designated routes. 2. Avoid the authorization of right-of-way and leases. 3. Within the SRMA, permit commercial woodcutting only to support BLM-authorized projects to meet resource management objectives. 4. Apply fluid mineral leasing stipulation S-VRM-II. 5. Maintain 80-acre withdrawal from location and entry under the mining laws. 6. Exclude mineral material disposals. 7. Maintain closure to weapons shooting within SRMA. 8. Apply Cultural Resource Use Allocation d. Public Use to Datil Well and related Cultural Resource sites. 9. Pursue acquisition of private land contiguous to the SRMA.	1. Limit motor vehicle use to designated routes. 2. Exclude the authorization of right-of-way and leases. 3. Exclude woodcutting. 4. Apply fluid mineral leasing stipulation S-VRM-II. 5. Maintain 80-acre withdrawal from location and entry under the mining laws. 6. Exclude mineral material disposals. 7. Maintain closure to weapons shooting within SRMA. 8. Apply Cultural Resource Use Allocation d. Public Use to Datil Well and related cultural sites. 9. Pursue acquisition of private land contiguous to the SRMA.	1. Limit motor vehicle use to designated routes. 2. Avoid the authorization of right-of-way and leases. 3. Within the SRMA, permit commercial woodcutting only to support BLM-authorized projects to meet resource management objectives. 4. Apply fluid mineral leasing stipulation S-VRM-II. 5. Maintain 80-acre withdrawal from location and entry under the mining laws. 6. Allow mineral material disposals contingent upon site-specific assessment of resources and mitigation as necessary. 7. Maintain closure to weapons shooting within SRMA. 8. Apply Cultural Resource Use Allocation d. Public Use.
Gordy's Hill	**Gordy's Hill SRMA (7,647 acres)**	**Gordy's Hill SRMA (2,876 acres)**	**Gordy's Hill SRMA (7,174 acres)**
Not designated in 1989 RMP.	1. Limit motor vehicle use to designated routes. 2. Prepare Recreation Area Management Plan. 3. Exclude target shooting within 0.5 mile of designated trails. 4. Avoid authorization of right-of-ways and leases.	1. Limit motor vehicle use to designated routes. 2. Prepare a Recreation Area Management Plan. 3. Exclude target shooting within 0.5 mile of designated trails. 4. Avoid authorization of right-of-ways and leases.	1. Limit motor vehicle use to designated routes. 2. Prepare a Recreation Area Management Plan. 3. Avoid authorization of right-of-ways and leases.

TABLE 2-2 MANAGEMENT PRESCRIPTIONS IN ACECS AND SMAS			
No-Action Alternative[7] (Alternative A)	**Alternative B (Preferred)**	**Alternative C**	**Alternative D**
Quebradas Backcountry Byway	**Quebradas Backcountry Byway SRMA (3,130 acres)**	**Quebradas Backcountry Byway SRMA (3,130 acres)**	**Quebradas Backcountry Byway SRMA (3,130 acres)**
Designate and manage as a backcountry byway.	1. Maintain the byway open to motor vehicle use. Close the buffer area surrounding the byway (i.e., 0.25 mile from centerline in each direction, for a buffer area that is 0.5 mile wide overall) to OHV within the WSA boundaries, and limit OHV use to designated routes elsewhere in the buffer zone. 2. Provide for interpretation and signing. 3. Exclude the authorization of right-of-way and leases within the WSA. Avoid the authorizations of right-of-way and leases in the remainder of the buffer area. 4. Allow mineral material disposals within the buffer area contingent upon site-specific assessment of resources and mitigation as necessary. 5. Exclude mineral leasing within the Presilla and Sierra de las Canas WSAs. Apply fluid mineral leasing stipulation S-VRM-II within the buffer area and outside the WSAs. 6. Exclude from vegetative material sales within the buffer area. 7. Maintain existing Socorro County Road Maintenance Agreement.	1. Maintain the byway open to motor vehicle use. Close the buffer area surrounding the byway (i.e., 0.25 mile from centerline in each direction, for a buffer area that is 0.5 mile wide overall) to OHV within the WSA boundaries, and limit OHV use to designated routes elsewhere in the buffer zone. 2. Exclude the authorization of right-of-way and leases within the buffer area. 3. Exclude mineral material disposals within the buffer area. 4. Exclude mineral leasing within the WSAs. Apply fluid mineral leasing stipulation S-VRM-II within the buffer area and outside of the WSAs. 5. Maintain existing Socorro County Road Maintenance Agreement. 6. Exclude from vegetative material sales within the buffer area.	1. Limit motor vehicle use to designated routes. 2. Provide for interpretation and signing. 3. Exclude the authorization of right-of-ways and leases within the WSA. Avoid the authorization of right-of-way and leases within the buffer area (i.e., 0.25 mile from centerline in each direction, for a buffer area that is 0.5 mile wide overall) and outside the WSAs. 4. Allow mineral material disposals within the buffer area contingent upon site-specific assessment of resources and mitigation as necessary. 5. Exclude mineral leasing within the WSAs. Apply fluid mineral leasing stipulation S-VRM-II within the buffer area. 6. Restrict vegetative material sales within the buffer area. 7. Maintain existing Socorro County Road Maintenance Agreement.
Socorro Nature Area	**Socorro Nature Area SRMA (80 acres)**	**Socorro Nature Area SRMA (80 acres)**	**Socorro Nature Area SRMA (80 acres)**
Not designated; area would be managed in accordance with 1989 RMP.	1. Complete a comprehensive management plan. 2. Limit motor vehicle use to designated routes.	1. Complete a comprehensive management plan. 2. Limit motor vehicle use to designated routes.	1. Complete a comprehensive management plan. 2. Limit motor vehicle use to designated routes.

TABLE 2-2 MANAGEMENT PRESCRIPTIONS IN ACECS AND SMAS			
No-Action Alternative[7] (Alternative A)	**Alternative B (Preferred)**	**Alternative C**	**Alternative D**
	3. Avoid the authorization of right-of-way and leases. 4. Apply fluid mineral leasing stipulation S-NSO-R. 5. Exclude mineral material disposals. 6. Exclude grazing on land that has not been allotted.	3. Avoid the authorization of right-of-way and leases. 4. Apply fluid mineral leasing stipulation S-NSO-R. 5. Exclude mineral material disposals. 6. Exclude grazing on land that has not been allotted.	3. Avoid the authorization of right-of-way and leases. 4. Apply fluid mineral leasing stipulation S-NSO-R. 5. Allow mineral material disposals within the buffer area contingent upon site-specific assessment of resources and mitigation as necessary. 6. Exclude grazing on land that has not been allotted.
Special Management Areas			
Fence Lake SMA (25,453 acres)			**Fence Lake SMA (25,452 acres)**
1. Limit motor vehicles to existing roads and trails. 2. Restrict authorization for right-of-way and leases. 3. Apply fluid leasing stipulation SRA-1, special values or special management 4. Designate grazing allotment in "M" category. 5. Close and rehabilitate certain vehicle trails.	Eliminate Fence Lake SMA designation and incorporate the area into the Zuni Salt Lake ACEC.	Eliminate Fence Lake SMA designation and incorporate the area into the Zuni Salt Lake ACEC.	1. Limit motor vehicle use to designated routes. 2. Avoid the authorization of right-of-way and leases. 3. Apply fluid mineral leasing stipulation S-CSU-S.
Fort Craig SMA (149 acres)	**Fort Craig SMA (149 acres)**	**Fort Craig SMA (149 acres)**	**Fort Craig SMA (149 acres)**
1. Limit motor vehicles to existing roads and trails. 2. Acquire all minerals. 3. Acquire legal access. 4. Continue grazing closure. 5. Apply fluid leasing stipulation SRA-3, no surface occupancy. 6. Restrict authorization for right-of-way and leases. 7. Restrict mineral material disposals 8. Develop visitor facilities and public	1. Limit motor vehicle use to designated routes. 2. Acquire all minerals. When acquired, petition for mineral withdrawal from location and entry under the mining laws. 3. Exclude grazing on land that has not been allotted. 4. Exclude fluid mineral leasing. 5. Avoid authorization of right-of-way and leases.	1. Limit motor vehicle use to designated routes. 2. Acquire all minerals. If acquired, petition for mineral withdrawal from location and entry under the mining laws. 3. Exclude grazing on land that has not been allotted. 4. Exclude mineral leasing. 5. Avoid authorization of right-of-way and leases.	1. Limit motor vehicle use to designated routes. 2. Exclude grazing on land that has not been allotted. 3. Apply fluid mineral leasing stipulations S-VRM-II and S-CSU-C4. 4. Avoid authorization of right-of-way and leases. 5. Allow mineral material disposals contingent upon site-specific assessment of resources and

TABLE 2-2 MANAGEMENT PRESCRIPTIONS IN ACECS AND SMAS			
No-Action Alternative[7] (Alternative A)	**Alternative B (Preferred)**	**Alternative C**	**Alternative D**
interpretation values.	6. Exclude mineral material disposals. 7. Develop visitor facilities and public interpretation values. 8. Apply Cultural Resource Use Allocation d. Public Use.	6. Exclude mineral material disposals. 7. Develop visitor facilities and public interpretation values. 8. Apply Cultural Resource Use Allocation d. Public Use.	mitigation as necessary. 6. Develop visitor facilities and public interpretation values. 7. Apply Cultural Resource Use Allocation d. Public Use.
Harvey Plot SMA (8 acres)			
1. Limit motor vehicles to existing roads and trails. 2. Restrict authorization for right-of-way and leases. 3. Apply fluid leasing stipulation SRA-1, special values or special management, and NM-5, White Sands Missile Range Safety Evacuation Zone. 4. Withdraw from locatable mineral entry.	Eliminate the Harvey Plot SMA designation.	Eliminate the Harvey Plot SMA designation.	Eliminate Harvey Plot SMA designation.
Iron Mine Ridge SMA (1,386 acres)			
1. Limit motor vehicles to existing roads and trails. 2. Restrict authorization for right-of-way and leases. 3. Apply fluid leasing stipulation SRA-1, special values or special management, and NM-5, White Sands Missile Range Safety Evacuation Zone. 4. Exclude from woodcutting. 5. Restrict mineral material disposals.	Eliminate Iron Mine Ridge SMA due to downlisting of special status plant species.	Eliminate Iron Mine Ridge SMA due to downlisting of special status plant species.	Eliminate Iron Mine Ridge SMA due to downlisting of special status plant species.
Mogollon Pueblo SMA (640 acres)			
1. Limit motor vehicles to existing roads and trails. 2. Restrict authorization for right-of-ways and leases. 3. Restrict mineral material disposals. 4. Fence core area and stabilize.	Eliminate Mogollon Pueblo SMA and incorporate the area into the Cerro Pomo ACEC.	Eliminate Mogollon Pueblo SMA and incorporate the area into the Zuni Salt Lake ACEC.	Eliminate Mogollon Pueblo SMA and incorporate the area into the Cerro Pomo ACEC.

TABLE 2-2 MANAGEMENT PRESCRIPTIONS IN ACECS AND SMAS			
No-Action Alternative[7] (Alternative A)	**Alternative B (Preferred)**	**Alternative C**	**Alternative D**
5. Apply fluid leasing stipulation SRA-2, seasonal restrictions. 6. Exclude livestock grazing (12-acre core area).			
Newton Site SMA (36 acres)	**Newton Site Proprietary SMA (6,789 acres)**	**Newton Site Proprietary SMA (6,789 acres)**	**Newton Site Proprietary SMA (6,789 acres)**
1. Nominate to National Register. 2. Limit motor vehicles to existing roads and trails. 3. Restrict authorization for right-of-way and leases. 4. Apply fluid leasing stipulation SRA-1, special values or special management. 5. Restrict mineral material disposals. 6. Exclude from woodcutting. 7. Stabilize ruins.	1. Limit motor vehicle use to designated routes. 2. Avoid the authorization of right-of-way and leases. 3. Apply fluid mineral leasing stipulation S-NSO-C. 4. Allow mineral material disposals contingent upon site-specific assessment of resources and mitigation as necessary. 5. Provide opportunity for research. 6. Apply Cultural Resource Use Allocation a. Scientific Use to Newton Site and associated complex of sites. 7. Acquire administrative access.	1. Limit motor vehicle use to designated routes. 2. Exclude the authorization of right-of-way and leases. 3. Exclude mineral leasing. 4. Exclude mineral material disposals. 5. Provide opportunity for research. 6. Apply Cultural Resource Use Allocation a. Scientific Use. 7. Acquire administrative access. 8. Conduct cultural inventory.	1. Limit motor vehicle use to designated routes. 2. Avoid the authorization of right-of-way and leases. 3. Apply fluid mineral leasing stipulation S-CSU-C3. 4. Allow mineral material disposals contingent upon site-specific assessment of resources and mitigation as necessary. 5. Provide opportunity for research. 6. Apply Cultural Resource Use Allocation a. Scientific Use. 7. Acquire administrative access.
Teypama SMA (37 acres)	**Penjeacu SMA (formerly Teypama) (11 acres)**	**Penjeacu SMA (formerly Teypama) (11 acres)**	**Penjeacu SMA (formerly Teypama) (11 acres)**
1. Close to motor vehicle use. 2. Restrict authorization for right-of-way and leases. 3. Restrict mineral material disposals. 4. Exclude livestock grazing on 17 acres by expanding the enclosure. 5. Apply fluid leasing stipulation SRA-3, no surface occupancy.	1. Limit vehicle use to designated routes. 2. Avoid the authorization of right-of-way and leases. 3. Exclude mineral material disposals. 4. Maintain nongrazing status. 5. Apply fluid mineral leasing stipulation S-NSO-C. 6. Conduct cadastral survey to determine boundaries. 7. Pursue acquisition of non-Federal portion of the cultural site. 8. Apply Cultural Resource Use Allocation d. Public Use.	1. Close to motor vehicle use. 2. Exclude the authorization of right-of-way and leases. 3. Exclude mineral material disposals. 4. Maintain nongrazing status. 5. Exclude fluid mineral leasing. 6. Conduct cadastral survey to determine boundaries. 7. Pursue acquisition of non-Federal portion of the cultural site. 8. Apply Cultural Resource Use Allocation a. Scientific Use. 9. Research, study, and protect the pueblo.	1. Limit vehicle use to designated routes. 2. Avoid the authorization of right-of-way and leases. 3. Exclude mineral material disposals. 4. Maintain nongrazing status. 5. Apply fluid mineral leasing stipulation S-NSO-C. 6. Provide opportunities for heritage tourism with appropriate mitigation measures as determined in coordination with SHPO and Tribes.

TABLE 2-2 MANAGEMENT PRESCRIPTIONS IN ACECS AND SMAS			
No-Action Alternative[7] (Alternative A)	**Alternative B (Preferred)**	**Alternative C**	**Alternative D**
	9. Research, study, and protect the pueblo.		7. Conduct cadastral survey to determine boundaries. 8. Pursue acquisition of non-Federal portion of the cultural site. 9. Apply Cultural Resource Use Allocation d. Public Use. 10. Research, study, and protect the pueblo.
Playa Pueblos SMA (203 acres)	**Playa Pueblos Proprietary SMA (203 acres)**	**Playa Pueblos Proprietary SMA (203 acres)**	**Playa Pueblos Proprietary SMA (203 acres)**
1. Limit motor vehicles to existing roads and trails. 2. Restrict authorization for right-of-way and leases 3. Acquire nonpublic land. 4. Restrict mineral material disposals. 5. Apply fluid leasing stipulation SRA-1, special values or special management, and NM-5, White Sands Missile Range Safety Evacuation Zone. 6. Exclude livestock grazing. 7. Fence and stabilize ruins. 8. Include in the thematic Tompiro National Register Nomination. 9. Close certain vehicle trails - .04 miles.	1. Limit motor vehicle use to designated routes. 2 Avoid the authorization of right-of-way and leases. 3. Pursue the acquisition of nonpublic land. 4. Allow mineral material disposals contingent upon site-specific assessment of resources and mitigation as necessary. 5. Apply fluid mineral leasing stipulations S-NSO-C and Lease Notice NM-5. 6. Exclude livestock grazing by fencing. 7. Apply Cultural Resource Use Allocation a. Scientific Use to Playa Pueblos. 8. Include in thematic Tompiro National Register Nomination.	1. Limit motor vehicle use to designated routes. 2. Exclude the authorization of right-of-way and leases. 3. Pursue the acquisition of nonpublic land. 4. Allow mineral material disposals contingent upon site-specific assessment of resources and mitigation as necessary. 5. Apply fluid mineral leasing stipulations S-NSO-C and Lease Notice NM-5. 6. Exclude livestock grazing by fencing. 7. Apply Cultural Resource Use Allocation a. Scientific Use. 8. Include in thematic Tompiro National Register Nomination.	1. Limit motor vehicle use to designated routes. 2. Avoid the authorization of right-of-way and leases. 3. Allow mineral material disposals contingent upon site-specific assessment of resources and mitigation as necessary. 4. Apply fluid mineral leasing stipulations S-NSO-C and Lease Notice NM-5. 5. Exclude livestock grazing by fencing. 6. Apply Cultural Resource Use Allocation a. Scientific Use.

TABLE 2-2 MANAGEMENT PRESCRIPTIONS IN ACECS AND SMAS			
No-Action Alternative[7] (Alternative A)	**Alternative B (Preferred)**	**Alternative C**	**Alternative D**
Puertecito SMA (7,156 acres)	**Puertecito SMA (7,156 acres)**	**Puertecito SMA (7,156 acres)**	**Puertecito SMA (7,156acres)**
1. Limit motor vehicles to existing roads and trails. 2. Restrict authorization for right-of-way and leases. 3. Apply fluid leasing stipulation SRA-1, special values or special management. 4. Designate grazing allotment in "M" category. 5. Close and rehabilitate certain vehicle trails as part of the activity plan.	1. Limit motor vehicle use to designated routes. 2. Avoid the authorizations of right-of-way and leases. 3. Apply fluid mineral leasing stipulations S-CSU-C1 and S-CSU-S. 4. Apply Cultural Resource Use Allocation a. Scientific Use to cultural sites within Puertecito SMA. 5. Research, study, and protect cultural sites within the SMA.	1. Limit motor vehicle use to designated routes. 2. Exclude the authorizations of right-of-way and leases. 3. Exclude mineral leasing. 4. Apply Cultural Resource Use Allocation a. Scientific Use. 5. Research, study, and protect cultural sites within the SMA.	1. Limit motor vehicle use to designated routes. 2. Avoid the authorization of right-of-way and leases. 3. Apply fluid mineral leasing stipulation S-CSU-C1. 4. Apply Cultural Resource Use Allocation a. Scientific Use to cultural sites in the SMA. 5. Research, study, and protect cultural sites within the SMA.
Rio Salado SMA (5,946 acres, includes 924 acres of overlap with WSAs)			**Rio Salado SMA (5,946 acres)**
1. Limit motor vehicles to existing roads and trails. 2. Restrict authorization for right-of-way and leases. 3. Restrict mineral material disposals. 4. Apply fluid leasing stipulation SRA-1, special values or special management. 5. Nominate as district to National Register. 6. Exclude from woodcutting. 7. Restrict geophysical operations. 8. Implement present Cultural Resources Management Plan for 20 acres.	Eliminate Rio Salado SMA and incorporate the area into the Ladron Mountain-Devil's Backbone Complex ACEC.	Eliminate Rio Salado SMA and incorporate the area into the Ladron Mountain-Devil's Backbone Complex ACEC.	1. Limit motor vehicle use to designated routes. 2. Avoid the authorization of right-of-way and leases. 3. Allow mineral material disposals contingent upon site-specific assessment of resources and mitigation as necessary. 4. Apply fluid mineral leasing stipulation S-CSU-C1. 5. Apply Cultural Resource Use Allocation a. Scientific Use to cultural sites in the SMA. 6. Exclude grazing on land that has not been allotted.
San Lorenzo SMA (2,320 acres)			**San Lorenzo SRMA (2,320 acres)**
1. Limit motor vehicles to existing roads and trails. 2. Restrict authorization for new right-of-way and leases.	Eliminate San Lorenzo SMA and incorporate the area into the Ladron Mountain-Devil's Backbone Complex ACEC.	Eliminate San Lorenzo SMA and incorporate the area into the Ladron Mountain-Devil's Backbone Complex ACEC.	1. Limit motor vehicle use to designated routes. 2. Avoid the authorization of right-of-way and leases.

TABLE 2-2 MANAGEMENT PRESCRIPTIONS IN ACECS AND SMAS			
No-Action Alternative[7] (Alternative A)	**Alternative B (Preferred)**	**Alternative C**	**Alternative D**
3. Acquire 2,240 acres of nonpublic land. 4. Restrict geophysical operations. Apply fluid leasing stipulation SRA-1, special values or special management.			3. Allow mineral material disposals contingent upon site-specific assessment of resources and mitigation as necessary. 4. Pursue acquisition of nonpublic land within and contiguous to the SMRA boundary. 5. Apply fluid mineral leasing stipulation S-VRM-II. 6. Allow woodcutting contingent upon site-specific assessment of resources and mitigation as necessary. 7. Exclude from vegetative material sales. 8. Close to domestic sheep and goats. 9. Apply Cultural Resource Use Allocation a. Scientific Use to cultural sites in the SMRA. 10. Exclude grazing on land that has not been allotted.
San Pedro ACEC (1,201 acres)	**San Pedro Proprietary SMA (1,201 acres)**	**San Pedro Proprietary SMA (1,201 acres)**	**San Pedro Proprietary SMA (1,201 acres)**
1. Limit motor vehicles to existing roads and trails. 2. Exclude authorization for right-of-way and leases. 3. Apply fluid leasing stipulation SRA-1, special values or special management, and NM-5, White Sands Missile Range Safety Evacuation Zone. 4. Initiate monitoring studies. 5. Restrict mineral material disposals.	1. Limit motor vehicle use to designated routes. 2. Avoid the authorization of right-of-way and leases. 3. Apply fluid mineral leasing stipulations S-NSO-T&E and Lease Notice NM-5. 5. Exclude mineral material disposals. 6. Exclude from vegetative material sales.	1. Limit motor vehicle use to designated routes. 2. Exclude the authorization of right-of-way and leases. 3. Apply fluid mineral leasing stipulations S-NSO-T&E and Lease Notice NM-5. 4. Exclude mineral material disposals. 5. Exclude from vegetative material sales.	1. Limit motor vehicle use to designated routes. 2. Avoid the authorization of right-of-way and leases. 3. Apply fluid mineral leasing stipulations S-NSO-T&E and Lease Notice NM-5. 4. Allow mineral material disposals contingent upon site-specific assessment of resources and mitigation as necessary

TABLE 2-2 MANAGEMENT PRESCRIPTIONS IN ACECS AND SMAS			
No-Action Alternative[7] (Alternative A)	**Alternative B (Preferred)**	**Alternative C**	**Alternative D**
Stallion SMA (19,702 acres, includes 9,479 acres of overlap with WSAs)	**Stallion SMA (10,883 acres)**	**Stallion SMA (10,883 acres)**	**Stallion SMA (10,883 acres)**
1. Limit motor vehicles to existing roads and trails. 2. Restrict authorization for right-of-way and leases. 3. Apply fluid leasing stipulation SRA-1, special values or special management, and NM-5, White Sands Missile Range Safety Evacuation Zone. 4. Designate grazing allotment in "M" category. 5. Acquire nonpublic land. 6. Close and rehabilitate certain vehicle trails as part of the activity plan.	1. Close to motor vehicle use within the WSAs (Sierra de las Canas and Presilla). Limit motor vehicle use to designated routes elsewhere within the SMA. 2. Exclude the authorization of right-of-way and leases within Sierra de las Canas and Presilla WSA. Avoid the authorization of right-of-way and leases within the SMA and outside the WSA. 3. Exclude mineral leasing within the WSA. 4. Apply fluid mineral leasing stipulations S-CSU-S, S-CSU-K, and Lease Notice NM-5 within the SMA and outside the WSA.	1. Close to motor vehicle use within the Sierra de las Canas WSA. Limit motor vehicle use to designated routes elsewhere within the SMA. 2. Exclude the authorization of right-of-way and leases within the Sierra de las Canas WSA. Exclude the authorization of right-of-ways and leases within the SMA and outside the WSA. 3. Exclude mineral leasing within the WSA. Apply fluid mineral leasing stipulations S-CSU-S, S-CSU-K, and Lease Notice NM-5 within the SMA and outside the WSA.	1. Limit motor vehicle use to designated routes. 2. Avoid the authorization of right-of-way and leases within the SMA. 3. Apply fluid mineral leasing stipulations S-VRM-II, S-CSU-K, and Lease Notice NM-5 within the SMA.
Soaptree SMA (1,296 acres)	**Soaptree SMA (1,296 acres)**	**Soaptree SMA (1,296 acres)**	**Soaptree SMA (1,296 acres)**
1. Limit motor vehicles to existing roads and trails. 2. Restrict authorization for right-of-way and leases. 3. Apply fluid leasing stipulation SRA-1, special values or special management. 4. Exclude vegetative material sales. 5. Restrict mineral material disposals.	1. Limit motor vehicle use to designated routes. 1. Avoid authorization of right-of-way and leases. 2. Apply fluid mineral leasing stipulations S-VRM-II and S-CSU-V. 3. Exclude from vegetative material sales. 4. Allow mineral material disposals contingent upon site-specific assessment of resources and mitigation as necessary.	1. Limit motor vehicle use to designated routes. 2. Exclude authorization of right-of-way and leases. 3. Exclude fluid mineral leasing. 4. Exclude from vegetative material sales. 5. Allow mineral material disposals contingent upon site-specific assessment of resources and mitigation as necessary.	1. Limit motor vehicle use to designated routes. 2. Avoid authorization of right-of-way and leases. 3. Apply fluid mineral leasing stipulation S-CSU-V. 4. Exclude from vegetative material sales. 5. Allow mineral material disposals contingent upon site-specific assessment of resources and mitigation as necessary.

TABLE 2-2 MANAGEMENT PRESCRIPTIONS IN ACECS AND SMAS			
No-Action Alternative[7] (Alternative A)	**Alternative B (Preferred)**	**Alternative C**	**Alternative D**
Taylor Canyon SMA (384 acres)	**Taylor Canyon SMA**	**Taylor Canyon SMA**	**Taylor Canyon SMA**
1. Limit motor vehicles to existing roads and trails. 2. Restrict authorization for right-of-way and leases. 3. Apply fluid leasing stipulation SRA-1, special values or special management, and NM-5, White Sands Missile Range Safety Evacuation Zone. 4. Restrict mineral material disposals.	Eliminate Taylor Canyon SMA due to downlisting of special status plant species.	Eliminate Taylor Canyon SMA due to downlisting of special status plant species.	Eliminate Taylor Canyon SMA due to downlisting of special status plant species.
Town of Riley SMA (533 acres)	**Town of Riley SMA**	**Town of Riley SMA (533 acres)**	**Town of Riley SMA**
1. Limit motor vehicles to existing roads and trails. 2. Restrict authorization for right-of-way and leases. 3. Survey Federal ownership within historic town. 4. Exclude from woodcutting. 5. Restrict mineral material disposals. 6. Apply fluid leasing stipulation SRA-1, special values or special management. 7. Restrict geophysical operations. 8. Nominate to National Register.	Eliminate Town of Riley SMA.	Same as Alternative A, except fluid mineral leasing stipulation S-CSU-C1 would be applied.	Eliminate Town of Riley SMA.

TABLE 2-2 MANAGEMENT PRESCRIPTIONS IN ACECS AND SMAS			
No-Action Alternative[7] (Alternative A)	**Alternative B (Preferred)**	**Alternative C**	**Alternative D**
Walnut Canyon SMA (1,145 acres)	**Walnut Canyon SMA**	**Walnut Canyon SMA**	**Walnut Canyon SMA**
1. Limit motor vehicles to existing roads and trails. 2. Restrict authorization for right-of-way and leases. 3. Exclude from woodcutting. 4. Restrict mineral material deposits. 5. Acquire nonpublic land. 6. Apply fluid leasing stipulation SRA-1, special values or special management. 7. Restrict geophysical operations. Acquire legal access.	Eliminate the Walnut Canyon SMA.	Eliminate the Walnut Canyon SMA.	Eliminate the Walnut Canyon.

TABLE 2-3 MANAGEMENT OF LAND WITHIN WSAs IF RELEASED FROM WILDERNESS REVIEW				
WSA	**Alternative A**	**Alternative B (Preferred)**	**Alternative C**	**Alternative D**
Antelope (20,541 acres)	Manage in accordance with prescriptions identified in the 1989 RMP.	Manage in accordance with prescriptions identified in this RMPR/EIS.	Manage in accordance with prescriptions identified in this RMPR/EIS.	Manage in accordance with prescriptions identified in this RMPR/EIS.
Continental Divide (69,240 acres)	Manage 39,730 acres as part of the Pelona Mountain SMA. The remainder would be managed in accordance with prescriptions identified in this RMPR/EIS.	Manage within the Pelona Mountain ACEC.	Manage within the Pelona Mountain ACEC.	Manage 58,744 acres as part of the Pelona Mountain ACEC.
Devil's Backbone (8,967 acres)	Manage in accordance with prescriptions identified in the 1989 RMP.	Manage within the Ladron Mountain-Devil's Backbone Complex ACEC.	Manage as part of the Ladron Mountain-Devil's Backbone Complex ACEC.	Manage in accordance with prescriptions identified in this RMPR/EIS.
Devil's Reach (684 acres)	Manage in accordance with prescriptions identified in the 1989 RMP.	Manage within the Ladron Mountain-Devil's Backbone Complex ACEC.	Manage within the Ladron Mountain-Devil's Backbone Complex ACEC.	Manage in accordance with prescriptions identified in this RMPR/EIS.
Eagle Peak (43,975 acres)	Manage 6,326 acres as part of the Agua Fria ACEC, and 8,784 acres as part of the Cerro Pomo SMA. The remainder would be managed in accordance with the prescriptions identified in the 1989 RMP.	Manage 23,236 acres as Cerro Pomo ACEC and 16,373 acres as Zuni Salt Lake ACEC. The remainder would be managed in accordance with prescriptions identified in this RMPR/EIS.	Manage 43,974 acres as Zuni Salt Lake ACEC. The remainder would be managed in accordance with prescriptions identified in this RMPR/EIS.	Manage 12,692 acres as Cerro Pomo ACEC and 2,732 acres as Zuni Salt Lake ACEC. The remainder would be managed in accordance with prescriptions identified in this RMPR/EIS.

TABLE 2-3 MANAGEMENT OF LAND WITHIN WSAs IF RELEASED FROM WILDERNESS REVIEW				
WSA	**Alternative A**	**Alternative B (Preferred)**	**Alternative C**	**Alternative D**
Horse Mountain (4,894 acres)	Manage 4,301 acres as part of the Horse Mountain ACEC. The remainder would be managed in accordance with the prescriptions identified in the 1989 RMP.	Manage within the Horse Mountain ACEC.	Manage within the Horse Mountain ACEC.	Manage within the Horse Mountain ACEC.
Jornada del Muerto (26,771 acres)	Manage in accordance with prescriptions identified in the 1989 RMP.	Manage in accordance with prescriptions identified in this RMPR/EIS.	Manage in accordance with prescriptions identified in this RMPR/EIS.	Manage in accordance with prescriptions identified in this RMPR/EIS.
Mesita Blanca (19,214 acres)	Manage 2,300 acres as part of the Agua Fria ACEC. The remainder would be managed in accordance with the prescriptions identified in the 1989 RMP.	Manage 1,963 acres as part of the Cerro Pomo ACEC and 3,469 acres as part of the Zuni Salt Lake ACEC. The remainder would be managed in accordance with prescriptions identified in this RMPR/EIS.	Manage 19,211 acres as part of the Zuni Salt Lake ACEC.	Manage 3,473 acres as part of the Cerro Pomo ACEC. The remainder would be managed in accordance with prescriptions identified in this RMPR/EIS.
Presilla (7,884 acres)	Manage 3,423 acres as a part of the Tinajas ACEC, and 382 acres as part of the Stallion SMA. The remainder would be managed in accordance with the prescriptions identified in the 1989 RMP.	Manage within the Tinajas ACEC, except for the 279 acres within the Quebradas Backcountry Byway SRMA.	Manage within the Tinajas ACEC, except for the 279 acres within the Quebradas Backcountry Byway SRMA.	Manage 3,423 acres as part of the Tinajas ACEC, except for the 279 acres within the Quebradas Backcountry Byway SRMA.
Sierra de las Canas (13,185 acres)	Manage 9,097 acres as part of the Stallion SMA. The remainder would be managed in accordance with the prescriptions identified in the 1989 RMP.	Manage within the Tinajas ACEC, except for the 743 acres within the Quebradas Backcountry Byway SRMA.	Manage within the Tinajas ACEC, except for the 743 acres within the Quebradas Backcountry Byway SRMA.	Manage 18 acres as part of the Tinajas ACEC, and 743 acres as part of the Quebradas Backcountry Byway SRMA. The remainder would be managed in accordance with prescriptions identified in this RMPR/EIS.
Sierra Ladrones (45,559 acres)	Manage 35,114 acres as part of the Ladron Mountain ACEC, and 924 acres as part of the Rio Salado SMA. The remainder would be managed in accordance with the prescriptions identified in the 1989 RMP.	Manage within the Ladron Mountain-Devil's Backbone Complex ACEC.	Manage within the Ladron Mountain-Devil's Backbone Complex ACEC.	Manage 37,046 acres as part of the Ladron Mountain ACEC and 924 acres as part of the Rio Salado SMA.
Stallion (23,671 acres)	Manage in accordance with prescriptions identified in the 1989 RMP.	Manage in accordance with prescriptions identified in this RMPR/EIS.	Manage in accordance with prescriptions identified in this RMPR/EIS.	Manage in accordance with prescriptions identified in this RMPR/EIS.
Veranito (7,241 acres)	Manage in accordance with prescriptions identified in the 1989 RMP.	Manage in accordance with prescriptions identified in this RMPR/EIS.	Manage in accordance with prescriptions identified in this RMPR/EIS.	Manage in accordance with prescriptions identified in this RMPR/EIS.

TABLE 2-4
ROUTE DESIGNATIONS IN WSAs PROPOSED UNDER ALTERNATIVES B, C, AND D (IN MILES)

WSA	Open			Closed (Rehabilitate)			Closed (Authorized Use Only)			Total Closed		
	B	C	D	B	C	D	B	C	D	B	C	D
Antelope	4.0	0.0	9.0	10.5	12.0	9.0	4.5	7.0	0.0	15.0	19.0	9.0
Continental Divide	23.5	16.0	40.0	12.5	12.5	10.5	21.0	28.5	6.5	33.5	41.0	17.0
Devil's Backbone	3.0	1.5	3.5	1.5	5.0	2.0	6.0	2.0	3.0	7.5	7.0	5.0
Devil's Reach	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Eagle Peak	29.5	22.5	40.5	16.5	16.0	6.0	5.5	12.0	4.0	22.0	28.0	10.0
Horse Mountain	0.0	0.0	8.5	6.0	8.5	0.0	1.5	0.0	0.0	7.5	8.5	0.0
Jornada del Muerto	10.75	9.75	12.5	3.5	2.5	2.5	5.75	2.75	0.0	9.25	5.25	2.5
Mesita Blanca	14.5	6.5	18.5	5.0	9.0	1.0	0.0	4.0	0.0	5.0	13.0	1.0
Presilla	0.0	0.0	8.5	11.0	11.0	2.5	0.0	0.0	0.0	11.0	11.0	2.5
Sierra de las Canas	0.0	0.0	0.0	0.7	0.2	0.2	0.0	0.5	0.5	0.7	0.7	0.7
Sierra Ladrones	15.5	15.5	35.25	6.5	6.5	4.5	17.75	17.75	0.0	24.25	24.25	4.5
Stallion	2.0	2.0	19.0	8.0	8.0	0.0	9.0	9.0	0.0	17.0	17.0	0.0
Veranito	0.0	0.0	2.0	5.25	9.0	7.0	4.0	0.0	0.0	9.25	9.0	7.0
Totals	102.75	73.75	197.25	86.95	100.20	45.20	75.00	83.50	14.0	161.95	183.70	59.20

TABLE 2-5 SUMMARY OF IMPACTS[8]				
Resource	**Alternative A (No Action)**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Air Quality	▪ Temporary and localized impacts from fugitive dust caused largely by surface disturbance and motorized travel on unpaved roads. ▪ Mitigation for fugitive dust through best management practices (BMPs), palliatives, road-watering, and planting compatible roadside vegetation. ▪ Management within special designations (238,936 acres) would reduce fugitive dust from surface disturbance in those areas. ▪ The effects of OHV use would be avoided on 29,117 acres that would be closed to OHVs.	Impacts would be similar to Alternative A, except ▪ management within expanded special designation boundaries (to 297,555 acres) would reduce dust from surface disturbance; and ▪ increased restrictions on motorized travel (no areas open to cross-country travel, closed areas expanded to 117,921 acres) would diminish impacts in localized areas.	Impacts would be similar to Alternative A, except ▪ management within expanded special designation boundaries (to 336,609 acres) would reduce dust from surface disturbance; and ▪ increased restrictions on motorized travel (no areas opento cross-country travel, closed areas expanded to 139,971 acres) would diminish impacts in localized areas.	Impacts would be similar to Alternative A, except ▪ management within expanded special designation boundaries (149,478 acres) would reduce dust from surface disturbance; ▪ the elimination of areas open to cross-country travel would diminish impacts in localized areas; and ▪ Alternative D would expose 29,117 previously closed acres to motorized travel.
Geology	▪ Recreation use could cause cumulative impacts to cliff faces or geological features. ▪ Surface-disturbing activities could have localized impacts due to degradation or damage to geologic resources; mitigation would be identified through NEPA. ▪ Management within special designations provides protection from surface disturbance (238,936 acres).	Impacts would be similar to Alternative A, except ▪ the expansion of management in special designations to 297,555 acres would indirectly increase protection for geologic resources in those areas.	Impacts would be similar to Alternative A, except ▪ the expansion of management in special designations to 336,609 acres would indirectly increase protection for geologic resources in those areas.	Impacts would be similar to Alternative A, except ▪ the expansion of management in special designations to 149,478 acres would indirectly increase protection for geologic resources in those areas.

[8] Unless otherwise noted, all acre figures refer to acres of BLM-managed surface land.

TABLE 2-5 SUMMARY OF IMPACTS[8]				
Resource	**Alternative A (No Action)**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Soil and Water Resources	▪ Surface-disturbing activities could cause soil disturbance and compaction, resulting in erosion and decreased soil infiltration and productivity in localized areas. Long-term effects (particularly from OHV use) would depend on the intensity, frequency, and type of use as well as the soil type and moisture content. ▪ Mitigation through BMPs and further NEPA analysis. ▪ Protective management to minimize or avoid these impacts would be applied primarily in special designations (238,936 acres).	Impacts would be similar to Alternative A, except ▪ protective management would be expanded, particularly in special designations (297,555 acres); ▪ closure to mineral development within Zuni Salt Lake ACEC would provide a conservative approach to reduce the potential of groundwater impacts; and ▪ the elimination of areas open to cross-country travel and increased limitations on OHV use would diminish impacts in those areas.	Impacts would be similar to Alternative B, except ▪ protective management would be expanded, particularly in special designations (336,609 acres); and ▪ larger closures and greater limitations on OHV use would diminish impacts in those areas.	Impacts would be similar to Alternative A, except ▪ protective management would be expanded, particularly in special designations (149,478 acres); ▪ the elimination of the areas open to cross-country travel and increased limitations on OHV use would diminish impacts in those areas.
Vegetation	▪ Development of watershed management plans would increase soil stabilization, reduce water runoff , and subsequently improve the quality of vegetation. ▪ Surface-disturbing activities could result in localized loss of or damage to vegetation, although mitigation would occur through BMPs and further NEPA analysis. ▪ Management to minimize surface disturbance would reduce loss or disturbance of vegetation, primarily in special designations (238,936 acres) and closed OHV areas (29,117 acres).	Impacts would be similar to Alternative A, except ▪ management to minimize surface disturbance would be expanded, especially in special designations (297,555 acres) and potential aplomado falcon habitat (40,104 acres of BLM-managed surface area); ▪ the elimination of areas open to cross-country traveland increased limitations on OHV use would diminish impacts in those areas; ▪ the designated utility corridor would cluster impacts from construction activities within the right-of-way in areas of previously disturbed vegetation; and	Impacts would be similar to Alternative B, except ▪ management to minimize surface disturbance would be further expanded, particularly in special designations (336,609 acres) and potential aplomado falcon habitat (63,808 acres of BLM-managed surface area); ▪ larger closures and greater limitations on OHV use would diminish impacts in those areas; and ▪ commercial woodcutting would be allowed in fewer areas.	Impacts would be similar to Alternative A, except ▪ management to minimize surface disturbance would be expanded, particularly in special designations (149,478 acres); ▪ the elimination of the areas open to cross-country traveland increased limitations on OHV use would diminish impacts in those areas; and ▪ management of woodcutting would have the same effects as described for Alternative B.

TABLE 2-5 SUMMARY OF IMPACTS[8]				
Resource	**Alternative A (No Action)**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
	▪ Vehicles could facilitate the dispersion of noxious and invasive weeds, but management would prevent the spread of these species and ensure mitigation for any proposed projects.	▪ management of woodcutting would reduce the potential for unsustainable vegetation loss.		
Wildlife, Riparian Habitat, & Special Status Species	▪ About 150,931 acres would be managed specifically to protect sensitive or special status species. ▪ Management to minimize surface disturbance would protect against habitat loss or fragmentation, disruption of movement corridors, or direct impacts on wildlife, particularly in special designations (238,936 acres). ▪ Mitigation of potential impacts to wildlife would occur through BMPs and further NEPA analysis. ▪ Open OHV area designation on 851,234 acres would increase access to habitat areas and could affect plains-mesa sand scrub and juniper savanna habitats that support raptor and other wildlife species.	Impacts would be similar to Alternative A, except ▪ a larger area would be managed to protect sensitive or special status species (117,682 acres), and management priorities would be shifted away from species that are no longer federally listed; ▪ the expansion of the Ladron Mountain-Devil's Backbone Complex ACEC would expand protection for sensitive habitats in that portion of the Planning Area; ▪ management to minimize surface disturbance would be expanded, especially in special designations (297,555 acres) and potential aplomado falcon habitat areas (40,104 acres of BLM-managed surface area); ▪ management to reduce or avoid impacts to areas that meet criteria for the aplomado falcon habitat; and ▪ the elimination of areas open to cross-country travel and increased limitations on OHV use would diminish impacts in those areas.	Impacts would be similar to Alternative A, except ▪ 118,321 acres would be managed to specifically protect sensitive or special status species; ▪ management to minimize surface disturbance would be further expanded, particularly in special designations (336,609 acres) and potential aplomado falcon habitat areas (63,808 acres of BLM-managed surface area); and ▪ larger closures and greater limitations on OHV use would diminish impacts in those areas.	Impacts would be similar to Alternative A, except ▪ 60,220 acres managed to specifically protect sensitive or special status species; ▪ management to minimize surface disturbance would be expanded, particularly in special designations (149,478 acres); ▪ management to reduce or avoid impacts to the aplomado falcon in areas that meet criteria for its habitat; and ▪ the elimination of areas open to cross-country travel and increased limitations on OHV use would diminish impacts in those areas.

TABLE 2-5 SUMMARY OF IMPACTS[8]				
Resource	**Alternative A (No Action)**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Wildland Fire Ecology & Management	▪ Treatment of up to 244,170 acres to improve ecological conditions would improve FRCC in those areas. ▪ Surface-disturbing hazardous fuels reductions and fireline construction would be limited in special designations (238,936 acres). ▪ Limits on hazardous fuel reductions in Agua Fria, Horse Mountain, and Ladron Mountain ACECs would occur in proximity to wildland-urban interface areas. ▪ Linear facilities present hazards during fire suppression operations; these facilities would be limited within right-of-way exclusion areas (39,148 acres). ▪ Ignitions may be caused by OHV use or other recreational uses.	Impacts would be similar to Alternative A, except ▪ management that could affect surface-disturbing hazardous fuel reductions and fireline construction would be expanded, especially in special designations (297,555 acres) and potential aplomado falcon habitat areas (40,104 acres of BLM-managed surface area); ▪ limits on hazardous fuel reductions close to wildland-urban interface areas would occur in Horse Mountain ACEC; ▪ linear facilities that would pose hazards during fire suppression activities would be limited over a larger area (406,283 acres within right-of-way exclusion areas); ▪ the designation of a utility corridor would promote the consolidation of linear facilities into a single location, minimizing hazards elsewhere; and ▪ increased restrictions on OHV use would reduce the potential for ignitions.	Impacts would be similar to Alternative B, except ▪ increased restoration efforts would improve FRCC; ▪ management that could affect surface-disturbing hazardous fuel reductions and fireline construction would be expanded, especially in special designations (336,609 acres) and potential aplomado falcon habitat areas (63,808 acres of BLM-managed surface area); ▪ limits on hazardous fuel reductions close to wildland-urban interface areas would occur in Horse Mountain and Zuni Salt Lake ACECs; ▪ linear facilities would be limited over a larger area (716,100 acres within right-of-way exclusion areas); and ▪ larger closures and greater limitations on OHV use would further reduce potential for ignitions.	Impacts would be similar to Alternative A, except ▪ management that could affect surface-disturbing hazardous fuel reductions and fireline construction would be expanded, especially in special designations (149,478 acres); ▪ limits on hazardous fuel reductions close to wildland-urban interface areas would occur in Horse Mountain ACEC; ▪ linear facilities that would pose hazards during fire suppression activities would be limited over a larger area (301,081 acres within right-of-way exclusion areas); and ▪ increased restrictions on OHV use would reduce the potential for ignitions.

TABLE 2-5 SUMMARY OF IMPACTS[8]				
Resource	**Alternative A (No Action)**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Cultural Resources	▪ Effects from activities requiring Federal authorization would continue to be avoided or mitigated through compliance with Section 106 of the National Historic Preservation Act and/or NEPA. ▪ Management to reduce erosion and other effects of surface disturbance would provide coincidental protection of cultural resources, particularly in special designations (238,936 acres). ▪ Specially designated areas where protection of cultural resources would be a primary or secondary objective would total 20,450 acres. ▪ Cultural resources in areas with reduced access to motorized vehicles, such as closed OHV areas (29,117 acres) or limited OHV designations (565,159 acres) would be less likely to experience disturbance from dispersed recreation and OHV use.	Impacts would be similar to Alternative A, except ▪ management to minimize surface disturbance would be expanded, especially in special designations (297,555 acres) and potential aplomado falcon habitat areas (40,104 acres of BLM-managed surface area); ▪ specially designated areas where protection of cultural resources would be a primary or secondary objective would total 149,179 acres, expanding mainly in Zuni Salt Lake and Cerro Pomo ACECs and Newton Site SMA; and ▪ greater protection from dispersed recreation and OHV use would be provided through the elimination of areas open to cross-country travel and the expansion of closed OHV areas (117,921 acres) and limited OHV designations (1,389,624 acres).	Impacts would be similar to Alternative B, except ▪ management to minimize surface disturbance would be further expanded, particularly in special designations (336,609 acres) and potential aplomado falcon habitat areas (63,808 acres of BLM-managed surface area); ▪ specially designated areas where protection of cultural resources would be a primary or secondary objective would total 240,382 acres, expanding over Alternative B mainly in Zuni Salt Lake and Tinajas ACECs; and ▪ protection from dispersed recreation and OHV use would be increased over Alternative B due to larger closed OHV areas (139,971 acres).	Impacts would be similar to Alternative A, except ▪ management to minimize surface disturbance would be expanded, particularly in special designations (149,478 acres); ▪ specially designated areas where protection of cultural resources would be a primary or secondary objective would total 25,330 acres, expanding over Alternative A in Cerro Pomo ACEC; and ▪ greater protection from dispersed recreation and OHV use would be provided through the elimination of areas open to cross-country travel.
Paleontological Resources	▪ Effects from activities requiring Federal authorization would continue to be avoided or mitigated through compliance with NEPA. ▪ Management to reduce erosion and other effects of surface disturbance would provide coincidental protection of paleontological resources,	Impacts would be similar to Alternative A, except ▪ management to minimize surface disturbance would be expanded, especially in special designations (297,555 acres) and potential aplomado falcon habitat areas (40,104 acres of BLM-managed surface area); ▪ the elimination of areas open to	Impacts would be similar to Alternative B, except ▪ management to minimize surface disturbance would be further expanded, particularly in special designations (336,609 acres) and potential aplomado falcon habitat areas (63,808 acres of BLM-managed surface area).	Impacts would be similar to Alternative B, except ▪ management to minimize surface disturbance would be further expanded, particularly in special designations (149,478 acres).

TABLE 2-5 SUMMARY OF IMPACTS[8]				
Resource	**Alternative A (No Action)**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
	particularly in special designations (238,936 acres). ▪ OHV use in areas designated as open (851,234 acres) could result in damage or loss to paleontological resources, depending on the location and frequency of OHV use.	cross-country travel would reduce the likelihood of impacts on paleontological resources.		
Visual Resources	▪ The most protective VRM classes would be applied to 30,343 acres (Class I) and 385,781 acres (Class II). ▪ Management to maintain, enhance, or protect natural or cultural resources also would enhance and protect scenic values. ▪ Impacts on visual resources from ground-disturbing activities associated with activities requiring Federal authorization would be mitigated through NEPA and compliance with VRM objectives. ▪ Open OHV areas (851,234 acres) allow proliferation of travel routes, which could affect vegetation and soils (and subsequently scenic quality), particularly where open areas are adjacent to sensitive viewers in special designations such as Town of Riley and Rio Salado SMAs.	Impacts would be similar to Alternative A, except ▪ VRM Class I objectives would be applied to slightly fewer areas (28,533 acres) and VRM Class II would be applied to an expanded area (488,339 acres); ▪ management to maintain, enhance, or protect natural or cultural resources would apply to expanded areas; ▪ the proposed utility corridor would promote the consolidation of linear facilities in one area, reducing overall visual impacts in the Planning Area, but sensitive viewers could experience new projects within their viewshed, particularly residential areas along I-25, Veranito WSA, and other special designations; and ▪ the elimination of areas open to cross-country travel would reduce the likelihood of impacts on visual resources in those areas.	Impacts would be similar to Alternative B, except ▪ VRM Class I objectives would be applied to slightly fewer areas (27,093 acres) and VRM Class II would be applied to an expanded area (715,706 acres); and ▪ management to maintain, enhance, or protect natural or cultural resources would be expanded further.	Impacts would be similar to Alternative A, except ▪ no areas would be managed as VRM Class I, and 354,222 acres would be managed as Class II; ▪ management to maintain, enhance, or protect natural or cultural resources would apply to expanded areas; ▪ the proposed utility corridors cross numerous special designations, which are more sensitive to changes to visual or scenic resources; and ▪ the elimination of areas open to cross-country travel would reduce the likelihood of impacts on visual resources in those areas.

TABLE 2-5 SUMMARY OF IMPACTS[8]				
Resource	**Alternative A (No Action)**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Cave & Karst Resources	▪ Effects from activities requiring Federal authorization would continue to be avoided or mitigated through compliance with NEPA. ▪ Management to protect resources and reduce effects of surface disturbance would provide coincidental protection of caves and karst resources, particularly in special designations (238,936 acres).	Impacts would be similar to Alternative A, except ▪ management to protect resources, particularly in special designations, would be expanded and would include more areas of high karst potential near the Puertecito SMA and WSMR Safety Evacuation Zone; ▪ the elimination of areas open to cross-country travel would provide protection to some resources by restricting access.	Impacts would be more similar to Alternative B, except ▪ management to protect resources, particularly in special designations, would be expanded further.	Impacts would be similar to Alternative A, except ▪ management to protect resources, particularly in special designations, would be expanded; and ▪ the elimination of areas open to cross-country travel would provide protection to some resources by restricting access.
Wilderness Characteristics	▪ WSAs would continue to be managed to maintain their suitability for preservation as wilderness in accordance with the Interim Management Policy. ▪ OHV use on existing routes in some WSAs would introduce noise and dust, diminishing solitude or the primitive recreation experience, depending on the frequency and duration of OHV use.	Impacts would be similar to Alternative A, except ▪ more areas within WSAs would be closed to OHV use (33,888 acres compared to 13,185 acres under Alternative A) and route designations would reduce the potential for noise and dust to affect wilderness character; and ▪ management objectives to reduce impacts from heavy OHV use in Gordy's Hill SRMA would reduce effects from adjacent OHV use on Veranito and Presilla WSAs.	Impacts would be similar to Alternative B, except ▪ additional areas within WSAs would be closed to OHV use (a total of 54,429 acres) and route designations would reduce the potential for noise and dust to affect wilderness character.	Impacts would be similar to Alternative A, except ▪ designation of multiple utility corridors could result in facilities being located near the Eagle Peak WSA, Continental Divide WSA, and Veranito WSA, causing indirect effects on wilderness characteristics such as naturalness and solitude; ▪ OHV travel would be permitted in 3 WSAs that previously were closed to OHV use; and ▪ management objectives to reduce impacts from heavy OHV use in Gordy's Hill SRMA would reduce effects from adjacent OHV use on Veranito and Presilla WSAs.

TABLE 2-5 SUMMARY OF IMPACTS[8]				
Resource	**Alternative A (No Action)**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Land and Realty	▪ Right-of-way authorizations would be excluded on 39,148 acres and avoided on 458,996 acres. ▪ Lands identified as suitable for disposal typically are isolated parcels located near rural communities, and disposal of these parcels would allow BLM to focus its resources on managing larger, contiguous tracts of land. ▪ Impacts from realty actions requiring Federal authorization would continue to be avoided or mitigated through compliance with NEPA. ▪ Depending on the site conditions and frequency of use, OHV use could indirectly affect adjacent land uses with vehicle-generated dust or noise.	Impacts would be similar to Alternative A, except ▪ BLM-managed surface land that would be available for right-of-way authorizations would be reduced, as such authorizations would be excluded on 406,283 acres and avoided on 349,343 acres; ▪ the location of right-of-way exclusion and avoidance areas would limit opportunities for siting east-west utilities to the east of I-25; and ▪ the designation of a utility corridor would promote the collocation of utilities in previously disturbed areas.	Impacts would be similar to Alternative B, except ▪ BLM-managed surface land that would be available for right-of-way authorizations would be reduced further, as such authorizations would be excluded on 716,100 acres and avoided on 419,120 acres; and ▪ the expanded right-of-way exclusion areas could affect the ability to develop some rural residential areas near I-25 and near the Zuni Salt Lake; and ▪ the designation of a utility corridor may be incompatible with some right-of-way exclusion and avoidance areas.	Impacts would be similar to Alternative A, except ▪ BLM-managed surface land that would be available for right-of-way authorizations would be reduced, as such authorizations would be excluded on 301,081 acres and avoided on 177,290 acres; ▪ more land would be identified as suitable for disposal, which would increase land resources available to support subdivisions and the growth of rural communities; and ▪ the designation of multiple utility corridors would promote the collocation of utilities while providing flexibility to site facilities, but some corridors would cross right-of-way exclusion and avoidance areas that would be incompatible with the purpose of the utility corridor.
Forestry and Woodland Management	▪ Tillage practices and treatment to improve ecological conditions would improve forest health and promote restoration of historic woodland structure. ▪ Management of special designations or to meet VRM	Impacts would be similar to Alternative A, except ▪ management in special designations or VRM Class I and II areas that would affect treatment methods would be expanded to more areas.	Impacts would be similar to Alternative B, except ▪ management would place more emphasis on restoration, which would result in greater potential to maintain and improve forest and woodland structure;	Impacts would be similar to Alternative A, except ▪ management in special designations areas that would affect treatment methods would be expanded to more areas.

TABLE 2-5 SUMMARY OF IMPACTS[8]				
Resource	**Alternative A (No Action)**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
	Class I and Class II objectives may affect the types of woodland treatment methods available for use in those areas. ▪ Woodcutting and other treatments would reduce fuel loading, improving FRCC in those areas.		▪ more successful restoration would reduce the risks from wildfires; and ▪ management in special designations or VRM Class I and II areas that would affect treatment methods would be expanded further.	
Rangeland Management	▪ Grazing would be managed to meet public land health standards; over the long term, this would promote the sustainability of grazing on BLM-managed surface land. ▪ Vegetation treatment or rehabilitation projects could reduce or exclude grazing or affect available forage in the short-term, but over the long-term would increase forage production. ▪ Management to minimize surface disturbance, particularly in special designations, would minimize competitive uses, potentially improving grazing conditions. ▪ Activities associated with right-of-way authorizations, harvest-ing operations, and mineral development would create short-term and temporary impacts to grazing through noise, closures, or reduction of available forage. Development of roads associated with these projects would allow use by permittees for livestock	Impacts would be similar to Alternative A, except ▪ management to minimize surface disturbance, particularly in special designations, would be expanded; and ▪ the elimination of areas open to cross-country travel and increased limitations on OHV use would diminish impacts from recreation use in those areas.	Impacts would be similar to Alternative B, except ▪ management to minimize surface disturbance, particularly in special designations, would be expanded further; ▪ management would prioritize wildlife and watershed needs over livestock, which would reduce the number of range projects but would improve overall range conditions; and ▪ increased limitations on OHV use would diminish impacts from recreation use in those areas.	Impacts would be similar to Alternative A, except ▪ management to minimize surface disturbance, particularly in special designations, would be expanded; ▪ management would increase the number of range projects and could allow for augmented stocking rates; and ▪ the elimination of areas open to cross-country travel would diminish impacts from recreation use in those areas.

TABLE 2-5 SUMMARY OF IMPACTS[8]				
Resource	**Alternative A (No Action)**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
	operations. Impacts from activities requiring Federal authorization would be avoided or mitigated through compliance with NEPA. ▪ Dispersed recreation and OHV use could disturb livestock, result in forage loss, and contribute to the spread of invasive species.			
Minerals	▪ Fluid mineral leasing stipulations (applied to a total of 736,000 acres of Federal mineral estate) would increase the cost and difficulty of developing fluid mineral resources. ▪ Application of a no-surface-occupancy over an area of at least 1 square mile would eliminate the possibility of directional drilling and constitute a de facto closure in that area. ▪ 1,418,415 acres of Federal mineral estate would be closed to fluid mineral leasing, ▪ within these closed areas, 646,901 acres are of moderate potential for oil and gas and 28,570 acres are of high potential for carbon dioxide and helium. ▪ The continued withdrawal of 11,408 acres of Federal mineral estate and proposal to withdraw an additional 1,508 acres of Federal mineral estate would	Impacts would be similar to Alternative A, except ▪ fluid mineral leasing stipulations would be expanded to apply to 1,515,544 acres of Federal mineral estate; ▪ 1,543,095 acres of Federal mineral estate would be closed to fluid mineral leasing (the majority of the difference from Alternative A is due to management in Zuni Salt Lake ACEC); ▪ within these closed areas, 761,155 acres are of moderate potential for oil and gas and 36,345 acres are of high potential for carbon dioxide and helium; ▪ additional Federal mineral estate would be withdrawn (a total of 72,369 acres), including areas with high and moderate potential; ▪ the acres potential available for coal leasing would be reduced to 3,200 from 31,640, limiting the opportunities to achieve the	Impacts would be similar to Alternative B, except ▪ fluid mineral leasing stipulations would be expanded to apply to 947,044 acres of Federal mineral estate; ▪ 1,856,116 acres of Federal mineral estate would be closed to fluid mineral leasing (the majority of the difference from Alternative B is due to the expanded Zuni Salt Lake ACEC); ▪ within these closed areas, 1,022,038 acres are of moderate potential for oil and gas and 135,578 acres are of high potential for carbon dioxide and helium; ▪ additional Federal mineral estate would be withdrawn (a total of 497,39 acres), including areas with high and moderate potential, primarily in Ladron Mountain-Devil's Backbone Complex and Zuni Salt Lake ACECs;	Impacts would be similar to Alternative A, except ▪ fluid mineral leasing stipulations would apply to more areas (785,484 acres of Federal mineral estate); ▪ 1,419,456 acres of Federal mineral estate would be closed to fluid mineral leasing; ▪ within these closed areas, 648,312 acres are of moderate potential for oil and gas and 28,582 acres are of high potential for carbon dioxide and helium; ▪ no additional mineral estate would be withdrawn; ▪ the acres potential available for coal leasing would be reduced to 3,200 from 31,640, limiting the opportunities to achieve the RFD on public land; and ▪ exclusions on right-of-way and access restrictions

TABLE 2-5 SUMMARY OF IMPACTS[8]				
Resource	**Alternative A (No Action)**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
	affect a small portion of the Decision Area. ▪ Decisions about access (closures or limitations on motorized vehicle use) and realty (right-of-way exclusion or avoidance areas) could encourage or restrict exploration and development of mineral resources.	RFD on public land; and ▪ exclusions on right-of-way and access restrictions would be increased.	▪ the exclusion of 484,133 from mineral material disposal would result in localized impacts but overall availability of saleable minerals would be adequate to meet demand; and ▪ exclusions on right-of-way and access restrictions would be increased further.	would be increased.
Recreation	▪ Management to protect natural, cultural, and scenic resources, particularly in special designations and VRM Class I and II areas, would displace some motorized uses but enhance opportunities for primitive recreation. ▪ Right-of-way authorizations, mineral development, and land acquisition could provide additional access for motorized and dispersed recreation in localized areas. ▪ Mineral development could result in localized impact by displacing users and changing the character of an area, but impacts would be avoided or mitigated in compliance with NEPA. ▪ About 95 percent of BLM-managed surface land would accommodate motorized travel.	Impacts would be similar to Alternative A, except ▪ management in special designations or VRM Class I and II areas that would enhance opportunities for primitive recreation would be expanded; ▪ increased acreage closed to fluid mineral leasing would provide more protection for primitive recreation opportunities, especially in the Fence Lake and Ladron Mountain areas; and ▪ OHV use would be more restricted, and about 92 percent of BLM-managed surface land would accommodate motorized travel.	Impacts would be similar to Alternative B, except ▪ management in special designations or VRM Class I and II areas that would enhance opportunities for primitive recreation would be expanded further; and ▪ OHV use would be further restricted in WSAs.	Impacts would be similar to Alternative A, except ▪ management in special designations that would enhance opportunities for primitive recreation would be expanded; ▪ the reduced acreage managed in accordance with VRM Class I and II objectives would deemphasize the maintenance of scenic resources that contribute to the recreational setting and experience; and ▪ OHV use would be more restricted due to the elimination of areas open to cross-country travel, although no areas would be closed to motorized access.

TABLE 2-5 SUMMARY OF IMPACTS[8]				
Resource	**Alternative A (No Action)**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Renewable Energy	▪ Management to minimize the intensity and location of surface-disturbing activities, particularly in special designations (238,936 acres), could affect the ability to site renewable energy generation and transmission facilities. ▪ Management to meet VRM Class I and II objectives could affect siting of wind turbine towers, solar panels, or other highly visible facilities, although mitigation would be identified during further NEPA analysis.	Impacts would be similar to Alternative A, except ▪ management to minimize the intensity and location of surface-disturbing activities would be expanded, particularly in special designations (297,555 acres); and ▪ areas managed to meet VRM Class I and II objectives would be expanded.	Impacts would be similar to Alternative B, except ▪ management to minimize the intensity and location of surface-disturbing activities would be expanded further, particularly in special designations (336,609 acres); and ▪ areas managed to meet VRM Class I and II objectives would be expanded.	Impacts would be similar to Alternative A, except ▪ management to minimize the intensity and location of surface-disturbing activities would be expanded, particularly in special designations (149,478 acres); ▪ fewer areas would be managed to meet VRM Class I and II objectives.
Transportation & Travel Management	▪ Access often increases for recreational and other users when roads are constructed or upgraded as part of land use authorizations, mineral development, or other activities. This effect would be minimized in right-of-way exclusion areas or areas where surface occupancy or mineral development is excluded. ▪ 29,117 acres would be closed to OHV use, but the majority of BLM-managed surface land would be accessible for motorized travel.	Impacts would be similar to Alternative A, except ▪ the expansion of right-of-way exclusion areas and restrictions on mineral development would affect new access development in those areas; ▪ the presence of a utility corridor would provide additional access to public land if rights-of-way are developed in the area; and ▪ the closure of more public land to OHV use (117,921 acres) and the elimination of areas open to cross-country travel would change local travel patterns, which could increase travel on routes that remain open.	Impacts would be similar to Alternative B, except ▪ further expansion of right-of-way exclusion areas and restrictions on mineral development would affect new access development in those areas; ▪ the closure of additional land to OHV use (139,971 acres) would affect local travel patterns and access in those areas.	Impacts would be similar to Alternative A, except ▪ the expansion of right-of-way exclusion areas would affect new access development in those areas; ▪ the areas that are currently closed to OHV would be accessible via existing or designated routes; and ▪ areas that previously were designated as open to cross-country travel would be limited to existing or designated routes, which would change local travel patterns.
Social & Economic Conditions	▪ Right-of-way exclusion and avoidance areas could require project proponents to select less	Impacts would be similar to Alternative A, except	Impacts would be similar to Alternative B, except	Impacts would be similar to Alternative A, except

TABLE 2-5 SUMMARY OF IMPACTS[8]				
Resource	**Alternative A (No Action)**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
	desirable or more expensive sites. ▪ It is not expected that land in Federal ownership would vary greatly, and acquisition would occur on a willing-seller basis. ▪ Mineral development typically would generate direct and induced wage income, royalties, and tax revenue. Project-specific effects would be identified through further NEPA analysis. ▪ BLM management of livestock grazing supports an important sector of the local economy. ▪ Recreation opportunities on BLM-managed land support local retail and other service industries. ▪ The protection of open space, scenic resources, and natural landscapes supports the quality of recreational opportunities.	▪ the expansion of right-of-way exclusion areas and designation of a utility corridor affect siting decisions, but also would streamline the authorization process and promote efficiencies through co-location of utilities within the same corridor; ▪ additional closures and restrictions on mineral development would reduce the possibility of capitalizing on economic opportunities in areas where mineral potential exists; ▪ the expansion of management to protect natural and cultural resources, particularly within special designations, would enhance scenic views and primitive recreation settings that contribute to the local economic benefits from visitation; and ▪ the addition of SRMAs and other special designations where recreation management is a primary objective would allow more visitors to be accommodated in those areas, improve the recreation setting and experience, and identify certain areas as recreation destinations, all of which could increase fees received by BLM and revenues generated in local communities due to increased visitation.	▪ further expansion of right-of-way exclusion areas would restrict options for utility development; ▪ further closures and restrictions on mineral development would limit economic opportunities in areas where mineral potential exists; ▪ further expansion of protective management would support primitive recreation opportunities and associated economic effects; and ▪ developed recreation and OHV use would be more restricted, affecting local interest groups.	▪ the expansion of right-of-way exclusion areas would affect siting decisions, but the designation of multiple utility corridors would increase the potential for gaining efficiencies from co-location of facilities and streamlining authorization processes; ▪ further limitations on the land available for consideration for coal leasing would reduce the possibility of capitalizing on economic opportunities in areas of coal potential; ▪ expansion of protective management, particularly within special designations, would support primitive recreation opportunities and associated economic effects; ▪ the management of SRMAs and other special designations where recreation management is a primary objective would have the same impact as described for Alternative B.

TABLE 2-5 SUMMARY OF IMPACTS[8]				
Resource	**Alternative A (No Action)**	**Alternative B (Preferred Alternative)**	**Alternative C**	**Alternative D**
Environmental Justice	▪ No BLM actions would cause disproportionate effects on minority or low-income populations.	▪ Management to make additional Federal minerals and land unavailable for fluid mineral leasing or locatable mineral development could have socioeconomic effects in some low-income areas such as northwestern Catron County. ▪ The Zuni Salt Lake ACEC, where mineral development and other surface-disturbing activities are restricted to protect resource values, is of cultural and religious value to the Zuni tribe, an environmental justice population.	Impacts would be similar to Alternative B, except ▪ larger areas are closed to mineral development, which would affect more areas with mineral development potential; and ▪ the expansion of Zuni Salt Lake ACEC would provide additional protection for the lake (and associated socio-cultural values) from surface disturbance; the extent of the additional protective effect on water in the lake it is uncertain due to lack of knowledge about the hydrogeology of the area	Impacts would be the same as Alternative A.

Chapter 3 - Affected Environment

3.0 AFFECTED ENVIRONMENT

3.1 INTRODUCTION

This chapter provides a summary of the current conditions of the resources, resource uses, and programs within the Planning Area (i.e., Socorro and Catron Counties). Pursuant to the National Environmental Policy Act regulations codified in Title 40, Code of Federal Regulations, Part 1502.15 (40 CFR 1502.15), the purpose of the affected environment chapter is to describe the human and natural environment that potentially could be affected, beneficially or adversely, by the alternatives.

The majority of the data that are used to characterize the affected environment was collected from the Socorro Field Office of the Bureau of Land Management (BLM); Federal, State, county, and local agencies including but not limited to the U.S. Geological Survey (USGS), U.S. Fish and Wildlife Service (USFWS), and New Mexico Department of Game and Fish (NMDGF); and other State agencies, counties, and public and private sources. Where data were lacking, information was interpreted from the best available sources. Field verification of the data was not conducted. Acreages used for analysis in this Resource Management Plan Revision/Environmental Impact Statement (RMPR/EIS) reflect the best available geographic information system (GIS) data maintained by the BLM.

In this chapter, the affected environment is characterized using the following categories:

- Resources:
  - Air quality
  - Geology
  - Soil resources
  - Water resources
  - Vegetation
  - Wildlife and riparian habitat
  - Special status species
  - Wild horses
  - Wildland fire ecology and management
  - Cultural resources
  - Paleontological resources
  - Visual resources
  - Cave and karst resources
  - Wilderness characteristics (including wilderness study areas)
- Resource uses:
  - Land use and facilities
  - Forestry and woodland management
  - Rangeland management
  - Minerals
  - Recreation
  - Renewable energy
  - Transportation and travel management (includes off-highway vehicle use)
  - Utility corridors and communication sites
  - Land tenure, including withdrawals
  - Hazardous materials and public safety
- Special designations (including areas of critical environmental concern and special management areas)
- Social and economic conditions

3.2 RESOURCES

3.2.1 Air Quality

The information provided in this section is summarized from the Air Quality Baseline Report (BLM 2003b). Existing conditions for air quality were characterized for Socorro and Catron Counties plus (1) the Gila Wilderness pristine quality airshed, which includes portions of southern Catron County and northern Grant County, New Mexico, and (2) portions of western Apache County, Arizona, which contain sources of air pollutants.

The air quality in this study area appears to meet the New Mexico and Federal ambient air quality standards. Ambient air monitoring data for criteria pollutants in Socorro and Catron Counties historically have not been collected. Consequently, these counties are designated as "unclassified" with respect to the National Ambient Air Quality Standards (NAAQS). This designation indicates that the status of attainment has not been verified through data collection. For permitting of new sources, an unclassified area is treated as an attainment area.

The U.S. Environmental Protection Agency maintains a nationwide Class I area visibility-monitoring network in accordance with the Regional Haze Regulations for Protection of Visibility in National Parks and Wilderness Areas. This monitoring program is titled IMPROVE, for Integrated Monitoring of Protected Visual Environments, and is administered by Crocker Nuclear Laboratory at the University of California, Davis. Currently, the IMPROVE measurement program is collecting data to establish baseline visibility and aerosol conditions in mandatory Class I areas and identify chemical species and emission sources responsible for the existing visibility impairment. These data will then be used to determine long-term trends and assess progress towards the national visibility goal. Currently, there are two IMPROVE monitoring sites in the study area. These sites are located in the two Class I areas, Gila Wilderness, managed by the Forest Service in Catron County, and Bosque del Apache National Wildlife Refuge, managed by USFWS in Socorro County.

3.2.1.1 Baseline Air Quality

As of 2005, ambient air monitoring stations have not been deployed in the Planning Area. The closest ambient pollutant monitoring station within the air resource study area is in Apache County, Arizona at Coyote Hill, approximately 10 miles west of the New Mexico border and 2 miles north of U.S. Route 60 (US 60). This station was established in part to monitor impacts from the Springerville Generating Station and Coronado Generating Station in eastern Arizona. These two coal-fired generating stations are the major source for criteria pollutants and the largest source of emissions located in the region.

The Coyote Hill monitoring station records data for nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and particulate matter less than 10 microns in diameter (PM_{10}). The most recent published data from this station as presented in Arizona Department of Environmental Quality's 2001 Air Quality Report and the NAAQS are listed in Table 3-1. The highest 24-hour average PM_{10} concentration recorded in the past year was 20 micrograms per cubic meter ($\mu g/m^3$), which is well below the NAAQS of 150 $\mu g/m^3$ for a 24-hour average PM_{10} concentration.

TABLE 3-1
2000 MONITORING DATA AT COYOTE HILL STATION, SPRINGERVILLE, ARIZONA

Pollutant, Station, and Standard	Annual Average	Maximum Values			Valid Samples
		One-Hour Average	Three-Hour Average	24-Hour Average	
Nitrogen Dioxide (NO_2)					
Station	0.001 ppm	0.021 ppm	—	0.005 ppm	7,858
NAAQS	0.053 ppm				
Sulfur Dioxide (SO_2)					
Station	0.65 µg/m^3	—	47 µg/m^3	11 µg/m^3	7,718
NAAQS	0.03 ppm		0.50 ppm	0.14 ppm	
Particulates equal to or less than 10 microns in diameter (PM_{10})					
Station	9.6 µg/m^3	—	—	20 µg/m^3	42
NAAQS	50.0 µg/m^3			150 µg/m^3	

SOURCE: Arizona Department of Environmental Quality 2001
NOTE: ppm = parts per million

The influence of anthropogenic air pollutant sources is expected to be minimal in the Planning Area, due to a lack of air emission sources in the region. Elevated localized concentrations of PM_{10} may be attributed to wind-blown dust over disturbed land surfaces and emissions from vehicles on unpaved roads. On a regional basis, power generation emission sources in eastern Arizona may affect the air quality in Socorro and Catron Counties due to transport with the prevalent west-to-east winds in the southwestern United States.

There are only eight facilities with air emission permits issued by the State of New Mexico within Socorro and Catron Counties, of which only two may be currently in operation. The operational facilities are minor sources (emit less than 100 tons per year of a criteria pollutant), both in Socorro County: (1) the Socorro Perlite Plant, and (2) fuel-burning equipment at the Very Large Array facility. According to data received from the New Mexico Air Quality Bureau, the Perlite Plant is the largest source of emissions and operates within its allowable emission rates for all criteria pollutants, with the exception of volatile organic compounds. The operator of the Very Large Array has reported no actual emissions since 1997.

In addition to the permitted sources in the Planning Area, there are a relatively small number of minor sources of air emissions that are not required to have an operating permit. For example, mining operations are regulated under the Mining Act Reclamation Program and are not monitored by the Air Quality Bureau.

3.2.2 Geology

Three distinct physiographic provinces have influenced the geologic history and rock types in the Planning Area (Grant and Foster 1989). In northwestern Socorro and northern Catron Counties, thick sequences of Permian and Cretaceous marine and continental sedimentary rocks characterize the stable platform of the Colorado Plateau province. In east-central Socorro and southern Catron Counties, Pennsylvanian marine and Permian continental sediments were uplifted and exposed in mountain ranges or block-faulted basins characteristic of the Basin and Range province. A Transitional province between the stable Colorado Plateau and the structurally complex Basin and Range provinces is characterized by large blocks of Colorado Plateau terrain separated from the craton by block-faulted grabens and basins.

The Tertiary-age opening of the Rio Grande Rift through central New Mexico combined with the Basin and Range extension to generate massive intrusives and volcanic activity through western Socorro County and much of Catron County. Tertiary alluvial sediments and volcanic plugs, flows, and ash-flow tuffs constitute most of the basin-fill material in the Transitional province.

Additional information on the geology of the Planning Area, including mapped data, is available in the Management Situation Analysis and the Energy and Minerals Potential Report (both are available in the Socorro Field Office).

3.2.3 Soil Resources

The U.S. Department of Agriculture (USDA) Soil Conservation Service (now the Natural Resource Conservation Service) has mapped most of the soils in Socorro County and northern Catron County (USDA Soil Conservation Service 1985, 1988). Soils were mapped at series, complex, and association levels; mapped information is provided in the Management Situation Analysis, which is available from the Socorro Field Office. The soils in Socorro and Catron Counties are derived from a variety of rock types, including granitic, volcanic, sedimentary formations, and alluvial and eolian sediments. There are three broad categories of soils within the two counties: (1) very shallow to deep, well-drained sandy loams with small rock fragments (gravel, cobbles) found on mesas, hills, mountains, ridges, slopes, and upland plains; (2) deep, well-drained very stony to very fine sandy and silty clay loams found on fan terraces, bajadas, and swales; and (3) deep, poor- to well-drained clay loams to loamy very fine sands found in the Rio Grande floodplain. Soils in the first category generally support piñon-juniper trees and grasses, which support livestock grazing, wildlife habitat, and woodland. Soils in the second category support grasses including blue grama and western wheatgrass; shrubs; and some trees. These areas are primarily used for open-land and rangeland livestock grazing and wildlife habitat. Soils within the Rio Grande floodplain are used as irrigated cropland and pastureland, and support urban development. Exposed rock outcrops, consisting of weathered and unweathered basalt, rhyolite, limestone, shale, and/or sandstone, occur throughout the two counties. The rock outcrops support little, if any, vegetation (USDA Soil Conservation Service 1985, 1988). Most of the soils are in the neutral to strongly alkaline range (pH of 6.6 to 9.0 standard units).

Erosion is one form of soil degradation; other types of degradation include soil compaction, low organic matter, loss of soil structure, poor internal drainage, salinization, and soil acidity problems. Factors that contribute to soil erosion include wind, rain, and stormwater runoff; soil type, slope length and steepness; and absence of or damage to the plant or vegetative cover. Other factors, such as off-road vehicles, improperly built or maintained roads and trails, and overgrazing accelerate the natural erosion process. Generally, soils with faster infiltration rates and higher levels of organic matter have a greater resistance to erosion. Sand, sandy loam, and loam-textured soils tend to be less erodible than silt, very fine sand, and certain clay textured soils. Mapping of areas with potential for soil erosion is included in the Management Situation Analysis, available from the Socorro Field Office.

Some areas within the Planning Area exhibit soil piping, bank sloughing, and bank cutting. These conditions usually occur in areas that receive heavy runoff. Soils in the resultant swales and gullies typically are clays or silty clays that have very high shrink and swell potential, and that can contribute to soil cracking and tunneling (BLM 1989a).

Prime farmland soils are defined by USDA as those that are “best suited to producing food, seed, forage, fiber, and oilseed crops” (USDA Soil Conservation Service 1988). Prime farmland soils are typically loams, silt loams, silts, and clay loams that have developed on floodplains. According to USDA (Soil Conservation Service 1985, 1988), there are no prime farmland soils in any of the surveyed areas in Socorro or Catron Counties.

3.2.4 Water Resources

3.2.4.1 Groundwater

Socorro and Catron Counties rely entirely on groundwater for drinking water. Groundwater also is used for agricultural irrigation, stock water, and industrial development. Degradation of groundwater supplies can result from both point and non-point source pollution. Point-source facilities that have the potential to impact groundwater include domestic wastewater treatment systems, mining operations, dairies, and industrial plants. Non-point source pollution from irrigated crops, feedlots, application of pesticides and fertilizers, and concentrated animal feeding operations can contribute nutrients, sediment, animal waste, salts, and pesticides to stormwater runoff that can then threaten the groundwater. In urbanized areas within the Planning Area, large numbers of domestic septic tanks and cesspools can contribute to non-point source groundwater pollution.

Four declared groundwater basins are located within the boundaries of Socorro and Catron Counties: Rio Grande, Gila-San Francisco, Gallup, and Tularosa. A small portion of an undeclared groundwater basin is located in the northeastern corner of Socorro County (New Mexico Office of the State Engineer [State Engineer] 2003). Map 3-1, Declared Groundwater Basins, shows the boundaries of the groundwater basins.

The Rio Grande Basin is the largest groundwater basin in New Mexico, extending approximately 250 miles south from the Colorado-New Mexico border to just south of Socorro County. Approximately 80 percent of Socorro County and 30 percent of Catron County lie within the Rio Grande groundwater basin. Depth to water in the Rio Grande Basin ranges from 12 feet to over 500 feet below ground surface, but is typically between 50 and 300 feet below ground surface (Roybal 1991). Groundwater flow direction in the Rio Grande Basin is controlled by the Rio Grande, local canals and conveyance channels, and areas of local pumping (Anderholm 1987).

Available data from wells in the Rio Grande Basin indicate that groundwater quality varies from good (total dissolved solids less than 1,000 milligrams per liter [mg/L]) to brackish (total dissolved solids between 1,000 and 10,000 mg/L) (Roybal 1991). In general, groundwater quality near the mountain fronts is good. Closer to the Rio Grande Valley, total dissolved solids concentrations range from less than 200 mg/L to over 3,000 mg/L (Roybal 1991).

The Gila-San Francisco groundwater basin, located in south, west, and southwestern Catron County, includes both the Gila and San Francisco surface water drainages. Groundwater within the alluvial deposits of the San Francisco Basin is unconfined and provides sufficient water for many domestic and stock wells. Reported yields from the alluvial aquifer range from 1 to 375 gallons per minute (Basabilvazo 1997). Underlying the alluvial deposits in the Gila-San Francisco Basin is the Quaternary to Tertiary Gila Conglomerate, which produces moderate to poor quantities of water (reported yields of 2 to 5 gallons per minute) (Basabilvazo 1997).

The northwestern quarter of Catron County lies within the Gallup groundwater basin, which is adjacent to the western border of the Rio Grande Basin. Groundwater quality data for the Gallup and Gila-San Francisco basins are limited, but indicate that the quality generally is good. Groundwater in the vicinity of Zuni Salt Lake, located in the northwestern corner of the Gallup Basin, contains elevated concentrations of sodium (up to 400 mg/L) (Basabilvazo 1997).

A small portion of southeastern Socorro County lies in the northwestern end of the Tularosa Basin. The primary aquifer in the Tularosa Basin is the basin-fill aquifer, located in the center of the basin, in Lincoln and Otero Counties. Most groundwater in this area is used for livestock watering (Roybal 1991). Sources of recharge to the groundwater basins include mountain-front recharge from snowmelt and rain, seepage

from the Rio Grande and ephemeral streams, recharge from excess applied irrigation water, and subflow from adjoining groundwater basins (Anderholm 1987; Roybal 1991).

According to the State Engineer's office, there are approximately 2,350 registered groundwater wells in Socorro County used for domestic and stock purposes and another 430 wells registered for nondomestic uses, including irrigation, mining, municipal, observation, and water for dairies (State Engineer 2003). Catron County has approximately 2,600 registered groundwater wells used for domestic and/or stock purposes and 40 registered wells for irrigation, commercial, and other uses (State Engineer 2003). The actual number of groundwater wells may be greater than the number of registered wells because, under New Mexico law, registration of wells is not required until the groundwater basin is declared by the State Engineer's office.

A total of 42,184 acre-feet of groundwater were withdrawn in Socorro County in 1995 (State Engineer 2003). For the same year, Catron County reported a total of 964 acre-feet of groundwater withdrawn. Of the combined two counties' groundwater withdrawals for 1995, 88 percent was used for agricultural irrigation (State Engineer 2003). Groundwater withdrawals in 1995 indicate an 8 percent increase from the total reported groundwater usage for 1975 (State Engineer 2003).

3.2.4.2 Surface Water

The Rio Grande bisects the eastern half of Socorro County for approximately 88 miles and is the effectual base level for all eastward-draining watersheds. The Continental Divide cuts across a portion of central Catron County, separating catchments that topographically drain to the Rio Grande from those that comprise the headwaters of the Gila and Little Colorado Rivers. Topographically, the Planning Area lies within the Gila River, San Francisco River, and the Rio Grande Basins region, as defined by the New Mexico Environment Department (NMED) (New Mexico Water Quality Control Commission 2002) for enforcement of the U.S. Clean Water Act (Title 33, United States Code, Section 1251, et seq. [33 U.S.C. 1251 et seq.]); and the New Mexico Standards for Interstate and Intrastate Streams (New Mexico Administrative Code 20.6.4).

3.2.4.3 Watersheds

The Planning Area is divided into numerous watersheds and subwatersheds. Perhaps the most basic division is the Continental Divide, which separates drainages that topographically descend to the Colorado River from those that descend to the Rio Grande. Beyond this, the U.S. Geological Survey (USGS) Hydrologic Unit Code system divides Socorro and Catron Counties into 9 and 12 watersheds, respectively (Table 3-2 and Map 3-2, Watershed Basins). Because of the small size of some watersheds, not all are visible on the map.

One watershed of particular interest is the portion of Carrizo Wash that supplies Zuni Salt Lake, a feature of considerable geologic and cultural significance. Concern was first heightened when Salt River Project was granted a permit to mine coal from the Moreno Hill Formation at French's Arroyo, about 12 miles from Zuni Salt Lake. The intention was to use groundwater from the Dakota Formation at the mine site included in the mine permit. It was originally believed, based upon existing hydrologic and geologic studies of the area (McGurk and Stone 1986; New Mexico Energy, Minerals, and Natural Resources Department [NMEMNRD] 1994), that the hydraulic behavior of the aquifers (leaky versus confined), insufficient hydrogeologic continuity, and the distance would preclude impacts to Zuni Salt Lake. Further, the source of water to the lake appeared to emanate from much deeper than the Dakota Formation (Willard 1957).

TABLE 3-2
USGS-DESIGNATED WATERSHED AREAS FOR PLANNING AND DECISION AREAS

Name	USGS Hydrologic Unit Classification Number	Acres of BLM-Managed Surface Land	Planning Area Acres	Percent of BLM-Managed Surface Land in the Watershed Area
Carrizo Wash	15020003	356,613	1,109,978	32.1
Elephant Butte Reservoir	13020211	118,993	911,123	13.1
North Plains	13020206	12,858	189,199	6.8
Plains of San Agustin	13020208	137,842	1,267,315	10.9
Rio Salado	13020209	18,161	155,199	11.7
San Francisco	15040004	740	1,092,479	0.1
Upper Gila	15040001	77,254	792,702	9.7
Jornada Del Muerto	13020210	115,283	850,125	13.6
Rio Grande-Albuquerque	13020203	276,817	934,046	29.6
Rio Puerco	13020204	99,071	812,647	12.2
Tularosa Valley	13050003	108,565	399,029	27.2

SOURCE: U.S. Geological Survey 2003

Subsequent work contracted by the Bureau of Indian Affairs (BIA) (King Engineering 2001) and the Zuni Nation (Glorieta Geosciences 1997, 2001) challenged these results; the BIA and Zuni Nation reports were counter-challenged (Duke Engineering 2001a, 2001b; U.S. Department of the Interior [USDI], Office of Surface Mine Reclamation and Enforcement 2001), and a controversy began that has not been resolved. Several pump tests were conducted on wells in the basin to evaluate (1) the behavior of the Dakota and Atarque Formation aquifers and (2) the effects of the proposed pumping by the Salt River Project on adjacent wells. The initial hydrologic work for the permit contracted by Salt River Project was directed primarily at establishing the potential for impairment to existing stock watering and domestic wells in the basin, not the impact on Zuni Salt Lake. Much of the exception taken by BIA and the Zuni Nation was based upon alternative interpretations of these results. Although a MODFLOW computer model was created for the prediction of impacts to both the Atarque and Dakota Formations (Glorieta Geosciences 1997, 2001), these models again were focused upon the potential effects of the proposed mine operations.

Recently, additional drilling and well testing has provided new insight into the hydrogeology of the lake (Glorieta Geoscience 2003). The Atarque Sandstone, which is found at, or very close, to the surface in the basin, appears to be contributing groundwater flow to the Zuni Salt Lake. The basin has not yet been investigated with any sort of predictive, quantitative hydrogeological/ geochemical model that represents the known complexity of the region, as was originally suggested by the NMEMNRD study (NMEMNRD 1994). An extensive drilling and well-testing investigation also would be required since much of the data required by a regional model is confined to two small areas.

Given the contentious nature of the situation, a study conducted and funded independent of any of the parties involved would be more likely to assist in resolving the controversy.

However, the abandonment by the Salt River Project of the Fence Lake Mine project, removing any commercial impetus to answer these questions, has put such a plan on hold. At the present time, technical studies only support that groundwater extraction or injection in the basin could have an impact on the

chemical water quality or quantity of the Zuni Salt Lake and that the mitigation of such impact is within the land management decision-making capability of BLM.

3.2.4.4 Water Quantity

In most of the Planning Area, surface water is used only sporadically. Dependable, year-round sources of surface water are rare in this arid region. Those supplies that have been historically used at a high level, such as the Rio Grande, are under enormous pressure between exploding urban and suburban growth, industrial needs, agricultural water rights, and ecosystem survival. In addition, the overdrafted aquifers and potential for long-term drought have pushed these resources to critically low levels (State Engineer 2002).

USGS 1995 water use data reflects diverse water use in the Planning Area (Solley et al. 1998) For the period of record, uses in Socorro County consumed about 110 million gallons per day (mgd) and in Catron County, 16.6 mgd of surface water. This is approximately a third of the total surface water use in the 12 watersheds that are included within the two counties. Agricultural irrigation was the most prodigious user of surface water with a total use of 109 mgd in Socorro County and 16.2 mgd in Catron County.

Surface water is not used domestically on any measurable scale within either the Planning Area or the greater watershed areas. However, individuals may capture rainwater for various nonpotable uses. Similarly, there is no surface water use for mining, industry, or power production within the Planning Area, although within the Rio San Jose watershed there are mouth-of-mine, coal-fired generating facilities in Cibola County that use surface water. Hydroelectric power also is generated below Elephant Butte Dam, located outside of the Planning Area.

Livestock grazing remains the only other surface water use in the Planning Area, utilizing about 0.32 mgd. Away from the Rio Grande, stock watering is a highly important consumptive use of surface water. Although many groundwater supplies are used in the livestock industry, numerous constructed or improved water facilities are scattered across the Planning Area in the form of check dams, earthen tanks, and other impoundments. In addition, some stock watering occurs along springs and seeps. Within the Plains of San Agustin, North Plains, and Jornada del Muerto closed basins, stock watering is the only measurable use of surface water. More information on surface water use in the Planning Area is available in the Management Situation Analysis on file in the Socorro Field Office.

Use of water by wildlife and riparian habitat is not quantified by the USGS database, although studies demonstrate that it is an important resource (Arid West Water Quality Research Project 2002). The amount of water necessary to sustain aquatic or terrestrial ecosystems remains an intensely site-specific and complex quantity to define (Poff and Ward 1989). The consumptive use of water by healthy rangeland has been examined recently from a qualitative perspective (Pellant et al. 2000), but a regional or watershed-scale usage estimate, encompassing all of the different ecological functions of water, remains an open question. Thus, it is impossible to estimate the general use of water by ecosystems within the Planning Area.

Perhaps the closest approximation to an ecological use of water in the terrestrial parts of the Planning Area is being developed at the Sevilleta Long Term Ecological Research site. A detailed water balance is one of the funded projects integrated with the Sevilleta Long Term Ecological Research program goals. The water balance will be correlated to changes in vegetation patterns and stream hydrology on the site. Much of the soil moisture, precipitation, and evapotranspiration data collected on the site is to be used for this modeling.

The San Acacia reach of the Rio Grande is designated as critical habitat for the federally listed Rio Grande silvery minnow. Although this listing is discussed in other sections from a biological perspective, the critical impact causing the listing is declining flows on the mainstem of the river in the Planning Area. The reasons for this decline are complex and controversial. The flow in the river is managed by the Bureau of Reclamation through releases at upstream dams as part of the Rio Grande Project. Delivery of a portion of this water to Elephant Butte Reservoir is a stipulation of the Rio Grande Compact and other Federal water rights obligations.

In June 2001, a Biological Opinion released by the USFWS indicated that the following hydrologic conditions must be met to avoid damaging the middle Rio Grande critical habitat within the Planning Area: (1) continuous flow from October to July would be required with a target at the San Marcial gage of 50 cubic feet per second (cfs) and a minimum flow of 40 cfs; (2) in May and June the minimum flow at San Marcial would increase to 50 cfs; (3) during the spring, initiate a brief increase in flows to simulate snowmelt flooding and cue spawning; and (4) from July through October, 50 cfs over the San Acacia diversion dam would be required to maintain the habitat. In addition, other river restoration and enhancement projects were required (USFWS 2001). In October 2002, the U.S. District Court rejected the revised Biological Opinion and required Reclamation to maintain the 50 cfs flows in the San Acacia reach. There is no indication how this matter finally will be resolved, particularly given the continued drought in New Mexico, but it is clear that the court will require all Federal agencies to work on maintaining stream flows in the Rio Grande. It is also clear that the City of Albuquerque and agricultural irrigators will press for their legal share of any water that flows through the Planning Area.

What does seem clear is that all Federal land management within the watershed of the San Acacia reach will be required to maximize surface flows to the river and otherwise protect aquatic and riparian habitat on the river. Although it does not manage river flows, BLM is currently playing an important part in riparian restoration along the river and manages a large percentage of this watershed. It is likely that all future actions that suggest an impact to the quality of runoff to the Rio Grande will require some analysis of the impact to listed species such as the silvery minnow.

3.2.4.5 Water Quality

Quality of the surface water in the Planning Area varies considerably. Several of the USGS stations maintain, or formerly maintained, water-quality monitoring stations in the various watersheds. NMED also monitors stream and lake water-quality data as part of their obligations under 308(d) of the Clean Water Act. USFWS monitors water quality in support of the two National Wildlife Refuges, and the Sevilleta Long Term Ecological Research has some limited data on sediment transport in their research plots.

Within Socorro County, the Socorro wastewater treatment plant (National Pollutant Discharge Elimination System permit number NM0028835) discharges to the Luis Lopez Drain, which flows into the Riverside Drain and, ultimately, to the Rio Grande. Discharge from the facility is about 1.0 mgd. The facility is required to submit reports to NMED on water-quality monitoring of the released effluent. Water-quality concerns reported by the discharger are pesticides and sludge.

The NMED 2002-2004 305(b) report on water quality in New Mexico was completed in July of 2002 (New Mexico Water Quality Control Commission 2002). This report is the basis for listing on the 303(d) list of impaired State waters. Within the Rio Grande-Albuquerque watershed, NMED monitors the Rio Grande between San Acacia and San Marcial. No Rio Grande reaches located in the Planning Area are listed as impaired. The Rio Salado is monitored at the boundary with the Alamo Navajo Reservation. The report does not indicate any current water quality problems on these reaches. In the Tularosa Valley,

13 water bodies are monitored by NMED (including the evocatively named "Lake Stinky"). None of the Planning Area is impacted by any surface water-quality problems in the Tularosa Valley.

Four lakes, including Quemado Lake, are monitored by NMED in the Carrizo Wash watershed. The lake has been classified by NMED as impaired by nuisance algae, excess nitrogen and phosphorus, and sediment, with extreme eutrophication problems. Three lakes are monitored in the Plains of San Agustin watershed; however, they do not appear to have any problems. The Rio Puerco, from the mouth on up, has been listed for excess silt disposition and this appears to be a continuing problem. However, NMED considers the stream as currently meeting all water quality standards.

There are numerous monitoring sites in the San Francisco River watershed including Apache Canyon, Centerfire Creek, Glenwood Pond, Mineral Creek, Mule Creek, Negrito Creek (2), San Francisco River (5), Silver Creek, Trout Creek, Tularosa River (2), and Whitewater Creek (3). These sites have resulted in various listings for temperature, conductivity, total ammonia, nitrogen, phosphorus, fecal coliform, low dissolved oxygen, cyanide, aluminum, zinc, turbidity, riparian vegetation, and streambank destabilization. Many of these problems have been attributed to natural background or poor quality/incorrect data. However, several streams (Centerfire Creek, Negrito Creek, San Francisco River, Tularosa River, and Whitewater Creek) still have problems with a variety of parameters.

The Upper Gila River also has been heavily monitored by NMED with sites within the Planning Area at Beaver Creek, Black Canyon Creek, Canyon Creek, Diamond Creek, Gila River (East Fork), Gila River (Middle Fork), Gila River (West Fork), Gilita Creek (2), Hoyt Creek, Iron Creek, Snow Canyon Creek, Taylor Creek (2), Willow Creek, and Wall Lake. Numerous problems have emerged from these data including temperature, phosphorus, nitrogen, low dissolved oxygen aluminum, turbidity, sediments, and/or nuisance algae. Wall Lake was found choked with macrophytes (water plants) and high in nutrients and sediment. As was the case for the San Francisco watershed, many of these water-quality issues were determined by NMED to be based on poor or incorrect data. Nevertheless, problems remain at Wall Lake, Black Canyon Creek, Canyon Creek, the East Fork of the Gila River, the Middle Fork of the Gila River, Gilita Creek, Taylor Creek, and Turkey Creek and all are listed as not supporting their designated use due to water quality impairments.

The Elephant Butte Reservoir watershed is drained by several streams that flow out of the southern part of the Planning Area. The only stream that is monitored by NMED is Alamosa Creek. Alamosa Creek has been listed since 1998 for excess sediment and riparian vegetation and streambank destabilization.

3.2.5 Vegetation

The information used to characterize current conditions in Socorro and Catron Counties was obtained from the USDA Natural Resources Conservation Service's Major Land Resource Area (MLRA) descriptions (BLM 2000a) and vegetation types classified by Dick-Peddie (1993). Southwestern ReGAP data were released in December 2005 and its field verification is ongoing, although the Chihuahuan Desert Ecoregion has been field-verified and will be cross-referenced in this document. Future planning efforts requiring vegetation data likely will utilize the ReGAP data, as available and appropriate.

MLRAs identify homogeneous areas in terms of land use, elevation, topography, climate, water resources, potential natural vegetation, and soils. These broad scale descriptions are based on aggregations of geographically associated areas derived from state soil geographic database map unit boundaries, commonly referred to as ecological site descriptions. Vegetation types classified by Dick-Peddie are sub-types of the six major vegetation types found in New Mexico: tundra, forest, woodland, grassland, scrubland, and riparian. The MLRA model uses a soils-up approach to identify vegetative communities and habitat and the Dick-Peddie model uses a vegetation-down approach. Because the Dick-Peddie

dataset emphasizes vegetative communities and provides greater detail in describing the different plant communities, it is used to a greater extent to describe the overall vegetation composition and to assess impacts within the Planning and Decision Areas.

3.2.5.1 Major Land Resource Areas

The Planning Area contains parts of four MLRAs. MLRAs are broad geographic areas that have a distinct combination of climate, topography, vegetation, land use, and general type of farming (USDA, Soil Conservation Service 1981). The four MLRAs within the Planning Area include the (1) New Mexico and Arizona Plateaus and Mesas; (2) Arizona and New Mexico Mountains; (3) Southern Desert Basins, Plains, and Mountains; and (4) Pecos-Canadian Plains and Valleys. These categories are based on USDA classifications, and are shown on Map 3-3, Vegetation and Major Land Resource Areas. Rangelands also are divided into ecological sites for the purposes of inventory, evaluation, and management. Ecological sites are correlated between areas, states, and MLRAs on the basis of soils, proportion of species, and annual production of the potential plant communities.

The acreage of each MLRA in the Planning and Decision Areas is provided in Table 3-3. The full extent of the Planning Area was not mapped due to low data resolution; therefore, the total number of acres of vegetation does not equal the total number of acres in the Planning Area. The following MLRA descriptions were taken directly from Land Resource Regions and Major Land Resource Areas of The United States Agriculture Handbook 296 (USDA, Soil Conservation Service 1981).

TABLE 3-3
MAJOR LAND RESOURCE AREAS IN THE PLANNING AND DECISION AREAS

Major Land Resource Areas (Vegetation Type)	Acres in Planning Area	Acres in Decision Area	Acres on BLM-Managed Surface Lands
New Mexico and Arizona Plateaus and Mesas	3,465,186	2,071,099	647,335
Arizona and New Mexico Mountains	2,731,306	2,395,327	155,707
Southern Desert Basins, Plains, and Mountains	1,750,938	1,195,302	505,986
Pecos-Canadian Plains and Mountains	749,980	498,825	197,867
Total	**8,697,410**	**6,160,463**	**1,506,895**

SOURCE: Bureau of Land Management 2003a

New Mexico and Arizona Plateaus and Mesas

Elevation and Topography. Elevation ranges from 1,500 to 2,300 meters, but a few isolated mountains are higher than 2,600 meters. These plateaus and mesas have gentle slopes, but precipitous slopes occur along valley walls and edges of the mesas.

Climate. Average annual precipitation is between 250 and 325 millimeters in most of the area but higher elevations receive an average of 375 millimeters. About two-thirds of the precipitation falls from midsummer to early autumn. The average annual temperature ranges from 9 to 12 degrees Celsius and the average freeze-free period is between 120 to 180 days.

Water. Water is scarce because of the low precipitation and sparse streamflow.

Soils. Most of the soils are Argids and Orthents. They are well drained and fine-textured to medium-textured and have a mesic temperature regime, an aridic moisture regime, and mixed mineralogy.

Potential Natural Vegetation. Most of this area supports grassland vegetation. Indian ricegrass, blue grama, dropseed, and galleta are the major species. Alkali sacaton, fourwing saltbush, winterfat, and rabbitbrush grow in the valleys between mesas. Piñon-juniper woodland occur at the higher elevations and also on shallow soils and escarpments. The understory includes western wheatgrass, galleta, sideoats grama and, in some places, big sagebrush.

Arizona and New Mexico Mountains

Elevation and Topography. In most places, elevation ranges from 1,400 to 2,400 meters, with a maximum height of 3,800 meters. This area is mostly very hilly and mountainous, but an upland plateau is dissected by many deep canyons.

Climate. The average annual precipitation ranges 275 to 900 millimeters, increasing with elevation. The average annual temperature is between 5 and 15 degrees Celsius. In timbered areas at higher elevations, the average is 7 degrees Celsius, and at lower elevations it is 10 degrees Celsius. The average freeze-free period ranges from less than 70 days at higher elevations to 170 days at lower elevations, averaging about 115 days.

Water. This MLRA supplies water for much of the adjoining irrigated areas. Because more than one-half of the annual precipitation occurs in winter, there is a general deficiency of moisture during the growing season. Several of the larger streams and a few of their larger tributaries maintain a yearlong flow. Much of this water is stored in reservoirs near or below the southern edge of the area and is used for irrigation and municipal water supplies. Small natural and artificial lakes at higher elevations are used for fishing and other recreation. Annual runoff into all reservoirs is highly variable, and most of the smaller lakes and reservoirs are dry in some years. Groundwater is limited and usually occurs at great depth.

Soils. The dominant soils are borolls, boralfs, ustolls, ustalfs, orthents, and orthids. They have a cryic, frigid, or mesic temperature regime, depending mainly on elevation.

Potential Natural Vegetation. This area supports alpine vegetation, conifer forests, chaparral, and grasses because of the broad elevation range. Cushion plants such as moss campion, kobresia, alpine timothy, and many low-growing forbs grow above timberline.

Spruce-fir woodland characterizes the area below timberline. Aspen grows on sites that have not been disturbed by past fires. The understory includes Thurber fescue, brome, bluegrasses, mountain muhly, Arizona fescue, lupine, aspen peavine, penstemons, and daisies. The major part of the area is a vast ponderosa pine forest. Common understory plants include bromes, Junegrass, pine dropseed, wheatgrasses, mountain muhly, blue grama, sedges, and snowberry. Piñon-juniper woodland occurs at elevations below 2,100 meters. The understory includes blue grama, tobosa, sideoats grama, and western wheatgrass. Below elevations of about 1,800 meters, turbinella oak, mountain mahogany, hollyleaf buckthorn, ceanothus, and manzanita grow along with sideoats grama, blue grama, Junegrass, longtongue muttongrass, squirreltail, and bluegrasses.

Southern Desert Basins, Plains, and Mountains

Elevation and Topography. Elevation ranges from 800 to 1,500 meters in basins and valleys, but reaches more than 2,600 meters in the mountains. Broad desert basins and valleys are bordered by gently sloping to strongly sloping fans and terraces. Steep north-south trending mountain ranges and many small mesas occur in the western portion of the MLRA.

Climate. The average annual precipitation ranges from 200 to 325 millimeters. Maximum precipitation occurs from midspring to midautumn. The average annual temperature is between l3 and 18 degrees Celsius. An average freeze-free period of 200 to 240 days occurs in most of the area but only 180 days are freeze-free in the northern ends of the Pecos and Rio Grande valleys.

Water. The Rio Grande and Pecos Rivers and a few of their larger tributaries are the only perennial streams. Water for irrigation generally is obtained from these rivers or from wells. Groundwater in deep valley fill provides water for domestic use and livestock, and in some places provides for irrigation.

Soils. Most of the soils are argids and orthids. They are well drained and medium-textured and have a thermic temperature regime, aridic moisture regime, and mixed or carbonatic mineralogy.

Potential Natural Vegetation. This area supports desert grass-shrub vegetation. Giant dropseed and mesa dropseed, along with scattered shrubs such as sand sagebrush and yuccas, grow on the sandier soils. Creosotebush, tarbush, catclaw, and javalinabush are found on gravelly, calcareous foot slopes. Giant sacaton, vine-mesquite, desert willow, brickellbush, and mesquite grow in drainageways and depressions. Piñon-juniper, scattered ponderosa pine, and Douglas fir also occur.

Pecos-Canadian Plains and Mountains

Elevation and Topography. Elevation ranges from 1,200 to 2,100 meters, increasing gradually from southeast to northwest, but reaches 2,400 meters on a few mesas and mountains. Most of these dissected high plains are gently sloping to rolling, but bands of steep slopes and rough broken land border the stream valleys. A few isolated mountains, mesas, and canyon walls have steep to very steep slopes. Valley floors are mostly narrow and cut by stream channels.

Climate. The average annual precipitation is between 300 and 400 millimeters, but it fluctuates widely from year to year. Maximum precipitation occurs from late spring to early autumn. The average annual temperature ranges from 10 to 16 degrees Celsius, and the average freeze-free period is between 135 to 200 days, decreasing from southeast to northwest.

Water. Water is scarce throughout the area because of the low and erratic precipitation and the few perennial streams. Groundwater in deep sand and gravel in the north and from limestone in the southern two-thirds of the area provides water for domestic use and livestock; locally it provides water for irrigation. Groundwater is scarce in areas where shale and sandstone occur near the surface.

Soils. Most of the soils are orthids, argids, and ustolls. They are well drained and moderately fine textured to moderately coarse textured and have mixed mineralogy. In the north and west, these soils have a mesic temperature regime and in the south and east a thermic temperature regime. They have an ustic or aridic moisture regime.

Potential Natural Vegetation. This area supports plains grassland vegetation that is dominated by short and mid-grasses. Blue grama is the dominant species. Western wheatgrass is the associated species in the northern part of the area, while lesser amounts of blue grama in association with black grama, galleta, New Mexico feathergrass, and a variety of shrubs, halt shrubs, and forbs characterize the southern part. Scattered piñon-juniper with an understory of sideoats grama, bottlebrush squirreltail, and western wheatgrass grow on shallow soils and in escarpments. Ponderosa pine grows on north and east slopes of the high mesas.

Cattle and sheep grazing is the principal enterprise. Eastern slopes of the high mesas in the north are covered by forest vegetation, but the total forested area is small.

3.2.5.2 Vegetation Types

Thirteen major vegetation types were identified for Socorro and Catron Counties with grasslands and desert scrub occupying the greatest area in Socorro County (Table 3-4). Catron County is a mix of mountain ranges with coniferous forests, woodlands and desert grasslands. These vegetation types are shown on Map 3-3, which is based on vegetation types classified by Dick-Peddie (1993). The acreage of each vegetation community in the Planning and Decision Areas is provided in Table 3-4. The full extent of the Planning Area was not mapped; therefore, the total number of acres of vegetation does not equal the total number of acres in the Planning Area. Following the table is a description of the vegetation types.

TABLE 3-4
VEGETATION IN THE PLANNING AND DECISION AREAS

Vegetation Type	Acres in Planning Area	Acres in BLM-Managed Surface Land
Montane Grassland	441,716	0
Plains-Mesa Grassland	1,037,039	258,389
Desert Grassland	1,015,066	316,268
Subalpine Coniferous Forest	133,049	0
Montane Coniferous Forest	1,584,002	30,945
Coniferous and Mixed Woodland	1,551,918	143,686
Juniper Savanna	1,734,816	324,153
Montane Scrub	87,000	11,456
Plains-Mesa Sand Scrub	603,066	201,015
Chihuahuan Desert Scrub	531,604	168,059
Closed Basin Scrub	189,832	13,941
Lava Beds*	59,004	21,353
Urban, Farmland, or Open Water Areas*	109,697	15,518
Total	**8,670,812**	**1,504,782**

SOURCE: Dick-Peddie 1993
NOTES: *These are land covers and not vegetation types.
There are additional lava beds that are not shown in the Dick-Peddie data, as noted in Section 3.2.5.2.4.

Grasslands

Montane Grassland

Montane grasslands are found within the subalpine and montane coniferous forest, usually occur from 8,900 to 11,500 feet, and are best developed on a smooth terrain. Forbs share dominance with grass in this vegetation type. The dominant grasses are tall (up to 3 feet) bunch grasses including fescue (*Festuca* sp.), oatgrass (*Danthonia* sp.), junegrass (*Koeleria* sp.), tufted hairgrass (*Deschampsia* sp.), and some species of bluegrass (*Poa* sp.) and muhly (*Muhlenbergia* sp.). Distribution of montane grassland in the Planning Area is limited to meadows in between the Mogollon and Elk Mountains in the south-central portion of Catron County.

Plains-Mesa Grassland

Plains-mesa grassland is the most extensive grassland in New Mexico. It merges with savanna or woodland at the highest elevational boundaries and with desert grassland or desert scrubland at its lowest elevational boundaries. Blue grama (*Bouteloua gracilis*) is the dominant species throughout this community, but other species also are common including buffalograss (*Buchloe dachtyloides*), galleta

(*Hilaria jamesii*), New Mexico feathergrass (*Stipa neomexicana*), and needle-and-thread grass (*Stipa comata*). Forbs do not play a significant role in plains-mesa grassland, but some forb species are used as indicator species including red globemallow (*Sphaeralcea cocinea*), curly cup gumweed (*Haplopappus spinulosus*), coneflowers (*Ratibida* sp.), and Rocky Mountain zinnia (*Zinnia grandiflora*). A few shrubs may be scattered in the grassland including soapweed (*Yucca glauca*), fringed sage (*Artemisia frigida*), winterfat (*Krascheninnikovia lanata*), Bigelow sagebrush (*Artemisia bigelovii*), and honey mesquite (*Prosopis glandulosa*). Distribution of plains-mesa grassland in the Planning Area occurs on the plains of eastern Socorro County and northwestern and central Catron County, primarily on Chupadera Mesa in Socorro County and the North and San Agustin Plains in Catron County.

Desert Grassland

Desert grassland is a transitional zone between plains-mesa grassland or montane scrub at its higher elevational boundaries and Chihuahuan desert scrub or Great Basin desert scrub at its lower elevational boundaries. Under Southwestern ReGAP, this area is classified as Chihuahuan semi-desert grassland, which is further broken down to Chihuahuan piedmont semi-desert grassland and Chihuahuan sandy plains semi-desert grasslands. The list of major plants constituting desert grassland vegetation is extensive and variable, due to the transitional nature of this community. The dominant grass species is black grama (*Bouteloua eriopoda*) and other common grasses include bush muhly (*Muhlenbergia porteri*), sand dropseed (*Sporobolis cryptandrus*), and purple three awn (*Aristida purpurea*). Some common shrubs are longleaf ephedra (*Ephedra trifurca*), thick-leaved yuccas (*Yucca baccata, Y. torreyi*), and soaptree yucca (*Y. elata*). Subshrubs may include snakeweed (*Gutierrezia sarothrae*), feather peabush (*Dalea formosa*), false mesquite (*Caliandra eriophylla*), various prickly pears (*Opuntia* spp.), and barrel cactus (*Ferocactus wislizenii*). Desert grasslands are found along the Rio Grande and in the northwestern part of Catron County. Semi-desert grasslands are recognized for their regional biological value, especially their importance to grassland birds (NMDGF 2005a). Various raptor species utilize these grasslands, including the aplomado falcon.

Woodland/Forests

Subalpine Coniferous Forest

Subalpine coniferous forests occur generally from 9,500 feet to 12,000 feet. These forests have short growing seasons and heavy snow accumulation. This community is very important in the watershed, contributing to water storage and discharge from snow. The climate is cold, with a mean annual temperature at 34 to 36 degrees Fahrenheit and an annual precipitation of 34 inches per year. Characteristic trees include Engelmann spruce (*Picea engelmannii*) and corbark fir (*Abies lasiocarpa* var. *arizonica*). Common shrubs are currants (*Ribes montigenum*) and bearberry honeysuckle (*Lonicera involucrate*). Common grasses are fringed brome (*Bromus ciliatus*), mountain trisetum (*Trisetum spicatum*), bluegrasses (*Poa glauca*), and nodding woodrush (*Luzula parviflora*). Common herbs are wood nymph (*Monesis uniflora*), showy fleabane (*Erigeron peregrinus*), white-flowered lousewort (*Pedicularis racemosa*), and alpine clover (*Trifolium dasyphyllum*). Distribution of subalpine coniferous forest in the Planning Area occurs in the Magdalena Mountains and San Mateo Mountains in western Socorro County and in the Mogollon, Tularosa, and Gallo Mountains interspersed in Catron County.

Montane Coniferous Forest

Montane coniferous forests occur generally from 8,000 to 10,000 feet. Precipitation (rain and snow) is abundant, so soils are moist for most of the growing season. There is a long growing season of favorable temperatures, so high biomass forests are found within this community. At lower elevations (generally below 8,500 feet) of the montane coniferous forests, the growing season is shorter (180 days), and the soil may be dry during the months of May and June. Characteristic trees of the higher elevations include

Douglas-fir (*Pseudotsuga menziesii* var. *glauca*), white fir (*Abies concolor*), blue spruce (*Picea pungens*), aspen (*Populus tremuloides*), and several pine species. Characteristic trees of the lower elevations include ponderosa pine (*Pinus ponderosa*), Chihuahua pine (*Pinus leiophylla*), piñon (*Pinus edulis*), junipers (*Juniperus* sp.), and several oaks (*Quercus* sp.). Gambel oak (*Q. gambelii*) is the major associated understory shrub, but other shrubs may include New Mexico locust (*Robinia neomexicana*), creeping mahonia (*Berberis repens*), and wood rose (*Rosa arizonica*). Common associated herbs include ross sedge (*Carex rossii*), vetch (*Vicia americana*), peavines (*Lathyrus arizonica*), yarrow (*Achillea millefolium* var. *lanulosa*), and sages (*Artemisia ludoviciana* and *A. franserioides*). Grasses such as Arizona fescue (*Festuca arizonica*), Kentucky bluegrass (*Poa pratensis*), muttongrass (*Poa fendleriana*), and fringed brome (*Bromus ciliatus*) are common. Distribution of montane coniferous forest in the Planning Area occurs in the Magdalena Mountains and San Mateo Mountains in western Socorro County and in the Mogollon, Tularosa, Gallo, Datil, San Francisco, Gallo, and Elk Mountains interspersed throughout Catron County.

Coniferous and Mixed Woodlands

Woodland vegetation differs from forests in two ways: the canopies of individual woodland trees rarely overlap and woodland tree species are typically smaller than forest tree species. Coniferous woodland in New Mexico includes piñon-juniper and mixed woodlands. Colorado piñon (*Pinus edulis*) is the most common piñon and one-seed juniper (*Juniperus monosperma*) is the most common juniper in New Mexico. Mountain mahogany (*Cercocarpus montanus*) is the dominant understory shrub and big bluestem (*Andropogon gerardii*) is the dominant grass in piñon-juniper communities in the Planning Area. Gambel oak (*Quercus gambellii*) is codominant in the woodland in the San Francisco and Tularosa Mountains. Distribution of coniferous and mixed woodland in the Planning Area occurs on the downslopes of the Magdalena and San Mateo Mountains in western Socorro County and the Mogollon, Tularosa, Gallo, Datil, San Francisco, Gallo, and Elk Mountains interspersed throughout Catron County.

Juniper Savanna

Savanna is a transitional zone between woodland and grassland, when individual trees are widely spaced (10 percent canopy) in grass. Juniper savanna has developed in the past century, displacing grassland communities. It is debatable whether there was any natural juniper savanna vegetation in New Mexico prior to the recent development of this plant community. Distribution of juniper savanna in the Planning Area occurs on the plateaus of northeastern and northwestern Socorro and Catron Counties, primarily on Chupadera Mesa in Socorro County and the North and San Augustin Plains in Catron County. In the vicinity of Pie Town there may be old growth juniper savannah stands co-occurring with piñon. The piñon was cored and aged, and determined to be pre-European settlement. Unfortunately, junipers cannot be aged by this method, but the large diameter of the trunks, crown and growth forms indicate a much older age class.

Climate change has affected the range of juniper for thousands of years but the expansion of juniper in the last 120 years due to anthropogenic factors is unprecedented. Juniper continues to expand, since American-European settlement, in range and density throughout the west. In prehistory, wetter periods led to the expansion of juniper. Juniper has increased since about A.D. 1500. Prior to Euro-American settlement, juniper were located sparsely throughout savannah-like environs, restricted mostly to rocky outcrops and rocky soils. Juniper stands have expanded and become more dense, even invading riparian areas, in recent history due to human caused factors. Increased juniper leads to less grasses and forbs as forage for wildlife and livestock and causes decreased plant species richness. Juniper extract nutrients from inter-tree spaces and deposit them beneath the trees' canopies. Juniper intercept 15 to 20 percent of precipitation, leaving less for forage plants. Juniper also provides forage for some wildlife species and shelter for wildlife.

Scrubs

Montane Scrub

Montane scrub is found where available moisture is less than expected, such as a high windswept knolls, southwesterly facing slopes, or rocky slopes. Dominant shrubs of montane scrub also are found in montane coniferous forests and woodlands including mountain mohagany (*Cercocarpus montanus*), skunkbush (*Rhus aromatica*), gray oak (*Quercus grisea*), and currants (*Ribes sp.*). Many dominant plants of lower montane scrub also are found in desert grasslands including agaves and yuccas. Several semiriparian species are important in montane scrub such as apache plume (*Falugia paradoxa*), chokecherry (*Prunus virginiana*), bigtooth maple (*Acer grandidentatum*), and hoptree (*Ptelea angustifolia*). Montane scrub is found on the western slopes of the Magdalena Mountains and in the Sierra Oscura range in the southeastern portion of Socorro County.

Plains-Mesa Sand Scrub

Plains-mesa sand scrub is dominated by deep-sand tolerant or deep-sand adapted species. The most common shrub is sand sagebrush (*Artemisia filifolia*), but broom snakeweed (*Guiterrezia sarothrae*) and fringed sabebrush also are common. Major grasses include indian ricegrass (*Achnatherum hymenoides*), blue grama (*Bouteloua gracilis*), dropseeds (*Sporobolus sp.*), purple three-awn (*Aristida purpurea*), and plains bristlegrass (*Setaria leucopila*). The most common forbs are annual buckwheat (*Eriogonum annuum*) and sand verbena (*Abronia angustifolia*). This vegetation community occurs in small patches in the northern portion of the Planning Area and in the western portions of the White Sands Missile Range.

Chihuahuan Desert Scrub

The Chihuahuan Desert is located primarily in Mexico, but portions of the desert extend north onto the mesas bordering the Rio Grande floodplains in New Mexico. Creosotebush (*Larrea tridentata*) is the sole dominant shrub. Scattered stands of tarbush (*Flourensia cernua*) and ocotillo (*Fouquieria splendens*) also occur within this community. Other common plants include black grama (*Bouteloua eriopoda*), fluff grass (*Dasyochloa* pulchellum), mariola (*Parthenium incanum*), feather peabush (*Dalea formosa*), field bahia (*Bahia absinthifolia*), and desert holly (*Acourtia nana*). Chihuahan Desert scrub is distributed in the Planning Area on the floodplains of the Rio Grande in Socorro County.

Closed Basin Scrub

Closed basin scrub is a semiriparian habitat found in broad, flat, or gently sloping areas where water flows tend to spread out rather than concentrate within gullies. Large areas with dense stands of fourwing saltbush (*Atriplex canescens*) are typical of closed basin scrub vegetation. Pale wolfberry (*Lycium pallidum*) can occasionally be a co-dominant with four-wing saltbush. Alkali sacaton (*Sporobolis airoides*) and forbs from the goosefoot family, *Chenopodiaceae*, are also common. Ground cover is sparse with clumps of burrowgrass (*Scleropogon brevifolius*), gyp grama (*Bouteloua breviseta*) and gyp dropseed (*Sporobolis nealleyi*), bristlely coldenia (*Tequilia hispidissimus*), and occasional forbs. Closed basin soils are often highly gypsiferous, such as the soils in the White Sands Missile Range. The closed basins in the White Sands Missile Range support forbs such as gyp moonpod (*Selinocarpus lanceolatus*) and mustard (*Nerisyrenia camporum*). The closed basin scrub community occurs in the White Sands Missile Range and southwest of Datil.

Land Cover

Lava Beds

Lava beds are composed of broken and cracked basalt lava. Lava beds located in the southeastern corner of the Planning Area are part of the Valley of Fires Recreation Area near Carizozo, which is managed by the BLM Roswell Field Office. According to the BLM Roswell Field Office, lava flowed from Little Black Peak approximately 1,500 years ago and flowed south into the Tularosa Basin. The resulting lava flow is 4 to 6 miles wide, more than 160 feet thick at the center, and 44 miles long, covering over 125 square miles (BLM 2003i). Lava flows also are present in the Jornada del Muerto WSA. BLM has identified lava beds in northwestern Catron County, along US 60 near the Arizona border; these areas are not reflected in the mapped data on Map 3-3.

Urban, Farmland, or Open Water Areas

Urban, farmland, or open water areas are those with significant urban development, concentrated agriculture, or open water (such as the Rio Grande). In the Planning Area, this classification is found in the Rio Grande Valley centered around Socorro.

3.2.6 Wildlife and Riparian Habitat

3.2.6.1 Big Game

Of the 14 big game species in New Mexico, the three most common that occur in the Planning Area are the mule deer (*Odocoileus hemionus*), pronghorn antelope (*Antilocarpa americanus*), and Rocky Mountain elk (*Cervus elaphus*). Wild turkey, mountain lions (*Felis concolor*), black bears (*Ursus americanus*), javelina (*Tayassu tajacu sonoriensis*), and desert bighorn sheep (*Ovis canadensis mexicana*) occur in the Planning Area, as well as several exotic species. NMDGF regulates the seasons, bag limits, and appropriate licensing of the harvest of game species in New Mexico[1].

Mule deer may be found throughout the Planning Area, but are most common within the coniferous forest and mixed coniferous woodland, riparian, and to some extent various scrubland and grassland habitat. No published information is available on population estimates for New Mexico; however, according to the NMDGF, the population has experienced a slight decline primarily due to drought conditions (NMDGF 2003a).

Pronghorn antelope predominantly utilize grassland habitats within the Planning Area. Pronghorn habitat requirements include grasslands in good ecological condition with little topographic relief, good visibility, and abundant supply of forbs. No information is available on population estimates for New Mexico; however, according to the NMDGF, the population has experienced a slight decline primarily due to drought conditions (NMDGF 2003a).

Rocky Mountain elk are very adaptable, primarily grazers, and utilize a variety of habitat types within the Planning Area. They are most commonly associated with the coniferous forest, mixed coniferous woodland, riparian, and to some extent grassland habitat. Through protection and the availability of unoccupied range, Rocky Mountain elk were established successfully in both their own historic range as well as the range of the extinct Merriam's elk. Rocky Mountain elk now occupy a large percentage of suitable range and habitat. The NMDGF estimates the current population in New Mexico at 61,900 to 77,500 (NMDGF 2001).

[1] Note that the Ladron Mountain population of the desert bighorn sheep currently is not hunted.

Wild turkey utilize a variety of habitat types, but are most common within the coniferous forest, mixed coniferous woodland, and riparian habitat types. Two of the five subspecies of turkey occur in the Planning Area: Rio Grande turkey is found along the Rio Grande (*M.g. intermedia*) and Merriam's turkey (*M.g. merriami*) occurs within suitable habitat throughout Catron and Socorro County. According to the NMDGF (2002b), the present statewide estimate is likely around 31,300 individuals (30,000 Merriam's and 1,300 Rio Grande).

Mountain lions occur throughout all habitat types in the Decision Area, but are most common where abundant prey is available. Because deer and elk are the most common prey species, habitats suitable for mountain lions require adequate habitat for mule deer and elk (enough browse). A long-range plan for mountain lion management in New Mexico was developed in 1997 (NMDGF 1997). The NMDGF has established hunting seasons, bag limits, and depradation resolution, and provides information on harvest quota for New Mexico, but no information on population status was available.

Black bears are found in a variety of habitat types in the Planning Area. Occupation of certain habitat types is dependent on the season and availability of food resources. Black bears typically are found in coniferous forests, mixed conifer woodland, and riparian habitats. In 1988, there were roughly 1,700 to 1,800 black bears in New Mexico, and the population was considered stable (Biota Information System of New Mexico [BISON-M] database, NMDGF 2005b). The population estimate in 2000 was approximately 5,000 black bears and is considered stable (NMDGF 2003b). NMDGF has established hunting seasons, bag limits, and depradation resolution and provides information on harvest quota for New Mexico, but no information on population status was available.

Javelina occur within desert, semi-desert, woodland, and riparian habitats. Use of habitat is dependant on the availability of water. Abundance, distribution, and expansion of habitat is influenced more by weather than any other factor. They feed primarily on roots, tubers, fruits, and cacti, and to some extent eggs and carrion. Javelina originally lived in extreme southeastern and extreme southwestern New Mexico. The species is at the northern extremity of its range. Recent years of mild winters has allowed expansion in abundance and range within southwest New Mexico and the Socorro Field Office. NMDGF has established hunting season, bag limits, and depradation resolution and provides information on harvest quota for New Mexico, but no information on population status was available (NMDGF 2005b).

The Ladron Mountain desert bighorn sheep (*Ovis canadensis mexicana*) population was established in 1992 with 23 bighorn sheep transplanted from the New Mexico Red Rock bighorn sheep-breeding facility, and was supplemented the following year with 8 more sheep (also from Red Rock). From 1993 through 2001, NMDGF released 43 desert bighorn sheep in the Ladron Mountains as part of a population restoration effort, and estimates of the population size have ranged from 23 to 39 individuals (BLM and NMDGF 2002). To enhance suitable habitat and encourage the use of otherwise suitable habitat for desert bighorn sheep, the BLM has conducted prescribed burns, restored natural water sources, installed artificial water facilities, opened up travel corridors, and enhanced and restored selected habitat areas through mechanical treatment of woody vegetation in the Ladron Mountains within the proposed Ladron-Devil's Backbone Area of Critical Environmental Concern (ACEC) complex. A 2002 study, funded by BLM and NMDGF, concluded that the population appears stagnant and recommended that (1) more individuals be translocated to establish a sustainable population; (2) more habitat be enhanced and forage quality improved through prescribed burns and mechanical treatment of woody vegetation in crucial areas, such as enhancement of travel corridors to water sources and between core habitats and ranges; and (3) additional water sources be provided (BLM and NMDGF 2002). The Ladron Mountain population of desert big horn sheep is not hunted.

In 1997, it was documented that mountain lion predation was the primary cause of adult mortality in bighorn sheep in New Mexico (NMDGF 2003d). The NMDGF implemented a mountain lion removal

program in three of the bighorn sheep ranges (Peloncillos, Hatchets, and Ladrons) by increasing the mountain lion quota. The program is designed with an adaptive management approach—as the number of bighorn sheep increases and the percent of bighorn killed by mountain lions decreases, the number of mountain lions harvested to protect bighorn will decrease.

Oryx (*Oryx gazella*), a large exotic African antelope species, inhabit the desert and semi-desert areas within eastern Socorro County. NMDGF released oryx on the White Sands Missile Range in the 1960s as a game species. The oryx population has grown since that time and expanded its range. It is a highly adapted desert species that subsists on desert shrubs and forbs in desert grassland habitat. Due to expansion of the species onto public land, NMDGF authorizes hunting opportunities to control numbers.

Barbary sheep (*Ammotragus lervia*), an exotic species native to northern Africa, were released along the Canadian River by NMDGF beginning in 1950. Barbary sheep are rare within the White Sands Missile Range and may be moving onto public lands. Due to their expansion onto public land, the NMDGF authorizes hunting opportunities to control numbers. Similar to native bighorn sheep of the southwestern deserts, barbary sheep are adapted to dry, rough, and barren habitats.

3.2.6.2 Small Game

There are 18 small game species that are harvested legally in New Mexico. The three most common small game species found within the Planning Area are Gambel's quail (*Callipepla gambelii*), scaled quail (*Callipepla squamata*), and mourning dove (*Zenaida macroura*). Gambel's quail and scaled quail inhabit brushy habitats and are predominantly associated with desert grassland, scrubland, and riparian habitats. Montezuma quail, although not common in the Planning Area, inhabit the coniferous forest and mixed conifer woodlands and to some extent upland grassland habitat. Population numbers of the quail species fluctuate, depending in part on precipitation. Mourning doves are common to abundant throughout the Planning Area. Abert's squirrel occurs primarily in the coniferous mountain habitat type in the southwestern portion of the Decision Area, but this species is not abundant in this area.

3.2.6.3 Nongame

Nongame species occur throughout the Planning Area. A complete list of species is on file at the Socorro Field Office in the Integrated Habitat Inventory Classification System (IHICS) database.

Many species of amphibians and reptiles inhabit the Planning Area, which includes turtles, whiptail lizards, horned lizards, rattlesnakes, rat snakes, skinks, salamanders, and frogs. Frogs, toads, turtles, and salamanders are found primarily near a water source, and lizards, skinks, and snakes are found throughout grasslands and scrub habitats.

Western New Mexico University, under contract to BLM, conducted amphibian and reptile surveys in the Socorro area, North Ladron, Rio Salado, Pelona Mountain, Horse Mountain, and Redhill in the spring of 1998 (BLM 1999a). For lizards, they reported five species of whiptail, collared lizard (*Crotaphytus collaris*), two species of horned lizard, two species of spiny lizard, northern tree lizard (*Urosaurus omatus*), and side-botched lizard (*Uta stansburiana*). For snakes, the University reported western diamondback rattlesnake (*Crotalus atrox*), gopher snake (*Pituophis melanoleucus*), and garter snake (*Tamnophis* sp.). Only two species of amphibians were reported: canyon tree frog (*Hyla arenicolor*) and New Mexico spadefoot (*Spea multiplicata*); however, unidentified tadpoles were observed in several springs. No turtles were reported during this survey.

3.2.6.4 Birds

A wide variety of bird species are found throughout the Planning Area including many resident, migratory, wintering, and transient species. With such a high diversity of habitats, New Mexico has recorded the second highest number of bird species of any land-locked state in the United States. More than 280 species of birds breed in New Mexico and the extensive grasslands are important for wintering birds. The Rio Grande Valley and other riparian corridors, such as the Rio Salado, serve as important flyway and stopover areas for migratory bird species. Many species have different breeding requirements in New Mexico than elsewhere in their range. Even within New Mexico, breeding requirements for certain species may differ. A list of bird species is on file at the Socorro Field Office in the IHICS database.

BLM continues to conduct annual surveys for breeding and song birds, Southwestern willow flycatcher (*Empidonax trailii extimus*), gray vireo (*Vireo vicinior*), mountain plover (*Charadrius montanus*), and five species of raptors within the Planning Area.

Breeding Birds

BLM established long-term monitoring sites in various habitats to record species richness and diversity, and record any trends associated with various treatments that may be applied (BLM 2001a). Five overall habitat types have been assessed since 1994 (riparian, grassland, piñon-juniper, sagebrush, and ponderosa pine). Information gained would facilitate the Socorro Field Office's ability to make effective management decisions to protect, enhance, and restore habitat conditions.

Raptors

BLM has conducted annual surveys for raptors throughout BLM-managed surface estate, which includes the identification of historic and/or potential habitat areas. In addition to conducting monitoring of known raptor nests, BLM is also in the process of conducting a study to inventory and map all raptor nests for purposes of identifying high use and/or critical habitat areas. Information gained would facilitate the Socorro Field Office's ability to make effective management decisions to protect, enhance, and restore habitat conditions. Information is available at the Socorro Field Office in the IHICS database. Surveys have been conducted for ferruginous hawk (*Buteo regalis*), golden eagle (*Aquila chrysaetos*), Mexican spotted owl (*Strix occidentalis*), northern goshawk (*Accipiter gentilis*), and aplomado falcon (*Falco femoralis*).

3.2.6.5 Mammals

Common species of rodents within the Planning Area include species of pocket mouse (*Chaetopidus* sp., *Perognathus* sp.), vole (*Microtus* sp.), wood rat (*Neotoma* sp.), deer mouse (*Peromyscus* sp.), kangaroo rat (*Dipodomys* sp.), squirrel (*Sciurus* and *Ammospermophilus* sp.), ground squirrel (*Spermophilus* sp.), chipmunk (*Tamais* sp.), cottontail rabbit (*Sylvilagus audubonii*), and black-tailed jackrabbit (*Lepus californicus*). Predators include the black bear and mountain lion, in addition to the following furbearers that may be harvested subject to conditions outlined by the NMDGF: coyote (*Canis latrans*), kit fox (*Vulpes macrotis*), gray fox (*Urocyon cinereoargenteus scottii*), badger (*Taxidea taxus*), and bobcat (*Lynx rufus*).

BLM is in the process of conducting surveys for black-tailed (*Cynomys ludovicianus*) and Gunnison's (*Cynomys gunnisoni*) prairie dogs for the purposes of inventorying, monitoring, and identifying occupied and suitable habitat within BLM-managed surface estate. Gunnison's prairie dog is listed as a sensitive species in New Mexico (Appendix L). Information gained from surveys would facilitate the Socorro Field

Office's ability to make effective management decisions to protect, enhance, and restore habitat conditions. Additional information is available at the Socorro Field Office in the IHICS database. BLM has conducted annual surveys since 1998 to determine occurrence and distribution of bat species within the Decision Area. The study objectives were to (1) conduct an inventory of bat species, (2) provide information on individual bats captured (species, gender, reproductive status), and (3) make recommendations for additional surveys or studies and habitat management and mitigation (BLM 2002a).

3.2.7 Special Status Species

Within the Planning Area, 115 species (flora and fauna) potentially occur that have been classified as one or more protected status. An estimated 19 federally listed species, 42 State-listed species, and 50 BLM sensitive species may occur within the Planning Area.[2] Federally listed, State-listed, and BLM sensitive species were identified through a review of the Biota Information System of New Mexico database (NMDGF 2005b). Some of the special status species in the Planning Area include the Southwestern willow flycatcher, black-tailed and Gunnison's prairie dogs, and desert bighorn sheep. A table of all special status species identified in the area, as well as descriptions of federally listed species, is included in Appendix L. A draft Biological Assessment was prepared in support of this planning effort; this document provides additional information on special status species.

3.2.7.1 Aplomado Falcon

In the United States, aplomado falcons historically occurred in southern Texas, southern New Mexico, and southeastern Arizona. Although aplomado falcons once were considered fairly common throughout their U.S. range, populations declined rapidly after the 1930s. The aplomado falcon was federally listed as endangered in 1986. Starting in the early 1990s, increases in reliable falcon sightings prompted additional interest in recovery of the species in New Mexico. At that time, the closest known free-ranging population to New Mexico was in northern Chihuahua, Mexico (Young et al. 2002).

A recent study was finalized to determine habitat suitability for northern aplomado falcons in the northern Chihuahuan Desert, throughout southern New Mexico, western Texas, and northern Chihuahua, Mexico (Young et al. 2002). Information from this project was designed to provide a tool for land managers to help prioritize areas for conservation actions. The underlying premise of the aplomado falcon predictive habitat model and associated maps is that they identify and depict potentially suitable habitat areas for prospective use by and conservation of aplomado falcons. These potentially suitable habitat predictions are not predictions of certain habitation by aplomado falcons; rather, they are starting points for more detailed conservation assessment or evaluation of the presence of requisite habitat features and advisability of specific management actions intended to benefit falcons and their habitat. Based on the model, over 74 percent of the Planning Area is over 6,000 feet in elevation and is, therefore, not considered suitable habitat. Of the remaining area, approximately 696,320 acres (8 percent of the Planning Area) consists of potential highly suitable habitat occurring in continuous patches, primarily on the east side of Interstate 25 (I-25) in the Jornado del Muerto (southeast of Socorro) and a small patch of habitat in the foothills of the Magdalena Mountains. In addition, an aplomado falcon prey base study was conducted in 2004 and 2005. The results of this study indicate larger prey availability within the Planning Area than that available in Chihuahua, Mexico. The BLM Socorro Field Office is currently conducting a five-year study and habitat suitability assessments to inventory and identify suitable habitat areas, as depicted by the model.

[2] Since there are duplicates among the federally listed, State-listed, and BLM sensitive species, these numbers do not add up to 115.

In 2006, the USFWS approved a proposal to release a non-essential experimental population of aplomado falcons in Arizona and portions of New Mexico (10j rule). Under the 10j rule, populations would be treated as proposed for listing outside of National Wildlife Refuges and National Parks. Lands managed by the Socorro Field Office are identified under the 10j rule as habitat. In addition, the Armendaris Ranch, which is adjacent to BLM-administered land in the Planning Area, has been identified as a potential release site (USFWS 2005).

The two last sightings of solitary aplomado falcons in the Planning Area were in 1998 north of Bernardo, and in 1992 west of Bingham.

3.2.8 Wild Horses

The Bordo Atravesado Wild Horse Herd Management Area is located in Socorro County within the Bordo Atravesado grazing allotment. The herd management area encompasses 19,598 acres, which includes BLM, private, and State land (Map 3-4, Bordo Atravesado Wild Horse Herd Management Area). This boundary was established based upon observations of wild horse movement and use patterns, inventories, terrain, and existing fences.

3.2.9 Wildland Fire Ecology and Management

3.2.9.1 Wildfire

Between 1968 and 2002, there were 158 wildfires on lands administered by the Socorro Field Office. During those years, annual ignitions ranged from zero in six of the 33 years to 10 ignitions in 1971, 13 in 1983, and 13 in 1994. Over 85,000 acres burned during the entire period; however, 25 percent of that acreage burned in 1993 and 1994, and 38 percent in 2000 due to the Chance fire that burned more than 32,000 acres. During this period, lightning caused 130 of the fires with sizes ranging from 0.1 acre to 32,000 acres. Three of the fires were caused by arson and six by burning debris. Fuels consumed were primarily grass, piñon-juniper, sagebrush, and a small amount of creosote (BLM 1989a, 2002b).

Wildfire history data are available for the Decision Area for the years between 1986 and 2002. During that time, the highest fire occurrence in the Decision Area was May through July with lower occurrence from March through April and August through October. As of September 10, 2002, two fires were recorded on lands administered by the Socorro Field Office. Both fires were started by lightning. The two recorded fires burned a total of 77 acres. Other lands in the Planning Area that are not managed by BLM recorded a total of 223 fires in 2002, for a combined total of 16,529 acres burned. The majority of those fires were caused by lightning strikes; however, nearly 40 were human-caused (Southwest Area Wildland Fire Operations 2002).

As more people build homes, operate businesses, and recreate in areas bordered by wildlands, the threat to private property from wildland fire increases. BLM has identified the wildland-urban interface as a potential safety hazard with respect to fires and fire management. The Planning Area contains parcels of public land that are “checkerboarded” with private land. Small towns such as Socorro and Reserve are also a concern with regard to fire due to their proximity to public land. The heavy fuel loading on public and private land in this area generates a risk to the communities. In 2001 and 2002, efforts were made to create fuel breaks at Pie Town, Datil, Chupadera Mesa, Horse Mountain, and other areas with potential wildland-urban interface fire risks.

3.2.9.2 Fire Treatments

The Socorro Field Office has implemented more than 32,000 acres of fire-related treatments over the past eight years within designated fire management units. These treatments include prescribed fire, prescribed natural fire, mechanical, and chemical treatments. Prescribed fire involves designating and burning

specific areas while taking into consideration weather, intensity of burning, and vegetation type. Wildland fire use occurs when a wildfire starts in an area that would benefit from fuels reduction and the fire is allowed to naturally reduce fuels before it is suppressed. Mechanical treatment involves the use of various types of mechanized equipment to clear out understory, brush, and/or trees and then pile and burn it. Chemical treatment involves the use of herbicides to target species to reduce their competitive effect on more desirable species as well as to reduce fuel loadings.

Future fire management and treatment will be guided by the 2004 Fire and Fuels Management Plan Amendment for BLM Lands in New Mexico and Texas. Appendix A of the Plan Amendment describes the Fire Management Units, and acres of Fire Regime Condition Class and Fire Management Units that are currently applied to the lands managed by the Socorro Field Office also are described in the Plan Amendment. Additional information on fire management is available in the Plan Amendment and the Management Situation Analysis, available in the Socorro Field Office.

3.2.10 Cultural Resources

3.2.10.1 Archaeological and Historical Sites

When the 1989 Socorro RMP was prepared, 2,918 archaeological and historical sites had been recorded in the Planning Area. Some sites reflect multiple occupations and, when different cultures or time periods can be recognized, they are recorded as separate temporal components. A total of 3,407 temporal components had been identified at the 2,918 sites that had been recorded.

Approximately 27 percent of the recorded sites (787) were on public land managed by BLM. Public land constitutes about 17 percent (1,506,504 acres) of the Planning Area (8,693,460 acres). The average density of approximately one site recorded per 3 square miles of public land was higher than the average of approximately one site per 5 square miles on other land within the Planning Area. Information about the extent of cultural resource survey was not documented, and the variation in site density probably reflected more survey effort on public land rather than an actual difference in the density of archaeological and historical sites. Because the extent of survey was not documented, there was no firm basis for estimating the total number of archaeological and historical sites that might be present within the Planning Area.

However, it was clear that only a small fraction of the archaeological and historical sites in the Planning Area had been discovered and recorded. The 1989 Resource Management Plan (RMP) reported an estimate that there could be 20,000 to 30,000 sites on public land within the Planning Area (BLM 1989a).

The types and numbers of cultural components recorded on public land are similar to those recorded on nonpublic land. Paleoindian components are rare and constitute only 1 percent of the inventory. Archaic components are more common, constituting 14 percent of the public land inventory. Ceramic period components dominate the inventory, constituting approximately half of the recorded components. Navajo and Apache components are about as rare as Paleoindian components, and may be under-represented because they are so difficult to identify. Historic era components constitute 8 percent of the public land inventory. The cultural affiliation of 32 percent of components recorded on public lands are unidentified.

BLM is cooperating with and providing financial support for the State Historic Preservation Office in developing the computerized New Mexico Cultural Resource Information System (NMCRIS), and is using NMCRIS to maintain an inventory of cultural resources recorded on public land throughout New Mexico. Originally, NMCRIS was a tabular database of archaeological and historical site attributes, but is now being upgraded into a GIS format. NMCRIS has incorporated GIS information about the nature and location of archaeological and historical sites in the Planning Area, and information on surveyed space is being entered into the database. It must be noted that the NMCRIS information was collected by many different researchers over a period of at least eight decades for a variety of reasons, and is subject to some

inconsistencies, incompleteness, and errors. However, the database is constantly being upgraded and expanded. Approximately 90 percent of the NMCRIS information about the Planning Area has been compiled by surveys undertaken since the 1970s in response to increasing Federal and State emphasis on historic preservation and cultural resource management. Even during the last 30 years, standards for intensive cultural resource survey and resource recording and evaluation have evolved considerably. The BLM Socorro Field Office prepares annual reports of cultural resource program activities and maintains an annual log of project reports. Table 3-5 summarizes inventory information tabulated in the reports since 1989.

TABLE 3-5
SUMMARY OF CULTURAL RESOURCE INVENTORY AFTER THE 1989 RMP

	Projects[1]			Acres Surveyed			Sites Recorded			Sites Evaluated[3]	
Fiscal Year	**BLM**	**non-BLM[2]**	**Total**	**BLM**	**non-BLM**	**Total**	**BLM**	**non-BLM**	**Total**	**National Register Eligible[2]**	**National Register Ineligible[2]**
1990	35	28	63	1,603	1,602	3,205	22.0	2.0	24	8	9
1991	14	19	33	210	137	347	6.0	2.0	8	3	1
1992	23	23	46	14,790	678	15,468	241.0	36.0	277	142	53
1993	65	10	75	478	1,933	2,411	17.0	58.0	75	16	4
1994	19	23	42	3,125	5,418	8,543	286.0	52.0	338	235	51
1995	22	23	45	478	177	655	4.0	19.0	23	13	9
1996	19	17	36	1,167	453	1,620	15.0	11.0	26	15	4
1997	21	11	32	650	350	1,000	6.0	8.0	14	17	4
1998	18	9	27	598	754	1,352	20.0	7.0	27	16	5
1999	14	20	34	585	809	1,394	16.5	27.5	44	29	4
2000	14	15	29	1,639	308	1,947	22.5	6.5	29	6	3
2001	14	16	30	1,747	588	2,335	54.5	26.5	81	30	15
2002	14	25	39	2,273	598	2,871	83.0	21.0	104	64	8
2003	11	13	24	773	229	1,002	56.0	4.0	60	4	3
2004	16	19	35	1,812	341	2,153	95.0	12.0	107	64	13
Totals	**319**	**271**	**590**	**31,928**	**14,375**	**46,303**	**944.5[4]**	**292.5**	**1237**	**662**	**186**
			square miles =	49.9	22.5	72.3					
						sites per square mile	**18.9**	**13.0**	**17.1**		
average	21	18	39	2,129	958	3087	63	20	82	44	12
			square miles =	3.3	1.5	4.8				78%	22%
10-year projection			393	21,285	9,583	30,869	630	195	825		
			square miles =	33.3	15.0	48.2					

SOURCE: BLM Socorro Field Office Cultural Resource Program annual reports and report logs, 1990-2004

NOTES:
1 Includes undertakings for which literature searches, field surveys, or other studies were conducted.
2 Socorro Field Office has worked with approximately 2 to 12 cultural resource permittees annually in implementing the cultural resource program.
3 Determinations of eligibility for the National Register are not limited to sites recorded in the current year.
4 This sum plus the 787 recorded sites reported in the 1989 RMP indicates a total of 1,732 sites have been recorded on public land, but NMCRIS includes information for only 1,079 sites. The discrepancy could be due to many factors. The numbers are based on report logs, which include previously recorded sites that could have been counted more than once. Changes in jurisdiction and inconsistencies and ambiguities in record keeping could account for part of the discrepancy, and some sites may not yet have been entered into the NMCRIS database.

The information in the annual reports suggest there could be as many as 190,000 to 230,000 archaeological and historical sites in Catron and Socorro Counties, including approximately 40,000 to 50,000 on public lands. If the trends of the last 15 years hold, about 80 percent of those sites could have values that warrant protection. At the current rate of survey, another 1.5 percent of the public lands would be intensively inventoried over the next 10 years, and approximately 600 more archaeological and historical sites would be discovered and recorded.

Evaluating the significance of the archaeological and historical sites recorded on public land is an ongoing, dynamic aspect of the cultural resource management program. Although records indicate that approximately 80 percent of the recorded sites are regarded as eligible for the National Register of

Historic Places (National Register), a rigorous listing of significance evaluations has not been compiled. Most of the sites evaluated as eligible for the National Register are significant because of their potential to yield important information about the prehistory or history of the area (Criterion D), and these are assigned to BLM's scientific use category. This is one of five use categories that BLM uses to facilitate management (see BLM Manual 8110.4).

The significance of many of the recorded archaeological and historical sites has not been evaluated and, therefore, eligibility for the National Register remains unknown. Often, test excavations are needed to fully evaluate some archaeological sites. Until evaluated, these sites and similar unrecorded sites that may be eligible for the National Register because of their information potential are assigned to BLM's category of scientific use until further investigation confirms or refutes the appropriateness of such assignments. Sites assigned to the scientific use category may not need to be conserved if a data recovery plan can be implemented to make appropriate use of their research importance.

3.2.10.2 Special Status Cultural Resources

The 1989 RMP indicated that four properties on public land had been listed on the National Register, including the Ake site (LA 13423), Bat Cave (LA 4935), Cox Ranch Ruin (or Mogollon Pueblo, LA 13681), and Fort Craig (LA 1091). The Fort Craig site was acquired by the Archaeological Conservancy and donated to the BLM in 1981. Two other properties were identified as having been nominated to the National Register, including La Parida (a nineteenth- and early twentieth-century Hispanic village, LA 31718) and Piro thematic sites. The Teypama site (LA 282), one of the Piro thematic sites, was listed on the National Register in 1983. Site LA 282 was identified as the Piro village named Teypama (or Teypana) by the Oñate Expedition in June 1598. Subsequent research calls into question that identification and suggests Site LA 282 may be another Piro village named Penjeacu (Bletzer 2004). La Parida had been listed on the State Register in 1986. In addition, the Mockingbird Gap site (LA 26748) was listed on the State Register of Cultural Properties, and BLM managed the Arroyo del Tajo pictograph site (LA 31719) as an ACEC. Cultural resource management plans have been prepared for the Arroyo del Tajo pictograph site, Bat Cave, Fort Craig, and Teypama.

When the 1989 RMP was prepared, more than 130 other properties on nonpublic land within the Planning Area had been designated as special status sites. These included the Gran Quivera unit of the Salinas Pueblo Missions National Monument and the Gila Cliff Dwellings National Monument, both managed by the National Park Service. The Trinity Site on the White Sands Missile Range, which is where the first atomic bomb was detonated, is designated as a National Historic Landmark. National Register-listed properties on national forests included Gallinas Springs Ruin and five properties listed as part of the National Forest Fire Lookouts in the Southwestern Region thematic resource nomination. The Socorro Mining Company Fannie Hill Mill in Mogollon and the Mogollon Historic District also were listed. Fourteen historic buildings in Magdalena had been listed along with the Clemens Ranch House south of Magdalena. The Sagrada Familia de Lemitar Church in Lemitar and six historic buildings in Socorro were listed as well.

In 1989, almost one hundred properties had been listed on the State Register but not on the National Register. Most of these were historic buildings, including approximately 73 in Socorro, five in San Antonio, five in Mogollon, one in Polvadera, and a historic town site, Paraje de Fra Cristobal, near San Marcial. Other historic-era properties included the Whitewater Canyon Pipeline in Glenwood, a church and mine at the ghost town of Kelly, and the Ojo Caliente military post in the vicinity of Winston. The historic Magdalena Stock Driveway also was listed on the State Register, but the listing included only a small commemorative area adjacent to US 60 near Magdalena and did not encompass the stock driveway itself, which was about 5 to 10 miles wide, stretching approximately 120 miles from Springerville, Arizona to the railhead at Magdalena. Eight other listed properties were large archaeological sites,

including the Mogollon Village site (near Glenwood), Apache Creek Ruin (near Apache Creek), Tularosa Cave (near Aragon), Goesling Ranch Pueblo (near St. Johns), Hubble Corner Pueblo (near Quemado), Tom's Rock Pueblo (near Pie Town), Alamo School Pueblo (near Alamo), and Sandal Cave (near San Antonio). Zuni Salt Lake also was listed on the State Register.

The 1989 RMP expanded and formalized the Tinajas ACEC, which included the Arroyo del Tajo pictograph site. The 1989 RMP also designated nine special management areas (SMAs) to protect cultural resources. These included three properties listed on the National Register (149 acres at Fort Craig, 640 acres at Cox Ranch Ruin [Mogollon Pueblo], and 17 acres at Teypama), and two listed on the State Register (12,139 acres at Mockingbird Gap, and 5,926 acres at Zuni Salt Lake). In addition, two SMAs were designated along the Rio Salado, one of 6,028 acres to protect a cluster of about 30 archaeological sites dating from the Basketmaker III through Pueblo II periods, and another of 563 acres around the historic town of Riley (Santa Rita) settled in the 1880s. Two other SMAs were designated to protect large archaeological sites including 37 acres around the Newton Site, a 150- to 200-room pueblo on the periphery of the Acoma cultural province, and 245 acres around two sites known as the Playa Pueblos (Fernandez Pueblo, LA 781, and Pueblo del Cerrito, LA 782). Each of these pueblos has 200 or more rooms, and was occupied from about A.D. 1150 to perhaps as late as 1700, probably by peoples that were known as the Tompiro or Piro in the early historic era.

The 1989 RMP designated 13 other SMAs primarily for wildlife, sensitive plant, watershed, rangeland, and recreation values. Many of these also provide protection opportunities for cultural resources. For example, Bat Cave is within the Pelona Mountain SMA designated for wildlife, the Cerro Pomo Ruin is within the Cerro Pomo SMA designated for recreation, and the historic Datil Well, associated with the Magdalena Stock Driveway, is within the Datil Well SMA designated for recreation. Cultural resources also are identified as secondary resources that would be protected within the Ladron Mountain, Agua Fria, Stallion, Fence Lake, Walnut Canyon, and San Lorenzo Canyon SMAs that were established for wildlife, watershed, and recreation resources.

Most special status properties and any similar unrecorded sites are assigned to the BLM category of conservation for future use. This classification indicates these resources are worthy of segregation from other land or resource uses that would threaten maintenance of their current condition or setting, including studies.

Selected special status sites, including Fort Craig and Datil Well, are assigned to BLM's public use category. Such resources are appropriate for public interpretation or related educational and recreational uses. The Zuni Salt Lake SMA and Town of Riley SMA are assigned to BLM's traditional use category. These resources are managed to accommodate their continuing traditional uses.

3.2.10.3 Traditional Cultural Properties

When the 1989 RMP was prepared, two resources were identified as having traditional cultural values, and subsequently these types of resources have come to be referred to as Traditional Cultural Properties. These included Zuni Salt Lake and the community of Riley (Santa Rita). As discussed in the previous section, the 1989 RMP designated both of these as SMAs.

After Native American Graves Protection and Repatriation Act was enacted in 1990, the BLM New Mexico State Office compiled an inventory of human remains, funerary objects, sacred objects, and items of cultural patrimony that had been collected from public land in New Mexico prior to 1990. The inventory included 13 sets of human remains and 13 funerary objects from five sites within the Socorro Planning Area. Once the inventories were completed, cultural affiliations were evaluated and tribes determined to be affiliated were notified. None of these communities requested that any of the inventoried

remains and cultural items be repatriated, and they remain at the Museum of New Mexico in Santa Fe or the University of New Mexico Maxwell Museum of Anthropology in Albuquerque (Fosberg 2003).

Since the 1989 RMP was completed, the Socorro Field Office has continued to consult with numerous American Indian communities with traditional cultural interests in the Planning Area, but these communities have not identified any additional Traditional Cultural Properties. As discussed in the previous section, Zuni Salt Lake and the surrounding area has been the one Traditional Cultural Property that has been the focus of attention (Hart and Ferguson 1993). Zuni Pueblo, Pueblo of Acoma, Hopi Tribe, Ramah Band of the Navajo, and other communities were concerned that the proposed development of the Fence Lake Coal Mine by Salt River Project would adversely affect Zuni Salt Lake and associated cultural resources. However, in August 2003, Salt River Project decided not to pursue development of the mine.

Additional information on cultural resources, including a narrative on cultural history, is included in the Management Situation Analysis that is available from the Socorro Field Office.

3.2.11 Paleontological Resources

Socorro and Catron Counties have a large variety of igneous, metamorphic, and sedimentary rocks representing all of the major geologic time periods from the Precambrian to Quaternary, except the Jurassic. Paleontological resources may be found in the sedimentary rocks of these time periods as well as in the more recent unconsolidated deposits of the Pleistocene. The paleontological resources are discussed based on the Planning Area since known fossil localities may occur outside of BLM-managed public land, but serve as an indication of possible resources that may be found in rock formations and deposits that crop out on public land.

The geologic units range from almost two billion years old to the present. In the Planning Area, the formations of the early Paleozoic (limestones, sandstones, shales, and conglomerates) are exposed only in portions of Socorro County and represent nearly 320 million years of deposition of marine sediments with invertebrate fossils. Rocks of the early Paleozoic crop out along escarpments of the Sacramento, Mockingbird, San Andres, San Mateo, Chupadera, Sierra Cuchillo, Magdalena, and Ladron Mountains in west central New Mexico. There are no known Cambrian vertebrates in New Mexico. A few heterostracan tessarae (early fish) were found in glauconitic sandstone in the northern part of the Sacramento Mountains. The sandstone is believed to be part of the Cambro-Ordovician Bliss Formation. The overlying younger Paleozoic sediments include marine and continental sandstones, redbeds, limestones, and gypsiferous units. No Silurian vertebrates are known to occur in New Mexico. There are several reports of late Devonian vertebrates (bone beds with abundant ichthyoliths and conodonts) in the Sacramento Mountains in the easternmost portion of Socorro County (Zidek and Kietzke 1993). Mississippian invertebrates and sharks teeth have been found in Socorro County (Ratkevich and La Fon 1978). The Pennsylvanian Madera Formation and Astrasado Formation have yielded several species of early fishes and sharks. Various reptiles, amphibians, and fish have been found in outcrops of the Permian Bursum, Abo, and Yeso formations. The Abo Formation along the Rio Grande has yielded numerous Permian vertebrate fossils including several species of amphibians and reptiles, and fragments of Eryops, Sphenacodon, and Ophiacodon (New Mexico Museum of Natural History and Science [NMMNH&S] 2002; Zidek and Kietzke 1993).

The Mesozoic Era is known as the Age of Reptiles, which included dinosaurs. Triassic deposits are exposed in northwest Socorro and Catron Counties and include conglomerates, sandstones, and siltstones primarily of the Santa Rosa Sandstone and Chinle Formation. The Chinle has yielded some of New Mexico's oldest dinosaurs. Trackways and bone fragments of theropods, ornithischians, and coelophysis have been recorded. Triassic fossils in northern Socorro County include petrified wood and fragments of

phytosaur bone (Lucas and Heckert 1994). Petrified wood has been found in the Chinle in northwestern Catron County. There are no Jurassic-aged rocks in southern New Mexico (Hunt and Lucas 1993a, 1993b). During the Cretaceous, New Mexico was on the western margin of a vast epicontinental seaway that split the North American continent into two landmasses. A series of transgressive-regressive cycles moved the shoreline from central Arizona to northeastern New Mexico. Numerous Cretaceous formations crop out along the northern portion of the Planning Area. The Cretaceous units consist of shoreline and near shore deposits (sandstone, siltstone, shale, and coal) from the numerous marine transgressive and regressive sequences. Most Cretaceous vertebrate fossils in New Mexico are found in the non-marine and shallow marine sequences (Hunt and Lucas 1993c). Cretaceous dinosaur fossils have been discovered in the Moreno Hill Formation in west-central New Mexico and the McRae Formation in south-central New Mexico. In west-central New Mexico, the lower part of the Moreno Hill Formation preserves a vertebrate fauna that includes fish, crocodiles, turtles and dinosaurs. A new ceratopsian dinosaur discovered in the Zuni Basin has been described from this geologic unit called *Zuniceratops christopheri* from skull, jaw and horn elements of the animal (Wolf and Kirkland 1997). The Zuni Basin has yielded several other significant paleontological resources including *Nothronychus* (bird-like theropods), the first therizinosaur from the United States, and other species that may change the perceptions about dinosaur origins and evolution (Edgar 2001). A series of *Tyrannosaurus rex* fossils from the McRae Formation have been documented near Elephant Butte Reservoir. Cretaceous marine and terrestrial fossils have been found in the Carthage area. The Atarque Sandstone Member (shoreline sandstone) of the Tres Hermanos Formation has yielded evidence of remnants of numerous varieties of chondrichtyes (cartilaginous fishes) and reptile (crocodile, plesiosaur, dinosaur, and turtles) (Hunt and Lucas 1993c; Lucas and Heckert 2000).

Cenozoic rocks crop out extensively in the Planning Area. The Tertiary units consist of a complex suite of sedimentary and volcanic rocks. The sedimentary rocks include sandstones, mudstones, and conglomerates of the Eocene Baca Formation, Miocene-Pliocene Popotosa Formation, Plio-Pleistocene Sierra Ladron Formation, and unconsolidated silts, sands, and gravels of the Pleistocene. These are typically basin fill, alluvial, pluvial, and colluvial deposits.

Cenozoic vertebrates have been located in several localities in Socorro and Catron Counties. Fossil vertebrates have been found in late Eocene deposits in the Caballo Mountains. The Miocene-Pliocene deposits exposed along the Rio Grande from Albuquerque to Las Cruces have produced a diverse fossil fauna assemblage of mammals such as camels, gomphotheres (stegomastodons, mastodons), horses, antelope, and more (NMMNH&S 2002). Vertebrate fossils from Arroyo de la Prada near Socorro have been found in an ancestral Rio Grande river facies of the Palomas Formation. These Late Pliocene deposits include several species of land tortoise, ground sloth, horse, camel, pronghorn, and proboscideans (Sealy et al. 2001). In 1998, a Pliocene vertebrate site was discovered by a person leasing public land near Elephant Butte Reservoir. BLM and NMMNH&S resource specialists conducted an investigation and collected fossils at the site. At this Silver Canyon site, the Palomas Formation has yielded a rodent jaw, horse bones, proboscidean teeth, and tusk fragments (NMMNH&S 1999). There are several other documented localities with a variety of Quaternary vertebrates in the Planning Area. Catron County sites include: San Agustin Plains, Tularosa Cave (marmot study), San Francisco River, and Bat Cave. Socorro County sites include: White Lake, San Antonio, and Mockingbird Gap (mammoth study) (Harris 1993). A summary of vertebrate fossil occurrences is available the Management Situation Analysis, on file in the Socorro Field Office.

Many areas in Socorro and Catron Counties have not been explored or surveyed for paleontological resources. To date, there has not been a comprehensive survey conducted for the Planning Area although significant and important paleontological resources occur in Socorro and Catron Counties and in the formations that crop out in these and adjacent counties. There are no designated SMAs, wilderness study areas (WSAs), Resource Natural Areas, National Natural Landmarks, or ACECs specifically for paleontological resources in the Planning Area.

3.2.12 Visual Resources

Visual resources include the natural and manmade physical features that give a particular landscape its character and value. The features that form the overall impression a viewer has of an area include landform, vegetation, water, color, adjacent scenery, scarcity, and manmade (cultural) modifications (BLM 1986).

The natural landscape of the Planning Area is dominated by forested mountain ranges, desert vistas, expansive rangeland, and large river systems. Variations in elevation and precipitation result in diverse vegetative regimes (e.g., desert shrub, creosote flats, piñon-juniper woodlands, ponderosa pine, and riparian areas near the Rio Grande). Large areas of piñon-juniper woodlands, and ponderosa pine and spruce/fir forests are present at higher elevations. Both Chihuahuan and Sonoran Desert influences are present in the vegetation at lower elevations (BLM 2001b). In Catron County, the open, broken terrain is characterized by grassy flatlands, mesas, moderately steep canyons, rolling upland ridges, and hills (BLM 1989b). A majority of the cultural landscape is defined by the natural setting, with concentrated areas of human modification. Livestock grazing is the predominant land use, but outdoor recreation, residential dwellings, and mining uses are apparent on the landscape (BLM 1989b). Additionally, modifications to the natural setting include agricultural features (e.g., fences, windmills, watering tanks), roadways, isolated homesteads, pipelines, power lines, the Langmuir Laboratory, and the National Radio Observatory's Very Large Array.

To manage visual resources, BLM assigns visual resource management (VRM) classifications—VRM Classes I, II, III, and IV—that guide the extent and type of modifications to the natural setting. The objectives for VRM Classes are summarized in Appendix G. BLM completed the inventory for public land in the eastern half of the Planning Area in 1979 with some updates in 1986, and the western half in 1981 (BLM 1989b). Each inventory class was determined through a matrix, which combined scenic quality, visual sensitivity, and distance zones. Subsequent to assigning inventory classes, the BLM, through its RMP process, assigned visual resource management classes to all public land in the Planning Area as illustrated in Map 3-5, Visual Resource Management Classes. The acreage included within each VRM Class is presented in Table 3-6.

TABLE 3-6
VRM CLASSES IN THE DECISION AREA

VRM Class	Acres of BLM-Managed Surface Land[1]
Class I	30,343
Class II	385,781
Class III	299,741
Class IV	774,170
Total acres	1,490,036

SOURCE: Bureau of Land Management 2003e
NOTE: [1] Calculated based on best available GIS data.

3.2.13 Cave and Karst Resources

The Federal Cave Resources Protection Act of 1988 (16 U.S.C. 4301-4309) defines a cave as any natural occurring void, cavity, recess, or system of interconnected passages which occurs beneath the surface of the earth or within a cliff or ledge (including any cave resource therein, but not including any vug, mine, tunnel, aqueduct, or other manmade excavation), and which is large enough to permit an individual to enter, whether or not the entrance is naturally formed or manmade. Features that do not meet these criteria are considered to be karst features.

3.2.13.1 Cave and Karst Regions in the Decision Area

Substantial karst topography is located from a point about 6 miles east of Socorro to the Lincoln/Socorro county line and beyond, and from central White Sands Missile Range north to the to the Socorro/Torrance county line and beyond. This karst region is primarily comprised of San Andres limestone layers 10 to 50 feet thick overlying massive gypsum and constitutes about 576,000 acres. Shield lava flows characteristic of the Rio Grande Rift occur in several locations throughout the Planning Area. These flows contain an undocumented number of lava tubes and bubbles. These features also are considered caves. Both karst and lava cave features contain various types of cave-adapted animal and plant life. A number of caves and hundreds of karst features, primarily sinkholes and blowholes, exist in this region.

BLM outdoor recreation specialists with caving experience, geologists, and caving volunteers developed descriptions of karst lands, primarily based on regional geographic features. Overall, 12 karst regions were identified within the Planning Area. Files are kept for each cave or sensitive location on BLM-managed surface estate at the Socorro Field Office. Karst potential is shown on Map 3-6.

3.2.13.2 Significant Cave List

The Federal Cave Resource Protection Act of 1988 directs the Secretary of the Interior to prepare and maintain a listing of significant caves. The criteria for listing of significant caves are found in 43 CFR Part 37.11 (C) Section 5(a) of the Federal Cave Resource Protection Act and indicate that the location of significant caves should be kept confidential in order to protect these resources from unauthorized use and vandalism. It has been determined that 18 caves on public land managed by the BLM meet one or more of the significant cave criteria listed in 43 CFR, Part 37.11(C).

3.2.14 Wilderness Characteristics

Wilderness characteristics are defined as naturalness, solitude, and primitive, unconfined recreation opportunities. Naturalness measures the degree to which the imprint of human activity is substantially unnoticeable (BLM 2003c). Evidence of human activity typically would include travel routes or trails, fences, or other landscape modifications. Naturalness also is characterized by the presence of native vegetation communities and the degree to which the area contributes to the connectivity of habitats.

Solitude exists in an area “when the sights, sounds, and evidence of human activity are rare or infrequent and where visitors can be isolated, alone, or secluded from others” (BLM 2003c). Characteristics of solitude include the presence of landforms with rugged relief or vegetation that may provide screening from other visitors, and the ability to enjoy the area without experiencing frequent contact with others or evidence of other visitors.

Primitive and unconfined recreation consists of non-motorized, nonmechanical uses in areas of no or minimal developed recreational facilities. Opportunities for primitive recreation are marked by a lack of developed recreational facilities, a sufficiently large area to allow these types of outdoor recreational uses, and features or attractions that lend themselves to primitive and unconfined types of recreational uses. Thirteen areas exhibiting wilderness characteristics were designated as WSAs within the Planning Area in November of 1980 (BLM 1980). The WSAs are listed in Table 3-7 (see Map 3-7). Two acreage totals are included in Table 3-7; the acres calculated using the best available GIS data vary from the numbers cited in the 1989 RMP (and the acres designated as WSAs in 1980).

TABLE 3-7
ACREAGES OF WSAs ON BLM-MANAGED SURFACE ESTATE

Wilderness Study Areas	Acres in 1989 RMP	Acres as Calculated in GIS
Antelope	20,710	20,541
Continental Divide	68,761	69,240
Devil's Backbone	8,904	8,967
Devil's Reach	N/A	684
Eagle Peak	43,960	43,975
Horse Mountain	5,032	4,894
Jornada del Muerto	31,147	26,771
Mesita Blanca	19,414	19,214
Presilla	8,680	7,884
Sierra de las Canas	12,838	13,185
Sierra Ladrones	46,308	45,559
Stallion	24,238	23,671
Veranito	7,206	7,241
TOTALS	**297,198**	**291,826**

SOURCE: Bureau of Land Management 2003a, 1989a

Since November of 1980, the WSAs have been managed under the Interim Policy and Management Guidelines for Lands Under Wilderness Review (1995) until Congress either designates them as wilderness or releases them from further wilderness review (see Section 2.3.11). The New Mexico Wilderness Study Report (BLM 1991a), completed in September of 1991, made recommendations from the Secretary of the Interior (October 1991) to the President as to the suitability of these areas as wilderness. The President then forwarded the recommendations to Congress by 1993. Congress will ultimately make the final determination as to wilderness designation.

Wilderness characteristics on acquired lands have been identified as shown in Table 3-8. All of the acquired lands identified as having wilderness character are within proposed ACECs. A land exchange with the State of New Mexico resulted in BLM's acquisition of about 52,230 acres, including lands within and adjacent to the Sierra Ladrones, Continental Divide, Devil's Backbone, and Horse Mountain WSAs. The criteria used to identify these characteristics are based on the 1978 Wilderness Inventory Handbook. Specifically, these criteria include (1) size, at least 5,000 contiguous roadless acres of public land; (2) naturalness, the imprint of man's work must be substantially unnoticeable; and (3) an outstanding opportunity for solitude or an outstanding opportunity for a primitive and unconfined type of recreation. The term "roadless" is defined in the 1978 Wilderness Inventory Handbook as "the absence of roads that have been improved and maintained by mechanical means to insure relatively regular and continuous use; a way solely maintained by the passage of vehicles does not constitute a road." (BLM 1978). Map 3-7 shows the acquired land listed in Table 3-8.

3.3 RESOURCE USES

3.3.1 Land Use and Facilities

Notable facilities in the Planning Area include the Very Large Array operated by the National Radio Observatory and the El Camino Real International Heritage Center. Other notable facilities include those on the White Sands Missile Range, an explosives testing and research facility at New Mexico Tech, and visitor facilities at the Bosque del Apache National Wildlife Refuge. Overall, the area is rural and sparsely populated. General land use patterns are discussed below; note that utilities and communication sites are discussed specifically in Section 3.3.8.

TABLE 3-8
WILDERNESS CHARACTERISTICS OF ACQUIRED LANDS[1]

Unit Name	Unit Number	Wilderness Character Identified	No Wilderness Character Identified
Shaw Mountain	010	X	
Batton Canyon	020		X
Coyote Canyon	030		X
Pelona Mountain	040		
	041	X	
	042	X	
	043	X	
	044	X	
	045	X	
	046	X	
	047	X	
	048	X	
	049	X	
	141	X	
	142	X	
	143	X	
	144	X	
Devil's Backbone	050		
	051		X
	052	X	
	053	X	
	054		X
Horse Mountain	060		
	061	X	
	062	X	
	063	X	
Sierra Ladrones	070		
	071		X
	072	X	
	073	X	
	074		X
	075	X	
	076	X	
	171	X	
	172	X	
	173	X	
	174	X	

SOURCE: Carson 2005
NOTE: [1] Unit report findings and maps of the units are available in the Socorro Field Office.

3.3.1.1 Existing Land Uses

The Planning Area is characterized by rural qualities and vast open spaces; however, some urban and suburban development occurs throughout. Outside of the Rio Grande Valley, the primary uses of land are livestock grazing and agricultural uses (BLM 1989a). Ranching is estimated to constitute about 70 percent of the land use in Socorro County (Socorro County 1998). Farming plays a large role within

the Rio Grande Valley and along I-25 and US 60 (Socorro County 1998). Ranching and farming also are primary land uses in Catron County.

Other land uses in the Planning Area include military activities; residential, commercial, and industrial development; and mining activities. Developed residential, commercial, and industrial land uses commonly are found near city limits and along I-25 and US 60 (Socorro County 1998). Natural or cultural resource protection occurs as a primary use within specially designated areas of public land. Dispersed recreational uses occur throughout the Planning Area, including in specially designated areas. Grazing is an important land use on BLM-administered land, and range improvements such as stock tanks and fences occur throughout the Decision Area.

Military activities generally are limited to the White Sands Missile Range, which occupies approximately 431,326 acres in southeastern Socorro County (Socorro County 1998). This land is closed to the public except when site tours are scheduled with the U.S. Department of Defense and during hunting seasons, which are regulated by the U.S. Department of Defense and NMDGF (NMDGF 2002a; White Sands Missile Range 2003). The military also maintains a safety zone beyond the boundaries of White Sands Missile Range; military activities require evacuation and closure of this area (including public land) one to three times per month (see Section 3.3.10.2 for more information).

Mining is an ongoing activity within the Planning Area. Two active mines are Socorro Peak, which is located near the City of Socorro, and Taylor Creek, located in the southeastern corner of Catron County.

3.3.1.2 Planned Land Uses

Though a majority of the existing land uses are expected to continue, Socorro and Catron Counties have recorded an increased number of plans for subdivisions (see Section 3.5.2 for population projections). In Socorro County, urban development has been proposed along the I-25 corridor from just south of San Antonio, New Mexico, north to the boundary of the Sevilleta National Wildlife Refuge (proposed urban development areas are illustrated on Map 1-1). Another area of proposed urban development in Socorro County is located along US 60, east of Bernardo. In Catron County, numerous areas of scattered development have been proposed. The proposed development areas in the I-25 corridor and those near the Arizona border tend to be surrounded primarily by public lands.

3.3.2 Forestry and Woodlands

There are two major forest or woodland types within the Planning Area, occupying a total of 173,634 acres. One type includes isolated stands of ponderosa pine forest located within WSAs and adjacent to U.S. Forest Service lands, totaling 10,043 acres. These tracts require silvicultural treatment if they are to remain pine sites and not revert to woodlands. Since the existing ponderosa pine forests are managed for the enhancement and protection of the stands instead of maximum production of wood products, no specific allowable cut goals are established. The last timber harvesting operation was carried out in 1976 on Pelona Mountain. Several mistletoe eradication projects have been attempted and were partially successful. No follow-up projects were funded and no timber sales have been offered since that time. The second forest type in the Planning Area is piñon-juniper woodlands, the dominant forest type in BLM's Decision Area, which covers approximately 163,094 acres. At this time, forest and particularly woodland stands are considered to be in Fire Regime Condition Class 2 and 3 (deviations from pre-European settlement range of natural variation for community structure, fire frequency, and fire size). Changes that have occurred in these stands include:

- Reduced tree growth

- Stagnated nutrient cycles
- Increased incidence of disease
- Insect and parasite infestations
- Decreased forage quality and quantity
- Increased fuel loading
- Increased vertical fuel continuity
- Increased canopy cover
- Increased severity of wildfires
- Decreased water availability and stream flow
- Fewer and smaller openings
- Shifts in habitat quality
- Lower aesthetic value

Forest and woodland stands within the Decision Area will continue to deteriorate without implementation of corrective management actions. Severe drought stress and insect infestation in piñon, in particular, has been occurring in the past few years. There are stands within the Decision Area that qualify as old growth under the Healthy Forests Restoration Act (see Appendix N).

Fuelwood is the main wood product produced from the woodlands in the Decision Area. There is one active, designated fuelwood cutting area—the Pie Town Fuelwood Area—which has green one-seed piñon-juniper. Since the Socorro Field Office is located in the arid southwestern region of the United States, growth rates in woodlands and forests are slow, so careful consideration is applied to ensure sustainable harvest of wood products.

Noncommercial demand for vegetative products has been minimal in the Decision Area, with some small interest in commercial Christmas tree sales areas. However, commercial and noncommercial demand for fuelwood has gradually increased, and with rising home heating fuel prices the demand for fuelwood could grow. In addition, urban development and the associated interest in utilizing native plants in waterwise landscaping could increase demand for native perennial plants in the coming years.
The Public Service of New Mexico has proposed biomass harvesting on public lands to provide resources for a planned 35-megawatt capacity biomass generator in Catron County. In total, the proposed harvest would require the harvest of 6,000 to 8,000 acres of land per year, although not all of this would occur on BLM-administered land. The Socorro Field Office is planning to work with other agencies and the Public Service of New Mexico to address this demand, and would utilize stewardship contracting to implement the harvesting (see Appendix G).

3.3.3 Rangeland Management

Ranchers throughout the region have been authorized to use BLM-managed public land to support livestock grazing operations. Allotments may include a mix of Federal, State, and private lands, although BLM has the authority to authorize grazing on public land only (BLM 1989b). Livestock grazing programs on public land are currently authorized by the Federal Land Policy and Management Act of 1976 (FLPMA), Public Rangelands Improvement Act, and the Taylor Grazing Act. Livestock grazing on public land within Socorro and Catron Counties is managed by the Socorro Field Office under the 1989 Socorro RMP and the New Mexico Standards for Public Land Health and Guidelines for Livestock Management.

BLM uses monitoring studies to determine if proper grazing management is occurring to meet public land health standards outlined in the New Mexico Standards and Guidelines (BLM 2000a). In addition, these guidelines describe the most beneficial approach to adjusting grazing management when it is determined

that livestock grazing is preventing the range from meeting the standards. Appendix H provides an expanded description of the New Mexico Standards and Guidelines.

BLM organizes allotments into management categories (see Appendix H) to direct attention to areas where grazing management is needed most to improve the resource or resolve resource-use conflicts. Using these management categories as a tool, BLM creates allotment management plans or cooperative management plans. These plans are developed to achieve the stated goals of local RMPs. Specific methods for controlling when, where, and the amount of livestock grazing use are covered in the plans. Allotment management plans promote the protection of resource values, such as water quality and riparian area resource management, and coordinate livestock grazing with other resource uses. Plans also address needed rangeland improvements, monitoring methods, and an implementation schedule, including more efficient implementation of grazing systems, and identification of priority allotments for public investment, such as range improvement projects or vegetation treatments. Allotment management plans have been completed on 150 allotments.

3.3.3.1 Livestock Use of Grazing Allotments

Livestock grazing allotments within the Planning Area encompass approximately 3 million acres of public, State, and private lands. This total includes 1.5 million acres of BLM-managed lands (50 percent); 569,023 acres of State lands (19 percent); 933,446 acres of private lands (31 percent); and 25,660 acres of other land (1 percent) divided into 252 livestock grazing allotments (see Appendix E). Of the 252 allotments, about 20 are located partially or entirely outside of the Planning Area. However, the Socorro Field Office is responsible for the administration of livestock grazing for the entire allotments, including the BLM-managed lands outside the Planning Area boundaries, while other resources are administered by other BLM field offices. Livestock grazing within an allotment can vary each year depending on range conditions and livestock management needs. Animal unit months (AUMs) is the term BLM uses to identify the amount of grazing use authorized on a grazing permit or in an allotment. An AUM is the amount of forage needed to sustain one animal unit (e.g., a 1,000-pound cow and calf, five sheep, or five goats) for one month (BLM 2000a). As shown in Table 3-9, livestock use in the Planning Area between the years 1992 and 2004 ranged from a low of 145,565 total AUMs in 2002 to a high of 180,504 total AUMs in 1998.

TABLE 3-9
LIVESTOCK USE
BETWEEN 1992 AND 2005[1]

Year	Billed AUMs[1]	Year	Billed AUMs[1]
1992	160,016	1999	172,249
1993	163,835	2000	164,510
1994	165,627	2001	167,678
1995	165,680	2002	145,565
1996	172,174	2003	166,395
1997	170,067	2004	150,609
1998	180,504	2005	150,609

SOURCES: Lane 2006; Matthews 2005
NOTE: [1]AUM = animal unit months

There are presently 232 permittees in the Planning Area who are authorized to use 229,000 AUMs on 252 allotments. Of the grazing permits issued within the Planning Area, 192 are issued under Section 3 of the Taylor Grazing Act, and 59 allotments are authorized by leases under Section 15 of the Taylor Grazing Act. Appendix E provides specific information for each allotment.

Allotments within the Planning Area vary in size from about 17 acres to 167,000 acres, with grazing preferences ranging from less than 10 AUMs to 11,880 AUMs (BLM 2003d). While grazing levels, season of use, and turn out dates vary by allotment and permittee, the majority of allotments are grazed year-round with some type of grazing system (pasture rotation, watering sites, salt placement, etc.) in place to reduce or disperse grazing impacts to soils and vegetation. Grazing levels, season of use, and turn out dates are authorized to allow time for pastures to rest for plant growth and development (see Appendix H). Livestock grazing systems also can vary within the Planning Area, ranging from intensive management, where cattle are moved every couple of days, to a rotational grazing plan that provides grazing and deferment periods throughout the year (BLM 2000a). Types of livestock presently authorized in the Planning Area consist of cattle and horses. There are no sheep allotments.

Most permittees run a cow/calf operation, with calving occurring generally during February and shipping from October to November. At times, heifers are held over as replacement stock. Some permittees run a yearling operation with a period of use generally from May 1 to November 1. Yearlings are purchased either locally or out-of-state (BLM 1989b).

3.3.3.2 Rangeland Utilization and Condition

Livestock grazing in the Planning Area is monitored to allow for an average of 50 percent utilization of key forage species per year (BLM 1989b). Utilization is defined as the degree of forage (grass, forbs, and shrub) removed from rangelands by grazing animals, both domestic and wild. Key forage species in the Planning Area include black grama, blue grama, drop seed spp., alkali sacaton, winterfat, and fourwing saltbush. The establishment and spread of invasive and noxious plant species are potential concerns throughout the Planning Area because these species can negatively affect rangeland health and available forage production for livestock and wildlife (BLM 1989b).

Livestock numbers on individual allotments is related to forage consumption and the overall balance with management of other resources. Ecological condition is the present state of the vegetation on a range site in relation to the potential natural community for that particular site (BLM 2000a). It is an expression of the relative degree to which the kinds, proportions, and amounts of plants making up a community resemble that of the potential natural community. The BLM uses Ecological Site Descriptions to describe and identify plant communities and one of the methods of evaluating ecological sites is the similarity index. This method compares the present plant community to either the historic climax plant community or one of the potential vegetation states. Similarity index is a measure of the percentage, by weight, of the historic climax plant community or desired vegetation state that is present on a site. Seral stages can be used to identify the ecological conditions of a site as shown in Table 3-10.

TABLE 3-10
ECOLOGICAL STATUS

Seral Stage	Estimated Percentage of Resemblance to Potential Natural Community
Historic Climax Plant Community	76-100
Late	51-75
Mid	26-50
Early	0-25

SOURCE: Bureau of Land Management 2000a

Ecological conditions of allotments in the Planning Area were analyzed in various EISs. These include the East Socorro Grazing EIS (BLM 1979), West Socorro Rangeland Management Program EIS (BLM 1982), and the Socorro RMP/EIS (BLM 1988). The most recent summary of ecological conditions for the Planning Area (BLM 2002c) classified 13,729 acres in historic climax plant community; 588,519 acres in late seral; 805,595 acres in mid seral; and 65,791 acres in early seral. A total of 62,976 acres has not been

classified. This information is based on a compilation of ecological site inventory data for the Chupadera Mesa and West Socorro allotments, and ocular assessments for the East Socorro allotments gathered at different points in time over the last few decades.

The BLM's most recent efforts to evaluate conditions have involved assessments of rangeland health; Rangeland Health assessments have been completed on 27 grazing allotments within the Grand Jean, Nogal, Sheep, and Milligan watersheds, as well as the Tularosa Valley (Largo and Ancho subbasins). The assessments concluded that all of the allotments are currently meeting the rangeland standards for upland and biotic health. This is an ongoing process and we will continue to work on completion of the rangeland health assessments on the remaining public land.

3.3.4 Minerals

There are three basic categories of Federal minerals on public lands: leasable, locatable, and salable. These minerals have been defined by Federal laws, regulations, and legal decisions (BLM 1997b). Federal mineral ownership is shown on Map 3-8, Federal Minerals.

Leasable minerals discussed in this section include:

- Nonrenewable energy fluid minerals (oil and gas, geothermal)
- Nonrenewable energy solid minerals (coal)
- Nonrenewable nonenergy fluid minerals (carbon dioxide and helium)

Locatable mineral resources discussed in this section include:

- Metallic minerals (e.g., gold, silver, uranium)
- Non-metallic minerals (e.g., gemstones, fluorspar, perlite)

Salable mineral resources discussed in this section include sand, gravel, limestone, cinders, and building stone.

The sections below address known prospects, mineral occurrences, and mineralized areas; mining claims, leases, and material sites; types of mineral deposits in the area of interest; and mineral economics. Additional information is available from the Management Situation Analysis and the 2003 Energy and Mineral Potential Report, on file with the Socorro Field Office.

3.3.4.1 Leasable Minerals

Federal lands are available for leasing to develop certain Federal minerals, including fluid minerals. Lands that are open to leasing are subject to standard lease terms and conditions. BLM may apply additional stipulations to a lease in a sensitive area. Some areas, such as WSAs, are nondiscretionarily closed to leasing. Procedures for fluid mineral leasing and development are described in more detail in Appendix D.

Oil and Gas

Oil and gas are nonrenewable energy fluid mineral resources that typically are discovered and exploited by drilling exploratory and development wells into oil- and/or gas-bearing sedimentary rocks. Sedimentary rocks that have reservoir-quality porosity are proximal to petroleum source rocks, such as organic-rich shale or coal, and have formed a structural or stratigraphic trap that may accumulate oil and/or gas. From the early 1920s to 2004, there have been 45 exploratory wells drilled in Socorro County

and 43 exploratory wells drilled in Catron County (Map 3-9, Oil and Gas Potential). Well locations shown on Map 3-9 are described in the Energy and Mineral Resource Potential Report (BLM 2003g). Although there have been shows of oil and gas reported in several of those wells in each county, there has been no economic production to date.

Coalbed methane is natural gas that is contained in coal beds, and is a nonrenewable, leasable energy fluid mineral resource. Prolific production of coalbed methane in the San Juan Basin of New Mexico and in other coal-bearing regions of the United States has stimulated interest in this resource. Coalbed methane usually exists in unexposed, water-saturated rock layers that occur downdip (the direction along the plane of a rock layer) from outcrops of coal-bearing formations. Coalbed methane is discovered and developed by drilling a well into the coal-bearing formation and completing the well in coal seams or other gas-bearing reservoir rocks.

Known Occurrences and Prospective Areas

The following basins have experienced oil and gas exploration activity.

Chupadera Mesa, located in eastern Socorro County, first was tested for oil and gas in the 1920s. Oil and/or gas shows were encountered in four wells drilled during the 1950s and 1960s, and two wells tested oil and/or gas shows in the 1970s. Two wells were drilled in the basin during the early 1990s, and one reported a gas show in lower Pennsylvanian sands and/or fractured Precambrian basement rocks.

Two wells were drilled in the **Carrizozo Basin** east of Chupadera Mesa within the past six years. This is a deep "elevator basin" reported to contain mature Permian and Pennsylvanian sediments. The first well drilled a horst structure and had a gas show containing methane, nitrogen, carbon dioxide, and helium in Precambrian basement. A completion attempt was reported for that well. The second well in adjacent Lincoln County reportedly contained mature source rock.

In the late 1930s to 1940s, six wells were drilled in the **Albuquerque-Belen Basin** in northern Socorro County, three of which had oil shows. Sporadic drilling activity since the late 1970s chased oil shows reported in previous exploration wells. Three wells drilled since 1996 have tested Tertiary sediments with no shows reported, although one well was abandoned temporarily and one attempted a completion. There have been many oil and gas shows in Cretaceous rocks in this basin north of Socorro County.

Socorro Basin, San Marcial Basin, and La Jencia Basin – Three wells were drilled in the Socorro Basin during the 1920s and 1930s and reported oil and/or gas shows. No exploration has occurred in that basin or the adjacent basins since. These basins are in the Rio Grande Rift and the structural complexity, depth of suitable reservoir rock, and possible release of hydrocarbons along faults and fractures may be a deterrent to exploration.

Three dry holes were drilled in **the Jornada del Muerto Basin** in 1948, 1955, and 1989. The lack of exploration in this basin may be due to the absence of suitable structural or stratigraphic traps. In addition, the White Sands Missile Range occupies a large portion of the basin and is excluded from exploration.

The **Acoma Basin** in northwestern Socorro and northeastern Catron Counties has been extensively tested by the drill bit since the 1920s. Shows of oil were reported from the Cretaceous Dakota Formation in two wells. However, no shows were reported in seven wells drilled in the basin between 1978 and 1987.

In the western end of the **Zuni Uplift** in Catron County, five wells drilled during the 1920s and 1930s reported oil and/or gas shows in Cretaceous rocks. Four dry holes were drilled in the 1970s. Exploration activity during the 1980s tested the Zuni Uplift and the western San Agustin Basin. Oil and gas shows

were reported from the Permian San Andres Formation where thin beds of thermally mature Permian source rocks were encountered. Reports of carbon dioxide from two drill stem tests of the Permian Yeso Formation indicate there is carbon dioxide and possibly helium potential in this area.

Six wells drilled during the 1950s through the 1970s tested the **Zuni Basin** and no shows were reported. However, oil and gas shows have been reported in the adjacent Holbrook Basin in Arizona. The Zuni Basin has encountered producible quantities of carbon dioxide and helium.

One well drilled in the **San Agustin Basin** during 1966 encountered gas shows. One dry hole was drilled in 1977. Broadhead et al. (2002a) suggest that volcanic activity in the vicinity of this basin may have "cooked" the source rock and rendered any hydrocarbons overmature and not likely to generate oil and gas.

Exploration for coalbed methane resources has experienced an increase in activity in northern New Mexico. However, there is currently no known coalbed methane activity in the Planning Area. Five prospective areas for coalbed methane development are shown on Map 3-10, Coal Fields, Coal, and Coalbed Methane Resources Potential, and discussed below.

Catron County has two known occurrences of coal resources: the Salt Lake coalfield and the Datil Mountains coalfield. Prospective lands for coalbed methane development are located south and east of the Salt Lake coalfield. The southern limit of the geologic area that is prospective is uncertain but generally would conform to the basal Tertiary erosional unconformity. The eastern limit would correspond to the boundary between the Colorado Plateau and Rio Grande Rift provinces.

The Jornada del Muerto coalfield contains coal-bearing units found in Late Cretaceous Mesa Verde Group sedimentary rocks. Prospective lands for coalbed methane development are located west of the outcrop of Mesa Verde Group rocks. The westward extent of the prospect is unknown due to lack of subsurface information.

In the Carthage coal district, coal-bearing units are found in the Late Cretaceous Mesaverde Group. Prospective lands for coalbed methane development probably are located west of the outcrop. The subsurface extent of the prospective area is unknown due to lack of information.

An unnamed outcrop of coalbeds is located near La Joya in the Sevilleta National Wildlife Refuge in northeastern Socorro County. Coal-bearing units are found in the Late Cretaceous Tres Hermanos and Crevasse Canyon Formations. Prospects for development of that resource are unknown.

Leasing Activity

In eastern Socorro County, leasing for oil and gas exploration currently is active in the Chupadera Mesa-Carrizozo Basin area. Leasing activity near Bingham has included Federal and State lands, and all Federal mineral estate in this area has been leased or nominated for leasing in the past year. Leasing activity is ongoing in the Albuquerque-Belen Basin in northern Socorro County.

Much of northwestern Catron County has been leased for oil and gas exploration. The most recent lease sales of State land were in October 2003. At the October 2003 Federal Oil and Gas Lease Sale, BLM offered all 124,000 acres nominated for lease in the Catron County area. As a result, BLM issued 45 Federal oil and gas leases in the Catron County area covering 73,370 acres. There are pending Expression of Interest nominations in northern Socorro County in the Bingham and Chupadera Mesa areas.

Carbon Dioxide and Helium

Carbon dioxide and helium are nonrenewable nonenergy fluid mineral resources typically discovered by exploratory oil and gas wells that encounter natural gas or nonflammable gas containing economic amounts of carbon dioxide and helium. If these gases can be economically separated, collected, and delivered to a market, then a gas field is developed.

Known Occurrences and Prospective Areas

Economic amounts of carbon dioxide and helium have been discovered in five wells, and gas shows that may contain carbon dioxide and helium have been reported in 11 wells. Although these gases were not primary targets for exploration until the late 1990s, several wells reported shows of carbon dioxide and helium in gas analysis reports. Areas of carbon dioxide and helium shows or testing include Chupadera Mesa; Carrizozo Basin; Albuquerque-Belen Basin; Socorro Basin, San Marcial Basin, and La Jencia Basin; Acoma Basin; Zuni Uplift; and Zuni Basin.

Leasing Activity

Leasing for carbon dioxide is conducted under standard oil and gas leasing procedures (see Appendix D). There currently is no leasing activity in Socorro County specifically targeting carbon dioxide exploration and development. In Catron County, there is leasing activity in the Zuni Basin area specifically targeting carbon dioxide exploration and development.

Although helium is an important component of carbon dioxide gas, it is not a leasable mineral. Helium is developed under extraction and sales contracts between the developer and the BLM instead of sales royalties under standard oil and gas leases.

Coal

Coal is a nonrenewable, leasable, solid energy mineral resource. Coal resources in Socorro and Catron Counties typically are found in Cretaceous-age sedimentary formations. Locations where coal resources occur and can be mined are designated as coalfields. Coalfields are present in Late Cretaceous-age sedimentary rock in both Socorro and Catron Counties (see Map 3-10).

Known Occurrences and Prospective Areas

Catron County has two known occurrences of coal resources: the Salt Lake coalfield and the Datil Mountains coalfield. The Salt Lake coalfield covers approximately 120,000 acres in the northwestern corner of the county, and the field extends north into Cibola County. Coal-bearing units are found in the Late Cretaceous Moreno Hill Formation. Coal seams average 5 feet thick and can be up to 14 feet thick. Outcrops of the Moreno Hill Formation form an arcuate belt open to the west that is centered around Zuni Salt Lake. Coalbeds dip to the southeast at 3 to 5 degrees. Faulting has caused minor displacement of coal-bearing units in parts of the field. Mining in the coalfield was conducted by the Phoenix-based utility Salt River Project in 1987 for a test burn at its Coronado Generating Station in Arizona. About 100,000 short tons of coal were extracted from the Fence Lake mine located on private land (Hoffman 2002).

The Datil Mountain coalfield covers approximately 202,000 acres in northwestern Socorro and northeastern Catron Counties. This field also extends north into Cibola County. Coal-bearing units are found in the Late Cretaceous Tres Hermanos and Crevasse Canyon Formations. Coalbeds average less than 3 feet thick and can be up to 7 feet thick. Faulting and folding have affected the lateral continuity of the beds, and the field has been impacted by several Tertiary intrusive bodies. Several old mines

reportedly operated in the field, but the mines are abandoned and information on production is limited (Hoffman 2002).

Three small coal fields are present in the Planning Area: the Jornada del Muerto coalfield covers approximately 11,900 acres in east-central Socorro County; the Carthage coal district covers approximately 5,700 acres in east-central Socorro County; and the La Joya coalfield covers approximately 5,700 acres in east-central Socorro County. These coal fields are not well-suited for development because of structural complexity or thin, discontinuous coal seams.

Leasing Activity

Salt River Project leased 18,000 acres of State and Federal land for its Fence Lake Mine in the Salt Lake coalfield. Reserves were estimated at 120 million short tons. The State issued a mining permit to Salt River Project, but the permit was relinquished and coal is now being obtained by Salt River Project from another source.

Geothermal

Geothermal resources—nonrenewable leasable energy fluid resources—have a history of successful application in New Mexico. Current uses include residential and commercial space heating, greenhousing, aquaculture, crop and food processing, and heated swimming pools and spas. Sources of geothermal energy include artesian hot springs and wells that tap into groundwater or dry rock at elevated temperatures resulting from high heat flow gradients in the subsurface. New sources of geothermal energy have been discovered by drilling exploratory wells in areas of known or suspected high temperature gradients, or by coincidence during drilling for water resources. There currently are 16 geothermal resource locations in Socorro County and 23 geothermal resource locations in Catron County.

Known Occurrences and Prospective Areas

Information on the known occurrences of geothermal energy resources in the Planning Area are available in the Geothermal Resource Data Base for New Mexico prepared by the Southwest Technology Development Institute at New Mexico State University (Witcher 1995). The database reports sites with measured temperatures greater than 30 degrees Centigrade/86 degrees Fahrenheit. The geothermal energy resources are described in the Energy and Mineral Resource Potential Report (BLM 2003g).

Geothermal energy resources in Socorro County range in temperature from 24.0 to 42.2 degrees Centigrade (75.2 to 107.9 degrees Fahrenheit). Eleven of the 16 known occurrences are at isolated locations within the county. The remaining five reported geothermal energy resources are clustered in a Known Geothermal Resource Area (KGRA) west of Socorro. None of the geothermal energy resources in Socorro County have been developed.

Geothermal energy resources in Catron County range from 26.0 to 64.8 degrees Centigrade (78.8 to 148.6 degrees Fahrenheit). Six of the 23 known occurrences are at isolated locations within the county. There are two KGRAs among the remaining 17 reported geothermal energy resources, as follows:

- There are 12 reported locations in a KGRA along the Middle Fork of the Gila River in extreme southeastern Catron County near the Gila Cliff Dwellings National Monument. Ten of those locations are hot springs or seeps; the remaining two are wells drilled to 182 meters (600 feet). Most of the hot springs have been incorporated into resort or spa facilities (Rural Economic Development through Tourism 2002).

- There are five reported hot spring locations in a KGRA along the San Francisco River in the southwestern part of the county south of Glenwood. The hot springs have been incorporated into resort or spa facilities (Rural Economic Development through Tourism 2002).

Leasing Activity

There is no reported leasing or development activity for geothermal energy resources in the Planning Area. Southwest Technology Development Institute has identified eight locations in New Mexico as priority sites for geothermal resource use. None of those locations are in or near the Planning Area.

3.3.4.2 Locatable Minerals

Locatable minerals include both metallic minerals (e.g., gold, silver, lead) and nonmetallic minerals (e.g., gemstones, kaolin, perlite). Locatable minerals can be obtained by filing a mining claim and can be extracted by mining or quarrying methods.

Metallic Locatable Minerals

Socorro and Catron Counties have several metallic mineral mining districts. Most of these districts have been mined historically and are no longer active; four are known prospects that have not been mined (McLemore 2002). Commodities historically produced by each mining district are discussed in further detail in the Management Situation Analysis and Energy and Minerals Potential Report.

Known Occurrences and Prospective Areas

Metallic and nonmetallic mineralized areas in the Planning Area are designated as mining districts. Mining districts are areas where prospective areas for mineral resources are located and/or mining has been conducted. There are 33 metallic mineral mining districts in Socorro and Catron Counties. Four of these districts are known prospects and have not been mined. Six mining districts extend south into Sierra County, two districts extend south into Grants County, and one district extends north into Valencia and Torrance Counties. The only known active metallic mineral mine in the Planning Area occurs in the Hiawatha and Little Jim Claims in Catron County. These claims for a placer tin mine are owned and operated by Volcanic Stone Company. The mine was being developed in 2001 and is presumed to be active today.

Mineralized Areas and Types

There are three mining districts that contain placer deposits: one mining district each in Socorro and Catron Counties contains placer gold deposits, and one mining district in Catron County contains placer tin deposits (McLemore 2002).

There are three mining districts in Socorro County that have lead and zinc deposits in carbonate rock (McLemore 2002). Five mining districts in Socorro County have sandstone-hosted sedimentary copper and uranium deposits. The Chupadera Mountains district and the Lemitar Mountains district in Socorro County contain carbonatites, which are carbonate-rich rocks that have a magmatic origin (McLemore 2002). Carbonatites are valuable mineralization types because they may contain rare-earth elements, uranium, thorium, niobium, copper, titanium, strontium, and manganese (McLemore 1983). Four districts in Socorro County have Precambrian-age veins and corresponding mineral replacement deposits (McLemore 2002).

Nonmetallic Locatable Minerals

There are three mining districts in the Planning Area that historically have mined nonmetallic locatable minerals. These nonmetallic minerals include gems, zeolite, gypsum, kaolin, and perlite. These mining districts are described in the Energy and Mineral Resource Potential Report (BLM 2003g). Locatable quality pumice is mined at two locations east of San Antonio that are not in a mining district.

Known Occurrences and Prospective Areas

There are two known prospective areas for nonmetallic mineral resources in Catron County. The Chloride mining district in Catron County historically has been mined for zeolite and is prospective for gems. Taylor Creek mining district is a known prospect for kaolin and industrial-grade garnet. In Socorro County, the Socorro Peak mining district historically has been mined for perlite and kaolin.

The only known active nonmetallic mineral mine in the Planning Area is the Socorro Perlite Mine and Mill in Socorro County.

Mineralized Areas and Types

The development of kaolin, zeolite, and gems is associated with the Tertiary-age outcrops and sedimentary rocks in the mining districts in Socorro and Catron Counties. Kaolin is a group of clay minerals including kaolinite typically derived from the weathering of alkali feldspars and micas in granite. In the Planning Area, it is found as hydrothermal alteration of Tertiary-age tuffs and rhyolite porphyry, or sedimentary deposits (Isik et al. 1994). Zeolites are aluminosilicate minerals that typically form as crystals in basalt cavities or as alteration of volcanic units.

Gem-quality minerals can form in the volcanic-epithermal processes described above and in vein deposits. Industrial-grade garnets are found in the massive replacement deposits (skarn) that have metallic minerals such as copper, lead, and zinc in the Taylor Creek mining district (Lueth 1996). Perlite is a volcanic glass with a high water content that is derived from high-silica rhyolite lava. When heated, perlite expands to many times the original volume, creating glass foam. Perlite is used in horticulture, light-weight construction material, and as a shipping material. Known locatable travertine building stone is found at three locations in northern Socorro County and are not associated with a mining district (Barker et al. 1996).

3.3.4.3 Salable Minerals

Since 1955, BLM defines common varieties of sand, gravel, stone, pumice, pumicite, cinders, and ordinary clay as salable, not locatable (BLM 1997b). Salable minerals include materials used for building and construction, both commercially and privately. Sand, gravel, aggregate, lime (limestone), cinders, and building stone are the more common salable minerals.

Known Occurrences and Prospective Areas

The locations of known occurrences and prospects for salable minerals are too numerous to discuss on an individual basis. A table of known occurrences and prospective areas, and an explanation of the symbols for the geologic formations, is provided in the Management Situation Analysis on file at the Socorro Field Office.

The New Mexico State Highway and Transportation Department (State Highway Department) has prepared the Geology and Aggregate Resources Manual describing known occurrences and prospects of sand, gravel, and aggregate resources adjacent to public roads for road construction. The State Highway

Department Manual was used to locate and assess sand, gravel, and aggregate salable mineral resources on Federal land in Socorro and Catron Counties (New Mexico Bureau of Geology and Mineral Resources 2002). Most of the pits, quarries, and prospective areas listed by the State Highway Department Manual are Quaternary-age alluvial deposits consisting of unconsolidated sand and gravel adjacent to public roads.

Current Activity

Use of salable minerals requires either a sales contract or a free-use permit. A search of the Case Recordation files on the BLM Land and Mineral Records LR 2000 database identified 27 saleable mineral pits on BLM-managed surface estate within the Planning Area. The New Mexico Highway Department and other sources indicate there are an additional 82 existing pits or quarries for sand, gravel, and aggregate resources and 5 travertine quarries or deposits. More information on the commodity type, volume and sales price of the commodity produced, and sales activity is included in the Management Situation Analysis, on file in the Socorro Field Office. The New Mexico Bureau of Mines and Mineral Resources reports that some inactive or intermittently operated aggregate pits are located on public land in the Planning Area and they can be reopened for construction or local repairs at any time (Barker 2002). The Mine Safety and Health Administration reports one active and one intermittent aggregate pit on private land in Socorro County, and one intermittent pit on private land in Catron County (Mine Safety and Health Administration 2003).

3.3.4.4 Potential for Occurrence of Mineral Resources

This section describes the potential for occurrence of energy and mineral resources in Socorro and Catron Counties. The narrative references resource potential maps for each energy and mineral resources discussed above. The potential for occurrence of mineral resources are determined using guidance provided in BLM Manual 3031 – Energy and Mineral Resource Assessment. The manual sets standards for assessing, classifying, and reporting the potential for occurrence of mineral resources on lands managed by BLM.

Definition of Mineral Resource Potential

The potential occurrence of a mineral resource is a prediction of the likelihood that the mineral resource will occur in a given area. The potential occurrence of a mineral resource includes both exploitable and potentially exploitable occurrences, and does not evaluate whether the mineral resource can be developed economically. The four categories of mineral potential, as defined in BLM Manual 3031, are as follows:

- (no potential) – the geologic environment, inferred geologic processes, and lack of mineral occurrences do not indicate potential for accumulation of mineral resources

- L (low potential) – the geologic environment and inferred geologic processes indicate low potential for accumulation of mineral resources

- M (moderate potential) – the geologic environment, inferred geologic processes, and reported mineral occurrences or valid geochemical/geophysical anomaly indicate moderate potential for accumulation of mineral resources

- H (high potential) – the geologic environment, inferred geologic processes, and reported mineral occurrences or valid geochemical/geophysical anomaly, and known mines or deposits [within the same type of geologic environment] indicate high potential for accumulation of mineral resources

In addition to those four categories, within each mineral potential category the potential must be supported according to a level of certainty regarding the available data. The level of certainty is a measure of confidence in the data that were assessed. Mineral potential categories are displayed on the mineral resource potential maps. The levels of certainty are annotated in the narrative of mineral resource potential using the letter designations described below, and are not displayed on the mineral resource potential maps:

- A: the available data are insufficient and/or cannot be considered as direct or indirect evidence to support or refute the possible existence of mineral resources within the respective area
- B: the available data provide indirect evidence to support or refute the possible existence of mineral resources
- C: the available data provide direct evidence but are quantitatively minimal to support or refute the possible existence of mineral resources
- D: the available data provide abundant direct and indirect evidence to support or refute the possible existence of mineral resources

Leasable Mineral Potential

Oil and Gas Potential

Oil and gas potential is allocated to areas that have the following characteristics:

- Source for hydrocarbons – e.g., an organic-rich shale or coal bed that has attained a level of thermal maturity through burial or other heating mechanism such that oil and/or gas could be generated. These data generally are obtained by testing core or drill cuttings samples in a laboratory.
- Reservoir-quality rock – sandstone, limestone, or fractured rock having interconnected porosity and permeability into which oil and/or gas may migrate from the source rock and be trapped.
- Trapping mechanism that prevents oil and/or gas from migrating out of the reservoir-quality rock; structural traps, stratigraphic traps, and faults are some common trapping mechanisms
- Known deposits of oil and/or gas

Areas having oil and gas potential are shown on Map 3-9. Using the criteria discussed above, no plays or basins in the Planning Area have high potential because there is no proven production from those areas.

The following basins or plays have moderate potential: Chupadera Mesa, Carrizozo Basin, Albuquerque-Belen Basin, Socorro Basin, Acoma Basin, Jornada del Muerto Basin, northern San Agustin Basin, Lucero Uplift, south-central Zuni Uplift, Zuni Basin, and the northern portion of the Los Pinos Uplift. The level of certainty for those plays is C because there is direct evidence through oil and gas shows, source rock, and geologic structures of the possible existence of oil and gas mineral resources. It is important to note that areas having moderate potential are not necessarily correlative with the basin boundaries shown on Map 3-9. For example, the depositional and tectonic history of the Planning Area has resulted in the uplift of reservoir-quality sedimentary rocks from Permian- and Pennsylvanian-age sedimentary basins to form the present-day Zuni and Lucero Uplifts (Broadhead et al. 2002b). There is potential for oil and gas accumulation in those reservoir-quality rocks even though they no longer occupy a structural basin.

Areas that have moderate potential for coalbed methane mineral resources contained in coal beds are shown on Map 3-10. Outcrops and drilling logs show that coal seams are present in those areas, and there are local shows of methane gas. However, there is no known methane production from those coalbeds, hence a level of certainty of "C" is assigned to the coalbed methane potential. The coal seams are ranked as sub-bituminous to bituminous, and have the requisite thermal maturity to generate methane gas (Kaiser and Ayers 1994).

The southern San Agustin Basin, San Marcial Basin, La Jencia Basin, Mogollon-Datil Volcanic Field, Caballo Uplift, Los Pinos Uplift, and all but the south-central portion of the Zuni Uplift have low potential because there is no proven production, oil or gas shows, and no evidence for source rock. The level of certainty is "A" because there are insufficient data to evaluate those plays.

The areas with no potential occur where reservoir-quality rocks have been uplifted and exposed, or removed by erosion adjacent to the Precambrian basement outcrops. The level of certainty is C because oil and gas potentially could escape through the exposed surface of reservoir-quality rock or through extensive fractures in uplifted fault blocks or overthrusts.

Carbon Dioxide and Helium

Carbon dioxide and helium potential is allocated to areas that have the following characteristics:

- Source for carbon dioxide and helium such as thick volcanic sequences that may have locally charged reservoir-quality sediments.
- Reservoir-quality rock – sandstone, limestone or fractured rock having interconnected porosity and permeability into which carbon dioxide and helium may migrate from the source area and be trapped.
- Trapping mechanism that prevents carbon dioxide and helium from migrating out of the reservoir-quality rock; structural traps, stratigraphic traps, and faults are some common trapping mechanisms.

Areas having carbon dioxide and helium potential are shown on Map 3-11. The Zuni Basin has high potential because drilling has proven that known occurrences of carbon dioxide and helium exist. The level of certainty is "D" for the Zuni Basin.

The Chupadera Mesa, Carrizozo Basin, Jornada del Muerto Basin, northern San Agustin Basin, and Zuni Uplift have moderate potential. These areas have had shows of carbon dioxide and helium in well tests but no known production. The level of certainty for those areas is "C" because of direct evidence for the occurrence of carbon dioxide and helium.

The southern San Agustin Basin, Albuquerque-Belen Basin, Acoma Basin, San Marcial Basin, La Jencia Basin, Socorro Basin, Caballo Uplift, Los Pinos Uplift, Lucero Uplift, and Mogollon-Datil Volcanic Field have low potential because there are no known occurrences and no carbon dioxide and helium shows.

However, the presence of volcanic activity and possible reservoir-quality rock in those areas provides some potential for carbon dioxide and helium resources. The level of certainty is "C" because in many of those areas drilling has not reported shows of carbon dioxide and helium.

Areas with no potential occur where reservoir-quality rocks have been uplifted and exposed, or removed by erosion adjacent to the Precambrian basement outcrops. The level of certainty for those areas is "D" because carbon dioxide and helium would likely escape from reservoir-quality rock through the exposed surface or through extensive fractures in uplifted fault blocks or overthrusts.

Coal Potential

Known occurrences and prospective lands for coal and coalbed methane mineral resources are shown on Map 3-10. Those areas are ranked as high potential for coal mineral resources based on outcrops and drilling logs. However, some of the areas may have limited economic potential because of faults, fractures, and steeply dipping beds; thin, discontinuous coal seams; and limited subsurface data. A level of certainty of "D" is assigned to coal potential.

Areas depicted on Map 3-10 as possessing moderate potential for coalbed methane resources may also be considered to have moderate potential for coal, as coal-bearing formations are present at depth in this area. The level of certainty is C in the area of coalbed methane potential because there is direct evidence that coalbeds are present in that area. However, it may not be economically feasible to mine coal from some areas because the depth of burial and amount of overburden that would have to be removed to extract the coal would be prohibitively expensive under most economic conditions.

Geothermal

The potential for geothermal energy resources ranges from high to none. High potential occurs in two locations in southern Catron County and one location west of Socorro (BLM 2003g). Those locations are convective resource areas characterized by low-temperature geothermal energy resources suitable for heating buildings, swimming pools or spas, or for agriculture or aquaculture. Those locations have a level of certainty of "D".

Most of the Planning Area has moderate potential because of crustal thinning that occurred during Basin and Range extension and formation of the Rio Grande Rift. Isolated known occurrences of low-temperature geothermal resources are located in the area of moderate potential. The level of certainty for moderate geothermal resources is "B" because for most of the area there are only isolated occurrences of geothermal resources. The areas east of the Rio Grande Rift and northwestern corner of Catron County have low or no geothermal resource potential and no known occurrences. The level of certainty for low or no geothermal resources potential is "B" because the absence of occurrences provides limited indirect evidence for no or low potential.

Locatable Mineral Potential

A map showing the known occurrences, prospective areas, and resource potential in Socorro and Catron Counties was prepared for locatable mineral resources and is available from the Socorro Field Office.

Metallic Minerals

High potential for metallic mineral resources occurs in areas of known occurrences of metallic minerals for each district. The level of certainty is "D" because available data provide abundant direct evidence that the metallic minerals occur in those districts.

There is low potential for metallic minerals in areas of similar geology outside the known mining districts because no mineral occurrences are known and the geologic environment and geologic processes indicate low potential for occurrence. The level of certainty is "B" because the areas designated as having low potential are areas that generally have only indirect evidence that few or no metallic mineral resources exist (i.e., no mineral exploration has been conducted and/or no mining district has been established).

Nonmetallic Minerals

High potential for nonmetallic mineral resources occurs in mining districts with known occurrences of nonmetallic minerals listed for each district. The level of certainty is "D" because available data provide abundant direct evidence that the non-metallic minerals occur in those districts.

As with metallic minerals, there is low potential for nonmetallic minerals in areas outside the mining districts.

Salable Mineral Potential

The known occurrences, prospective areas, and potential of salable mineral resources in Socorro and Catron Counties are shown in the Management Situation Analysis. Quaternary-age geologic formations described as alluvial sand and gravel, colluvium, and eolian sand are considered high potential prospective areas for salable minerals. The level of certainty is "D" for those resources because they have been evaluated for quality by the State Highway Department.

Quaternary-Tertiary-age sedimentary and volcanic formations, such as those mentioned as prospective materials in the State Highway Department Manual, are classified as moderate potential. The Quaternary-Tertiary-age sedimentary deposits typically have more variable composition and are more indurated than Quaternary-age deposits. As such, certain outcrops of those deposits may be less suitable as salable mineral resources. For that reason, Quaternary-Tertiary-age deposits have moderate potential. The level of certainty is "C" because there is direct evidence for the occurrence of those resources, but the preferred salable mineral resource may not occur at all locations.

3.3.5 Recreation

West-central New Mexico is rural in nature and generally characterized by sparse population with extensive open space and unique resources providing opportunities for a variety of recreational uses. Much of the land within the Planning Area is public domain and generally available to the public for a wide range of uses. Federal lands help satisfy the growing public demand for outdoor recreation. Most of the recreational uses depend on the natural and cultural features of the land. Estimated recreational use of public lands administered by the BLM in New Mexico totaled over 2.1 million visits and nearly 1.8 million visitor days in Fiscal Year 2004 (BLM 2004a).

Special Recreation Permits are issued to manage visitor use, protect natural and cultural resources, provide for the health and safety of visitors, and accommodate commercial recreational uses. There are four types of uses for which these permits are required: commercial, competitive, organized groups or events, and individual or group use in special areas. The Socorro Field Office issues and administers approximately 25 or more permits per year. The majority of permits are related to outfitting for hunting. Other permits include dog trials, motorcycle races, endurance horse races, astronomy events, mountain bike races, model rocket launches, climbing, reenactments at Fort Craig, and a variety of other activities.

3.3.5.1 Recreational Uses

Outdoor recreation in the Planning Area occurs in a variety of areas that range from predominantly natural, low-use areas to developed, intensive-use areas. The physical environment often determines where, when, and what type of recreational activities occur (BLM 1989a). Landscape attributes that enhance recreation opportunities and attract visitors to public land include desert badlands, mountains, canyons, lava features, grasslands, and wooded environments (BLM 1989a). A range of outdoor recreation experiences exists for pursuits such as backpacking, camping, sightseeing, motorcycling,

hunting, climbing, bouldering, caving, driving for pleasure, hiking, and horseback riding. Off-highway vehicle (OHV) use is addressed in Section 3.3.7, Transportation and Travel Management.

Many of the special designations provide visitors with notable recreational opportunities (see Map 3-7; Map 3-12 shows the locations of SMAs). For example, badlands landscapes such as the Tinajas ACEC, Sierra de las Cañas WSA, and the Quebradas National Backcountry Byway offer unusual scenery with highly colorful rock formations, unusual banding, and a uniquely contrasting landscape with the adjacent Rio Grande and associated bosque (BLM 1989a). These scenic attributes make these areas popular for "geological sightseeing." The Box, San Lorenzo Canyon, and Walnut Canyon SMAs afford visitors opportunities to rock climb, hike in washes and along ridges, experience solitude in canyons, and offer sweeping panoramic views of surrounding mountains and valleys. The Pelona Mountain SMA, Continental Divide WSA, and Continental Divide National Scenic Trail SMA are situated in a highly scenic, remote, natural region providing various opportunities for solitude or primitive recreation.

Datil Well SMA is managed by the BLM on 669 acres in west-central New Mexico. Datil Well SMA contains hiking trails, 22 individual family camping units, and interpretive opportunities. Datil Well is a Pilot Fee Demonstration Site, and the BLM currently collects fees for camping only. Facilities and services available include picnic tables, fire pits, drinking water, firewood, and toilets. Occasionally, BLM personnel perform maintenance, patrol, environmental education, and visitor contact (BLM 1992). Since 1989, management has included the prohibition of woodcutting. BLM makes firewood available at the campground, which eliminates the need for such activities (BLM 1992). BLM has limited OHV use in the SMA to existing roads and trails. Generally, total campsite occupancy is about 25 to 50 percent during weekdays and about 60 to 90 percent during the weekend through the primary use season (April through November) (BLM 1992). The majority of visits to Datil Well Campground occur during hunting seasons (BLM 1992). Data presented below show an increase in visitor use since 1995, with a visit defined as overnight use (with varying lengths of stay) with an average party size of between two and three persons (BLM 1992, 2004a; Carson 2003a).

- 1995 – 1,249 visits
- 1996 – 2,398 visits
- 1997 – 2,000 visits
- 1998 – 2,245 visits
- 1999 – 2,747 visits
- 2000 – 3,200 visits
- 2001 – 3,785 visits
- 2002 – 4,500 visits
- 2003 – 4,500 visits
- 2004 – 4,875 visits

Areas not specifically managed to maintain recreational values (i.e., areas other than special designations) are by default part of the Extensive Recreation Management Area. The Extensive Recreation Management Area, which does not require designation, is open for recreational uses. These areas are routinely monitored. Periodic patrol of the Extensive Recreation Management Area provides the necessary information for appropriate management and feedback to planning.

Federal land not managed by BLM that provides recreational opportunities within the Planning Area includes three national forests, two National Wildlife Refuges, and two National Park Service properties. The national forests, including portions of the Cibola, Gila, and Apache National Forests, provide additional opportunities for dispersed recreation similar to that offered on public land; however, national forests provide more developed recreational sites for camping, picnicking, and other activities. Public land is located adjacent to the national forests in several areas where recreational uses may cross jurisdictional boundaries. The two National Wildlife Refuges managed by USFWS (i.e., Sevilleta National Wildlife Refuge and Bosque del Apache National Wildlife Refuge) provide areas for birdwatching and unique wildlife viewing opportunities. Other activities at the bosque include fishing and small- and big-game hunting. Public land surrounds portions of the two National Wildlife Refuges;

however, visitors seem to stay within the National Wildlife Refuge boundaries due to the quality of wildlife viewing (Carson 2003a).

3.3.5.2 Recreation Opportunity Spectrum

The recreation opportunity spectrum (ROS) recognizes that people want and need different recreation experiences, and that the resource base has a varying potential for providing recreation experiences. Through ROS, BLM can characterize demand for various types of recreation settings and opportunities, and the capability of the resource to provide such experiences. All possible combinations of recreation experiences, setting, and activity opportunities can be arranged along a spectrum, or continuum. The ROS is divided into six classes: primitive, semi-primitive non-motorized, semi-primitive motorized, roaded natural, rural, and modern urban. Each class is defined in terms of a combination of activity, setting, and experience opportunities. Further information on ROS is provided in Appendix E.

ROS classes are established as a result of inventory and are used as an analysis tool in the RMP process. A minimal level 1 inventory was completed for this plan and for use as a tool in developing alternatives and management actions related to recreation experiences. This inventory of ROS classes is presented in Map 3-13.

3.3.6 Renewable Energy

Interest in biomass-fueled power generation has been expressed within the Planning Area. Additional information is provided in Section 3.3.2, Forestry and Woodlands.

3.3.6.1 Solar Energy

Solar energy is a renewable energy resource that has excellent potential for generating electricity in Socorro and Catron Counties. Electricity is generated when sunlight contacts a photovoltaic cell that transforms solar energy to electricity. Solar energy resources are classified based on the amount of solar radiation that contacts the ground surface in a specified area. The amount of solar energy resource available at a specific location varies with the latitude of that location, the season, and the time of day. The Planning Area has generally uniform, high potential for solar energy generation. The relatively high elevation and arid climate are conducive to clear, sunny days with high solar radiation. However, there is no reported activity on public land for the testing or exploitation of commercial-scale solar resources in the Planning Area.

3.3.6.2 Wind Energy

Wind energy is a renewable energy resource that has excellent potential for generating electricity. Wind resources are classified based on the typical wind speed measured at a location or area. Wind-power classes range from lowest (Class 1) to highest (Class 7). Wind-power is considered economic for large turbines (utilities-scale) at Class 3 and higher, although a small turbine can be used at Class 1.

There are four wind-power classes available in the Planning Area: Class 4, Class 3, Class 2, and Class 1. The areas having the highest wind-power class correspond to areas of higher elevation and higher relief as well as higher wind velocity. The locations for each wind-power class in the Planning Area are as follows:

> *Class 4* – includes the Oscura Mountains in southeastern Socorro County, which jut up from the flat Jornada del Muerto and Tularosa Valley; and the peak elevations in the Magdalena, Mogollon, and San Mateo Mountains. Wind-energy resources range from 400 to 500 watts per square meter at a turbine elevation of 165 feet above ground level.

Class 3 – includes the upper elevations of the San Mateo and Magdalena Mountains in southwestern Socorro County. This class includes the upper elevations of the mountain ranges in central and southern Catron County that follow the general trend of the Continental Divide including the Gallo, Tularosa, and Mogollon Mountains, and Black Range. Those ranges are within the Apache and Gila National Forests. Wind-energy resources range from 300 to 400 watts per square meter at a turbine elevation of 165 feet above ground level.

Class 2 – includes the lower elevations of the mountain ranges in central and southern Catron County that follow the general trend of the Continental Divide, including the Gallo, Tularosa, and Mogollon Mountains, and Black Range. This class includes the lower elevations of the San Mateo and Magdalena Mountains in southwestern Socorro County, and the upper elevations of lesser mountains in eastern Socorro County and throughout Catron County. Wind-energy resources range from 200 to 300 watts per square meter at a turbine elevation of 165 feet above ground level.

Class 1 – includes the low-lying areas west of the Rio Grande in Socorro and Catron Counties, and relatively flat mesas and valleys east of the Rio Grande including the Jornada del Muerto, Tularosa Valley, and Chupadera Mesa. Wind-energy resources are less than 200 watts per square meter at a turbine elevation of 165 feet above ground level.

Wind energy potential ranges from high to low and is dependent on the difference in elevation. Hence, the higher mountain elevations have greater wind energy potential. High potential is found at the highest elevations, which include Socorro Peak and the Magdalena, Mogollon, and San Mateo Mountains. Moderate potential is found at the intermediate elevations on those same mountains. Low potential is found in areas having lesser elevation differences and the low elevations, such as the flat valleys east of the Rio Grande River. There are no areas of no wind energy potential because even areas having light winds can generate power using small-scale wind turbines.

At this time, there are no monitoring sites, commercial operations, or other activity reported in the Planning Area. However, wind energy is being actively developed on State land in the eastern part of the state. Resource assessments are in progress by commercial interests to identify sites for development.

3.3.7 Transportation and Travel Management

3.3.7.1 Transportation System

Within the Planning Area, roadways, railroads, and airports provide access to the general area and public land. Access to public land and its resources is provided largely by an extensive network of highways, roads, trails, and "ways" (primitive two-track trails located within WSAs).

The existing transportation network is shown on Map 3-14, Existing Access. The major existing transportation facilities include I-25; US 60, US 180, and US 380; and NM 12 and NM 169. I-25 runs north to south through Socorro County as it parallels the Rio Grande. US 60 enters Catron County north of the Gila National Forest and travels easterly, linking the communities of Quemado, Pie Town, Datil, Magdalena, and Socorro. US 60 also travels east from Bernardo. US 180 extends from the Arizona border west of Reserve, south through the Gila National Forest, out of the Planning Area into Silver City and Deming. US 380 begins at the community of San Antonio and heads east and out of the Planning Area in southeastern Socorro County. Travel along US 380 is restricted at certain times due to White Sands Missile Range missile firings, yet it is seldom closed for more than a few hours (BLM 1989b). NM 12 begins at US 180 and travels east through the Gila National Forest, connecting the towns of Reserve and Aragon before leaving the Gila National Forest and connecting with US 60 near Datil. The NM 169 is a road that leads from Magdalena to the north, providing access to the Alamo Band Navajo Indian Reservation. Numerous other State highways and county roads are located throughout the Planning Area.

Map 3-14 includes primitive routes[3] or "ways" within WSAs. These "ways" were mapped by BLM between 1978 and 1980[4].

3.3.7.2 Traffic Volumes

State Highway Department reports annual average daily traffic (AADT) counts by roadway within individual counties. The AADT counts are reported at milepost increments with similar AADTs within each county for roads that cross county boundaries. AADT counts may vary significantly on the same stretch of roadway depending upon the surrounding land uses (i.e., rural versus urban areas). This factor makes documenting AADT counts by roadway and county difficult. Table 3-11 shows the range of AADT volumes for the five major roads within Socorro and Catron Counties.

TABLE 3-11
ANNUAL AVERAGE DAILY TRAFFIC VOLUMES ON MAIN ROADS IN SOCORRO AND CATRON COUNTIES

Road	Range of Annual Average Daily Traffic Observed	Average of All AADT Volumes Recorded within the Planning Area
Interstate 25	1,737 – 6,662	4,104
US 60	478 – 3,306	1,129
US 180	1,261 – 2,532	1,284
US 380	727 – 2,028	1,539
NM 12	96 – 1,254	415

SOURCE: New Mexico State Highway and Transportation Department 2003

3.3.7.3 Access to Public Land

An extensive network of improved and unimproved roads and trails provides access to public land throughout the Planning Area. Based on the best available data, there are over 13,000 miles of routes providing motorized access to public land in the Planning Area. County roads are critical to providing access to public land, and other important routes are BLM roads. The full existing network of existing roads and trails is provided in Map 3-14. In addition, the Socorro Field Office has established foot trails to provide non-motorized access to public land.

Since 1989, legal access has been acquired for the Pelona Mountain SMA, Fort Craig SMA, Cottonwood Canyon, Bat Cave, and areas of the Continental Divide Trail, as determined necessary in the 1989 RMP. Legal access also exists for Walnut Canyon via Socorro County Roads A128 and E128 (Bell 2003). Legal access has not been acquired for the Sawtooth ACEC, which also was determined as needed in the 1989 RMP.

Map 3-14 identifies roads and trails within the Planning Area that have been closed. BLM has closed (through temporary or emergency trail closures) or proposed to close about 25.5 miles of roads or trails since 1989. However, none of these proposed closures have included RMP amendments, as required by 43 CFR 8342. Therefore, these roads have not been closed formally through the planning process, but these closures are included in all of the action alternatives for this RMPR.

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[3] Primitive routes or ways are maintained solely by the passage of vehicles and do not constitute roads. A road is improved and maintained by mechanical means to ensure relatively regular and continuous use (BLM 2001c).

[4] These "ways" existed within the WSAs prior to the enactment of FLPMA in 1976; "existing facilities" and "grandfathered" uses are provided for under BLM's Interim Management Policy for Lands Under Wilderness Review (1995). Therefore, these pre-existing, or pre-FLPMA, routes have unique status and become the planning baseline for all route designations in the WSAs. Throughout the route designation process, "ways" may be referred to as "routes."

Motorized vehicle access within WSAs is limited to "ways," which were established prior to the implementation of FLPMA and that have not been closed by BLM since then (BLM closed 36 miles of ways with the 1989 RMP). Ways are defined as primitive routes that have been developed and maintained solely by the passage of vehicles and do not constitute roads. A road is improved and maintained by mechanical means to ensure relatively regular and continuous use (BLM 2001c). According to BLM policy, any vehicle routes established in WSAs after 1976, which were not identified in BLM Wilderness Inventories, are considered unauthorized. BLM management decisions detailed within the 1988 Proposed RMP Final EIS discussed access activity plans to be developed specifically to identify certain easement needs and target acquisition dates. Access activity planning determines whether the existing legal access is sufficient, insufficient, excessive, or in some cases a mix of the three (BLM 1989a). In activity planning analyses, the distinction between legal access and physical access will be addressed (BLM 1989a). Legal access will be pursued, where needed, through the use of existing physical access routes before new road construction is considered, as long as the existing physical access route serves the intended purposes (BLM 1989a). Only one access activity plan has been initiated since adoption of the RMP, but this plan has not been completed (BLM 1999b).

3.3.7.4 Off-highway Vehicle Use

OHV use occurs throughout the Planning Area, as both a mode of transportation and a recreation use. OHVs transport people to remote areas for activities such as hunting. As a recreation use, OHVs are often used for touring, sightseeing, family activities, hill climbing, and various competitive events (Jaggers 2003a). Motorized OHV use on BLM land has increased substantially in recent years (BLM 2001c). By far, most of the OHV activity within the Planning Area is dispersed and occurs during the fall and winter when hunters pursue big game. Most cross-country traffic (i.e., vehicle travel off of established trails and roads) occurs during this time period, resulting in the pioneering or proliferation of new trails (Jaggers 2003b).

To manage OHV use on public lands, including within WSAs, the BLM designates areas as open, limited, or closed to OHV use in accordance with 43 CFR 8340 (see Appendix J for additional information). Existing OHV area designations are shown in Map 3-15, Existing OHV Area Designations, and summarized by acres in Table 3-12. Approximately 57 percent of the Planning Area is open to unrestricted vehicle access, and about 38 percent is restricted to existing or designated roads and trails (Jaggers 2003a). Less than 2 percent of the road and trail system in the Planning Area is closed to vehicle use due to sensitive resources (e.g., cultural, scenic, or habitat resource protection).

TABLE 3-12
EXISTING OHV AREA DESIGNATIONS

Area Designation	Acres
Open to OHV use	851,234
Limited to existing or designated roads and trails	562,914
Seasonally limited[a]	20,120
Closed to motorized travel	29,117
Undesignated[b]	40,810

SOURCE: Bureau of Land Management 2003a
NOTES: Acreage calculations are based on the BLM's best available GIS data.
[a] Limited to existing roads and trails between November 1 and March 31, otherwise designated as open for OHV use.
[b] Recently acquired lands within WSAs are considered "undesignated" for OHV use.

Although a majority of the OHV use on public land within the Planning Area is dispersed, BLM has recognized Gordy's Hill as an "open" area where intensive OHV activity has occurred for more than 30 years. This area is located in Socorro County on approximately 1,200 acres within T. 2 S., R. 1 E. A boundary was not designated in the 1989 RMP, but the "open" areas comprised the drainages of Arroyo

de la Parida, Arroyo del Coyote, and Arroyo de los Pinos, with the general ridge areas between the drainages "limited to existing roads and trails." After the 1989 RMP went into effect, casual use OHV visitors expanded the area to an estimated 6,000 acres, sandwiched between the two WSAs, Veranito on the north and Presilla on the south. The estimated use area extends from near Pueblito east for about 3.5 miles. The use area distance between the two WSAs is about 4 miles. BLM was unable to control this informal expansion. The current estimated use boundary is effectively defined by the WSA boundaries north to south, and west to east from the Pueblito hamlet to the private holdings and where the Quebradas Backcountry Byway turns south.

The BLM Socorro Field Office estimates that approximately 20 miles of motorized trail have been established in the Gordy's Hill area as a result of the intensive use. Within this area, BLM has issued use permits for OHV events such as hill climbs and motorcross. This area is the site of the annual "Socorro 100" motorcycle/all-terrain vehicle competition, which draws hundreds of participants and spectators each fall. The first competitions began in 1989, after BLM was approached by the New Mexico Desert Racing Association to locate a suitable track or course for its proposed motorized competition. Once the track was laid out and potential impacts analyzed in an environmental assessment, BLM issued a Special Recreation Use Permit for the event. BLM continues to issue a permit each year for this event. In 2002, approximately 160 entrants raced during two days of hill climbing and cross-country racing competitions on the existing trails in this area.

Data supporting the increased use of OHVs were obtained from the New Mexico Department of Motor Vehicles. According to New Mexico Department of Motor Vehicles, vehicle registration of OHVs has increased throughout the State and within Socorro and Catron Counties. Data received from the New Mexico Department of Motor Vehicles is provided in Table 3-13.

TABLE 3-13
1990 AND 2000 REGISTRATION STATISTICS FOR OHVS, MOTORCYCLES, AND TRUCKS

Geographic Area	Vehicle Type	1990	2000	Change
Socorro County	Off-Highway	23	119	417%
	Motorcycle	206	156	-24%
	Truck	4,003	5,116	28%
Catron County	Off-Highway	21	41	95%
	Motorcycle	52	84	62%
	Truck	1,532	2,178	42%
New Mexico	Off-Highway	2,995	7,457	149%
	Motorcycle	26,126	25,408	-3%
	Truck	401,315	498,292	24%

SOURCE: New Mexico Department of Motor Vehicles 2003
NOTE: Trucks include sport utility vehicles.

As indicated by these data, OHV registrations have increased substantially within the Planning Area, as well as in New Mexico, over the past 10 years. OHV users in the Planning Area may have their vehicle(s) registered in other counties (or possibly other states). The increased number of OHVs and trucks corresponds with increased use on and off roads and trails within the Planning Area.

In areas adjacent to public land, OHV use occurs on national forest, State, and private land throughout the Planning Area. Due to the dispersed nature of recreation on State and private land, OHV activity in these areas is likely similar to the use occurring on BLM lands. Generally, most national forest land that interfaces with the Socorro Field Office is open to cross-country OHV use. Most Forest Service land that is closed to OHV use is within special designations (e.g., wilderness) and in areas where there is a need to protect sensitive species, important wildlife habitat, and other unique natural and historical resources. The USFWS prohibits the use of OHVs within the two national wildlife refuges.

3.3.8 Utility Corridors and Communication Sites

3.3.8.1 Rights-of-Way, Leases, and Permits

There are numerous existing road rights-of-way in the Planning Area, including Federal and State highways, county roads, and other access roads. Major utility right-of-way holders in the Planning Area include three American Telephone and Telegraph Company communication sites; two Quemado Television Association television translator sites near Quemado; a Western New Mexico Telephone Company communication site near Magdalena; and a double-track railroad that was granted to the U.S. Army Corps of Engineers as part of the 27-antenna the Very Large Array project located in the Plains of San Agustin (BLM 1989b).

3.3.8.2 Utility Corridors

No designated right-of-way corridors exist on public land within the Planning Area. Instead, BLM has designated right-of-way exclusion and avoidance areas to enhance right-of-way management, as described below. Many of the linear facilities authorized under various right-of-way grants have led to the establishment of de facto right-of-way corridors (BLM 1989a). The major utility rights-of-way in the Planning Area include Navopache Electric, American Telephone and Telegraph Company, Socorro Electric Cooperative, Western New Mexico Electric, El Paso Electric, Plains Electric, and Eastern New Mexico Electric (Bell 2002a, 2003).

The BLM designated right-of-way exclusion and avoidance areas in the Planning Area through the 1989 RMP. In May 1991, the Socorro Resource Area Right-of-Way Avoidance Area Plan (BLM 1991b) was initiated. BLM Manual 1623.51 states that right-of-way exclusion areas are areas where future rights-of-way may be granted only when mandated by law. Reasonable access cannot be denied to a mining claimant (43 CFR 3809) unless the land is withdrawn from mineral entry. Exclusion areas include Horse Mountain, San Pedro, and Sawtooth ACECs and all VRM Class I areas (Map 3-16, Right-of-Way Exclusion and Avoidance Areas). The VRM Class I areas include portions of the Tinajas SMA and the highlands of Ladron Mountain SMA. Designated right-of-way exclusion areas cover approximately 39,745 acres of BLM-managed surface land.

Right-of-way avoidance areas are defined as areas where future rights-of-way may be granted only when no feasible alternative route is available (BLM 1991b). Avoidance areas are identified based on resource management objectives, and occupy approximately 467,091 acres of BLM-managed surface land (see Map 3-16). The purpose of right-of-way avoidance areas is to reduce the likelihood of rights-of-way being placed in these areas. When possible, alternative routes and sites would be considered.

3.3.9 Land Tenure

The purpose of land tenure adjustments is to provide for efficient management of public resources. The 1989 RMP designated broad areas as BLM retention and disposal areas, as illustrated in Map 3-17, Land Tenure. Retention areas tend to encompass consolidated blocks of public land including special designations, such as WSAs, ACECs, and SMAs. Disposal areas include isolated, unmanageable public land parcels near and within well-blocked areas of private and State Trust Land, and areas that include scattered parcels of public land that have proven difficult to manage. In addition, the 1989 RMP restricted disposals or withdrawals within coal areas so that exploration and development would not be inhibited.

Since the 1989 RMP was adopted, surface management status has changed as the result of certain land actions. BLM has completed a land exchange with the State of New Mexico and two exchanges with private landowners. One mineral estate exchange occurred with New Mexico and Arizona Land Company, resulting in the disposal of all minerals on approximately 14,704 acres and oil and gas on an

additional 1,240 acres. Adjustments to surface management resulting from these actions are shown on Map 1-1.

In addition to exchanges since 1989, disposals of public land have altered land tenure in the Planning Area. Disposals generally occurred pursuant to Section 203 of the FLPMA as BLM disposed of land under the Middle Rio Grande Occupancy Resolution Program. The program was developed to resolve long-standing title disputes in the Rio Grande Valley, where public land inadvertently had been treated as private land. Under this program, public land was disposed of through sales (competitive, modified competitive, and direct), and Color-of-Title disposals (Bell 2003). Through the late 1990s and early 2000s, the number of disposals steadily declined as title problems were resolved with the issuance of numerous public land patents (Bell 2003).

Since 1989, three Recreation and Public Purpose patent transactions have been issued. BLM conveyed to the State of New Mexico approximately 120 acres of public surface land for the construction of the El Camino Real International Heritage Center. In addition, 5 acres of public surface land were conveyed for the Luis Lopez Fire Station. In October 1995, Catron County acquired 150 acres of public land for a recreational area that includes a picnic and camping area, cemetery, rodeo arena, race track area, shipping pens, a little league ball park, and a transfer station.

3.3.10 Hazardous Materials and Public Safety

3.3.10.1 Hazardous Materials

BLM stores and uses hazardous substances at the Socorro Field Office, including a variety of flammable and combustible liquids. Types of hazardous chemicals used by BLM include paint, fuel, lubricants, oil, adhesives, antifreeze, propane, household cleaners, and fuses (for starting back fires) (Seagraves 2003). All of these materials are stored in fire-proof cabinetry or buildings at the Socorro Field Office and are used in *de minimis* quantities for construction and maintenance activities on the public land (Seagraves 2003). That is, the chemicals are stored in quantities that generally do not represent a risk of harm to public health or the environment, or a condition that would be subject to regulatory enforcement.

In the past, BLM has leased land to Socorro and Catron Counties under the Recreation and Public Purposes Act for use as sanitary landfills. The responsible parties for these areas with regard to the Resource Conservation and Recovery Act solid waste regulations are the counties to whom the land was leased. There have been seven separate leases executed for these purposes since 1965. Table 3-14 lists the common names of these lease areas and the initial date of execution for each.

TABLE 3-14
RECREATION AND PUBLIC PURPOSES ACT
LEASES FOR SANITARY LANDFILLS

Common Name	Execution Date	Acres
Old San Antonio Landfill	February 1965	10.00
Old Lemitar Landfill	February 1967	10.00
Quemado Landfill	February 1966	10.00
Datil Landfill	April 1966	10.00
PieTown Landfill	May 1966	10.00
Lemitar Landfill	July 1982	5.893
San Antonio Landfill	March 1983	8.800

SOURCE: Lois Bell 2002b

There are other activities taking place or may take place on public land that have the potential to use hazardous materials or generate hazardous wastes through leases, access agreements, or land use

designations. These activities include mining, oil and natural gas exploration and production, OHV use, and construction of power plants. Mining activities are regulated by the NMED, as well as by the Mining and Minerals Division of the NMEMNRD. The exploration and production of oil and natural gas in New Mexico, while excluded from Resource Conservation and Recovery Act, is regulated by the Oil Conservation Division of the NMEMNRD. OHV use, while a potential source for pollutants, is an activity conducted by individual private citizens and, therefore, not specifically subject to regulation. Any new power plants built would fall under regulation by the Air Quality Bureau of NMED.

3.3.10.2 White Sands Missile Range Safety Evacuation Areas

The White Sands Missile Range Safety Evacuation Areas are Federal (administered by BLM), State, and private lands outside the boundaries of the missile range that are used periodically for launching missiles onto the range or as safety "fans" for missiles that impact on the range near the boundaries. Although missiles may be launched from the Safety Evacuation Areas, they are not purposely impacted into the areas. The use of the Safety Evacuation Areas as safety fans around the impact zone on the missile range provides a margin of safety from missile debris. These fans may extend for several miles in all directions around the impact target.

A number of people, mostly ranchers, live inside the Safety Evacuation Areas. These areas are also used by nonresidents, including recreationists and hunters. Whenever an area is needed for a launch or impact fan, all residents as well as any nonresidents within the area must evacuate for 12 hours. White Sands Missile Range has set up contracts with residents in the Safety Evacuation Areas that stipulate timing considerations and compensation for inconvenience of the evacuation and the time lost from pursuing their livelihood. The amount of the payments varies with the resident and the size of the ranch holding. The contracts generally stipulate the following:

- The duration of the evacuation period is 12 hours.
- There is a minimum of 48 hours between evacuation periods.
- There are no evacuations during cattle shipping – October 15 to November 15 each year.
- There are no evacuations on holidays or the day before holidays.
- Evacuations occur no more than 25 times a year per area, and no more than 4 times per month.
- The contracts is for 5 years.

The notification or call-up process for residents in the Safety Evacuation Areas consists of a 30-day notice following the White Sands Missile Range monthly forecast of activity on the range. This is later followed by a 10-day notice (mailed 15 days before the activity). A 3-day notice is then hand delivered to those who are living within the Safety Evacuation Areas.

Anyone using these areas who is not a resident therein, such as a hiker or hunter, would not have any advance notice that evacuations might occur in an area. All primary access roads in the areas are blocked during the 12-hour activity period, so a recreationist would not be aware of the evacuation unless a roadblock is encountered. This has resulted in a number of complaints, primarily from hunters, to BLM in the past. Table 3-15 shows the number of evacuations that have occurred in the last 3 years.

TABLE 3-15
NUMBER OF EVACUATIONS FROM WHITE SANDS MISSILE RANGE SAFETY EVACUATION AREAS, 2002-2004

	2002	2003	2004	Total 2002-2004
Annual Total	52	25	32	109

White Sands Missile Range has established procedures to handle a projectile impact off-range into one of the Safety Evacuation Areas. First, the location where the projectile impacted is determined. The rancher or landowner, including BLM or the New Mexico State Land Office, as appropriate, is notified. White Sands Missile Range receives permission from the rancher or landowner for recovery of the device. A land specialist accompanies the White Sands Missile Range Recovery/Explosive Ordnance Disposal team to the site. The device and associated debris are removed from the site and the impacts mitigated as needed.

3.4 SPECIAL DESIGNATIONS

BLM, through previous inventory and land planning efforts, has identified areas of public land for special designation, including WSAs, ACECs, SRMAs, SMAs, backcountry byways, and national historic or scenic trails (BLM 1990, 1989a). WSAs and national historic or scenic trails are units within the BLM's National Landscape Conservation System. BLM established the National Landscape Conservation System in 2000 to increase public awareness of the scientific, cultural, educational, ecological, and other values present within certain special designations (BLM 2004b).

The Planning Area includes 13 WSAs, 6 ACECs, and 22 SMAs (Maps 3-7 and 3-12). WSAs are described further in Section 3.2.14, Wilderness Characteristics. The special designations overlap in certain areas, particularly with respect to WSAs. For example, an ACEC or SMA may be partially or wholly located within the boundaries of a WSA. Only minimal overlap occurs between the designated SMAs and ACECs. In addition to these special designations, the Planning Area includes one National Backcountry Byway, one National Historic Trail, and one National Scenic Trail.

The overall acreage of each designation within the Decision Area is presented in Table 3-16; no acreage values have been associated with the byway or trails. Table 3-17 provides the acreages for each special designation from the 1989 RMP, calculations of acreage based on GIS data, and a summary of the resource values protected by the designation. Acreages in Table 3-16 and Table 3-17 have been derived from the best available GIS data unless otherwise stated. As a result, there may be some variation from acreages in previous documents. Maps of the existing ACECs and SMAs (Maps 3-18 through 3-37) follow Table 3-17; additional information on these areas is provided in Appendix K.

TABLE 3-16
SPECIAL DESIGNATIONS ON BLM-MANAGED PUBLIC LAND

County	Special Designation	Acres of BLM-Managed Surface Land [1]
Socorro	WSA	154,492[2]
	ACEC	61,859
	SMA	49,250
Catron	WSA	137,323
	ACEC	17,186
	SMA	110,666

SOURCE: Bureau of Land Management 2003a
NOTES: [1] Acreage values should not be summed for the total of specially designated public land within each county because of overlap in designations.
[2] The Jornada del Muerto WSA also includes 4,070 acres of public land in Sierra County, which is managed by the Las Cruces District Office.

TABLE 3-17
ACREAGES OF SPECIAL DESIGNATIONS ON BLM-MANAGED PUBLIC LAND

Special Designation	Acres in 1989 RMP	Acres as Calculated in GIS	Resource Values Protected
ACECs			
Agua Fria	10,770	9,571	Wildlife habitat, cultural resources, recreation, geologic, scenic
Horse Mountain	7,720	7,490	Wildlife habitat, recreation, scenic, geologic
Ladron Mountain	62,460	57,195	Wildlife habitat, special status sp. (plant and animal), recreation, scenic, geologic, paleontologic
San Pedro Proprietary	1,200	1,201	Special status plants
Sawtooth Proprietary	120	125	Special status plants
Tinajas	3,520	3,463	Cultural resources, recreation
SMAs			
The Box	320	300	Recreational, scenic
Cerro Pomo	8,840	8,784	Cultural resources, wildlife habitat, recreation
Fence Lake	32,840	25,453	Watershed, range, wildlife habitat, minerals, cultural resources
Fort Craig	160	149	Historic, recreation
Harvey Plot	3	8	Vegetation
Iron Mine Ridge Proprietary	1,440	1,386	Special status plants
Mockingbird Gap Proprietary	11,970	8,685	Cultural resources
Mogollon Pueblo Proprietary	640	640	Cultural resources
Newton Site Proprietary	40	37	Cultural resources
Pelona Mountain	78,320	70,838	Wildlife habitat, scenic, geologic, recreational, cultural resources
Playa Pueblos Proprietary	320	203	Cultural resources
Puertecito	10,040	7,156	Watershed
Rio Salado	6,400	5,946	Cultural resources, special status plants
San Lorenzo Canyon	4,800	2,320	Wildlife habitat, cultural resources, scenic
Soaptree	1,200	1,296	Vegetation
Stallion	22,840	19,702	Watershed, vegetation, wildlife habitat, cultural resources, mineral, recreation
Taylor Canyon Proprietary	320	384	Special status plants
Teypama	17	37	Cultural resources
Town of Riley	600	533	Cultural resources
Walnut Canyon	1,730	1,145	Wildlife habitat, geologic, recreation, scenic
Zuni Salt Lake Proprietary	5,760	4,839	Cultural resources
Datil Well	680	669	Recreation
Backcountry Byway			
Quebradas	–	–	Recreation, scenic, geologic, wildlife habitat
Trails			
Continental Divide National Scenic Trail	–	–	Recreation, scenic resources
El Camino Real NHT	–	–	Cultural resources, historic value

SOURCES: Bureau of Land Management 1989a, 2003a

3.5 SOCIAL AND ECONOMIC CONDITIONS

The information provided in this section is based on the Baseline Socioeconomic Conditions Report (BLM 2003e) and incorporates additional analysis pertinent to the RMPR.

3.5.1 Study Area

The study area for social and economic conditions was defined as the potential area of influence of one potential resource management decisions in the RMPR. Data are analyzed for the following geographic areas:

- State of New Mexico
- Socorro and Catron Counties
- Municipalities: City of Socorro, village of Magdelena, village of Reserve
- Unincorporated communities: Glenwood, Aragon, Quemado, Pie Town, Datil, Abeytas, La Joya, San Marcial, Bernardo, San Antonio, Bingham, Claunch
- American Indian Tribes: Alamo Band of the Navajo Indian Reservation

The region of potential impact extends beyond the Planning Area to account for direct and indirect social and economic effects related to the activities being evaluated on public land in Socorro and Catron Counties, including those related to environmental justice.

Since 1990, the percent increase in the population in the Planning Area has been large, but the number of new people is not large relative to the total State population, and the area remains sparsely populated overall. From 1990 to 2000, Socorro and Catron Counties grew 22 percent and 38 percent, respectively, more rapidly than the overall statewide growth rate of 20 percent (U.S. Census Bureau 2002a). The growth in Catron County during this period also is notable in light of the reversal from the population decline during the 1980s. This growth in population has resulted in expanding urbanization, consequent growth of the urban-rural interface, and increasing demands on public lands within Socorro and Catron Counties for recreation, open space, and other resources. Population growth elsewhere in the State also may contribute to increased demand for the recreation and other resources provided within the Planning Area, which is within a day's driving distance from population centers such as Albuquerque.

3.5.2 Demographics

Selected demographic data from the 2000 U.S. Census, including total population, gender, age, and race and ethnicity, are presented in Table 3-18 for Socorro and Catron Counties. Socorro County, at 18,078 residents, is almost five times more populous than Catron County, which has about 3,543 residents. Together, the two counties constitute 1.2 percent of the population of New Mexico. However, in terms of land area, the two counties combined constitute 11.2 percent of New Mexico. According to the 2000 U.S. Census, there are 0.5 persons per square mile within Catron County and 2.7 persons per square mile within Socorro County. This same statistic for New Mexico is 15.0 persons per square mile, and there are 79.6 persons per square mile nationwide (U.S. Census Bureau 2002b).

There are no notable differences in gender distribution. With a median age of 47.5 years, Catron County has an older population than Socorro County or the State, overall. Race distribution within the counties differs dramatically, with a significantly higher percentage of Caucasian people living in Catron County (87.8 percent) than the percentage of Caucasian people living in Socorro County (62.9 percent). The

percentage of Caucasians in Socorro County is similar to that of the State of New Mexico (66.8 percent), but is much lower than the national percentage (77.1 percent). In contrast, Catron County has a significantly higher percentage of Caucasians than either New Mexico or the United States. At 2.2 percent, Catron County's American Indian/Alaska Native population compares closely to that of the Nation (1.5 percent), but is far below that of the State of New Mexico (9.5 percent). In contrast, Socorro County's American Indian/Alaska Native population, at 10.9 percent, is more closely comparable to that of the State of New Mexico than that of the United States. No other racial category accounts for more than 2.2 percent of the population in either county. Catron County has a much smaller proportion of the population that is of Hispanic or Latino origin[5] than that of New Mexico (19.2 percent compared to 42.1 percent), while Socorro County's percent of persons of Hispanic or Latino origin is somewhat higher (48.7 percent). All of these percentages are substantially higher than the Hispanic/Latino population of the United States, at 12.5 percent.

The Alamo Band of the Navajo Nation includes Tribal trust lands held by both the Alamo Band and Navajo Nation and individual BIA allotments (Socorro County 1998). The Alamo Navajo Reservation, which is situated 220 miles southeast of the Navajo Nation capital of Window Rock, is isolated geographically from the Navajo Reservation. The Alamo Navajo Reservation also comprises the Alamo Chapter of the Navajo Nation, one of the 110 of these political entities or subdivisions of the Navajo Nation, which are similar to counties. The population of the reservation in 2000 was 2,072, of which 95.7 percent was American Indian/Alaska Native. The median age, at 24.0, is quite young in comparison to other areas in the United States (U.S. Census Bureau 2002g).

Historical and projected population growth for 1980 to 2020 is presented in Table 3-19. According to the data, Catron County experienced a population decrease of approximately 5.7 percent in the decade from 1980 to 1990, but an increase of 38.2 percent during the next decade. Socorro County's population increased 17.2 percent from 1980 to 1990 and 22.4 percent from 1990 to 2000. During the 20-year period, both counties exceeded the population growth experienced within the State and nationally. Projected growth rates for Socorro County for the next two decades slightly exceed those of New Mexico, and are more than double national projected growth rates. Projected growth rates for Catron County are slightly less than the State but greater than the Nation.

3.5.3 Economic Activity, Employment, and Earnings

In general, growth in the economies of Socorro and Catron Counties has been commensurate with population growth. As the population in the two counties combined increased by 81 percent from 1970 to 2000, jobs in the two counties combined more than doubled from 4,220 in 1970 to 8,583 in 2000 (U.S. Department of Commerce, Bureau of Economic Analysis 2003a). Table 3-20 presents employment data by type and by industry.

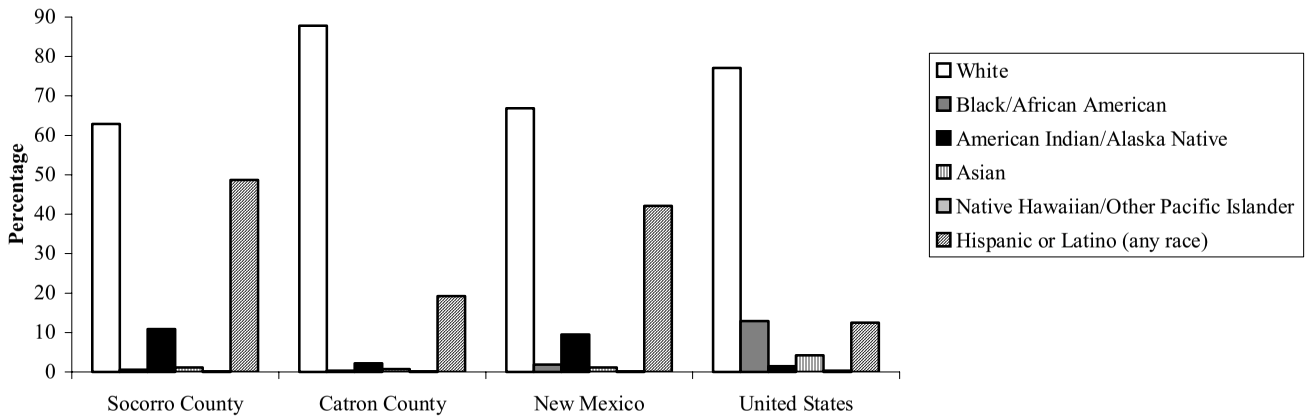
While there are quite a few North American Industry Classification System sectors for which data were suppressed by the Bureau of Economic Analysis (BEA), the available data together with the trend data in Table 3-21 provides adequate baseline data for employment. Table 3-21 presents trend data for the six major industry groupings in the two counties. In some cases, particularly for Catron County, data are

[5] Based on Office of Management and Budget guidelines, there are the five minimum categories for data on race and two categories for data on ethnicity: "Hispanic or Latino" and "Not Hispanic or Latino" (Executive Office of the President, Office of Management and Budget 1997). People of Hispanic or Latino origin may be of any race. People of Hispanic or Latino origin, in particular, include those who indicate their origin as Mexican, Puerto Rican, Cuban, Central or South American, or some other Hispanic origin. For example, people who indicate that they are of Mexican origin may be born either in Mexico or of Mexican heritage. The U.S. Census Bureau uses the terms "Hispanic" and "Latino" interchangeably (U.S. Census Bureau 2001b).

TABLE 3-18
SELECTED CENSUS 2000 DEMOGRAPHIC INFORMATION

	Socorro County		Catron County		New Mexico		United States	
Total Population	18,078		3,543		1,819,046		281,421,906	
Persons per Square Mile	2.7		0.5		15.0		79.6	
Gender	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Male	9,184	50.8	1,812	51.1	894,317	49.2	138,053,563	49.1
Female	8,894	49.2	1,731	48.9	924,729	50.8	143,368,343	50.9
Age								
Under 20 Years	5,904	32.6	807	22.8	564,859	31.0	84,522,713	30.0
20 to 64 Years	10,207	56.5	2,069	58.4	1,041,962	57.3	161,907,440	57.6
Age 65 and Older	1,967	10.9	667	18.8	212,225	11.7	34,991,753	12.4
Median Age	32.4	N/A	47.8	N/A	34.6	N/A	35.3	N/A
Race and Ethnicity								
White	11,365	62.9	3,109	87.8	1,214,253	66.8	216,930,975	77.1
Black or African American	116	0.6	10	0.3	34,343	1.9	36,419,434	12.9
American Indian/Alaska Native	1,974	10.9	78	2.2	173,483	9.5	4,119,301	1.5
Asian	206	1.1	24	0.7	19,255	1.1	11,898,828	4.2
Native Hawaiian/Other Pacific Islander	10	0.1	2	0.1	1,503	0.1	874,414	0.3
Hispanic or Latino (any Race)	8,810	48.7	679	19.2	765,386	42.1	35,305,818	12.5

Graphical Representation of Race Distribution

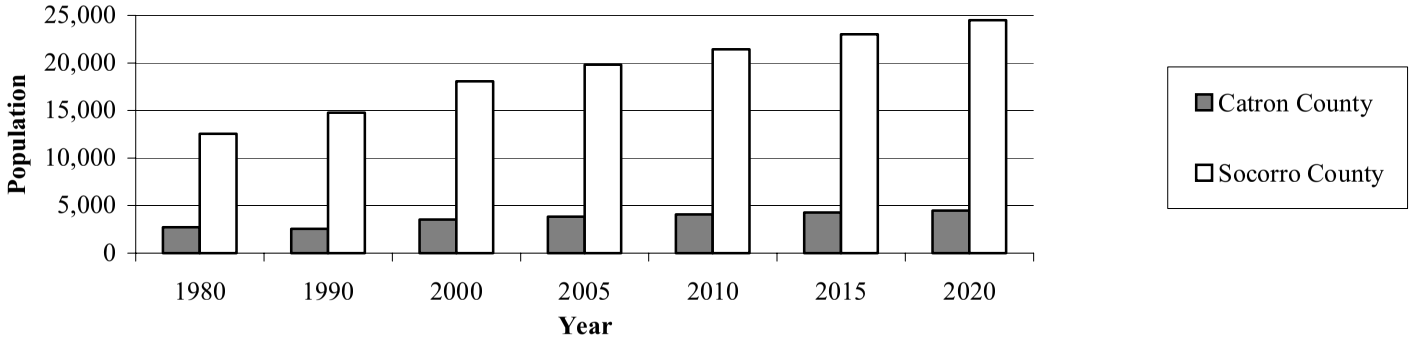


SOURCES: U.S. Census Bureau 2002b, 2002c

TABLE 3-19
HISTORICAL AND PROJECTED POPULATION GROWTH

	Historical Population Growth			Projected Population Growth				Rate of Change			
Geographic Area	**1980**	**1990**	**2000**	**2005**	**2010**	**2015**	**2020**	**1980 to 1990**	**1990 to 2000**	**2000 to 2010**	**2010 to 2020**
United States	226,542,199	248,718,291	281,421,906	287,716,000	299,862,000	312,268,000	324,927,000	9.8	13.1	6.6	8.4
New Mexico	1,303,302	1,515,069	1,819,046	1,970,982	2,112,957	2,251,249	2,382,999	16.2	20.1	16.2	12.8
Socorro County	12,566	14,764	18,078	19,802	21,421	23,000	24,493	17.5	22.4	18.5	14.3
Catron County	2,720	2,563	3,543	3,828	4,063	4,275	4,459	-5.7	38.2	14.7	9.7

Graphical Representation – Counties



SOURCES: U.S. Census Bureau 1990, 2002c
Population Projections: For the U.S.: U.S. Census Bureau 2000; For New Mexico: University of New Mexico Bureau of Business and Economic Research 2002

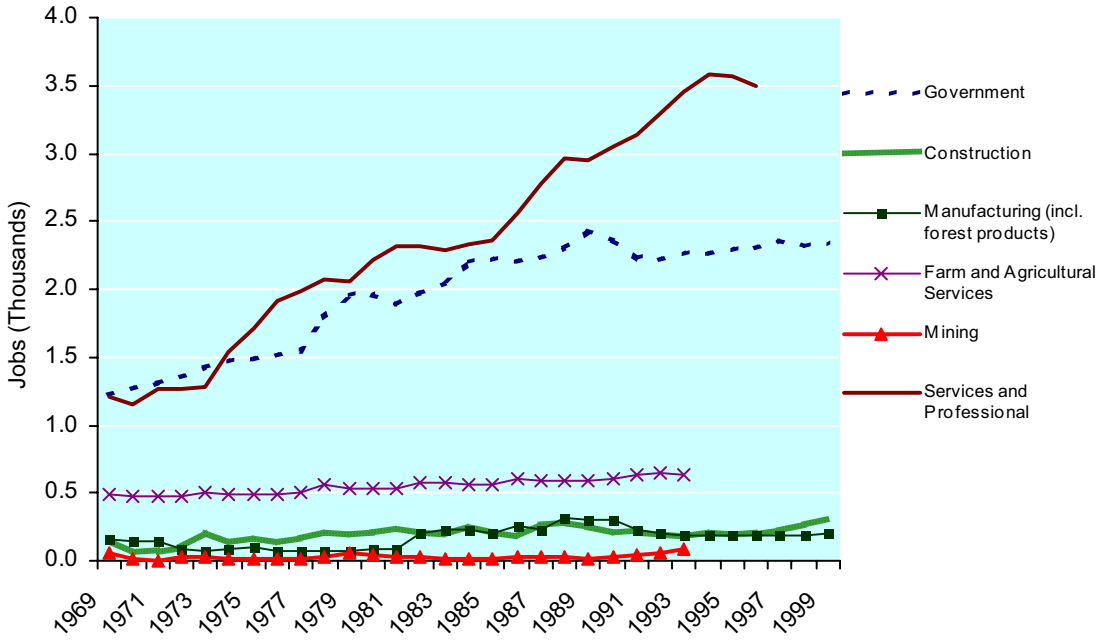
TABLE 3-20
EMPLOYMENT BY PLACE OF WORK

	United States		New Mexico		Socorro County		Catron County	
Total Full-time and Part-time Employment[1]	167,535,600		989,989		7,394		1,457	
By Type	**No. of Jobs**	**% of Total**	**No. of Jobs**	**% of Total**	**No. of Jobs**	**% of Total**	**No. of Jobs**	**% of Total**
Wage and salary employment	139,165,000	83.1	802,681	81.1	5,728	77.5	710	48.7
Proprietors' employment	28,380,600	16.9	187,681	18.9	1,666	22.5	747	51.3
Farm proprietors' employment	2,205,000	1.3	14,785	1.5	409	5.5	216	14.8
Nonfarm proprietors' employment[2]	26,165,600	15.6	172,523	17.4	1,257	17.0	531	36.4
By Industry	**No. of Jobs**	**% of Total**	**No. of Jobs**	**% of Total**	**No. of Jobs**	**% of Total**	**No. of Jobs**	**% of Total**
Farm employment	3,075,000	1.8	21,444	2.2	574	7.8	268	18.4
Nonfarm employment	164,460,600	98.2	968,545	97.8	6,820	92.2	1,189	81.6
Private employment	141,296,600	84.3	763,793	77.2	4,386	59.3	840	57.7
Forestry, fishing, related activities, and other[3]	908,100	0.5	6,401	0.6	(D)	(D)	78	5.4
Mining	783,200	0.5	19,519	2.0	(D)	(D)	(L)	(L)
Utilities	626,400	0.4	4,371	0.4	(D)	(D)	(D)	(D)
Construction	9,841,800	5.9	64,945	6.6	299	4.0	(D)	(D)
Manufacturing	17,025,100	10.2	46,818	4.7	187	2.5	(D)	(D)
Wholesale trade	6,323,300	3.8	29,076	2.9	(D)	(D)	(L)	(L)
Retail trade	18,679,100	11.1	113,769	11.5	562	7.6	81	5.6
Transportation and warehousing	5,460,500	3.3	23,581	2.4	112	1.5	(D)	(D)
Information	4,065,700	2.4	19,764	2.0	54	0.7	17	1.2
Finance and insurance	8,143,200	4.9	33,762	3.4	174	2.4	17	1.2
Real estate and rental and leasing	5,602,200	3.3	32,001	3.2	144	1.9	(D)	(D)
Professional and technical services	10,525,100	6.3	60,463	6.1	552	7.5	(D)	(D)
Management of companies and enterprises	1,796,600	1.1	6,130	0.6	(D)	(D)	0	0.0
Administrative and waste services	9,827,500	5.9	54,730	5.5	(D)	(D)	(D)	(D)
Educational services	2,952,600	1.8	12,115	1.2	(D)	(D)	(D)	(D)
Health care and social assistance	15,520,600	9.3	88,493	8.9	(D)	(D)	(D)	(D)
Arts, entertainment, and recreation	3,290,500	2.0	20,218	2.0	(D)	(D)	(D)	(D)
Accommodation and food services	11,014,100	6.6	78,257	7.9	(D)	(D)	(D)	(D)
Other services, except public administration	8,911,000	5.3	49,380	5.0	318	4.3	108	7.4
Government and government enterprises	23,164,000	13.8	204,752	20.7	2,434	32.9	349	24.0
Federal, civilian	2,728,000	1.6	28,771	2.9	235	3.2	125	8.6
Military	2,097,000	1.3	17,070	1.7	58	0.8	11	0.8
State and local	18,339,000	10.9	158,911	16.1	2,141	29.0	213	14.6

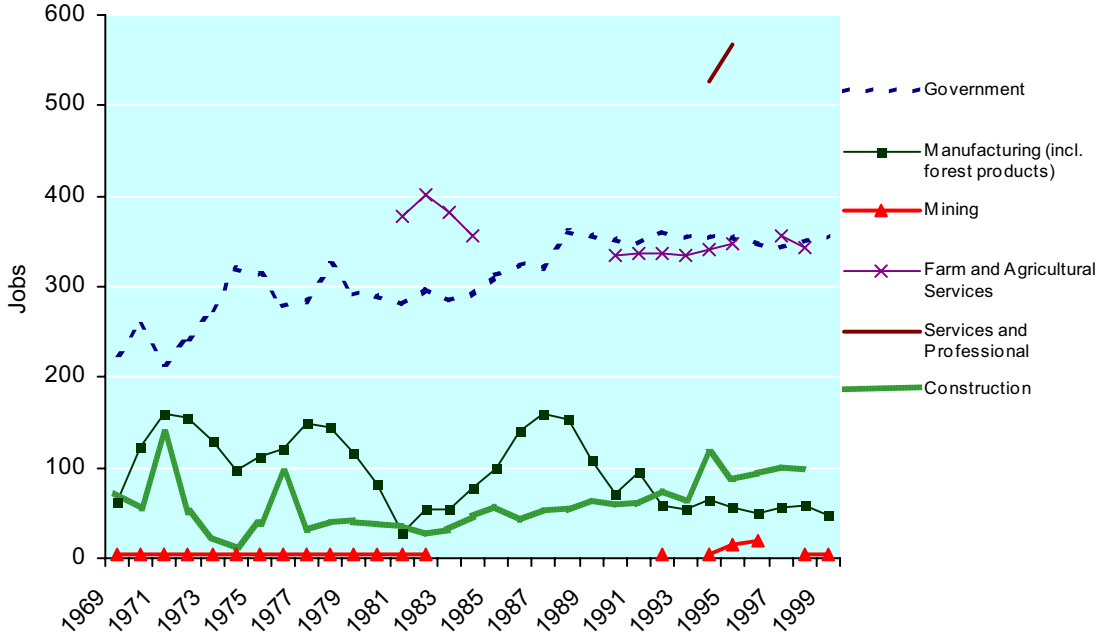
SOURCE: U.S. Department of Commerce, Bureau of Economic Analysis 2003a.
NOTES: [1] Based on the 2002 North American Industry Classification System
[2] Excludes limited partners.
[3] "Other" consists of the number of jobs held by residents of the United States employed by international organizations and foreign embassies and consulates in the United States.
(D) Not shown to avoid disclosure of confidential information, but the estimates for this item are included in the totals.
(L) Less than 10 jobs, but the estimates for this item are included in the totals.

TABLE 3-21
EMPLOYMENT BY INDUSTRY FROM 1970 TO 2000
IN SOCORRO AND CATRON COUNTIES

Socorro County



Catron County



SOURCE: U.S. Department of Commerce, Bureau of Economic Analysis 2003b
NOTES: Based on Standard Industrial Classification divisions
Data points not included above are due to data that are (1) not disclosed by the BEA because to do so would disclose confidential information, (2) excluded because the number of jobs in a particular sector was fewer than 10, or (3) otherwise not available.

incomplete because data are (1) not disclosed by the BEA because to do so would disclose confidential information, (2) excluded because the number of jobs in a particular sector was fewer than 10, or (3) otherwise not available. However, even with data lacking, some evident trends are discussed below in Subsections 3.6.3.1 (Socorro County), 3.6.3.2 (Catron County), and 3.6.3.3 (Alamo Band of the Navajo Nation).

Data on income generally correspond with the employment data, although some sectors generally have higher average earnings (e.g., technical and professional services) and others have lower average earnings (e.g., accommodation and food services). Where relevant, earnings relative to employment are discussed in Subsections 3.6.3.1 (Socorro County) and 3.6.3.2 (Catron County). A notable trend in the Planning Area is the increase in non-labor sources of income, which is a mix of dividends, interests, and rent (money earned from past investments) and transfer payments (government payments to individuals).

Table 3-22 presents income, poverty, and unemployment data for the two counties, New Mexico, and the United States. With the exception of unemployment data, the predominant source of data in this table is the 2000 U.S. Census, which is based on 1999 income data. U.S. Department of Labor, Bureau of Labor Statistics unemployment data are presented for 1999, 2000, and 2001. These data generally show lower income rates, higher poverty rates, and higher unemployment rates for both counties as compared to the State and Nation. These per capita income, unemployment, and poverty statistics are further discussed in Subsections 3.6.3.1 (Socorro County) and 3.6.3.2 (Catron County).

TABLE 3-22
GENERAL EMPLOYMENT AND INCOME CHARACTERISTICS

	Socorro County	Catron County	New Mexico	United States
Income				
Per Capita Personal Income	$12,826	$13,951	$17,261	$21,587
Median Household Income	$23,439	$23,892	$34,133	$41,994
Unemployment (Civilian Labor Force)				
Unemployment Rate (1999)	5.3%	9.8%	5.6%	4.2%
Unemployment Rate (2000)	5.4%	8.0%	4.9%	4.0%
Unemployment Rate (2001)	6.1%	6.8%	4.8%	4.8%
Poverty				
Number of Persons below Poverty Level	5,539	860	328,933	33,899,812
Poverty Rate among Individuals	31.7%	24.5%	18.4%	12.4%
Children below the Poverty Level (<18 years)	2,178	283	122,488	11,386,031
Percent Children below the Poverty Level (<18 years)	43.6%	39.6%	24.6%	16.1%

SOURCES: U.S. Census Bureau 2002c; U.S. Department of Labor 2002a, 2002b, 2002c

3.5.3.1 Socorro County

At 4,255,845 acres, Socorro County is the third largest county in New Mexico (U.S. Census Bureau 2002b). The Federal Government administers more than 65 percent of the land within Socorro County. Much of the Federal land, including Cibola National Forest, Sevilleta and Bosque del Apache National Wildlife Refuges, and BLM WSAs and ACECs, offers opportunities that support tourism and related service industries. The extensive open space also attracts the movement of people to the area who can work remotely or rely on non-labor sources of income such as pensions, dividends, interest, and rent. A portion of the White Sands Missile Range, which supports defense-related employment and earnings, is located in southern Socorro County. The City of Socorro, located near the geographic center of New Mexico, on the west bank of the Rio Grande, is the largest municipality in the county. The city is the home of the New Mexico Institute of Mining and Technology (New Mexico Tech), a top-rated technical

college that is the largest employer in the area with an annual payroll of approximately $25 million. The school, which opened as the New Mexico School of Mines in 1889, has an enrollment of about 1,500 students, with plans to add an additional 300 by 2008. Numerous high-tech facilities occupy the northern portion of the White Sands Missile Range and the surrounding area. The Very Large Array National Radio Telescope, located in the Plains of San Agustin in the western portion of the county, also provides employment and expenditures in the high-tech industry (Socorro Chamber of Commerce 2000).

Government and government enterprises constitute the largest employers in the county. This sector employed 2,434 persons in 2001, representing almost one-third (32.9 percent) of the work force in Socorro County. This is far greater than the percentage of workers in this sector either in the State of New Mexico or nationally (20.8 and 13.8, respectively) (see Table 3-20). Earnings in this sector totaled about $79 million, by far the largest percentage of earnings in any of the sectors represented in Socorro County and representing a higher share than earnings in this sector within the State as a whole (28.2 percent) (BEA 2003c). Of those nonfarm private industries in Socorro County where data are disclosed, the largest employer is the retail trade industry, with 562 persons employed (7.6 percent) (see Table 3-20). Earnings for this sector were approximately $8.4 million in 2001, or 4.7 percent, slightly lower than the statewide average of 7.7 percent (BEA 2003c). The second largest nonfarm private employment sector is the professional and technical services industry, employing 552 persons in 2001 (7.5 percent). By percentage, this is slightly greater than employment in the professional and technical services industry statewide and nationally.

Farm employment provided 574 jobs in Socorro County in 2001. This percentage of farm employment (7.8 percent) is much higher than the State (2.2 percent) and Nation (1.8 percent) (see Table 3-20). As is typical of the farm sector, earnings (at $10.3 million) are low in comparison to other private industries supporting a similar number of jobs (e.g., professional and technical services) (BEA 2003c).

Long-term trends in job and income growth show that the services and professional and government sectors have consistently been the largest source of jobs and labor income in Socorro County (see Table 3-20). There also has been growth in nonlabor income, from 27 percent of total personal income in 1970 to 39 percent in 1990. These were mostly transfer payments from age-related resources (retirement, disability, insurance payments, and Medicare) and dividends, interest, and rent. Farm employment and earnings have decreased from 13.3 percent of employment and 7.1 percent of income to 8.1 percent of employment and 4.6 percent of employment. The relative 6.5 percent reduction in employment to 3.5 percent reduction suggests that farms have become more efficient during this time period (BEA 2003b).

The per capita income for persons in Socorro County reported by Census 2000, at $12,826, was slightly lower than the per capita income for Catron County and was substantially lower than the State and national averages. Specifically, the per capita income for Socorro County was only about two-thirds that of the State and one-half that of the United States. The median household income was similar to Catron County and also lower than the State and national average (see Table 3-22). The average earnings per job in Socorro County in real terms have fallen slightly from $23,962 in 1970 to $23,542 in 2000 (BEA 2003b).

Unemployment in Socorro County in 1999, reported by the Bureau of Labor Statistics, was 5.3 percent, slightly lower than that of New Mexico as a whole at 5.6 percent, but higher than the 4.2 percent national rate (see Table 3-22). Bureau of Labor Statistics data from 1988 to present show that the annual average unemployment rate has fluctuated fairly consistently with the state and national rates, with the state and national rates typically being lower than that of Socorro County. The highest unemployment rate during this time frame was near 10 percent in 1993 and the lowest was 5.3 percent in 1999. Since 1999, the

unemployment rate in Socorro County has risen slightly to about 6.1 percent in 2001, while New Mexico's and the United States' unemployment rates were both at 4.8 percent (U.S. Department of Labor 2003). The percentage of persons below the poverty level in Socorro County, at 31.7 percent, was greater than that of Catron County, and was significantly higher than either the State or Nation as a whole. The figures are proportionately higher for children less than 18 years living below the poverty level (see Table 3-22).

3.5.3.2 Catron County

Although Catron County is the largest county in New Mexico in terms of area, it is one of the State's most sparsely populated. About 75 percent of the land in Catron County is administered by the Federal Government and is managed in a manner that preserves open space. This includes the Cibola, Apache, and Gila National Forests, four BLM SMAs, and two BLM ACECs. As a result of the natural resources found in these and surrounding areas, numerous recreational opportunities support the service and tourism industries. There is also approximately 13,000 acres of Tribal land, which is land held in trust by the Federal Government, in the northeastern portion of the county. The Village of Reserve, located in the west-central portion of the county, is the county seat. Similar to Socorro County, government and government services represent the largest industry in the county. The government and government enterprises sector employed 349 persons, or almost one-fourth of the county's work force in 2001. This percentage is greater than state and national employment in this sector, which were at 20.7 and 13.8, respectively, in 2001 (see Table 3-20). In terms of earnings, the government and government services sector contributed $12.5 million, translating to 66.2 percent of all personal income in the county (BEA 2003c).

As with Socorro County, much of the data on nonfarm, private employment is undisclosed for Catron County. Where data are disclosed, the largest employment sector is services other than public administration at 7.4 percent of all jobs (108 employees), followed by the retail trade industry at 5.6 percent of all jobs in the county (81 employees). Because these jobs traditionally tend to pay less than the government and government services industry jobs, income generated from these sectors is proportionately less, yielding only 5.5 and 3.0 percent of personal income, respectively (BEA 2003c). Farm employment in Catron County provided 268 jobs (18.4 percent of all employment), which was greater than any other sector where data were unsuppressed. Although farm industry earnings were reported as a loss of $2.9 million in 2001, Catron County's economy is highly dependent on agrarian enterprise, specifically livestock production (BEA 2003c).

Long-term trends in job and income growth show that, like Socorro County, government has consistently been one of the largest sources of jobs and labor income. From 1970 to 2000, farm employment and income decreased, with employment dropping from 39.4 percent to 18.9 percent of all jobs and with a share of total income decreasing from 18.6 percent to minus 2.5 percent. There also has been a substantial decrease in manufacturing (including forest products) from 6.7 percent of all jobs and 7.8 percent of all income to 3.3 percent of all jobs and 1.0 percent of all income, a trend attributable to the closure of the timber mill in Reserve during the late 1980s. The largest growth in income has been in nonlabor income, mostly in dividends, interest, and rent, and from age-related sources (retirement, disability, and Medicare) (BEA 2003b).

Both the average per capita annual income ($13,951) and median household income ($23,892) for Catron County are significantly lower than the State and national averages (see Table 3-22). Average earnings per job, in real terms, have fallen from $21,503 in 1970 to $14,916 in 2000. In Catron County, there was a dramatic decrease in earnings in the early 1980s and another downturn in the mid-1990s. This pattern is somewhat matched by Socorro County (although there was much less of an effect on annual average

earnings in Socorro County in the early 1980s) and is not matched by the State, which has remained relatively even with a slight decrease; or the Nation, which has experienced a moderate increase (see Table 3-22).

In 2001, the annual unemployment rate in Catron County reported by the Bureau of Labor Statistics was 6.8 percent, down from the 9.8 percent reported in 1999 when it was about double that of the state and national averages (see Table 3-22). The unemployment rate in Catron County has been much higher at times, reaching highs around 15 percent in 1991 and 1996, but has been decreasing steadily from about 12 percent since 1998 (U.S. Department of Labor 2003). The percent of persons living below the poverty level in Catron County in 1999 was 24.5, while the rate of families living in poverty was 17.4 percent. Children under 18 years living below the poverty level represent 39.6 of the population, and 32.7 percent of families with related children below the age of 18 live in poverty (see Table 3-22). These rates are significantly higher than both the state and national poverty statistics.

3.5.3.3 Alamo Band of the Navajo Nation

The socioeconomic conditions of the Alamo Band of the Navajo Reservation are a reflection of the isolation of this area, not just from the main Navajo Reservation, but from other economic opportunities and communities as well. Within the Alamo Chapter, 55.7 percent of individuals fall below the 1999 poverty level, with a median household income of $19,306 and per capita income of $6,528 (U.S. Census Bureau 2002g). Much of the area's economy is based on livestock-based agriculture along with the services industry. Most of the sheep and lamb reported in Socorro and Catron Counties are located on the Alamo Indian Reservation and are important both economically and culturally. The Alamo Navajo School provides a principal source of direct and indirect employment and earnings (Socorro County 1998).

3.5.4 Agricultural Statistics

The USDA (2000) estimates that in the western United States, farming jobs account for only about 8 percent of all jobs that comprise the system required to produce farm products and move them to consumers. The importance of agriculture to the economy in the Planning Area is evident in the share of employment (USDA 2000). In 2001, farm employment accounted for 18.4 percent of all employment in Catron County, and 7.8 percent of all employment in Socorro County. In comparison, farm employment accounted for 2.2 percent of the jobs in the State and 1.8 percent of the jobs in the Nation.

New Mexico's agricultural industry is a major component of the state's economy with annual crop and livestock sales exceeding $2 billion. Agriculture directly employs an average of 24,448 people in the state and is indirectly responsible for employment of approximately 78,780 people in the food processing industry, retail food establishments, and other food-related industries.
New Mexico's farms and ranches produce numerous agricultural commodities including beef, chile, corn, milk, pecans, apples, lamb, sorghum, wheat, and wool. Livestock products continue to be a major economic force in New Mexico and the statewide agricultural leader in terms of cash receipts generated from agrarian enterprise. Sales from livestock and livestock products totaled over $1.6 billion in 2001. Agriculture lends support to many local businesses including those associated with farm equipment, feed, and fertilizer. In 2001 feed sales totaled 1,765,139 tons, while fertilizer shipments were estimated at 180,900 tons creating additional jobs in sales, service, and transportation industries.

3.5.4.1 Farms

There is a higher proportion of farms relative to population in Socorro and Catron Counties than in New Mexico. Based on the 1997 Census of Agriculture, the farms in Socorro and Catron Counties together

constitute 4.4 percent of all farms and 7.5 percent of all farm acreage in the State. The average size of farms in both Socorro and Catron County is substantially greater than the statewide average, particularly in Catron County where the average acreage of farms was 2.5 times greater than that of the State in 1997. While the number of farms in Socorro County and New Mexico has remained fairly stable since 1987, the number of farms in Catron County is decreasing (17 percent over the last 10 years). However, during the same time period, the average acreage of farms in Catron County has increased by 28 percent (National Agriculture Statistics Service 1997).

Most farms in Socorro and Catron Counties are individually or family owned. While statewide and in Socorro County the number of individual and family farms has decreased only slightly from 1992 to 1997, there has been a decrease of 12 percent in these types of farms in Catron County. There also is a notable percent increase in partnership or corporate farms in Catron County in comparison to Socorro County and the State, where the number of such farms has decreased. A slight majority of farms in both Socorro and Catron Counties are farms with less than $10,000 in annual sales (55 percent and 52 percent, respectively). In Socorro County, there has been a slight shift toward more farms in the less-than-$10,000 annual sales category to farms in the $10,000-or-more annual sales category, particularly from 1992 to 1997 (National Agricultural Statistics Service 1997).

3.5.5 Minority and Low-income Populations

The identification of minority and low-income populations is relevant for this study because Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires that Federal agencies make achieving environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations, low-income populations, and Native American tribes.

Those minority and/or low-income populations that could potentially be adversely affected by BLM resource management decisions are identified to provide a baseline for evaluating the potential for adverse impacts to disproportionately affect minority or low-income populations. For purposes of this analysis, minority populations and low-income populations are defined as follows:

- Minority populations are persons of Hispanic or Latino origin of any race; Blacks; American Indian/Alaska Native; and Asian or Pacific Islanders (without double-counting persons of Hispanic/Latino origin who are also contained in these racial groups).
- Low-income populations are persons living below the poverty level.

3.5.5.1 Minority Populations

For this analysis, census tracts were identified as containing disproportionately high percentages of minority populations if either of two criteria were met: (1) the percentage of persons in minority populations in the census tract exceeds the average for the comparison population (New Mexico), which is 55.3 percent; or (2) the minority population exceeds 50.0 percent, indicating that in that census tract, minorities constitute a majority of the persons who potentially could be affected by the project. As shown in Table 3-23, only two census tracts did not fall within these parameters: 9782, which covers most of western Socorro County, and 9762, which covers nearly all of Catron County.

3.5.5.2 Low-income Populations

As shown in Table 3-23, the poverty rates among individuals in Socorro and Catron Counties are higher than those experienced statewide. The statewide poverty rate of 18.4 percent was compared against the poverty rate in the Planning Area as reported in the eight census tracts in Table 3-23. All census tracts exceed the 18.4 percent threshold for identification of disproportionately low-income populations. The census tract that constitutes almost all of Catron County (9762) showed an average poverty rate of 24.4 percent, similar to the countywide rate of 24.5 percent. Poverty rates in Socorro County ranged from 22.7 percent to 70.1 percent. The census tract in Socorro County showing the highest poverty rate (70.1 percent) is located in the northwestern portion of the Planning Area and includes the Alamo Band of the Navajo Reservation (Census Tract 9461).

TABLE 3-23
MINORITY AND LOW-INCOME POPULATIONS

New Mexico (Comparison Population)	Minority Population =		55.3%	Low-Income Population =		18.4%
		Minority Population			Low-Income Population	
Census Tract	Total Minority[1]	>50%	>55.3%	Poverty Rate[2]	Poverty Rate >50%	Poverty Rate >18.4%
9461, Socorro County	99.4%	yes	yes	70.1%	yes	yes
9781, Socorro County	57.4%	yes	yes	22.7%	no	yes
9782, Socorro County	49.8%	no	no	24.7%	no	yes
9783.01, Socorro County	60.0%	yes	yes	31.0%	no	yes
9783.02, Socorro County	54.3%	yes	no	32.6%	no	yes
9783.03, Socorro County	68.1%	yes	yes	29.0%	no	yes
9762, Catron County	23.8%	no	no	24.4%	no	yes
9415, Catron, Socorro, and Cibola Counties[3]	99.5%	yes	yes	29.8%	no	yes

SOURCES: U.S. Census Bureau 2002c, 2002d, 2002e, 2002f

NOTES: [1] The total minority population includes individuals of Hispanic/Latino origin, but those that also are Black/African Americans, American Indian/Alaska Natives, Asians, and Native Hawaiian/Other Pacific Islanders are not included in the Hispanic/Latino total in order to avoid double counting.

[2] Poverty rate among individuals, based on poverty status in 1999.

[3] The majority of the census tract is located north of Catron and Socorro Counties, in Cibola County; however, a small portion occurs in both Socorro and Catron Counties.

3.5.6 Public Finance and Payments in Lieu of Taxes

The principal sources of revenue for local governments include county-enacted taxes and fees including the Gross Receipts Tax, state-shared taxes including property taxes, and federally shared taxes including payment-in-lieu of taxes (PILT). There are various other sources of intergovernmental revenue available to the counties from State and Federal grants and loans (New Mexico Association of Counties 2002). Of these, the most relevant to this RMPR/EIS is the PILT. The Payment in Lieu of Taxes Act of 1976, as amended (31 U.S.C. 6901-6907), defines lands that are eligible for PILT as including lands administered by the BLM and Federal lands in the National Forest System and National Park System. PILT payments are determined on a formula basis, with the number of Federal acres constituting the principal variable determining payments. The logic behind PILT is that Federal lands within county boundaries are not part of the county's tax base and that the county should be compensated for lost revenue opportunities. PILT payments are made for tax-exempt Federal land administered by the BLM, National Park Service, USFWS (all agencies of the Interior Department), Forest Service, and for Federal water projects and some military installations.

Total PILT payments for Socorro and Catron Counties and New Mexico in 2002 are shown in Table 3-24. The BLM accounts for 58.3 percent of all entitlement acreage in Socorro County and 21.8 percent of all entitlement acreage in Catron County, as compared to the 56.5 percent share of BLM entitlement acreage statewide. The Forest Service is a greater source of PILT payments in Catron County than the BLM. These entitlement acreages have varied slightly over recent years, but the relative share of agency PILT payments has remained fairly constant.

TABLE 3-24
PILT PAYMENT AND ENTITLEMENT ACREAGE, 2002

Area	Payment	Total Acres	BLM Portion[1]
Catron County	$280,882.00	2,749,802	$61,173.76
Socorro County	$781,870.00	1,600,779	$455,996.20
New Mexico	$19,012,423.00	22,591,875	$10,735,133.88

SOURCES: Bureau of Land Management 2002d, 2002e
NOTE: [1]BLM portion is based on entitlement acreage, which is 58.3 percent for Socorro County, 21.8 percent for Catron County, and 56.5 percent for New Mexico.

3.5.7 Social and Economic Conditions Related to BLM's Decision Area

Some social and economic conditions within the Planning Area are related more closely to BLM management decisions. Specifically highlighted here are the (1) BLM Socorro Field Office budget, (2) livestock grazing allotments administered by the BLM, (3) energy and mineral resources, (4) forestry and vegetative material sales, (5) rights-of-way and land use authorizations, (6) recreational resources, (7) connections between protected and open space growth and (8) non-market value.

3.5.7.1 BLM Socorro Field Office Budget

There currently are 35 full-time employees in the BLM Socorro Field Office and there are six unfilled positions (Lane 2002). The Fiscal Year 2002 total revenue/planned budget was $3,135,200. In total, expenditures were 51 percent labor and 49 percent operational, matching the percent in each major category allocated. Some components of the budget vary widely on an annual basis, while others such as administrative support and annual maintenance remain fairly consistent (BLM 2000b, 2001d, 2002f).

3.5.7.2 Livestock Grazing

Livestock grazing on public lands in the Planning Area is authorized through grazing permits and leases, which typically are issued for a 10-year term. Livestock grazing on Federal lands is a privilege and not a right nor an interest in property. Authorization of grazing in allotments is limited to those who own nearby property, known as base property (Cody and Baldwin 1998).

Grazing on allotments that include public land helps to support local economies. The average ranch spends $20,000 a year in the local economy. Expenditure multipliers for rural economies are fairly small (approximately 1.8), which indicates that an additional $0.80 is generated in the community for every $1.00 originating in the livestock sector as the expenditure turns within the community before the dollars leak from the local economy (Fowler 2000).

The grazing fee for western public lands administered by the BLM and the Forest Service is set according to a formula established by the Public Rangelands Improvement Act and continued under Executive Order 12548, Grazing Fees, issued in 1986. The 2003 fee is $1.35 per AUM (BLM 2003f), down from $1.43 in 2002. As shown in Table 3-25, over the past 10 years the fee of $1.35 per AUM has been the most common although it has fluctuated higher in the early 1990s, with a high of $1.98 per AUM in 1994.

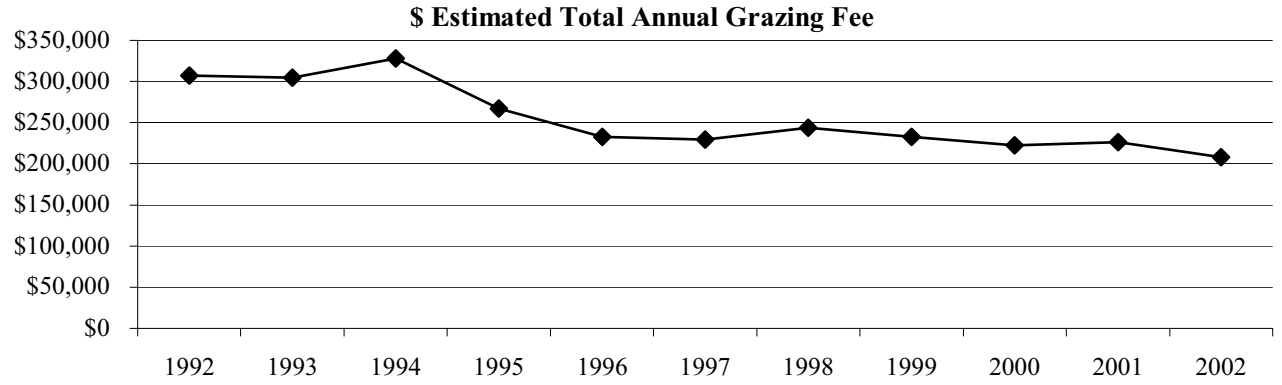
The grazing fees charged for livestock grazing allotments on State Trust lands are consistently higher than those charged for grazing on Federal rangelands.

Table 3-27 shows how the estimated total grazing fees have fluctuated when the variations in fee are combined with the 10-year trend in active-use AUMs for the Decision Area. The highest total fees have corresponded with the higher fee per AUM (e.g., 1994) rather than higher AUM stocking rates (e.g., 1998). Variations in active AUMs are attributable to range conditions (and consequently, forage production), economics, and animal husbandry practices.

Currently, grazing fees in the Decision Area are paid by approximately 260 authorized operators (Mendenhall 2002) on 204 allotments authorized by permits issued under Section 3 of Taylor Grazing Act and 56 allotments authorized by leases under Section 15 of Taylor Grazing Act (BLM 2000a). The allotments vary in size and capacity and consist of intermingled private, State, and public lands. Some of the allotments are overlapping. The majority of the operations are commercial cow/calf enterprises, using a variety of breeds. The grazing authorization on BLM allotments allows the permittee to graze livestock, but the permittee is responsible for maintenance of range improvements on the allotment. Many initial range improvements in the Planning Area involved the construction of boundary fences, interior fences, and water developments by allottees during the 1950s and 1960s (Matthews 2002, 2003a, 2003b). Since that time, allottees have continued to implement range improvements in cooperation with the BLM and other agencies.

TABLE 3-25
GRAZING FEES IN THE DECISION AREA, 1992-2002

Fee Year	Public Rangelands Improvement Act of 1978 Grazing Fee	Active-Use AUMs in the Decision Area	Estimated Total Annual Fee
1992	$1.92	160,016	$307,231
1993	$1.86	163,835	$304,733
1994	$1.98	165,627	$327,941
1995	$1.61	165,680	$266,745
1996	$1.35	172,174	$232,435
1997	$1.35	170,067	$229,590
1998	$1.35	180,504	$243,680
1999	$1.35	172,249	$232,536
2000	$1.35	164,510	$222,089
2001	$1.35	167,678	$226,365
2002[1]	$1.43	145,565	$208,158



SOURCES: Bureau of Land Management 2003f; Cody 1996; Matthews 2002; Mendenhall 2002
NOTE: [1] 2002 data are not yet complete.

3.5.7.3 Energy and Mineral Resources

Sections 3.4.4 and 3.4.6 provide detailed information on the mineral and energy resources in the Planning Area and Decision Area, while the information that follows is focused more closely on the employment and expenditures from current or proposed development of these resources.

Leasable Minerals

Although moderate oil and gas potential is identified in some areas, there has not been economic production of these resources. As noted in Section 3.4.4, leasing for oil and gas exploration is currently active and there is continued significant interest in leasing for oil and gas exploration in some portions of the Planning and Decision Areas.

Ridgeway Arizona Oil Corporation (Ridgeway) has been investigating the development of a carbon dioxide field in western Catron County. In adjacent Apache County, Arizona, there are currently three employees at Ridgeway and an additional three to four employees at the carbon dioxide compressor plant near Springerville, operated by Reliant Processing. An EIS was begun in 1998 for larger scale development, but Ridgeway postponed development and the EIS and is currently working on securing contracts for the product (White 2003). Potential exists for future development and economic opportunity associated with development of carbon dioxide fields in western Catron County.

Recent mining and test burning have proven the potential for occurrences of leasable solid energy coal minerals in the Salt Lake coalfield in northwest Catron County. Salt River Project had leased 18,000 acres of State Trust land and Federal land for the proposed Fence Lake Mine. However, due to public controversy, Salt River Project opted to relinquish permits and leases that were acquired for the mine in favor of purchasing coal from another source. Although this project will not go forward, the potential for future development and economic opportunity remains. Economic development of the Datil Mountains coalfield and in three small fields in east-central Socorro County is expected to follow the increasing demand for coal to fuel power plants in the Southwest.

There is no notable economic activity associated with the development of geothermal, solar, or wind energy, although potential exists throughout much of the Planning Area.

Locatable Minerals

Past mining for metallic minerals in the Planning Area has primarily produced gold, silver, copper, lead, zinc, and uranium and for nonmetallic minerals included gemstones, kaolin, zeolites, and perlite. With the exception of perlite, the metallic and nonmetallic locatable mineral resources in the Planning Area are not being actively mined. Economic factors contributing to the lack of mining activity may include the value of the deposit, current market demand, and expenses for development. Perlite is actively being mined immediately west of Socorro. This relatively small Socorro deposit (mined by Dicaperl) has approximately 37 employees (United Mine Workers Journal 2001).

Salable Minerals and Materials

A wide variety of salable minerals are available in the Planning Area. Aggregate pits in the Planning Area are generally inactive or intermittent, although any pit can be re-opened for construction or local repairs at any time. BLM's policy is to make these materials on public lands available to the public and local governmental agencies whenever possible and wherever environmentally acceptable. BLM issue permits to dispose of (sell) mineral materials to the public at fair market value. BLM issues free-use permits to

states, counties, or other government entities for public projects and, in limited amounts, to non-profit groups. Materials obtained free of charge cannot be bartered or sold. BLM shares a portion of the revenues from the sale of mineral materials with the state where the minerals are produced. Regulations that guide BLM's mineral materials program are found in 43 CFR 3600 (BLM 2003h). Information on use of salable minerals for a specific parcel of land where mineral resources are administered by the BLM is maintained at the Socorro Field Office.

3.5.7.4 Forestry and Vegetative Material Sales Programs

Commercial and personal use woodcutting occurs within the Planning Area. BLM charges $10 per cord for fuelwood for personal use. Prices vary for commercial wood resources, depending on accessibility, terrain, and other factors. Noncommercial demand for vegetative products has been minimal for the Decision Area, with some small interest in commercial Christmas tree sales areas. However, commercial and noncommercial demand for fuelwood has gradually increased, and with rising home heating fuel prices the demand for fuelwood could grow. In addition, urban development and the associated interest in utilizing native plants in waterwise landscaping could increase demand for native perennial plants in the coming years.

Public Service Company of New Mexico has proposed biomass harvesting on public lands to provide resources for a planned 35-megawatt capacity biomass generator in Catron County. In total, the proposed harvest would require the harvest of 6,000 to 8,000 acres of land per year, although not all of this would occur on BLM-administered lands.

Vegetation treatment efforts to achieve fire management or other resource objectives are a cost to BLM. The Fire and Fuels Management Statewide RMPA estimated that prescribed burns cost $50 per acre, mechanical treatment costs $500 per acre, and chemical treatments would cost $25 per acre. Using these estimates, annual treatments on BLM-managed surface land in the Planning Area could cost about $5 million, although this figure would vary depending on how many acres are actually treated each year.

3.5.7.5 Rights-of-Way and Land Use Authorizations

Rights-of-Way

BLM issues rights-of-way on public land to authorize a specific piece of land for specific facilities for a period of time. The vast majority of right-of-way grants are authorized under Title V of FLPMA (43 U.S.C. 1761-1771) and the Mineral Leasing Act (Section 28 as amended, 43 U.S.C. 185). Fees received by the BLM include fees for processing the application and monitoring compliance with the terms and conditions of the right-of-way grant and the annual rental, which is based on fair market rental value. Rental rates are based on land values in the area and are adjusted annually in accordance with an economic index.

There are various types of rights-of-way currently in place or that would be possible under current management policy for the Planning Area. Direct economic impacts from the right-of-way applications vary by type, applicant, and purpose. While the value of some individual rights-of-way may benefit just a few (e.g., well sites for local water users), some rights-of-way are of benefit to many (e.g., providing utilities and transportation infrastructure to support residential and commercial uses).

Permits, Leases, and Easements

Proposals for non-Federal use of public land (for other than casual purposes) are outlined in 43 CFR 2090. Collection of rental fees for these uses is determined by the BLM State Director and is to be based on fair market rates or competitive bidding. Leases and permits are issued for purposes such as:

- commercial filming
- advertising displays
- commercial or noncommercial croplands
- apiaries, livestock holding or feeding areas if not related to grazing permits or leases
- harvesting of native or introduced species
- temporary or permanent facilities for commercial purposes (does not include mining claims)
- residential occupancy
- ski resorts
- construction equipment storage sites
- assembly yards, oil rig stacking sites
- mining claim occupancy if the residential structures are not incidental to the mining operation
- water pipelines and well pumps related to irrigation and non-irrigation facilities

Government reimbursement costs conditions are similar to those described for rights-of-way. The major types of these permits issued by the Socorro Field Office are Special Recreation Permits.

3.5.7.6 Recreation

The social and economic values of the recreational resources on the BLM lands in the Decision Area include hunting, camping, picnicking, backpacking, horseback riding, climbing, caving, hang gliding, motorcycling, four-wheel driving, nature observing, rockhounding, and photography. By some estimates, tourism is the largest employer and second largest industry in New Mexico, contributing more than $4 billion in direct economic impact. Key reasons cited for tourism are outdoor recreation opportunities and open space, which are prevalent assets in the Planning Area.

Economic activity associated with recreational use in the Decision Area is difficult to quantify based on available data, but would include the purchases of services and sundries in nearby communities, fees paid for hunting and other recreational permits, and the outfitter industry. The socioeconomics of such recreation uses are temporally related to season, hunting seasons (particularly big game), and timing of recreational events.

The BLM collects some fees for recreation use of public land in the Decision Area. During Fiscal Year 2002, the BLM collected $27,971 in recreation fees (BLM 2002g). Estimates of total economic impact are limited to statewide estimates, which are largely focused on wildlife-associated recreation. Available data indicate that there were 884,000 total participants in wildlife-associated recreation, which generated in excess of $1 billion economic impact in New Mexico in 2001 (USFWS 2001). Nationwide, hunters spend an average of approximately $1,896 per hunter on an annual basis. The retail sales related to hunting, at $891 million, translated into more than $342 million in economic impact (International Association of

Fish and Wildlife Agencies 2002). Although nonresident hunters comprise 22 percent of all hunters in New Mexico, they account for more than 70 percent of hunting license sales income (New Mexico State University 2003). The cost of hunting permits in the Planning Area varies from $5 to $3,064 based on a number of factors (e.g., type of permit, resident/nonresident, and fee reductions for handicapped, juniors, and seniors) (NMDGF 2002a).

According to the NMGFD outfitter's database, active New Mexico outfitters total 246. Of these, the registration addresses of 30, or 12.2 percent, were within the Planning Area (NMDGF 2003c). By strictly applying this percentage to the total estimated economic impact of outfitting and guiding per the New Mexico State University 2003 study, the corresponding annual economic impact of these outfitters within the Planning Area is $27.2 million. A total of 53, or 21.5 percent, of the outfitters and guides in the NMGFD database have a registration address outside of New Mexico. Out-of-state addresses were mostly in Arizona, Colorado, and Texas, but some addresses were as far as New York and Michigan (NMDGF 2003c).

The New Mexico BLM issues Special Recreation Use Permits for outfitters and guides that are registered with the NMGFD (Sykes 2003). Typically, about 15 to 20 active Special Recreation Use Permits are issued per year in the Decision Area (primarily for elk hunting, but also includes deer, antelope, and other hunts). Outfitter group size varies from fewer than five to as many as 20 to 30 hunters. Days of use vary from one to five, depending on the hunt and a variety of other factors. Total annual visitor use associated with outfitted hunters can vary from as few as about 300 to 400 days to as many as 1,500 to 2,000 days. Many outfitters receive about $1,500 per hunter for low-end hunts and up to $4,000 per hunter for high-end hunts. Assuming 15 Special Recreation Permits with 10 hunters, this translates to a low-end annual income of $225,000 and a high-end annual income of $600,000. Most of this use occurs in Catron County, but some occurs within Socorro County (Carson 2003b).

A 2003 New Mexico Council of Outfitters and Guides study notes that outfitting and guiding in rural communities generates a source of income in areas impacted by curtailed logging and mining activities and limitations on livestock grazing. The study estimates that, annually, New Mexico's big game and outfitting industry generates $127.7 million in direct economic impact, provides 4,680 in direct full- and part-time jobs (with total employment compensation of $29.2 million), and generates indirect and secondary impacts to reach a total estimated economic impact of $223 million, with total employment of 6,082 and $54.6 million in employment compensation. From 1989 to 2002, the number of outfitters in New Mexico has more than doubled, increasing from 80 to 260. Similarly, the demand for the service has increased from 6,204 clients to 20,540 clients (New Mexico State University 2003).

Various annual events have economic impacts that can result in a short-term influx of expenditures in the area, which may dramatically influence some businesses (e.g., vendors of recreational supplies) and affect some business decisions (e.g., inventory, staffing, etc.). Recreational events that draw users to the Decision Area include the Enchanted Sky Star Party (one to four days, approximately 200 participants), Fat Tire Fiesta (one weekend, about 100 to 200 participants), Rock Hounding Days (one-day event, about 50 participants), Fort Craig Re-enactment (usually a weekend, approximately 100 participants), Socorro Valley 100 Motorcycle Races (two days, 100 to 200 participants), Dog Trials (about five times a year, 30-75 participants), Model Rocket Launches (small groups, about 15 to 20 times a year), and visitation associated with the annual Festival of the Cranes at the nearby Bosque Del Apache National Wildlife Refuge (Carson 2003b).

3.5.7.7 Connections Between Protected Open Space and Economic Growth

The vast expanses of open space and protected land in the Planning Area are a fundamental asset. In the past decade, a widening body of research has shown that amenities associated with open space and protected land influence peoples' decisions to live and to do business in rural areas. Quality of life assets in the Planning Area include environmental quality, a slower pace of life, relatively low crime rates, scenery, and recreational opportunities. The economic value of protected land and open space has long been established and demonstrated by increased demand and prices for properties located near or adjacent to open spaces (Muro 2002; National Park Service 1995; Sonoran Institute 2004; Trust for Public Lands 1999).

According to the Sonoran Institute (2004), protected land has the greatest influence on economic growth in rural isolated counties that lack easy access to larger markets, such as Socorro and Catron Counties. However, while public land is important for growth in such areas, other factors are even more important, including (1) the proportion of the workforce employed in producer services, arts and entertainment; (2) the presence of a ski area and commercial airport; (3) the education of the workforce; and (4) the presence of mountains. Economic diversity also influences growth. Specialized economies are associated with slower growth, especially if the specialization is in mining, oil and gas development, logging, wood products manufacturing, or other resource extractive sectors. Ready ability to travel to larger population centers remains key despite advances in telecommunications. The influx of newcomers is closely tied to economic growth (Sonoran Institute 2004). In the Planning Area, these factors are largely lacking.

3.5.7.8 Non-market Value

Many characteristics associated with public land are not marketed, but they are scarce and provide satisfaction and enjoyment; thus, they have value even if no money changes hands. Non-market values represent economic benefits to user groups that may not be adequately reflected in local area spending (e.g., the excess that a purchaser would be willing to pay for use of public lands over that which is paid, also known as consumer surplus). Impacts to non-market values may be perceived both locally (e.g., ranchers, recreationalists) and nonlocally (e.g., interest groups) (Loomis 2002). Non-market values can be analyzed quantitatively, but can also be assessed qualitatively in terms of social values that may include adequate access, natural and cultural resource protection, recreation, hunting, and the ability to maintain a livestock grazing/ranching-oriented lifestyle.

Chapter 4 - Environmental Consequences

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

This chapter characterizes the potential impacts on the environment of implementing the alternatives described in Chapter 2. The remainder of this introductory section addresses the methods and approach to the impact analysis by identifying analytical assumptions, defining the types of effects, and disclosing any critical elements that are not addressed or present and areas of incomplete information. Subsequent sections of this chapter characterize the impacts that are predicted to result from actions that are common to all alternatives; the impacts that are predicted to result from each Alternative A, B, C, and D; and cumulative effects.

Throughout this chapter, the terms Planning Area and Decision Area are used to reference geographic boundaries. The Planning Area includes all land, both public and private, within Socorro and Catron Counties. The Bureau of Land Management (BLM) considers potential impacts on all resources within this inclusive Planning Area, regardless of jurisdiction or ownership. The term Decision Area is used to describe public land and the subsurface Federal mineral estate administered by BLM within the two counties, a total of about 6 million acres, for which BLM has the authority to make decisions. The phrase "BLM-managed surface land" refers to only the approximately 1.5 million acres of surface land that is managed by the BLM, where many of BLM's management actions would be implemented.

4.1.1 Analytical Assumptions

The impact analysis is based on an understanding of the existing conditions in the Planning Area as characterized in Chapter 3 (Affected Environment) and the Management Situation Analysis (on file in the Socorro Field Office), and descriptions of the alternatives provided in Chapter 2 (Alternatives).

The alternatives in this Draft Resource Management Plan Revision (RMPR)/ Environmental Impact Statement (EIS) are designed to provide general management guidance for all resource programs in most cases. Specific projects for some areas or resource programs may be detailed in future activity plans, project plans, and site-specific proposals. These plans and projects may be derived from broader decisions in the RMPR or from internal management decisions. These projects and plans would address more precisely how a particular area or resource is to be managed and must comply with the management direction in the approved RMPR. Additional National Environmental Policy Act (NEPA) analysis and documentation would be conducted as needed. Usually this would occur when the project or activity plan has not been specifically addressed in the RMPR. These plans and projects may include such things as developing a travel management plan, issuing a right-of-way, constructing a range improvement, or approving an application for a permit to drill for oil or gas. NEPA analysis in these cases would consist of determination of NEPA adequacy, a categorical exclusion, an environmental assessment with accompanying Finding of No Significant Impact, or an EIS if the situation warrants. These documents can and should be, where appropriate, tiered to this RMPR/EIS.

In all alternatives, it is assumed that best management practices would be used to reduce potential impacts on resources. Best management practices are discussed in Appendix C; additional best management practices specific to wildlife are included in Appendix L. The impact analysis incorporates consideration of reasonably foreseeable future actions by the BLM; these are described in Section 4.7 as part of the discussion of past, present, and future actions that informed the cumulative effects analysis. Appendix O provides definitions of impacts, additional assumptions, or other information that may be useful in understanding the approach to the analysis for each resource or resource use.

4.1.2 Types of Effects to Be Addressed

An impact, or effect, is defined as a modification to the environment as it presently exists, that is brought about by an outside action. Impacts can vary in significance from no change or only slightly discernible change, to a full modification or elimination of the environmental condition. Impacts may be beneficial (positive) or adverse (negative).

Direct effects are caused by an action and occur at the same time and place. ***Indirect effects*** are caused by the proposed action and occur later in time or farther in distance, but are still reasonably foreseeable. ***Cumulative effects*** result from incremental impacts of actions when added to other past, present, and future actions regardless of what person or agency undertakes those actions. In addition, effects may be ***short-term*** (temporary) or ***long-term*** (permanent and long-lasting).

4.1.3 Incomplete or Unavailable Information

Existing data were used for preparation of this RMPR/EIS and, for the most part, were sufficient for the RMP-level decisions. However, scenic quality data are not available for the Planning Area; therefore, it is assumed that the existing visual resource management (VRM) classes generally represent the type of existing scenic quality within the Planning Area.

Project-specific information on future activities and uses in BLM's Decision Area are unknown at this time. As activities and uses are proposed throughout the life of the plan, it is assumed that subsequent NEPA analysis would occur as appropriate to evaluate the types of impacts that could occur on a site-specific basis, as described above in Section 4.1.1.

4.2 IMPACTS FROM ACTIONS COMMON TO ALL ALTERNATIVES

This section describes the impacts that would result from the implementation of the actions that are common to all alternatives (see Section 2.3 of Chapter 2) and would be identical impacts across the alternatives. Not all resource topics are addressed in this section; some topics are covered entirely in the discussion of each alternative (Sections 4.3 through 4.6).

The possibility for widespread direct impacts on air quality would be related primarily to the potential for a large commodity production project to be located in the Planning Area, which would be subject to additional NEPA analysis if the project were a Federal action. Even if such a project were located off public land, the BLM, as a Federal land manager with jurisdiction over areas that may experience impacts, could elect to review and comment on Prevention of Significant Deterioration permits that would be required for larger projects.

Prescribed burns and wildfires would create emissions that affect air quality. All alternatives would provide for fuels reduction activities that would decrease the risk of large wildland fires and associated emissions. In addition, the New Mexico Environment Department's Air Quality Bureau would regulate smoke from all sources to ensure that the National Ambient Air Quality Standards are not violated.

The New Mexico Standards for Public Land Health and Guidelines for Livestock Grazing Management (New Mexico Standards and Guidelines) would be applied under all alternatives. The public land health standards apply to all resource programs, although the guidelines are specific to grazing management. Guidelines for livestock grazing management are applied after an interdisciplinary team has evaluated a particular watershed, determined that it was not meeting public land health standards, and determined that grazing was the reason for that particular watershed not meeting the standards. These guidelines would help to guide the mitigation, restoration, or other measures needed to improve rangeland health.

Management of public land to meet or move towards public land health standards would reduce erosion and improve ecological processes that support the desired diversity of native vegetation. Increasing soil stabilization to meet the upland sites standard would decrease the loss or degradation of vegetation due to erosion. When soils erode, topsoil, which has organic matter and nutrients, is lost and therefore soil productivity and vegetation quality are reduced. Improvement of ecological processes (hydrologic, nutrient, and energy flow) to meet the biotic communities standard would support diverse native species, maintain and conserve desired plant communities, and restore native plants. Improvement of riparian areas to meet the riparian sites standard through the use of adequate vegetation to withstand high stream flow, capture sediment, provide for groundwater recharge, and meet water quality standards would benefit riparian vegetation, as well as all vegetation within the watershed. Management of plant communities to meet public land health standards would benefit wildlife and special status species in riparian or other areas by maintaining or enhancing habitat. The improvement of rangeland conditions in accordance with the New Mexico Standards and Guidelines also could alter the number of acres associated with Fire Regime Condition Class (FRCC) 3 to FRCC 2, or from FRCC 2 to FRCC 1 (see Section 3.3.2). Where the FRCC of rangelands change to a lower category, fire return intervals would more resemble the historic fire regime. This would result in a decreased risk of stand-replacing fires in forests and could decrease the average size of fires in grasslands.

Under all alternatives, management of noxious weeds would continue in accordance with all applicable guidance and agreements. Identification and control of invasive species populations would help prevent further spread of these species into native vegetation communities, reduce competition with native species, improve the ability of native communities to recover from disturbances (e.g., grazing, mining, fire, etc.), and minimize edge effects on wildlife habitats throughout the Planning Area[1]. In addition, potential impacts from invasive weeds would be mitigated through standard conditions for operators of projects that are disturbing native vegetation, enabling any invasive species introductions that are detected to be managed and remediated. Management of noxious weeds throughout the Planning Area would result in continued protection of the diversity of vegetation and forage in wildlife and riparian habitats. This management would support special status species by improving the ecological integrity of these habitats and increasing their ability to recover from natural and manmade disturbances.

Under all alternatives, best management practices (Appendix C and Appendix L) would apply to all surface-disturbing activities, and would result in increased protection of wildlife and special status species and the habitats that support them. In addition, monitoring and adaptive management (described in Section 2.7) would provide a mechanism through which BLM can alter its management to better meet resource objectives over time.

Fire management would continue in accordance with the Statewide Resource Management Plan Amendment for Fire and Fuels Management under all alternatives. Impacts were evaluated as part of the planning process for the Resource Management Plan Amendment. Generally, the use of best management practices and the assessment of vegetation through FRCC would promote biological diversity and minimize the potential for loss or alteration of vegetation and habitat caused by large wildland fires.

[1] Edge effects occur when natural habitats are interrupted by development or other human-induced disturbances, including roads, structures, and trampling or vehicle tracks. Edge effects affect wildlife species in very different ways, depending on the life history of the species, and cause behavioral modifications that can lead to fragmentation of habitat. Some disturbance-adapted species, especially shrub/scrub bird species, thrive along edges of roads and other developed areas. Other wildlife species, especially large mammals, avoid human-disturbed areas and do not tend to cross roads. Roads also increase mortality of small mammals from both increased vehicle collisions and increased predation from large mammals, while roads increase mortality of large mammals as a result of vehicle collisions. Pollution and bioaccumulation are secondary effects of roads and other development that increase edge effects on wildlife and wildlife habitats.

Historic suppression of fires has allowed piñon-juniper, sagebrush, creosotebush, and other shrub and woodland species to encroach into historically grassland-dominated communities (White, Loftin, and Hofstad 1999). As brush and woodland communities spread into grassland sites, the more palatable grass and forbs species are out-competed, which reduces the amount of forage available for livestock, as well as the fuels needed to carry natural wildfires. Treating these sites through fuel reductions could reestablish natural fire return intervals and reduce competition from brush and woodland species, but would have short-term impacts on grazing by reducing the available forage and restricting access during post-treatment rest or deferral periods. However, over the long-term, increases in the amount of grass and forbs species available for grazing would increase available forage and promote the reestablishment of structural and functional components of the landscape.

Prescribed and nonprescribed burns would result in short-term impacts on visual resources resulting from smoke and burn effects on the landscape. Impacts from smoke would affect visibility temporarily. Scorching of the land would create a contrast with adjacent landscapes untouched by the burn. Impacts on sensitive viewers and the natural landscapes would be temporary as areas become revegetated. Fire management activities also could result in indirect impacts on land uses where large blocks of BLM-managed surface land abut wildland-urban interface areas or proposed urban development areas, particularly in areas designated for fire use when opportunities arise or as fire use emphasis areas. If and when BLM uses fire in these areas, local communities (i.e., in Socorro County along Interstate 25 [I-25]) would be subject to impacts from smoke and/or temporary restrictions to uses on nearby BLM-managed surface land.

Under all alternatives, cultural and paleontological resources would continue to be impacted by natural weathering and erosion processes, and some resources may be lost by removal from and vandalism on public land. These resources are subject to an active discovery process so additional cultural and paleontological resources may be found on BLM-managed surface land, but quantity and quality are not known until discovered and properly evaluated. Any actions proposed for BLM-managed surface land or by the BLM will include an evaluation of (1) the potential for the presence of important resources, (2) potential impacts on resources due to the type of project action that may allow for surface disturbance or easier access to the resource, and (3) appropriate mitigating actions to protect those resources. Access or surface disturbance associated with a specific future action may result in damage or loss of the resource; however, important resources also may be discovered and would need to be properly evaluated and curated.

The management of the 13 wilderness study areas (WSAs) on BLM-managed surface land would continue in accordance with the 1995 Interim Management Policy for Lands Under Wilderness Review (Interim Management Policy). As a result, mineral exploration and development activities and realty actions would be excluded or limited in these areas. Management in WSAs would support the maintenance and enhancement of primitive and semi-primitive recreation settings. In addition, incidental protection of natural and cultural resources would occur in those areas.

There is potential for harvesting woodland products on public land for biomass-fueled power generation. Impacts resulting from these activities would include tree removal, primarily piñon and juniper, and possible conversion of areas from woodland to grass and shrub vegetation types. Any ground-disturbing activities associated with exploration or development of renewable energy or minerals would undergo site-specific environmental analysis in accordance with NEPA and other statutes, similar to other future actions. Piñon and juniper woodlands would be harvested sustainably, by reducing high-density stands to a historic range of density and structure. As a result, grasslands or juniper savannah that have been heavily encroached upon with one-seed juniper and piñon will be returned to historic grassland conditions.

Throughout all the alternatives, grazing would be permitted on the majority of BLM-managed surface land; therefore, no impacts on the general availability of land for this use are anticipated. Changes to grazing numbers or range management could occur if determined necessary to meet public land health standards or as part of noxious weed treatment programs. Over the long term, livestock grazing reductions could result in healthier, more stable plant communities, which would produce more desirable, predictable forage that would be more resistant to grazing impacts. Weed treatment programs that reduce noxious or invasive weed species also could reduce unpalatable or toxic species and reduce competition with desirable forage species.

Range management tools such as fences, water, and salt placement would be used as part of ongoing management, allowing for greater control of livestock and therefore more flexible rangeland management, as well as plant reproduction and increased vigor. Within WSAs, the installation of new improvements would be limited in accordance with the Interim Management Policy. In areas outside the WSAs, range improvements may be installed contingent upon site-specific analysis and potential mitigation as identified in additional NEPA analysis.

Under all alternatives, about 1,418,415 acres of Federal mineral estate within BLM's Decision Area would be closed nondiscretionarily to fluid mineral leasing in WSAs and other areas (described in Section 2.3.16). These closures directly affect the ability to develop 646,901 acres identified as having moderate oil and gas potential, including portions of the following sedimentary basins: San Agustin, Zuni, Belen-Albuquerque, and Jornada del Muerto, and the Chupadera Mesa and Rio Grande Rift (see Map 3-8). Although this management would not affect existing conditions, as prices for these resources rise, the economic feasibility of exploration and development for oil and gas also increases. The inability to explore or develop resources on this acreage would reduce the ability to consolidate larger blocks of land on which it would be more cost-effective to pursue exploration and development activities, potentially resulting in lost economic opportunities that would otherwise be realized.

Under all alternatives, no impacts are anticipated on existing major transportation facilities in the Planning Area (I-25; U.S. Highway 60, U.S. Highway 180, and U.S. Highway 380; and New Mexico (NM) 12 and NM 169). Secondary or unauthorized route proliferation could occur if route designations are not enforced, potentially resulting in changes to access patterns and traffic circulation.

Compliance with Federal, State, and local regulations would minimize potential impacts related to the use and disposal of hazardous wastes and materials. Health and safety requirements for future activities and uses on public land would be uniform under all alternatives, but the level of effort to monitor activities and the level of risk to public health and safety would vary according to the number of permits and other approvals issued. Future site-specific NEPA analysis would identify specific risks and any appropriate mitigation.

Under all alternatives, limited economic opportunities associated with BLM's wildfire management program would continue. The current practice of BLM offering contracts to local enterprises to assist with tasks related to fire management, such as clearing areas and removing fuel materials and/or debris, would remain under any alternative. Expanded stewardship contracting authority sets parameters to continue to engage local businesses in long-term ecological restoration services. This would generate income and result in direct and induced revenue in local economies if local businesses are used.

4.3 ALTERNATIVE A – NO-ACTION ALTERNATIVE

Impacts on the environment that would occur as a result of the continuation of existing management are discussed below by resource management category (e.g., vegetation or rangeland management). Each discussion provides, as appropriate, characterizations of impacts that could result from the management of

other resources and resource uses. Management that is expected to have no effect on a resource or resource use is not included in the discussion.

4.3.1 Summary of Management Direction

The No-Action Alternative (or Alternative A) represents the continuation of existing management, as defined by the 1989 RMP and subsequent amendments. Under Alternative A, resource values or sensitive habitats would receive management emphasis at present levels, and current management strategies would continue to be used. Decisions from the 1989 RMP that have been implemented would continue in force, and those that have not been implemented would be carried forward into the future. A summary of Alternative A also is provided in Table 2-1, Chapter 2, while a summary of management prescriptions for areas of critical environmental concern (ACECs) and special management areas (SMAs) under Alternative A is provided in Table 2-2.

4.3.2 Summary of Aggregate Effects of Alternative A

Management of soils, water and watershed resources, and vegetation would be expected to reduce soil erosion and vegetation loss, and increase control of noxious weeds over time. These effects would occur as actions are taken to meet public land health standards in areas that are not currently achieving them and as a result of management designed to protect sensitive resources within specially designated areas. Surface disturbance such as that caused by mineral development, off-highway vehicle (OHV) use, and construction of facilities within rights-of-way or other land use authorizations could have localized, short-term direct effects on soil, water, and vegetation, including soil compaction and vegetation loss. The extent of long-term effects would depend on the intensity, frequency, and type of use in a specific area. Impacts would be greater outside areas where use restrictions apply (see Table 4-1, Land Allocations Under All Alternatives).

Public land within special designations typically would be managed to protect resources by minimizing surface disturbance. Under Alternative A, a total of 238,936 acres of BLM-managed surface land would be managed as discretionary special designations (ACECs and SMAs) to protect watershed, vegetation, wildlife, and cultural resources. An additional 291,826 acres within WSAs would be managed in accordance with the Interim Management Policy, which requires nonimpairment of wilderness values, with the effect of supporting native vegetation and wildlife habitat, preserving scenic resources, and maintaining primitive recreational settings in those areas until the areas are designated as wilderness or dropped from further wilderness study.

Impacts on wildlife are closely correlated with impacts on vegetation, which provides forage and cover. Generally, Alternative A would be expected to have localized direct effects on wildlife where surface-disturbing activities occur. In some cases, land disposal allows for land uses to be developed that would result in effects such as habitat fragmentation[2], degradation, or disruption of wildlife movement corridors. Since the 1989 RMP, the federally listed aplomado falcon has been elevated as a species of concern in the Planning Area. Existing management (Alternative A) has no specific management decisions related to the aplomado falcon; however, in the event of a proposed action, the legal provisions of the Endangered Species Act and NEPA provide protection of the falcon from incidental takes and require consideration and mitigation of potential effects on the species.

[2] Habitat fragmentation occurs when native vegetation is cleared, often as a result of fire or human development, and habitats that were once continuous become fragmented or isolated from one another. Habitat fragmentation can result in edge effects.

TABLE 4-1
LAND ALLOCATIONS UNDER ALL ALTERNATIVES

Land Allocation	Alternative A	Alternative B	Alternative C	Alternative D
Total acres in discretionary special designations (ACECs, SMAs, SRMAs)	238,936 acres of BLM-managed surface land	297,555 acres of BLM-managed surface land	336,609 acres of BLM-managed surface land	149,478 acres of BLM-managed surface land
Acres in WSAs	291,826 acres of BLM-managed surface land	291,826 acres of BLM-managed surface land	291,826 acres of BLM-managed surface land	291,826 acres of BLM-managed surface land
Right-of-way exclusion areas	39,148 acres of BLM-managed surface land	406,283 acres of BLM-managed surface land	716,100 acres of BLM-managed surface land	301,081 acres of BLM-managed surface land
Right-of-way avoidance areas	458,996 acres of BLM-managed surface land	349,343 acres of BLM-managed surface land	**419,120 acres of BLM-managed surface land**	177,290 acres of BLM-managed surface land
Land identified as suitable for disposal	86,458 acres of BLM-managed surface land	89,447 acres of BLM-managed surface land	42,913 acres of BLM-managed surface land	212,323 acres of BLM-managed surface land
Closed OHV area designations	29,117 acres of BLM-managed surface land	**117,921 acres of BLM-managed surface land**	139,971 acres of BLM-managed surface land	0 acres of BLM-managed surface land
Limited OHV area designations	565,159 acres of BLM-managed surface land	1,389,624 acres of BLM-managed surface land	1,364,742 acres of BLM-managed surface land	1,504,534 acres of BLM-managed surface land
Open to cross-country travel	851,234 acres of BLM-managed surface land	0 acres of BLM-managed surface land	0 acres of BLM-managed surface land	0 acres of BLM-managed surface land
Areas closed to fluid mineral leasing	1,418,415 acres of Federal mineral estate	1,543,095 acres of Federal mineral estate	1,856,116 acres of Federal mineral estate	1,419,456 acres of Federal mineral estate
Areas that would be withdrawn from location and entry under the mining laws	1,508 acres of Federal mineral estate	72,369 acres of Federal mineral estate	497,391 acres of Federal mineral estate	0 acres of Federal mineral estate
Areas excluded from mineral material disposals	0 acres of BLM-managed surface land	340,066 acres of BLM-managed surface land	484,133 acres of BLM-managed surface land	291,859 acres of BLM-managed surface land
VRM Class I	30,343 acres of BLM-managed surface land	28,533 acres of BLM-managed surface land	27,093 acres of BLM-managed surface land	0 acres of BLM-managed surface land
VRM Class II	385,781 acres of BLM-managed surface land	488,339 acres of BLM-managed surface land	715,706 acres of BLM-managed surface land	354,222 acres of BLM-managed surface land
VRM Class III	299,741 acres of BLM-managed surface land	480,595 acres of BLM-managed surface land	249,953 acres of BLM-managed surface land	106,277 acres of BLM-managed surface land
VRM Class IV	774,170 acres of BLM-managed surface land	509,432 acres of BLM-managed surface land	513,997 acres of BLM-managed surface land	1,046,399 acres of BLM-managed surface land

NOTE: ACEC = area of critical environmental concern
SMA = special management area
SRMA = special recreation management area
OHV = off-highway vehicle
VRM = visual resource management

Under Alternative A, the potential for cultural and paleontological resource degradation due to future surface-disturbing actions would be minimized through established legal requirements and the requisite NEPA or other analysis that would occur on a site-specific basis. These resources are subject to an active discovery process, and typically the approval process for surface-disturbing activities would result in survey, potential discovery, and contribution to knowledge of cultural history and/or paleontology. A total of 20,450 acres of BLM-managed surface land is identified specifically for protection of some known sensitive and/or unique cultural resources within special designations under Alternative A. Management to minimize surface disturbance in these areas typically would include a combination of restrictions on land use authorizations, mineral development activities, and motorized travel.

The Zuni Salt Lake, a sensitive resource of cultural value to the Zuni Tribe, as well as other southwestern tribes such as the Acoma Pueblo, Hopi Tribe, Laguna Pueblo, Ramah Navajo, and Taos Pueblo would be managed within a 4,839-acre SMA to regulate surface-disturbing activities. Water quantity and quality within the lake would be evaluated continually through measures intended to regulate environmental impacts on a site- and action-specific basis in accordance with NEPA and other Federal and State laws. Because the Zuni Tribe has senior rights to the waters of the lake, any new diversion of ground or surface water would require nonimpairment of those rights, and the Tribe has legal standing to protest any new application for water use filed by either BLM or a private party.

Under Alternative A, 851,234 acres of public land would remain open to cross-country travel use. Impacts would include increased particulate and engine exhaust emissions; increased potential for soil erosion, sediment transport across public land, water quality degradation, and vegetation loss; potential damage to cultural resources; and greater potential for conflicts with wildlife, including habitat degradation. Opportunities for solitude and primitive recreational experiences would likely decrease due to OHV-generated noise and dust. Impacts would vary according to the intensity and frequency of use as well as the soil types within affected areas.

Alternative A would accommodate diverse uses of public land, including mineral exploration and development, developed and primitive recreational activities, grazing, and commodity production associated with woodcutting and plant material sales. Potential impacts on these resource uses would include localized effects on access, although overall travel throughout the Planning Area and the overall balance of recreation opportunities would not be impaired or affected by the management under this alternative. Lease stipulations to control surface use and limit surface occupancy would discourage fluid mineral leasing and development activities if such restrictions increase the cost and difficulty of exploration for and development of mineral resources such that these activities cease to be economically feasible. The potential for this impact would fluctuate according to the variable price of minerals over time and the known potential for the minerals in a particular area, both of which influence the economic feasibility of exploration and development.

4.3.3 Air Quality

Management under Alternative A would be expected to maintain air quality that would meet the New Mexico and Federal ambient air quality standards, and there are no specific resource management actions included in Alternative A that would result in widespread direct effects on air quality. Generally, direct and indirect effects on air quality would result from earth-moving or vehicle traffic associated with development of mineral and energy resources, transportation and travel routes, utility corridors, and other surface-disturbing activities.

Fugitive dust from unpaved access roads and commodity production sites would increase under Alternative A with any increase in roads and commodity production projects within the Planning Area.

Pollutant concentrations from expanded construction and use of unpaved roads and transportation corridors would be dispersed over relatively short distances, less than 1 mile, from rights-of-way. For construction projects, these direct effects would occur for a period of a few weeks or months. Quantifying the direct effects of a given project, or new activity, would be based on published air pollutant emission factors. Particulate emissions are the most prevalent direct effect. Typically, the air emissions from heavy construction (defined as use of mechanized earthmoving vehicles for scraping, blading, and contouring the project site) are estimated to be 2.69 milligrams/hectare/month of activity (1.2 tons/acre/month of activity) (U.S. Environmental Protection Agency AP-42, Section 13.2.3).

In general, the estimation of dust emissions resulting from OHV and other vehicle traffic would occur as a function of several variables, including the surface materials' silt and moisture content, vehicle speed, and other factors such as 1980s vehicle fleet exhaust, brake wear, and tire wear. Some natural mitigation of fugitive dust would occur with precipitation. Application of treatments that alleviate dust, such as road watering and planting of compatible roadside vegetation, could prevent 50 to 80 percent of the direct effects from fugitive dust generation.

Particulate emissions from coal mining and associated material handling activities would be correlated with the soil silt and moisture content at the mine site. Emission factors provided by the U.S. Environmental Protection Agency for surface coal production operations range from 0.01 to 0.03 pound of particulate emission per ton of coal for haul truck and rail car loading of coal or overburden, and up to 0.4 pound of particulate emission per ton of coal for overburden removal (scraping or bulldozing). Wind erosion of dust from exposed areas at coal mine sites is characterized by a general emission factor of 0.38 ton per acre per year. Under the reasonably foreseeable development (RFD) scenario (described under Section 4.7), up to 18,000 acres could be disturbed to extract coal.

4.3.4 Geology

Potential impacts could result from surface disturbance to accommodate mineral exploration and development, land use authorizations, or other activities. Potential direct impacts could include vegetation removal and soil disturbance that increases erosion. Construction activity on mountain ridges could degrade and damage resources, and excavation on mountainsides for sand and gravel operations would affect geological features. Such activities could impact resources with unusual geological, mineralogical, or paleontological information, or natural scenic value, unless mitigated on a project-by-project basis. Overall, protection against effects from any new proposed projects or activities that require permits or BLM approval would be provided by mandatory, site-specific NEPA analysis to identify impacts and appropriate mitigation.

Some management under Alternative A would protect geological resources; specially designated areas to protect natural, cultural, and recreation resources (a total of 238,936 acres) also would protect geologic resources against impacts associated with surface disturbance (described above) in those areas. Land use restrictions in special designations include right-of-way exclusion areas, restrictions on OHV use, closure of areas to mineral leasing, or withdrawal from location and entry under the mining laws (see Table 4-1).

Geological resources on 851,234 acres open to cross-country OHV under Alternative A would be vulnerable to degradation or damage. Other recreation activities, such as rock-climbing, mountain biking, and horseback riding, could cause cumulative damage to cliffs faces and other geological features. In addition, natural erosion processes could degrade or enhance geologic resources.

4.3.5 Soil and Water Resources

The construction of facilities or access roads on BLM-managed surface land to support mineral development or other activities would require additional authorization from BLM. Consequently, effects would be evaluated on a site-specific basis during additional NEPA analysis. It is assumed that impacts on soil and water resources that result from these activities would be mitigated through the application of best management practices (see Appendix C) or other mitigation identified during additional NEPA analysis. Potential direct impacts that might be considered on a site-specific basis include temporary soil erosion in clearance areas or long-term erosion that could result from more intense activity. The intensity of the activity and, therefore, the potential effects would depend on variables such as the size and type of equipment used, access requirements for facilities maintenance, and increased access to public land with new access roads.

Alternative A provides protection for soil and water resources in some areas from the effects of these surface-disturbing activities through right-of-way exclusion and avoidance areas and restrictions on mineral development (see Table 4-1 for total acres associated with this management). In these areas, management to prohibit or minimize major surface-disturbing activities would result in protection against soil disturbance and compaction, which would promote reduced erosion and increased soil infiltration and productivity. In addition, management of VRM Class I and II areas to retain natural landscapes on a total of 416,124 acres would protect or enhance soils and watershed resources in those areas because an emphasis on maintaining existing vegetation and terrain features would be inherent to the management objectives for those areas.

The potential effects of BLM management on Zuni Salt Lake have been identified as a key area of concern within the Planning Area. Under Alternative A, the 4,839-acre Zuni Salt Lake SMA would continue to protect soil and watershed resources in that area through limits on surface disturbance from land use authorizations, mineral development, and OHV use. The Zuni Tribe has senior rights to the waters of the lake, and any diversion of ground or surface water cannot violate those rights. Existing law, regulations, and policy provide abundant protection of the Tribe's rights to beneficial use of Zuni Salt Lake. Under existing State law, the Tribe could protest any new application for water use filed by either BLM or a private party.

Potential impacts on soil and water resources from grazing are addressed as part of the discussion on vegetation (Section 4.3.6).

Several fluid mineral leases have been issued previously by BLM for areas in the vicinity of Zuni Salt Lake. Any removal or re-injection of production water into the subsurface as a consequence of resource extraction would require a permit from the State Oil Conservation Commission; impacts on water rights, including rights to the Zuni Salt Lake, would be a determining factor in the outcome of the permitting process. Mandatory NEPA analysis would assess specific proposed activities or uses, and identify mitigation measures.

Under Alternative A, up to 31,640 acres would continue to be available for coal leasing in northwestern Catron County, with permitting restrictions. The Salt River Project had obtained a coal-mining permit and lease for the Fence Lake Mine, but has since vacated them. State permits would be required for any new mining exploration or extraction, and potential lessees would be required to demonstrate that existing water resources, including Zuni Salt Lake, would be unimpaired by mining activity. In addition, mandatory site-specific NEPA analysis would identify potential impacts on the lake water's quality and quantity, and mitigation measures to reduce or eliminate those impacts would be identified as part of that process.

Motorized vehicle travel could contribute to soil loss and impact water quality when OHV use causes soil disturbance. The extent of impacts would be determined by several factors, including the frequency, duration, intensity, and location of OHV use; the types of vehicles involved in the activity; the pattern of precipitation (which would affect the water content of soil); and the silt and moisture content of soil (which affect a soil's vulnerability to disturbance). Soil loss would most likely occur in areas designated as open to cross-country travel (851,234 acres of public land under Alternative A), and in higher intensity OHV use areas where silt and moisture content are such that the soils are more vulnerable to disturbance. Closed areas under Alternative A total 29,117 acres of public land; in these areas, soil and water resources would not be subjected to the potential effects of motorized vehicle travel.

4.3.6 Vegetation

The development of watershed plans designed to improve, protect, and rehabilitate critical watersheds by increasing soil stabilization, improving soil structure and water quality, and reducing water runoff and sediment transport would have the indirect effect of improving the quality of vegetation within the watersheds. Practices such as natural and artificial revegetation after treatment (mechanical) to control undesirable vegetation, watershed tillage practices, and weed control would improve vegetation quality and reduce competition from noxious weeds or non-native species. Naturally occurring and manmade water resources are often focal points of use by domestic and wild animals, which may result in loss of vegetation and rare plants found only in riparian zones.

Under Alternative A, approximately 238,936 acres of BLM-managed surface land within special designations would be managed to protect or enhance natural and cultural resources. Vegetation within these special designations would be protected from ground-disturbing activities, which would minimize vegetation loss in those areas. Ground disturbance would be allowed in some special designations to accommodate scientific investigations and to construct infrastructure associated with tourism or education. The VRM Class I or II in special designations and other areas (a total of 416,124 acres of BLM-managed surface land) would support the maintenance or enhancement of existing vegetation communities in accordance with VRM objectives through mitigation measures when a surface-disturbing action is proposed.

The construction of facilities within rights-of-way or associated with other land use authorizations would remove vegetation and likely increase erosion, reduce soil or water quality due to run-off, and increase the likelihood of the occurrence of noxious weeds or invasive species in localized areas. However, these impacts would be mitigated on a site-specific basis through use of best management practices or other measures as identified in subsequent, site-specific NEPA analyses. Impacts from invasive weeds also would be mitigated through standard conditions for operators that are disturbing native vegetation by managing and remediating any invasive species introductions that are detected. The establishment of right-of-way exclusion and avoidance areas would protect vegetation in those areas by limiting land use authorizations that might cause surface disturbance. The number of acres per vegetation type managed within exclusion and avoidance areas for Alternative A is summarized in Table 4-2. Approximately a third of the montane coniferous forest areas on BLM-managed surface land would be protected within exclusion areas, and a substantial portion (about 72 percent) of the closed basin scrub on BLM-managed surface land would be managed within avoidance areas. Some areas with lava beds in northwestern Catron County (additional to the acres noted in Table 4-2) would be available for right-of-ways; however, additional mitigation measures would be identified during the required NEPA analysis.

TABLE 4-2
ACREAGE BY VEGETATION TYPE IN RIGHT-OF-WAY EXCLUSION AND AVOIDANCE AREAS FOR ALTERNATIVE A

Vegetation Type	Acres of BLM-Managed Surface Land	Right-of-way Exclusion	Percent of BLM-Managed Surface Land Population	Right-of-way Avoidance	Percent of BLM-Managed Surface Land Population
Chihuahuan Desert Scrub	168,059	12,989	8	27,419	16
Closed Basin Scrub	13,941		0	10,016	72
Coniferous And Mixed Woodland	143,686	8,655	6	60,164	42
Desert Grassland	316,268	7,009	2	131,107	41
Juniper Savanna	324,153	90	0	90,906	28
Lava Beds	21,353*		0	21,319	100*
Montane Coniferous Forest	30,945	10,262	33	7,733	25
Montane Scrub	11,456		0	1,250	11
Plains-Mesa Grassland	258,389	13	0	64,019	25
Plains-Mesa Sand Scrub	201,015	130	0	44,105	22
Urban, Farmland or Open Water	15,518		0	764	5
TOTALS	1,504,783	39,148	3	458,802	30

SOURCE: Dick-Peddie 1993
NOTES: Acreage based on best available GIS data.
*The data on which these calculations are based do not include some additional lava beds in northwestern Catron County. These areas are addressed in the text, as appropriate.

BLM has identified approximately 40,920 acres of land for acquisition because of its suitable habitat for wildlife, including special status species. These acquisitions would enhance the BLM's ability to effectively support wildlife in the Decision Area. About 86,458 acres have been identified as suitable for disposal; vegetation could be lost in those areas if disposal occurs and surface-disturbing activities are initiated. Increased development adjacent to public land could result in a direct loss of vegetation due to construction of supporting infrastructure (roads, utilities, etc.) on BLM-managed surface land.

The reduction of woodcutting in high erosion areas would reduce impacts on soil productivity and thus vegetation. Activities associated with vegetative sales would cause localized loss of vegetation and habitat due to construction of access routes and other surface disturbance during the removal of vegetation, and increased water run-off and erosion. Loss of habitat and vegetation due to construction of road access would be mitigated by road placement through best management practices (Appendix C). Potential increases in the spread of noxious weeds or invasive species could occur in those areas, but likely would be avoided or mitigated due to the application of weed control guidelines procedures described in Section 2.3.4. As part of the monitoring program, site visits would pick up early infestations of introduced noxious weeds and they would be treated accordingly.

Vegetation could be removed during ground-disturbing activities associated with mineral exploration and development. Construction and operation of infrastructure associated with those activities (i.e., access roads, supply lines, laydown areas, etc.) would require removal of vegetation and increase the likelihood of invasive species or noxious weeds. According to the RFD (see Section 4.7.1), fewer than 1,000 acres in BLM's Decision Area would be disturbed due to oil and gas development, and approximately 50,000 acres (with well spacing of 320 acres) would be disturbed for carbon dioxide and helium development. Under the RFD, up to 18,000 acres could be disturbed for coal development. The estimated size of the disturbance areas is a small portion of the overall Planning Area. Localized impacts from future actions would be mitigated on a site-specific basis through use of best management practices or other measures as identified in subsequent, site-specific NEPA analyses.

Both positive and negative conclusions about the effects of livestock grazing on vegetation have been derived from studies. Overall, however, the impacts on vegetation on BLM-managed surface land would be minimal if grazing is managed to meet public land health standards in accordance with the New Mexico Standards and Guidelines. Grazing has been shown to increase soil compaction and thus decrease water infiltration (Fleischer 1994), thereby affecting conditions for vegetation. These effects generally increase with stocking rates, but are moderated by soil moisture conditions at the time of trampling (Warren et al. 1996). Soil compaction would reduce water infiltration, restrict root depth, and limit seed germination (Hart and Ferguson 1993). Mechanical impacts on soils and biologic crusts would reduce soil stability and fixed nitrogen availability (Belnap 1995; Eldridge and Green 1994). Soil disturbance from hoof sheer and bedding would create habitat for non-native invasive and noxious weed species, which would likely increase the overall competition with native species for limited resources (water, nutrients, space, etc.) (Laycock and Conrad 1981). Each of these indirect impacts, or a combination of all, would reduce the reproductive capacity of residual perennial communities (Cook and Child 1971; and Yensen 1982). Long-term impacts from reduced perennial reproduction and increased competition from invasive species would likely result in increased fuel loads that would decrease the interval between disturbance events (wildfire) and potentially enhance the size and severity of those events resulting in an accelerated expansion of exotic annual dominated communities.

However, livestock grazing after seed set could have limited beneficial, short-term indirect impacts on upland vegetation by dispersing seeds and creating microhabitats for native species through localized soil disturbance (Burkhardt 1996). In addition, Holechek (1981), Daddy et al. (1988), and Klipple and Costello (1960) concluded that moderate grazing had a more positive effect on plant communities than no grazing. Blackburn (1984) also argues that the moderate, continuous grazing or specialized grazing systems would reduce sediment losses to a minimum. Grazing that is managed to meet public land health standards could increase infiltration and sediment yield (McGinty et al. 1979).

Ground disturbance caused by motorized vehicles, camping, hiking, day use, horseback riding, mountain biking, and trail maintenance would directly impact vegetation through loss and trampling. Concentration of these activities within special designations for recreational use would restrict loss of vegetation to localized areas, and those designated areas would be managed to accommodate concentrated use in such a way as to reduce overall impacts.

OHV use affects vegetation primarily by crushing plants. Repeated disturbances could eliminate vegetation within frequently used tracks and could alter species composition and community dynamics within immediately adjacent areas by compacting and disturbing soils and causing the dusting of vegetation. Route designation would eliminate some redundant routes, resulting in larger contiguous areas that are not subjected to effects associated with OHV activities.

Vehicles can facilitate the dispersion of invasive and noxious weeds. Vehicles driving through populations of invasive plants often get seed entrapped in tire tread and undercarriages, move to another area and then drop seeds into a previously uninfested area. A study performed by Trunkle and Fay (1991) determined that an average of 1,644 knapweed seeds became attached to a pickup truck after backing 40 feet through an infested area and then pulling back out. After driving one mile, 14 percent of the seeds were still attached, and after 10 miles, only 8 percent remained attached. This type of seed attachment and dispersal is likely common for any number of weed species and shows the impact the motorized vehicle users can cause unknowingly on the landscape. In addition, continued OHV use in an area often reduces vegetation and exposes soil, creating favorable conditions for germination of weed seeds (Gelbard and Belnap 2003; Greenberg et al. 1997; Harrison et al. 2002; Hobbs and Heunneke 1992).

The number of acres per vegetation type managed under each OHV area designation for Alternative A is summarized in Table 4-3. Open areas, where cross-country use is permitted and impacts on previously

TABLE 4-3
ACREAGE OF VEGETATION TYPE ON BLM-MANAGED SURFACE LAND BY OHV AREA DESIGNATION FOR ALTERNATIVE A

Vegetation Type	Acres of BLM-Managed Surface Land	Closed to OHV		OHV Limited to Designated or Existing Roads		Seasonal Limitations on OHV		Open to OHV	
		Acres	Percent of BLM-Managed Surface Land	Acres	Percent of BLM-Managed Surface Land	Acres	Percent of BLM-Managed Surface Land	Acres	Percent of BLM-Managed Surface Land
Chihuahuan Desert Scrub	168,059	1,364	1	66,443	40	0	0	100,201	60
Closed Basin Scrub	13,941	0	0	**4,313**	31	0	0	9,623	69
Coniferous and Mixed Woodland	143,686	**11,997**	8	**58,623**	41	0	0	68,567	48
Desert Grassland	316,268	**11,813**	4	**153,489**	49	19,434	6	122,981	39
Juniper Savanna	324,153	**0**	0	**115,710**	36	0	0	192,578	59
Lava Beds	21,353*	**0**	0	**21,341**	100*	0	0	3	0
Montane Coniferous Forest	30,945	**2,229**	7	**11,182**	36	0	0	15,603	50
Montane Scrub	11,456	**0**	0	**2,491**	22	0	0	4,326	38
Plains-Mesa Grassland	258,389	**1,672**	1	**46,066**	18	686	0	204,564	79
Plains-Mesa Sand Scrub	201,015	**5**	0	**83,989**	42	0	0	117,013	58
Urban, Farmland or Open Water	15,518	**37**	0	**1,512**	10	0	0	13,967	90
Totals:	**1,504,783**	29,117	**21**	565,159	**38**	**20,120**	**6**	**849,426**	**56**

SOURCE: Dick-Peddie 1993
NOTES: Some acreage is undesignated under this alternative, and would be managed as limited to existing routes.
The acre totals may not equal the calculations for area designations in Chapter 2, due to variations in datasets and calculation methods.
*The data on which these calculations are based do not include some additional lava beds in northwestern Catron County. These areas are addressed in the text, as appropriate.

undisturbed vegetation are most likely, total 851,234 acres of BLM-managed surface land and are mostly characterized by plains-mesa grassland, juniper savanna, desert grassland, and plains-mesa sand scrub. Some areas with lava beds in northwestern Catron County (additional to the acres noted in Table 4-3) would be managed as open to OHV use; effects on vegetation could occur if motorized travel affect certain vegetation types that grow in lava beds.

Restriction of motorized vehicle use to existing or designated trails would minimize impacts on vegetation in those areas (about 565,159 acres of BLM-managed surface land under Alternative A). Minimal loss of vegetation would occur on existing trails and roads, as they are already disturbed. Vegetation in areas closed to OHV use would be protected from the impacts described above.

4.3.7 Wildlife, Riparian Habitat, and Special Status Species

Management of 150,931 acres of special designations would protect the habitats of special status species and other wildlife, including riparian habitat and raptor nesting and wintering habitat, by limiting access and restricting surface-disturbing activities. A description of these areas and associated habitat types is provided in Table 4-4. Site-specific NEPA analysis of future actions would determine mitigation of impacts or rehabilitation of wildlife and riparian habitats or habitats that support special status species.

TABLE 4-4
AREAS MANAGED TO PROTECT WILDLIFE, WILDLIFE HABITAT AND SPECIAL STATUS SPECIES UNDER ALTERNATIVE A

Name of Area	Habitat Type	Focus of Management	Acres
Horse Mountain ACEC	Remote, roadless, and rarely grazed rugged canyons and mountains. Good habitat for diverse wildlife species; potential for bald eagles and peregrine falcons.	Protect habitat for bald eagle and peregrine falcon (federally listed species), wildlife corridor between BLM and U.S. Forest Service (Forest Service) land, and crucial mule deer habitat from OHV, subdivision, and energy exploration.	7,490
Ladron Mountain ACEC	Rough topography and highly diverse vegetation, habitat for desert bighorn sheep and critical to raptor wintering and nesting habitat. Habitat for rare and endemic plant species including Wright's spiderlily, threadleaf false carrot, and planks catchfly.	Manage rare and endemic plants including three State sensitive plants; protect riparian habitat that supports residential and non-residential species; Protect desert bighorn sheep critical habitat, habitat for several special status bat species, and crucial mule deer habitat. Threats include urbanization, increased recreation use, military activities, fuels reduction, and unauthorized OHV use.	57,195
Sawtooth Proprietary ACEC	Steep ridges and foot slopes with piñon-juniper vegetation that provide habitat to small Zuni fleabane population.	Protect and enhance habitat for federally threatened Zuni Fleabane that is associated with uranium deposits in piñon-juniper vegetation communities. Threats include intensive recreational or livestock use and fires.	125
San Pedro Proprietary ACEC	Low ridges, slopes, arroyos and watercourses that support isolated Fugate's blue star population.	Protect New Mexico State sensitive Fugate's blue star, found in Chihuahuan desert scrub, from surface-disturbing activities and to maintain habitat.	1,201

TABLE 4-4
AREAS MANAGED TO PROTECT WILDLIFE, WILDLIFE HABITAT AND SPECIAL STATUS SPECIES UNDER ALTERNATIVE A

Name of Area	Habitat Type	Focus of Management	Acres
Agua Fria ACEC	Mesas and open grasslands, with volcanic features and vertical cliffs. Provides habitat for bald eagles, golden eagles, peregrine falcons, and prairie falcons.	Protect raptor wintering and nesting habitats.	9,571
Soaptree SMA	Large dense yucca stands in mesa sand scrub habitat.	Protect yucca ecosystem while maintaining area for livestock grazing and improving recreational opportunities.	1,296
Pelona Mountain SMA	Relatively roadless area; rugged canyons and hilly to mountainous country with piñon-juniper and grassland habitats. Provides potential habitat for bald eagles, peregrine falcons, black-footed ferrets, and other wildlife including big game species.	Protect habitat for bald eagle, peregrine falcon wintering and nesting habitats, wildlife corridor between BLM and Forest Service land, crucial mule deer habitat, and one of largest New Mexico elk herds from energy exploration and surface disturbance.	70,838
Taylor Canyon Proprietary SMA	Habitat for several species of rare and endemic plants.	Protect State-listed sensitive species including threadleaf horsebrush, gypsum blazing star and other State-listed species.	384
Iron Mine Ridge Proprietary SMA	Habitat for several species of rare and endemic plants.	Protect State-listed sensitive species including Wright's spiderfly, desert parsley, threadleaf false carrot and other State-listed species.	1,386
Walnut Canyon SMA	Rugged desert foothill with wide arroyo canyons that support diverse vegetation and habitat for golden eagles, prairie falcons, great horned owls, and a variety of big game species.	Protect raptor wintering and nesting habitat.	1,145
The Box SMA	Chihuahuan desert scrub habitat.	Manage recreation opportunities for bouldering and rock climbing, with special protection given to desert bighorn sheep and bat habitats.	300
Total			**150,931**

Exclusion of or limitations on rights-of-way, OHV use, and mineral and renewable energy exploration activities within the Horse Mountain and Agua Fria ACECs and Taylor Canyon, Iron Mine Ridge, and Walnut Canyon SMAs would continue to provide protection of special-status raptor nesting and wintering habitat and habitat for dwindling mule deer populations by excluding surface-disturbing activities associated with road construction, mineral extraction, and development of utility corridors. These surface-disturbing activities could increase the potential for erosion or the loss or degradation of wildlife and riparian habitats that support special status species. Rights-of-way and leases would be restricted in both the Ladron Mountain ACEC and Pelona Mountain SMA. Impacts on individual species, to the extent possible, will be discussed in detail in the Biological Assessment associated with U.S. Fish and Wildlife Service (USFWS) Section 7 consultation for this document.

Exclusion of domestic sheep and goats from the Horse Mountain ACEC and Pelona Mountain SMA would have direct and indirect effects on elk and mule deer habitat and similar effects on desert bighorn sheep habitat in the Ladron Mountain ACEC by decreasing the potential for disease transmission to wildlife species from domesticated animals. The potential for loss of habitat through the establishment of

invasive or exotic species as a result of soil compaction from trampling by sheep and goats also would be decreased. Soil compaction, which can lead to decreased water infiltration, and exposed soils from overgrazing can affect the productivity and resilience of vegetation, which in turn could cause the loss of special status, rare, or endemic plant species. The grazing exclusions would further allow vegetative succession to proceed under more natural conditions, vegetation would maintain greater diversity, and the potential for water runoff and erosion would be reduced. The Box SMA management prescriptions would provide further protections to bat habitats; protection for bighorn sheep also would be incorporated into the SMA.

The Sawtooth, San Pedro, and Ladron Mountain ACECs and the Soaptree, Taylor Canyon, and Iron Mine Ridge SMAs currently protect several currently or formerly designated special status, rare, or endemic plant species and special status wildlife and their habitats. The management programs for these specially designated areas would include right-of-way exclusions, mineral leasing stipulations, and road closures, as well as requirements for site-specific permitting prior to ground disturbance. These restrictions would allow retention of large, contiguous areas on BLM-managed surface land, which would limit potential edge effects on wildlife and minimize habitat fragmentation. Additionally, completion and implementation of the current habitat and other related management plans, as well as implementation of right-of-way exclusion and avoidance areas, road closures, fluid mineral leasing stipulations, woodcutting exclusions, and bighorn sheep reintroduction activities associated with the various special designations, would protect existing habitat and/or increase the availability of habitat within the special designations. Special designations for cultural resources also would restrict land disturbance and thus indirectly minimize loss or degradation of wildlife habitat.

Under Alternative A, land under VRM Class I and II (a total of 416,124 acres of BLM-managed surface land) would be managed to minimize change to the existing character of the landscape, which may support and enhance existing habitat. VRM designation of Class I or II would not preclude proactive habitat management or enhancement. The potential for increased land use intensity under Class IV (774,170 acres) could allow actions that increase susceptibility to habitat degradation, fragmentation, and edge effects from the potential increase in human activity. However, all proposed activities would be subject to NEPA analysis on a site-specific basis, and impacts on wildlife and special status species within the specific sites would be minimized and mitigated through the NEPA process.

Construction within rights-of-way or as a result of other land use authorizations could cause habitat fragmentation, loss or degradation of wildlife habitat, or edge effects in areas that support local and regionally important wildlife travel corridors. Habitats within right-of-way exclusion and avoidance areas would be protected from these effects. Under Alternative A, 39,148 acres of BLM-managed surface land would be managed as right-of-way exclusion areas. These areas, composed mainly of desert scrub, grassland, and mountain coniferous forest habitats, support a diversity of wildlife species. A total of 458,996 acres would be managed as right-of-way avoidance areas; they are located mainly within Chihuahuan Desert scrub, Chihuahuan Desert grassland, juniper savanna, mountain coniferous and mixed woodlands, and plains-mesa grassland and sand scrub habitats that provide habitat for a diversity of wildlife species including raptor and several special status species. Under Alternative A, plains-mesa grassland, including those that contain the soaptree yucca ecosystem, and Chihuahuan Desert grassland habitats that support aplomado falcon, bald eagle, elk, and mule deer would receive the most protection.

Land disposal also could result in habitat fragmentation, loss or degradation of habitat, or edge effects. The likelihood of these effects would increase if disposed parcels are located near developing areas and development occurs on the site. However, the criteria used to determine disposal of land would be based on an overall goal to consolidate land within special designations to maintain wildlife corridors and core habitat areas. Up to 40,920 acres of nonpublic land within and adjacent to special designations would be pursued for acquisition as the opportunity allows to consolidate areas for the best management potential.

This would minimize the potential for habitat fragmentation or disturbance of local or regionally important wildlife travel corridors and maintain the quality of game and nongame wildlife and special status species habitat within those areas.

The effects of harvesting of plant materials on public land would include loss or degradation of habitat for a diversity of wildlife species where woodcutting is allowed, and potential for increased water runoff, erosion, and damage to soil structure in areas lacking vegetative cover. Exclusion of woodcutting would reduce these surface-disturbing activities and associated effects on wildlife habitat or special status species. However, reduction of fuels also may have the effect of enhancing wildlife habitat and reducing the potential for wildfire.

Under Alternative A, much of the areas that are available for mineral extraction are located within Chihuahuan desert scrub, desert and montane grasslands, and coniferous forests that support many different wildlife or special status species, including game and nongame species that have extensive ranges. Surface-disturbing activities associated with mineral exploration and extraction could lead to an increase in land use intensity in some areas that could result in loss of wildlife and their habitats; habitat fragmentation or edge effects in wildlife habitats near new extraction areas; and potential disruption of local wildlife movement corridors. The RFD estimates a relatively small amount of disturbance from oil and gas development (about 1,000 acres throughout the entire Planning Area) and well spacing of 320 acres is anticipated for any carbon dioxide and helium development. Implementation of additional fluid mineral leasing stipulations on 736,000 acres could mitigate potential impacts, or additional mitigation would be identified on a site-specific basis in accordance with NEPA and the Endangered Species Act. Habitat within areas that are closed to fluid mineral leasing (1,418,415 acres of mineral estate) or withdrawn from mineral entry (up to 12,916 acres of BLM-managed surface land) would be protected from these impacts.

Direct effects on habitat from livestock grazing would include land disturbance such as trampling and construction of rangeland improvements that can cause habitat fragmentation and limit or eliminate use of areas by wildlife (see Section 4.3.6). Improperly managed grazing could increase the potential for the establishment of invasive exotic species and subsequently cause loss of rare, endemic, or listed plant species, although management in accordance with the New Mexico Standards and Guidelines would be expected to avoid or mitigate these effects (see Section 4.2). Grazing by domestic sheep and goats in desert bighorn sheep and other wildlife habitats could also occur in this alternative and could lead to degradation of vegetation and forage for wildlife by causing increased potential for erosion and establishment of invasive plants and noxious weeds as well as increased potential for disease transmission from domesticated animals, except in existing special designations that exclude goats and sheep.

Recreational use could result in chronic or short-term disturbance of wildlife or special status species habitats, human disturbance of wildlife or special status species, including desert bighorn sheep, and increased edge effects (e.g., noise, lighting, dust, erosion, and sedimentation) as defined in Section 4.2. The potential for impacts would be higher within the 24,361 acres of special designations to be managed for recreational use, especially if those designations result in increased or concentrated recreational use in those areas. The Walnut Canyon SMA contains habitat that supports golden eagles, prairie falcons, and great horned owls, and management includes activities that specifically protect raptor nesting and wintering habitat. The Box SMA management activities also specifically protect bighorn sheep and bat habitat as compatible with recreational uses. However, the presence of humans would inhibit bighorn sheep use where recreational activities are frequent or intense. Several bat species are likely to use this habitat; however, these species are not likely to be affected by recreational use since they are nocturnal foragers and their roost sites typically are not easily accessible to recreational users. The San Lorenzo Canyon SMA would continue to be managed to protect wildlife habitat.

A substantial amount of land would remain open to cross-country travel within plains-mesa sand scrub and juniper savanna habitats that support raptor species and both game and nongame wildlife species. Activities allowed under this alternative could increase access to habitat areas or special status species habitats, and cause increased potential for loss or degradation of wildlife habitats, habitat fragmentation, associated edge effects, and increased potential for the illegal harvest of both game and nongame wildlife species. The approximately 29,117 acres that would be closed to OHV use are composed largely of scrub, grassland, and coniferous forest habitats that support diverse wildlife, including special status species; these areas would be protected from the effects of OHV use. Road construction or maintenance could alter and/or fragment habitats, and potentially disrupt wildlife movement corridors. Best management practices that have been established for this RMP (Appendix C) would be adhered to for all activities related to OHV use.

4.3.8 Wildland Fire Ecology and Management

Treatment of up to 244,170 acres (16 percent) of BLM-managed surface land to improve ecological conditions could improve FRCC by altering the structure of vegetation communities to better resemble their historic ranges. Woody species encroachment into historic grasslands would be reduced, allowing for establishment of grasses and forbs. Forests that have become dense from a century of fire suppression also would benefit from treatments by reducing the amount of vertical fuels that create a high risk of stand replacing fires. Fire suppression activities by BLM staff would be less hazardous if the FRCC were improved.

Surface-disturbing hazardous fuels reductions and fireline construction likely would be limited within special designations (a total of 238,936 acres of BLM-managed surface land). In areas with cultural resources, a resource advisor would be required during suppression activities within these areas to ensure protection of cultural resources. Fuels treatments may be focused around the perimeters of these areas in order to prevent mortality of special status plants resulting from wildfire spread. The southern extent of the Agua Fria ACEC is less than 2 miles away from a wildland-urban interface area to the south, which presents a potential impact on fire managers. Hazardous-fuel reduction opportunities would be limited north of the urban area because woodcutting is not allowed within the ACEC, and fires that originate in the ACEC and spread south may not be pursued as aggressively due to concerns about surface disturbance within the ACEC.

A large wildland-urban interface area also exists immediately north of the Horse Mountain ACEC. The Horse Mountain area is designated as a Category D-fire use emphasis area (BLM 2004c). However, the presence of a large developed area to the north and the consequent heightened public safety concerns may require reevaluation of the Horse Mountain Fire Management Unit designation. The proximity of the Fire Management Unit to the wildland-urban interface area presents limited opportunities for aggressive suppression tactics in case a fire-use activity was to get out of control. Opportunities for hazardous-fuel reductions, generally necessary adjacent to wildland-urban interface areas, would be limited due to the Horse Mountain ACEC's Category D designation, as well as the potential presence of habitat for two federally listed threatened and endangered species within the ACEC. A similar relationship would exist under this alternative between the Ladron Mountain ACEC and the Riley community.

Hazardous fuels treatments that result in a discernible change in color, line, form, and texture to the landscape would be prohibited or greatly restricted on 416,124 acres of BLM-managed surface land as a result of the VRM Class I and II designations.

Linear utilities (e.g., high tension power lines, gas pipelines, etc.) present safety hazards during fire suppression operations. The continued management of right-of-way exclusion areas (39,148 acres of

public land) and avoidance areas (458,996 acres of BLM-managed surface land) would minimize or eliminate those dangers in those areas.

Land disposal could increase areas of wildland-urban interface, and thereby increase areas of priority where fire must by aggressively suppressed if structures and human development were constructed on the parcel(s). Disposal would have less of an impact if parcels are very isolated from development. If public land is consolidated through acquisitions, more contiguous blocks of public land could increase the efficiency of fire and fuels management as fewer landowners would be involved in suppression and fuels management activities.

Harvesting of vegetative products such as firewood, fence posts, Christmas trees, and wildings by public and commercial entities would reduce fuel loads. These products are often derived from younger trees, or downed material in the case of firewood. However, woodcutting would be prohibited in special designations totaling 171,274 acres (11 percent) of BLM-managed surface land. In areas where woodcutting activities are restricted, fire staff may need to increase hazardous fuels reductions where stand density increases.

Fire suppression activities would be limited within the Continental Divide National Scenic Trail SMA (7,680 acres). Fuels treatments that alter the appearance of the landscape likely would be limited in the SMA due to its visual sensitivity. The impact would be minimal due to the relatively small size of the area. Other fire management tools, such as wildland fire use and prescribed fire, would still be available to managers.

Ignitions have been caused on public land by OHV use, where fine fuels were ignited by sparks or heat from exhaust manifolds. There are also risks of human-caused ignition as a result of campfires or cigarettes. Under Alternative A, the probability of human-caused fire ignition would be reduced on 29,117 acres of BLM-managed surface land that are closed to OHV use. Conversely, areas open to cross-country OHV use (851,234 acres of BLM-managed surface land) would continue to be associated with an increased risk of ignition.

4.3.9 Cultural Resources

Management of cultural resources is usually a nondisturbing activity that involves inventory, site monitoring, and occasionally placement of site protection signs. Some cultural resource management activities, such as installation of protective fencing to exclude livestock or motorized vehicles, research involving excavation, and development of interpretive projects or facilities, such as signs, kiosks, and public events, could directly affect cultural resources, as well as other resources. Such projects rarely involve disturbance of more than 1 acre in any given year. When these kinds of projects are proposed, they will be analyzed through the NEPA and Section 106 processes in consultation with the State Historic Preservation Officer and affiliated tribes, as appropriate.

Under Alternative A, approximately 238,936 acres (15 percent) of BLM-managed surface land within special designations would be managed to protect or enhance natural and cultural resources. Because those special designations tend to limit or carefully manage ground-disturbing activities they also provide some coincidental, indirect protection of cultural resources.

Alternative A does not address use of cultural resources for heritage tourism, but Fort Craig, the Camino Real, and the Datil Well (Magdalena Stock Driveway) campground have been developed for public interpretation, and those efforts would continue under Alternative A.

Activities and projects associated with the management of natural resources include range improvements, erosion control structures, habitat improvement projects (such as wildlife water catchments), and vegetation treatments, which may include prescribed fire, herbicide applications, or mechanical removal. When the proposed projects have the potential to affect cultural resources, they are evaluated on a case-by-case basis so that potential negative effects on cultural resources can be avoided, reduced, or mitigated. Some resource management projects can help protect cultural resources by reducing erosion, reducing heavy fuel loads, or improving livestock distribution. Effects from these land management activities would be similar across all alternatives.

Uses of public land include mineral exploration and extraction, livestock grazing, granting of rights-of-way, recreation, and research projects. When these uses require Federal authorization they are reviewed to ensure that potential effects on cultural resources are considered. Many uses, including issuance of rights-of-way, livestock facilities, and mineral development, have secondary, indirect effects because they create new vehicle access, which often leads to inadvertent damage and vandalism of fragile cultural resources. By altering the local environment, these developments also can degrade the integrity of some types of nearby cultural resources if their settings or sense of feeling are important aspects of their historical values.

Activities that are not subject to the permitting process, such as dispersed recreation and cross-country OHV use, also have the potential to disturb cultural resources. Alternative A provides the least protection for cultural resources from these uses because it would impose the least restrictions on development and OHV use (851,234 acres or almost 57 percent of the BLM-managed surface land in the Planning Area would remain open to cross-country travel).

Alternative A does not address changes in uses that have occurred since the 1989 RMP, such as the increase in motorized recreation, nor does it incorporate resource data that have been collected since 1989. Negative effects on cultural resources resulting from development on adjacent nonpublic land, such as subdivisions, can be expected under all alternatives. Under Alternative A, public education and awareness efforts, which do not require a plan decision, would be one way of addressing these concerns.

4.3.10 Paleontological Resources

Management to protect natural resources within special designations through minimizing surface disturbance would decrease the potential for increased erosion that could potentially expose paleontological resources to discovery or loss. The following special designations include geologic formations with the potential for paleontological resources varying in significance, abundance, and predictable quality (by total acreage of potential paleontological resources; see Appendix M for locations).

- Agua Fria ACEC (6,095 acres)
- Horse Mountain ACEC (162 acres)
- Ladron Mountain ACEC (overlaps with Sierra Ladrones WSA) (19,551 acres including locations of known paleontological resources)
- San Pedro ACEC (915 acres)
- Sawtooth ACEC (125 acres)
- Fence Lake SMA (11,977 acres including highly fossiliferous geologic units)
- Tinajas ACEC (2,930 acres)

- Zuni Salt Lake SMA (1,608 acres)
- Cerro Pomo SMA (5,330 acres including important known paleontological resources)

Outside of special designations, the impacts discussed under Impacts from Actions Common to All Alternatives (Section 4.2) would apply.

OHV use in areas designated as open to cross-country travel would cause surface disturbance that could result in damage or loss of paleontological resources. Under Alternative A, 851,234 acres of BLM-managed surface land would be designated as open. The degree of impact would depend on the location and frequency of OHV use.

4.3.11 Visual Resources

Under Alternative A, management to stabilize soils and maintain or enhance natural vegetation would enhance scenic values associated with natural landscapes or sensitive viewers throughout the Planning Area. Large-scale management actions, such as a prescribed burn, could alter the natural landscape temporarily, until the area recovered and revegetated. Management within special designations (238,936 acres of BLM-managed surface land) would limit disturbances in those areas that could alter the natural landscape or impair experiences of sensitive viewers. Generally, management to protect or interpret cultural resources also would support the preservation of natural landscapes and maintain areas of visual interest. In addition, BLM-managed surface land would be managed in accordance with VRM objectives as identified in Table 4-1.

Under Alternative A, approximately 1,008,753 acres of BLM-managed surface land would be relatively open for BLM to authorize development of power lines, pipelines, roads, or other facilities. If construction activities occur as the result of those authorizations, scenic quality could be directly impacted by loss of vegetation and/or addition of elements within the landscape in those areas. Activities within rights-of-way granted near population centers and/or special designations could impact sensitive viewers in those locations. Visual impacts from installation of new aboveground linear facilities that could be seen from a distance (e.g., power lines) could be mitigated if facilities are sited adjacent to each other or in proximity to similar facilities. Site- and project-specific evaluations prior to development activities would identify appropriate mitigation measures. Management within right-of-way exclusion and avoidance areas would avoid or reduce these visual impacts on a total of approximately 498,144 acres of BLM-managed surface land.

Acquisitions that consolidate public land ownership within special designations would enhance management's ability to preserve their high scenic quality. The disposal of public land in the future (of up to 86,458 acres) could affect viewsheds if disposed land are developed; site-specific impacts and mitigation would be identified during additional NEPA analysis when a disposal is proposed.

Mineral development could impact visual resources by disturbing natural landscapes that can be seen by sensitive viewers from residential and recreational areas and roadways throughout the Planning Area. Exploration and development would remove vegetation, modify landforms, and add structural elements to the landscape. Ground-disturbing activities associated with construction and operation of facilities would generate fugitive dust, increase traffic on access roads, and potentially use nighttime lighting. Distant views from VRM Class I areas are vulnerable to visual impacts where mineral development occurs in proximity to Class I areas.

Fluid mineral leasing stipulations to mitigate the impacts of surface-disturbing activities on wildlife, vegetation, and cultural or other resources generally would reduce potential change to the landscape by controlling or restricting surface disturbance. In addition, implementation of best management practices

would mitigate impacts on sensitive viewers (see Appendix C). Site- and project-specific evaluations prior to exploration and development activities would identify appropriate mitigation measures.

Closure of about 1,418,415 acres of mineral estate to fluid mineral leasing would result in avoidance of these effects in those areas. Withdrawing areas from mineral entry (up to 12,916 acres of BLM-managed surface land) would open the possibility of reclaiming past mineral development land, which would restore the natural landscape; reduce the contrasts of form, line, color, and texture within the landscape; and improve scenic quality.

Nonmotorized recreational uses (e.g., camping, hiking, bird-watching) generally would have no impacts on scenic quality or sensitive viewers, with the exception of development of staging/camping areas and visitor facilities (parking areas, signs) to support this type of recreation. Localized, direct impacts on visual resources through land clearance and the addition of structures could occur. As with other activities requiring Federal authorization, potential impacts would be mitigated in compliance with NEPA and VRM objectives.

Motorized recreation, where authorized, would disturb natural vegetation and generate dust, affecting sensitive viewers. Areas that are open to cross-country travel (on 851,234 acres of BLM-managed surface land) allow unimpeded proliferation of travel routes, which increases vulnerability to vegetation loss, soil compaction, and soil erosion. Sensitive viewers would be most impacted where open areas are adjacent to special designations (i.e., Rio Salado, Riley, Fence Lake, and Puertecito SMAs, and the Ladron and Horse Mountain ACECs) or populated areas. Commercial and motorized events could alter the natural landscape by increasing litter on public land, disturbing vegetation and soils, and reducing visibility with fugitive dust and vehicle emissions.

Under Alternative A, The Box SMA would remain a VRM Class IV area, allowing for intense recreational use (as well as other uses that could modify the natural landscape). A stated objective for designating The Box is to protect scenic resources; however, VRM Class IV would not necessarily support the protection of scenic values within the natural landscape of this area.

4.3.12 Cave and Karst Resources

Management to protect natural and cultural resources also would protect caves and karst areas on land within BLM's Decision Area. Caves and karst resources would be protected by management decisions to protect bats and other cave-dwelling species and their habitats. Karst terrain could be protected by management decisions to prevent runoff of silt- or debris-laden water, or prevent polluted water from contaminating groundwater. Caves could be protected by management decisions to protect soil and vegetation to reduce potential for erosion that might affect geologic features or water movement in caves. Management of cultural resources could result in protection of caves as cultural sites, if evidence indicates historic or prehistoric inhabitation.

Development of mineral resources could damage caves or degrade karst features and drainage systems if lease stipulations or permit restrictions are not in place to protect those resources. However, it is expected that additional NEPA analysis related to future proposed activities would identify appropriate, site-specific mitigation measures.

4.3.13 Wilderness Characteristics

WSAs would be managed to maintain their suitability for preservation as wilderness (in accordance with the Interim Management Policy; refer to Section 4.2). Management of natural and cultural resources could have temporary or short-term impacts on the wilderness characteristics of an area where it becomes

necessary to introduce vehicles, people, and noise to conduct treatments (e.g., treatments to eradicate invasive species). However, because BLM must comply with the nonimpairment standard, such management would ensure that treatments would cause no long-term impacts on the naturalness of wilderness areas, and no long-term loss of opportunity to experience solitude and primitive, unconfined recreation in those areas.

Motorized travel would be allowed within WSAs on routes and ways that were in existence before the WSA was designated, with the exception of routes that were closed by the 1989 RMP. The presence of vehicles, people, and noise has potential to impact the natural quality of those areas, and diminish solitude or the primitive recreation experience. The intensity of impact would vary with the amount and duration of OHV use within a particular area. Impacts would be avoided on portions of the Continental Divide, Presilla, and Sierra Ladrones WSAs, which are closed to OHV travel. The Devil's Reach WSA would be open to vehicle travel; however, consistent with the nonimpairment standard, travel would be limited to existing routes. Should any of these WSAs be released from wilderness review, in most areas protection would be provided by overlapping special designations. A summary of how these areas would be managed is provided in Table 2-3.

4.3.14 Lands and Realty

Management of land and realty has potential to support or prevent new land uses, and affect existing land uses. Under Alternative A, right-of-way and other land use authorizations would continue to be allowed to support local and regional utility and infrastructure needs on about 1,008,753 acres of BLM-managed surface land; 458,996 acres would be managed within right-of-way avoidance areas where land use authorizations would be permitted within limited dimensions to protect resources. The introduction of utilities to an undeveloped area or increased access to an area could result in changes to the uses in that area, by contributing to more intense or less primitive recreational use. All proposed utility or infrastructure projects would require additional authorization by BLM, and therefore would be subject to additional, site-specific NEPA analysis to identify impacts and appropriate mitigation.

Under Alternative A, approximately 86,458 acres of remote BLM-managed surface land located within or adjacent to developing rural communities would be designated for disposal, and would not be expected to impact existing and planned land uses within the resource area. If a disposal is proposed, additional NEPA analysis would evaluate the potential effects on land uses that would be relevant to the specific parcel and circumstances. Overall, disposal of isolated parcels would allow BLM to focus its resources on managing larger, contiguous tracts of land.

Management of visual resources likely would not prohibit some land uses in Class I or II areas (416,124 acres), although mitigation for future proposed projects could be applied on a site-specific basis to promote compliance with the visual resource management objectives. Management under VRM classes is not expected to affect land use or the realty program.

About 4.5 million acres of Federal mineral estate would be open to fluid mineral leasing (with or without stipulations), but under the RFD scenario, it is anticipated that less than about 1,000 acres for oil and gas would be leased, and one 50,000-acre carbon dioxide/helium field could be developed with 320-acre well spacing. Because of the small percentage of BLM's Decision Area that could be affected and the expected well spacing, minimal changes to overall land use patterns in the Planning Area would result from fluid mineral leasing decisions. Less than half of 1 percent of the Planning Area (about 31,640 acres) would be available for coal leasing, most in northwestern Catron County. Clustering of coal lease areas in this high potential area could discourage other land uses. The RFD scenario for mineral materials estimates that saleable mineral uses would disturb five 10-acre sites, and land uses likely would be displaced in those

areas. Mandatory, site-specific NEPA analysis would be required for any mineral development project, and would identify potential impacts on land uses and appropriate mitigation measures.

OHV use could have direct and indirect effects on land uses. Alternative A limits OHV travel to existing or designated roads and trails (year-round or seasonally) on 565,159 acres. Vehicle-generated dust and noise could indirectly impact land uses along those routes, but there would likely be no direct impacts. OHV use on 851,234 acres open to cross-country travel could disturb the natural environment, directly affecting some land uses; noise and dust could indirectly affect nearby land uses. Impacts would be greatest in areas of concentrated OHV use, and the severity of impacts would depend on site conditions and circumstances (e.g., vehicle type, existing vegetation, soil, weather, etc.). Closure of 29,117 acres to OHV use would continue to prevent vehicle-related disturbance to existing land uses in those areas.

4.3.15 Forestry and Woodland Management

Tillage practices that reduce the cover of piñon-pine and juniper trees would alter the composition of the plant community by mimicking the disturbance that has historically been created by fire events. As a result, tillage in these areas would promote restoration of historic woodland structure. Indirect effects would include reduced potential for wildfire ignition and spread in grasslands and shrub habitats, leading to a lower likelihood of wildfire spreading into forests and causing tree mortality or injury.

Treatment of up to 244,170 acres (16 percent) of BLM-managed surface land to improve ecological conditions could benefit forest health directly where key ecological processes such as fire were reintroduced. Reintroduction of fire in some forest types such as Ponderosa pine forests would increase resiliency and reduce the likelihood of stand-replacing crown fires.

Forest harvest, including woodcutting and other surface-disturbing activities, would continue to be limited within some special designations to protect special status plants, wildlife habitat, and cultural resources. In areas where fire exclusion has altered the structure of forests and woodlands, woodcutting represents one way that forest and woodland structure can be restored; use of this tool to restore the structure of these areas within special designations to within their historic ranges of variability would be lost. Other methods of restoration (e.g., wildland fire use, prescribed fire) may still be acceptable. Specifically, the reduction of hazardous fuels through wildfire use in Horse Mountain ACEC, Ladron Mountain ACEC, and Pelona Mountain SMA would help maintain forest structure, reduce the potential for hazardous, stand-replacing fires, and improve forest health over the long-term. However, management of Ladron Mountain ACEC would limit fire suppression activities. Among special designations to protect cultural resources, only the Rio Salado and Riley SMAs have potential for forest and woodland resources.

Harvest of timber and other forest products that alter the color, line, and texture of the landscape would be limited in the Ladron Mountain ACEC because the area is designated as VRM Class I. Large-scale commercial timber harvest in the region of Pelona Mountain SMA would be prohibited due to its VRM Class II designation. Small-scale harvest of firewood, or other forest products may still be appropriate, if the resulting landscape does not attract attention of the casual observer.

Of the 498,784 forest and woodland acres on BLM-managed surface land (including juniper savannah), 177,810 acres would be designated as right-of-way exclusion and avoidance areas. The Sawtooth, San Pedro, Horse Mountain, and Ladron Mountain ACECs, and the Pelona Mountain and Taylor Canyon SMAs have forested areas where right-of-way and other land use authorizations would be excluded or avoided. This would have indirect impacts on forest health, as surface disturbance associated with road construction and utility corridors that could increase erosion potential would be limited in these areas Land disposal and acquisition that results in more contiguous areas of BLM-managed surface land would allow for consistent forest and woodland management practices throughout large blocks of public land.

Activities associated with mineral exploration and development would include surface-disturbing activities that may occur in forests and woodlands throughout the Planning Area such as removal of trees to make room for infrastructure. Mitigation for these impacts may be identified as the result of site-specific NEPA analysis when a project is proposed. The maximum potential area of disturbance from these activities, according to the RFD, is small relative to the size of BLM's Decision Area. For example, two small (500-acre) oil and gas fields and up to 18,000 acres of coal development could occur in woodland areas.

An improvement in rangeland conditions could help achieve an improvement in FRCC where consumption of herbaceous species by livestock were reduced enough to allow a build up of fine fuels capable of carrying wildfire through a forest, or woodland. Where FRCC is at or near 1, maintenance or improvement of rangeland conditions could help maintain historic fire regimes. Where FRCC was restored, fire return intervals would more resemble the historic fire regime, making forests more resilient when disturbances from wildfire occur and decreasing safety hazards during suppression operations due to the reduced likelihood of stand-replacing fires.

Exclusion of domestic sheep and goats from the Horse Mountain and Ladron Mountain ACECs and the Pelona Mountain SMA would allow forest succession to proceed under more natural conditions by reducing grazing pressure on native herbaceous plant species. Heavy livestock grazing pressures in forest vegetation types can alter forest structure by favoring shade-tolerant trees in the canopy understory and reducing herbaceous understory. The elimination of domestic sheep and goats from the Horse Mountain and Ladron Mountain ACECs would promote the maintenance of historic forest structure by removing those species of herbivores that have been introduced by man in the last century.

Impacts from commercial and personal woodcutting activities would depend on the types of trees that were cut. Harvest of old growth and late seral (i.e., generally more than 100 years old depending on forest type) timber would alter the structure of the forest and reduce the genetic material from which new cohorts of trees could be propagated. An alteration of forest structure from the harvest of old growth and late seral timber could change the FRCC of the forest. Harvest of late-seral trees would be done on a case-by-case basis. The selective harvest of some late seral forest species may be necessary for the purpose of forest health and possible salvage harvest of fire killed timber. The use of uneven-aged silviculture regeneration systems would be the most appropriate to manage all size classes of forest species.

Harvest of young, early seral trees (1 to 10 inches diameter breast height, depending on forest type) within forested areas could lead to improving or maintaining FRCC. Woodcutting activities could reduce fuel loadings in areas where historic suppression activities have resulted in increased surface fuels to beyond historic ranges, leading to an improved FRCC. In addition, a reduction in tree density and ladder fuels resulting from woodcutting would reduce the potential for large canopy fires that might endanger lives and private property.

Harvesting of vegetative products such as firewood, fence posts, Christmas trees, and wildings on 6,500 acres (less than 1 percent of BLM-managed surface land) would continue to reduce young cohorts of trees that historically have been reduced through ecological processes such as wildfire. The thinning of certain forest types (e.g., Ponderosa pine, Douglas fir) would decrease the potential of stand-replacing fires by reducing fuel loads. Thinning activities by the public would improve forest health by increasing the resiliency of forests to pests and disease. However, harvest of timber and forest products, including woodcutting, would not occur on 171,274 acres within special designations.

Forest and woodland areas managed for recreational uses would include the Continental Divide National Scenic Trail SMA (7,680 acres of BLM-managed surface land) and Datil Well SMA (669 acres of BLM-managed surface land). Woodcutting would be prohibited in these areas. Because this represents less than

1 percent of BLM-managed surface land and less than 5 percent of the forest and woodland areas on BLM-managed surface land, only negligible impacts on forest and woodlands would be anticipated as a result of managing these areas for recreational uses.

4.3.16 Rangeland Management

Improving the ecological condition of an area (i.e., reestablishing watershed health or making progress toward proper functioning condition) through water-control measures (such as erosion control structures like spreader dams or retention structures), vegetation treatments, or rehabilitation of identified sites could reduce or exclude grazing uses within the affected sites over the short term, during post-treatment rest or deferment periods. In the short-term, these types of controls and treatments also could reduce the amount of overall available forage within an allotment or pasture by decreasing its vigor, abundance, and ability to reproduce, thereby limiting the capacity of residual perennial communities to reestablish. Construction of water-control measures would result in localized forage losses near the construction site, but the site stabilization provided by these structures would improve the vigor and production of vegetation in the area. A chemical or burn vegetation treatment would cause a short-term loss of forage but ultimately would enhance the vegetation community by eliminating the target species and decreasing the competition for water. In addition, maintaining or improving riparian plant communities for proper functioning condition would reduce the potential for localized increases in livestock stocking rates and limit prospective rangeland improvements related to livestock grazing.

Management to reestablish the structural and functional components of degraded sites could increase the overall production of desirable forage on a site and its ability to resist less desirable invasive species (BLM 2000a; Finch et al. 1999; Young and Evans 1978). Similarly, rehabilitation or treatment projects that restore structural or functional components to sites could increase the resistance or resilience of vegetation to disturbances, such as grazing and fire (Peters and Bunting 1992; Laycock and Conrad 1981). If management increases the ability of a site to resist disturbances or naturally reestablish after a disturbance, the amount of time that livestock grazing would be reduced (due to rest or deferment) could be decreased over the long term.

Several management actions to protect wildlife would directly affect the ability of BLM to authorize grazing. Under Alternative A, livestock grazing would be excluded on former allotment 1152 within the Ladron Mountain ACEC. In addition, the Ladron Mountain and Horse Mountain ACECs and Pelona Mountain SMA exclude grazing by domestic sheep and goats on approximately 135,523 acres. Based on the absence of sheep and goat operations within BLM's Decision Area and the small share of BLM-managed surface land that would be affected, the impacts of these restrictions on livestock grazing at the landscape level would be marginal.

Under Alternative A, management to protect cultural resources would require the exclusion of livestock in the Playa Pueblos and Fort Craig SMAs, and in portions of the Teypama and Mogollon SMAs (a total of 381 acres). While these are long-term impacts, they are site-specific and would have only a localized effect on a small portion of BLM-managed surface land; therefore, this alternative would have a limited overall impact on the availability of public land for livestock grazing.

Construction that would result from right-of-way grants and land use authorizations could create noise disturbances for livestock, limit the area available for livestock distribution, and reduce available forage near project sites. However, the development of access and maintenance roads associated with right-of-way and other land use authorizations could indirectly affect rangeland management by providing better access to allotments and range projects (water sites, fences, corrals, etc.) and could be used by permittees to guide or retrieve livestock.

Any land acquired by BLM likely would be part of an existing ranch or grazing allotment. If land were acquired that is not part of an allotment and BLM intended to authorize grazing, potential effects would be evaluated as part of the site-specific analysis. Disposal of BLM-managed surface land could directly affect grazing if all or part of an existing allotment is transferred to another owner that removes the grazing use. However, since grazing occurs on a large amount of acreage within the Planning Area, the disposal area would have to be very large to change grazing patterns substantially in a particular area.

Available forage for grazing might be affected by woodlands harvesting or vegetation sales. Harvesting crews, machinery, and transports associated with permitted commercial or private harvesting of forest and woodland systems within active grazing allotments likely would have direct, short-term impacts on livestock grazing by displacing or disturbing livestock, increasing the potential for vehicle/animal collisions, and reducing available forage through trampling. However, post-harvest conditions would result in short-term indirect impacts by opening the canopy, which could then support a greater abundance of available forage in the form of early seral grasses and forbs. Impacts related to vegetation material sales within grazing allotments would have similar short-term impacts. However, these sales also would potentially reduce the vigor, abundance, and ability of individuals to reproduce, thereby, limiting the capacity of residual perennial communities to reestablish for future forage production.

The RFD estimates that a total of up to 19,000 acres could be disturbed for oil, natural gas, or coal production over the life of the plan. In these areas, mineral development could compete with livestock grazing for access to available public land. When these resource uses overlap, construction, maintenance, and other activities associated with mineral development could disturb livestock with noise, increase the potential for vehicle/animal collisions, and reduce the availability of forage (if surface-disturbing activities occur). The NEPA analysis that would occur prior to any mineral development activities would identify site-specific impacts and mitigation measures. The RFD also calls for a well field to be developed for carbon dioxide and helium production, totaling 50,000 acres. The well spacing would be 320 acres, which limits the possibility that such a use would compete with livestock grazing. Similar to other types of mineral development, site-specific analysis would occur and mitigation would be identified.

Livestock could be disturbed by recreational activity, and trampling or soil compaction could reduce available forage. Most of the impacts from dispersed recreation would be site-specific and temporary. OHV use in grazing allotments would disturb livestock and reduce available forage through trampling or soil compaction. Regular OHV use in an area could result in a change in grazing habits or animal-vehicle collisions. OHV use also could introduce invasive species and noxious weeds (see Section 4.3.6), and accidentally ignite wildfires. The avoidance of these impacts from OHV use in closed areas (on 29,117 acres) would increase the amount of residual perennial vegetation, and improve overall vegetation conditions, which would likely result in increased forage availability. Closed OHV designations would not preclude permitted access for grazing purposes if such access is determined necessary by the Authorized Officer.

4.3.17 Minerals

Under Alternative A, fluid mineral leasing stipulations would continue to be applied to reduce potential impacts on natural and cultural resources from mineral development activities. Fluid mineral leasing stipulations that control surface use and limit surface occupancy could increase the cost and difficulty of exploration and development of fluid mineral resources to a point where these activities become economically infeasible. A no-surface-occupancy lease stipulation could double the drilling costs when exploration drilling has to be conducted from adjacent land using complex directional drilling methods (Society of Petroleum Engineers 1999).

Extensive application of a no-surface-occupancy stipulation in one area could affect the ability to target a fluid mineral resource using directional drilling technology if the distance from the mineral source is too great, rendering this extraction method infeasible and effectively closing the area to fluid mineral extraction. Factors influencing when this situation might occur include the depth to the resource being extracted and rock types, as some rocks may be more difficult to drill. As a general estimate, the application of a no-surface-occupancy stipulation over an area of at least 1 square mile could eliminate the possibility of directional drilling and constitute a de facto closure to those minerals. However, a site-specific analysis would be needed to determine the actual distance for a particular extraction project.

Under Alternative A, the areas closed to fluid mineral leasing would total 1,418,415 acres of Federal mineral estate. These areas overlap 646,901 acres of fluid mineral estate with moderate potential for oil and gas (or 16 percent of moderate potential areas in the Planning Area). No areas of high potential for oil and gas are closed under Alternative A; the remaining closed areas are of low potential for these resources. Closures of areas to fluid mineral leasing also would affect the ability to extract carbon dioxide and helium resources. The closed areas include 28,570 acres of high potential for these gases (or 9 percent of high potential areas in the Planning Area), and 489,964 acres of moderate potential (or 13 percent of moderate potential areas in the Planning Area).

The RFD for fluid minerals predicts that 1,000 acres would be required for development of oil and gas and 50,000 acres for carbon dioxide and helium over the next 15 years. There would be adequate Federal minerals available to accommodate this demand, since 3,312,904 acres of Federal mineral estate would be open under standard terms and conditions, and 736,000 acres of Federal mineral estate would be available with stipulations. These areas include 1,756,886 acres of Federal mineral estate that are of moderate potential for oil and gas resources (no areas of high potential for oil and gas are present in the study area).

Current mineral withdrawals (on 11,408 acres of public land) and saleable minerals management would be continued under Alternative A. BLM also would withdraw 1,508 acres of Federal mineral estate within the Tinajas ACEC and Harvey Plot SMA. The overall availability of salable mineral resources for extraction from public land would not be changed, as mineral material deposits are available in moderate-to-high potential areas throughout BLM-managed surface land.

Decisions about access and realty could indirectly encourage or restrict exploration and development of mineral resources. The development of a right-of-way may provide new access that could be used for exploration and development of mineral resources. Restrictions on access could limit the ability to pursue mineral development. Under Alternative A, the 29,117 acres closed to OHV and the 562,901 acres limited to designated routes could affect access for mineral development in some areas.

Acquisition of land with mineral resources suitable for development would have a direct impact on the availability of those minerals for development and could increase the potential for development. For example, if the BLM acquired land with a high potential to yield coal adjacent to public land and determined that the land is suitable for coal leasing (Figure I-1 in Appendix I; Section 13, Township 4 North, Range 17 West), the combined acreage could be more economically suitable for coal leasing. However, land acquired within special designations or with unique resource values likely would be managed with restrictions on mineral development and other surface-disturbing activities.

4.3.18 Recreation

Management to protect natural and cultural resources within 238,936 acres of special designations, and to protect cave, karst, and paleontological resources from surface-disturbing activities could result in localized impacts on recreational opportunities, including displacement if access into those areas were restricted and opportunities for motorized recreation were diminished on either a permanent or seasonal

basis. However, management within special designations would indirectly enhance and maintain opportunities for primitive types of recreation (e.g., sightseeing, hiking, backpacking, and opportunities for solitude). Areas designated as VRM Class I (about 30,343 acres of BLM-managed surface land) and VRM Class II (about 385,781 acres) also would limit surface-disturbing activities and support primarily primitive recreational opportunities. Areas designated as VRM Class III (about 299,741 acres) and VRM Class IV (774,170 acres) would allow for more developed recreational opportunities to continue.

Designation of right-of-way exclusion areas on 39,148 acres (about 2.6 percent of BLM-managed surface land) and right-of-way avoidance areas on 458,996 acres (over 30 percent of BLM-managed surface land) would not affect existing recreational opportunities in WSAs, ACECs, and SMAs. Right-of-way could be authorized on the remaining 66 percent of BLM-managed surface land following site-specific environmental analyses, which could provide additional access for motorized recreation in localized areas, particularly if a publicly accessible road were established as part of the right-of-way. Authorization of rights-of-way would not be expected to result in the loss of recreational opportunities throughout the Planning Area, though there could be some localized, temporary impacts (e.g., displacement during development of the right-of-way).

About 86,458 acres of BLM-managed surface land (or about 6 percent) would be identified as suitable for disposal under Alternative A. The dispersed recreational opportunities on this land would still be available on BLM-managed surface land and within the overall Planning Area even if all parcels were disposed. Recreation could be affected by disposals of BLM-managed surface land in areas that are immediately south of the Pelona SMA or on isolated parcels northeast and southwest of the Cibola National Forest, just south of Magdalena. Impacts could be experienced through loss of access from land adjacent to the SMA or National Forest or indirectly through restrictions on recreational uses in the SMA or National Forest to maintain compatibility with changing land uses on disposed land. Acquisitions of land could increase recreational opportunities, protect existing opportunities from incompatible adjacent land uses, and improve access to other recreational areas.

Impacts resulting from the development of leaseholds would be localized (due to the small amount of acreage expected to be disturbed in the RFD, described in Section 4.7.1, relative to the size of the entire Planning Area) and temporary, since drill pad sites would be restored upon completion of activities. Access roads would be developed to support fluid mineral leasing activities, which would increase motorized access and OHV uses. Based on the area where coal leasing could occur (up to 31,640 acres) and the RFD, which indicates that up to 18,000 acres could be disturbed for coal development, less than 1 percent of the Planning Area would be disturbed due to development of coal leases. Based on the RFD, a total of approximately 50 acres would be disturbed for saleable mineral uses, which over the entire Planning Area would not change the recreational opportunities available.

Mineral development and extraction could result in localized and direct impacts on recreational opportunities, including displacement of recreational opportunities and changes to the character of those areas resulting from loss of vegetation and increased activity and noise. Extraction of coal or saleable minerals would prohibit recreation. Depending on the specific location, extent, and duration of extraction, localized impacts on recreation could occur if other opportunities are not available in the area, or if the areas disturbed provide unique recreational opportunities or are in proximity to primitive settings. Site-specific mitigation may include rehabilitation or other measures to minimize long-term impacts.

Impacts from reduction of access would include route closures totaling 36 miles across all of the WSAs and localized or seasonal restrictions in specific areas to meet other management goals. Overall, any access restrictions would not be expected to change the overall type, quantity, or quality of recreational experiences available throughout the Planning Area. Under Alternative A, over 56 percent of BLM-managed surface land would be open to cross-country travel and an additional 39 percent would be

limited to existing or designated roads. Therefore, 95 percent of BLM-managed surface land would accommodate some sort of motorized travel, providing extensive opportunities for motorized recreation (as noted in Table 4-1). OHV use could limit the opportunities for solitude and more primitive forms of recreation on BLM-managed surface land, depending on the intensity and location of the use. Route closures in the WSAs could enhance opportunities for primitive recreation and solitude in those areas.

4.3.19 Renewable Energy

Management to minimize the intensity and location of surface-disturbing activities within special designations for the protection of natural or cultural resources (238,936 acres of BLM-managed surface land) could affect the ability to site renewable energy generation and transmission facilities in those areas. Restrictions on land uses to support management of other resources on BLM-managed surface land could inhibit development of renewable energy development. For example, development of renewable energy resource could be prevented where right-of-way exclusion areas (39,148 acres) would prohibit placement of transmission facilities. In addition, restrictions on the amount of surface disturbance in an area could inhibit construction of large, commercial-scale facilities. These effects would be most relevant in areas of moderate-to-high wind, solar, and biomass resource potential (identified in the February 2005 BLM Management Situation Analysis).

Management of visual resources could affect the placement of wind turbine towers, solar energy panels, or other highly visible facilities in some areas, particularly in VRM Class I and II areas (a total of 416,124 acres). Site-specific impacts and mitigation measures would be identified during additional NEPA analysis.

4.3.20 Transportation and Travel Management

Management to minimize surface disturbance, particularly in special designations for the protection of natural or cultural resources (238,936 acres of BLM-managed surface land) could diminish opportunities for motorized travel in those areas. Overall, the routes located within these areas represent a small percentage of the overall route network and do not serve as primary or secondary transportation system routes. Moreover, the transportation and access-related management for special designations generally places a greater emphasis on limiting access to designated roads and trails (with some seasonal use considerations) or existing roads and trails rather than closing roads. Though no specific management actions have been identified for cave and karst resources and paleontological resources, management of these resources consistent with their goals could result in localized impacts on transportation if motorized access into specific areas were restricted. Areas designated as VRM Class I (about 30,343 acres of BLM-managed surface land) and VRM Class II (about 358,781 acres) also would limit surface-disturbing activities such as the construction of new travel routes; however, the existing travel network would not be impacted by VRM designation.

Management of right-of-way exclusion and avoidance areas on 33 percent of BLM-managed surface land (498,144 acres) would reduce the construction or expansion of access routes that typically accompany right-of-way and land use authorizations in those areas. Access roads that are developed to construct and maintain land uses generally are available for recreational use by the public. Existing access would not be affected as the result of the establishment of exclusion and avoidance areas, although there could be localized, temporary impacts on travel (e.g., displacement during development of the right-of-way) during construction. However, the establishment of exclusion and avoidance areas could result in increased use of fewer roads in areas where access roads are more likely to be constructed or maintained through use depending on demand and the specific road network available in that particular area. Increased use likely would not occur in areas where redundant routes occur or where intensity of use is low.

Under Alternative A, up to 6 percent of BLM-managed surface land (86,458 acres) could be disposed, resulting in the loss of public access in localized areas and possible displacement of motorized travel onto other routes crossing public land. However, an extensive travel network still would be available in the Planning Area. Land acquisition could increase access opportunities unless access is restricted in acquired parcels to support wildlife habitat, cultural resources, or other management programs.

The construction or upgrading of roads to access mining activities indirectly would increase motorized public access if the authorized routes are made available for public use. If the routes are not authorized for public use, then restrictions for motorized access could result in localized reductions within those specific areas; however, the restrictions would not be expected to change the overall type or quantity of transportation uses available within the Planning Area because of the minimal acreage affected.

Access restrictions would occur in specific areas and/or during certain times (i.e., seasonally) to meet natural or cultural resource management goals. However, 95 percent of BLM-managed surface land would accommodate some sort of motorized travel (see Table 4-1). Route closures totaling 36 miles across all of the WSAs result in localized impacts on transportation uses and motorized access (Appendix J). However, relative to the remaining travel route opportunities available throughout the Planning Area, these impacts would be negligible. Closure of these routes would not be expected to generate a noticeable increase in use on other routes within the WSAs or Planning Area.

4.3.21 Social and Economic Conditions

The protection of open space, scenic value, and natural landscapes may have an indirect economic effect on local economies, to the extent that these factors contribute to quality-of-life assets in the Planning Area that could increase prices and demand for land. This type of management occurs in special designations, which include 238,936 acres under Alternative A. However, as described in Section 3.5.7.7, some of the key factors that allow communities to translate public land amenities into economic development opportunities are lacking in the Planning Area; therefore, these impacts could be negligible overall.

Within the Planning Area, the Zuni Salt Lake has been identified as an area of cultural and social importance and attachment. The quantity and quality of the water within the lake are integral to its cultural value. Potential effects on water resources in the lake from the proposed management are described in Section 4.3.5. Other activities could be permitted in the area that may be perceived as affecting the landscape and resources that are considered sacred, including the introduction of equipment and facilities associated with mineral development activities.

The implementation of right-of-way exclusion and avoidance areas would limit the options for where right-of-way projects would be considered. A proponent of a right-of-way or other land use action may be prohibited from completing a proposed project due to incompatibilities with land management decisions or may have to select a less desirable and/or more expensive location, routing, or design/build process.

It is not expected that land in Federal ownership will vary greatly. This is due to the relatively low historic rates of disposal and the potential that land to be disposed of will be offset by land proposed for acquisition. Consequently, there will be no foreseeable substantial change in payments to Socorro and Catron Counties under the payment-in-lieu-of-taxes program.

Land identified for disposal could become available for State or local governments or developers for a variety of uses. The socioeconomic impact of land disposals cannot be adequately identified unless potential future uses are identified. However, future uses would be required to conform with existing county and community land use plans and regulations. Any major project would be evaluated by local

governments and may involve Federal government review, both of which would provide opportunity for public input and potentially environmental review.

Land acquisition for WSAs, ACECs, and SMAs may preclude development on acquired parcels that would provide economic development opportunities. Because acquisition would occur on a willing-seller basis, existing landowners would not be affected negatively by BLM's decisions regarding acquisition.

Under Alternative A, the majority of BLM's Decision Area would be available for mineral development. The RFD indicates that leaseable and locatable development is expected to occur, including exploratory wells, two small oil and gas fields, and a 50,000-acre field of carbon dioxide and helium wells (see the RFD in Section 4.7.1). Coal development is expected to include the development of a new coal field that would extract 80 million tons of coal over its 50-year life. Alternative A would continue to provide for coal development opportunities on up to 31,640 acres. The location and size of the public land area that is potentially suitable for coal leasing could accommodate coal extraction operations on a scale similar to that of the previously proposed Fence Lake Mine, where employment was estimated to be 200 during start-up and between 75 and 150 for the duration of mining operations, generating approximately $60 million in taxes and $60 to $70 million in royalties.

Typically, fluid mineral, coal, and locatable extraction activity would result in direct wage income from jobs, induced income as wages circulate through the local economy, revenue generation for the State of New Mexico and U.S. General Fund from royalties, and tax revenue generation for local jurisdictions. Since mining has not been a primary job contributor in either Socorro or Catron Counties, needed skilled labor could relocate from elsewhere to meet employment needs. Although existing local residents may not receive the full wage benefits, local businesses and jurisdictions would receive tax and other income from additional residents. In some cases, an influx of workers that may be temporary residents could result in social conflicts within existing communities. Direct and indirect employment and income that would be generated from mineral exploration and development are project-specific and would be evaluated further through additional NEPA analysis.

Controlled surface use lease stipulations and limits on surface occupancy (a total of about 736,000 acres) would curtail fluid mineral leasing and development activities if restrictions increase the cost and difficulty of exploration for and development of mineral resources such that these activities cease to be economically feasible (e.g., if more expensive directional drilling is required).

Maintaining the existing policy for saleable minerals would continue to allow for this type economic opportunity in BLM's Decision Area. The types of effects that would result from saleable mineral extraction include direct employment and induced income effects, the generation of revenue from sales that is shared by the BLM and New Mexico, and local tax revenue for local jurisdictions. In addition, saleable mineral development such as sand, gravel, and building stone may support other industries locally, including construction, and support State road projects that benefit local communities. However, the socioeconomic impact of saleable mineral extraction would be localized and minimal based on historic use rates and the relatively small RFD scenario estimates (five new salable mineral pits or community permitted or reactivated in the next 15 years).

There is little current economic activity associated with vegetative sales on BLM-managed surface land. The management objective for vegetative sales is to meet local and regional needs in a manner that minimizes impacts on resources. Individuals or groups that currently take advantage of the vegetative sales still would have access to some public land for such uses.

Livestock grazing contributes to the important ranching and farming economic sector in the Planning Area. BLM management that provides availability of public land for grazing and assures management of

rangeland to meet public land health standards would support the continued viability of this industry. The closure to domestic sheep and goats of approximately 135,523 acres allocated as grazing land within the Horse Mountain and Ladron Mountain ACECs and the Pelona Mountain SMA would be expected to have little or no effect on existing conditions, since current grazing activities in the Planning Area are typically commercial cow/calf enterprises rather than domestic sheep and goats. The grazing closures for former allotment 1152 (Ladron Mountain ACEC) and within the Fort Craig SMA, Playa Pueblos SMA, Mogollon SMA, and Teypama SMA potentially would have localized impacts for limiting this type of socioeconomic use, but would not be expected to affect overall grazing opportunities on public land.

The recreation opportunities provided on public land support retail, food and accommodation, and other service industries in local economies by attracting visitation from outside the local area. This results in economic impacts via jobs and income in these industries, induced income as wages circulate through the local economy, and tax revenue for local jurisdictions. Recreation opportunities on public land also provide a local social amenity that is valued by local residents. Future visitation is difficult to predict because it is influenced by so many variables outside of BLM's control, but typical expenditures associated with visitation are summarized in Table 4-5.

TABLE 4-5
AVERAGE LOCAL EXPENDITURES PER VISITOR TO BLM SITES

Lodging	$284.60
Guide fees	$168.08
Equipment rentals	$127.74
Other expenses (not listed in this table)	$98.25
Shopping	$89.29
Restaurant dining	$89.16
Groceries	$74.33
Local transportation	$66.88
Camping fees	$24.90

SOURCE: U.S. Department of the Interior, Bureau of Land Management 2004

The special designations under Alternative A include some areas where recreation use and/or resource use would be promoted (e.g., Cerro Pomo SMA – development of a cultural site, Datil Well SMA) and other areas where recreation use would be restricted to protect resources (e.g., ACECs to protect sensitive resources). Areas promoted for recreation use, whether developed or primitive recreation, would provide social and economic value to local, regional, and national visitors. Restriction of access for resource protection would be viewed positively by those who value resource protection in the affected areas, but could be viewed negatively by those who are generally against restricting such forms of access to public land. OHV use could be an economic opportunity based on regional demand for areas available to use OHV; however, public scoping comments also indicated that OHV use is sometimes socially undesirable due to the potential for resource degradation.

4.3.22 Environmental Justice

During the course of this analysis, no alternative considered resulted in identifiable effects or issues specific to any minority or low-income population or community as defined in Executive Order 12898. While there are some areas within the socioeconomic study area that are home to large minority and low-income populations, no BLM actions proposed in any of the alternatives have been identified as causing disproportionate effects on these populations.

4.4 ALTERNATIVE B – PREFERRED ALTERNATIVE

4.4.1 Summary of Management Direction

Alternative B is the preferred alternative at the time of this Draft RMPR/EIS. The overall goal of this alternative is to provide a balance between resource use and protection. Management under this alternative would balance the need to protect, restore, and enhance natural values with the need to provide for the production of food, fiber, minerals, and recreation, heritage tourism, and other services on public land. This balance would be achieved within the limits of the ecosystem's ability to provide resources on a sustainable basis and within the constraints of applicable laws and regulations. A summary of Alternative B also is provided in Table 2-1, Chapter 2, while a summary of management prescriptions for ACECs and SMAs in Alternative B is provided in Table 2-2.

4.4.2 Summary of Aggregate Effects of Alternative B

Some of the impacts that would be expected under Alternative B would be the same as those in Alternative A. Reduced potential for soil erosion and vegetation loss, and increased control of noxious weeds would be expected to result as actions are taken to meet public land health standards in areas that are not currently achieving them and from protective management that regulates surface disturbance, including restrictions on right-of-way and land use authorizations, OHV use, and minerals exploration and development activities. However, generally, this protective management would be applied to more acres of BLM-managed surface land under Alternative B than Alternative A. Acreages that would be managed to minimize various types of surface use under Alternative B are identified in Table 4-1.

In addition, public land that would be managed within discretionary special designations, and that typically would be managed with a combination of these types of restrictive management, would include 297,555 acres to protect watershed, vegetation, wildlife, and cultural resources. Similarly to Alternative A, an additional 291,826 acres would be managed within WSAs in accordance with the Interim Management Policy.

Under Alternative B, larger areas would be managed to minimize surface disturbance, which would reduce potential for soil erosion and loss of vegetation, influencing the availability of habitat and forage for wildlife and reducing opportunities for noxious weed infestation. This would reduce the potential for habitat degradation and fragmentation throughout the Planning Area. Compared to Alternative A, these effects would occur in increased acreages within the Horse Mountain ACEC, Ladron Mountain-Devil's Backbone Complex ACEC, Pelona Mountain ACEC, Cerro Pomo ACEC, Zuni Salt Lake ACEC, Tinajas ACEC, and the Newton Site SMA. Reduced access to the Newton Site SMA could reduce degradation of cultural resources due to vandalism.

Under Alternative B, the Walnut Canyon SMA designation would be eliminated; this area is characterized by habitat that supports a variety of species, including golden eagles, prairie falcons, and great horned owls. However, since Alternative B would continue the same type of OHV area designation and management of fluid minerals in that area, there would be minimal effect on management from the change in designation. The elimination of the Town of Riley SMA designation also would not be expected to affect cultural resources substantially since regulatory reviews still would be required. In addition, no distinct effects on natural or cultural resources would be expected to result from the elimination or reduction in size of other special designations that are proposed under Alternative B, for the following reasons: (1) the land (i.e., the Agua Fria ACEC, and the Fence Lake, Mogollon Pueblo, and San Lorenzo SMAs) still would be managed within other special designations; (2) previously protected species have been delisted, and special management beyond future NEPA compliance to avoid losses of

those species is no longer required (i.e., Taylor Canyon and Iron Mine Ridge SMAs); and (3) sensitive areas still would be encompassed within smaller designations (i.e., the Teypama and Stallion SMAs).

Under Alternative B, management would reduce the possibility of surface disturbance on up to 43,952 acres of Federal mineral estate (including 40,104 acres of BLM-managed surface land) within Chihuahuan semi-desert grassland that may provide aplomado falcon habitat in southern Socorro County, including closure to fluid mineral leasing, exclusions of mineral material disposals, and petitioning to withdraw the area from location and entry under the mining laws. OHV use also would be limited. These measures would impact habitat by minimizing loss of forage, directly addressing the primary threat to this species. These actions would be expected to contribute to the recovery of the aplomado falcon beyond what is proposed in Alternative A by implementing additional and proactive protection for the species.

Management under this alternative would accommodate diverse resource uses, although potential impacts on mineral development are anticipated. The acreage that would be closed discretionarily to fluid mineral leasing includes areas of high potential for carbon dioxide and helium resources (36,345 acres) in Ladron Mountain ACEC. In addition, if proposed mineral withdrawals are completed, some areas with high mineral resource potential would be unavailable for mineral development. If a no-surface-occupancy stipulation covers extensive acreage, the ability to target a fluid mineral resource using directional drilling technology becomes restricted or infeasible, effectively closing the land to fluid mineral development.

Under Alternative B, a total of 100,358 acres of BLM-managed surface land would be managed as special designations for protection and enhancement of recreation opportunities. Effects to natural and cultural resources resulting from recreational use as the result of enhanced opportunities could be minimized through access restrictions and site hardening measures, as warranted. The management of public land within special recreation management areas (SRMAs) would be expected to increase visitation; such increases typically occur in response to the development of facilities, improved recreation settings, and public knowledge of intended recreation destinations. Visitation could contribute to local economies that support visitation, particularly in service and retail industries, although the extent of this impact is difficult to predict due to the wide variety of factors influencing visitation trends and local economies.

4.4.3 Air Quality

Expansion of areas for management and protection near existing ACECs under Alternative B may have long-term benefit for preservation of air quality. In particular, expansion of the Pelona Mountain ACEC by about 70 percent under this alternative, to 51,091 acres, could improve air quality in the Gila Wilderness Class I area located to the south. Restricting commodity production, woodcutting, or other surface-disturbing activities in some areas could cause these uses to intensify in other areas. Depending on the extent of this activity, there could be an increase in air pollutant emissions in that area during project construction. However, most of these impacts would be limited to the actual period of construction and the vicinity of the activity.

Under Alternative B, the acreage of land that is available for coal leasing also would decrease to about 3,200 acres. Potential impacts on air quality would be the same as Alternative A unless the reduced acreage limits the ability to achieve the RFD in the Salt Lake Coal Field (see Section 4.4.17 for further discussion of the RFD). It is possible that the RFD would still be achieved primarily or entirely on State or private land in the Planning Area, although this may be affected by the reduced acreage of public land identified as “not unsuitable,” as described in Section 4.4.17.

The application of specific criteria in Alternative B to identify appropriate areas for commercial woodcutting, such as the presence of suitable access roads and stable soils, would reduce fugitive dust, soil erosion, and other impacts. Construction of roads according to best management practices

Appendix C) for woodcutting and forestry management access would promote road surface conditions that are less likely to generate fugitive dust and thereby create localized dust impacts. Based on these practices, direct effects on air quality would be limited to an extent of less than 1 mile surrounding an activity.

Under Alternative B, no public land would be open to cross-country travel, which could result in incremental direct benefits for air quality as compared with Alternative A. Alternative B substantially increases the area that would be limited to existing or designated routes to 1,389,624 acres of BLM-managed surface land, and would result in the closure of four times as many acres to OHV travel (see Table 4-1). Over time, the aggregated particulate and engine exhaust emissions associated with motorized travel throughout the Planning Area would be expected to decrease, though this effect would be influenced by the frequency and duration of use as well as site-specific factors related to soil type and moisture content.

4.4.4 Geology

Potential impacts on geologic resources from surface disturbance could occur as described for Alternative A; however, the use restrictions within special designations and some other areas that provide coincidental protection of geological resources would be expanded under Alternative B (see Table 4-1). Similar to Alternative A, it is expected that potential impacts from surface-disturbing activities would be mitigated through measures identified through site-specific NEPA analysis.

The elimination of cross-country travel on BLM-managed surface land under Alternative B would minimize the potential for vegetation loss, soil disturbance, and increased soil erosion that might affect geologic resources in those areas. The potential for localized disturbances to geologic resources from dispersed recreation activities such rock-climbing or mountain-climbing would be the same as described for Alternative A.

4.4.5 Soil and Water Resources

Similar to Alternative A, the application of best management practices and other mitigation that would be identified during additional NEPA analysis would address the potential for site-specific impacts on soils from surface-disturbing activities. Alternative B increases the protection for soil and water resources by expanding special designations for the protection of natural or cultural resources to 297,555 acres, an increase of 58,619 acres (or 25 percent) over Alternative A. The expansion of right-of-way exclusion areas (an additional 376,135 acres over Alternative A), areas associated with fluid minerals leasing stipulations (an additional 780,824 acres), and areas closed to fluid mineral leasing (an additional 124,680 acres) would reduce erosion and increase soil infiltration and productivity in those areas. The additional protection under Alternative B would occur primarily on 46,746 acres of BLM-managed surface land in the vicinity of Zuni Salt Lake (in northwestern Catron County) and in potential aplomado falcon habitat areas (in Socorro County).

Alternative B would increase protective measures for cultural resources associated with Zuni Salt Lake, as compared with Alternative A. The current 4,839-acre Zuni Salt Lake SMA would be replaced with the Zuni Salt Lake ACEC on 46,746 acres of BLM-managed surface land that are centered on the lake. There is no known hydrogeologic basis for this boundary. Management within this ACEC would minimize the potential for surface disturbance over a larger area that was determined to be eligible for the National Register of Historic Places. Soil disturbances and compaction would be reduced, resulting in reduced erosion and increased soil infiltration and productivity.

The Zuni Tribe and BLM would develop a memorandum of understanding outlining consultation procedures for management of cultural and natural resources in the Zuni Salt Lake ACEC. The intent of the agreement would be to reduce the potential for impacts on the groundwater systems that are presumed to supply water to the Zuni Salt Lake, in combination with closure to fluid mineral leasing and other locatable and saleable mining activities. Although no direct hydrogeologic connection between the Moreno Hill Formation and the Zuni Salt Lake has been demonstrated (U.S. Geological Survey [USGS] 2004), evidence suggests that the Dakota Formation may behave as a leaky confined aquifer (Brown 1989; New Mexico Energy, Minerals, and Natural Resources Department 1994) and some hydrologic communication between the Moreno Hill Formation and the Atarque Sandstone and deeper aquifers is possible. Until a better understanding of the regional hydrogeology of the Zuni Salt Lake is acquired, this management approach would be highly conservative.

A new utility corridor would reduce the acreage exposed to potential soil disturbance (assuming that facilities would be collocated within the corridor). The expansion of VRM Class I or II areas to 516,872 acres (24 percent more acreage than Alternative A) would promote greater protection of soil and water resources in those areas, because of the management emphasis on maintaining existing vegetation and terrain features in those areas.

The management of commercial and personal-use woodcutting and plant material sales under Alternative B would reduce the potential for catastrophic wildfires and improve surface water infiltration.

Impacts on soils and water resources from grazing are addressed as part of the Vegetation discussion (Section 4.4.6).

Under Alternative B, the land available for coal leasing would decrease relative to Alternative A (to 3,200 from 31,640 acres). This would reduce the area where coal extraction activities could disturb or compact soil, thereby reducing the potential for impacts on erosion and soil infiltration and productivity. Potential impacts on water resources would be the same as those under Alternative A, as mandatory NEPA analysis and permitting requirements to ensure nonimpairment of existing water resources would be the same.

Exclusion of mineral material disposals on about 340,066 acres of BLM-managed surface land under Alternative B also would reduce potential impacts on soil erosion in those areas, relative to Alternative A. However, about 291,826 acres that are excluded would be within WSAs, which are already managed as de facto exclusion areas in accordance with the Interim Management Policy. Therefore, the effects of this management would be most apparent in the potential aplomado falcon habitat areas in Socorro County and some special designations, as identified in Table 2-2.

Under Alternative B, cross-country travel would be eliminated and there would be a substantial increase in acres with limitations on OHV use (1,389,624 versus 565,159 acres under Alternative A). This would decrease the potential for soil loss and impacts on water quality related to soil disturbance from OHV use. Additional “closed” and “closed and rehabilitated” routes within WSAs (Appendix J) and the closure of 26 additional miles of routes for wildlife concerns also would shield more soil from vehicle disturbance.

4.4.6 Vegetation

The effects of developing watershed management plans would be the same as Alternative A. Under Alternative B, management would be implemented with the objective of balancing commodity production with providing for maintenance of good watershed health. Increased watershed quality would increase the health of vegetation within the watershed.

Under Alternative B, special designations to protect natural and cultural resources would be expanded to 297,555 acres. In addition, Alternative B includes management to protect 40,104 acres of BLM-managed surface land identified as potential aplomado falcon habitat areas. Vegetation in these areas would be protected from surface-disturbing activities that would result in loss of vegetation, reduce soil stability,

increase erosion, or reduce watershed health. The intensity of these effects would vary by the actual use allowed within each area. Overall, more vegetation would be subject to the type of management under Alternative B compared to Alternative A. More vegetation would be protected within special designations for special status or rare plant species under Alternative A than under Alternative B, due to the delisting of several special status plant species, but rare plant protection areas would be the same for both alternatives.

The VRM Class I or II would be expanded to 516,872 acres under Alternative B, increasing the areas where the maintenance or enhancement of existing vegetation communities is supported in accordance with VRM objectives through mitigation measures when a surface-disturbing action is proposed.

Similar to Alternative A, the effects related to soil erosion, water quality, and invasive species could result from surface-disturbing activities such as construction in rights-of-way, although it is expected that mitigation would be identified as part of the site-specific NEPA analysis. However, under Alternative B more vegetation would be protected from the effects of these activities due to the expansion of right-of-way exclusion areas to 406,283 acres of BLM-managed surface land. Right-of-way exclusion and avoidance areas together would total 755,626 acres. The number of acres per vegetation type managed as exclusion and avoidance areas is summarized in Table 4-6. Desert grassland and plains-mesa sand scrub are the most common vegetation types within exclusion areas. Avoidance areas would include over half of the montane scrub on BLM-managed surface land. Overall, almost 75 percent of desert grassland on BLM-managed surface land would be included within one of these land use allocations. The remaining grasslands on public land would be subject to right-of-way authorizations, but additional mitigation measures would be identified for any potential impacts on vegetation during the NEPA analysis required prior to an authorization. Some areas with lava beds in northwestern Catron County (additional to the acres noted in Table 4-6) would be available for right-of-ways; however, additional mitigation measures would be identified during the required NEPA analysis.

TABLE 4-6
ACREAGE OF VEGETATION TYPE IN RIGHT-OF-WAY (ROW) EXCLUSION AND AVOIDANCE AREAS FOR ALTERNATIVE B[A]

Vegetation Type	Acres of BLM-Managed Surface Land	Right-of-way Exclusion	Percent of BLM-Managed Surface Land Population	Right-of-Way Avoidance	Percent of BLM-Managed Surface Land Population
Chihuahuan Desert Scrub	168,059	35,146	21	56,169	33
Closed Basin Scrub	13,941	1,455	10	3,076	22
Coniferous And Mixed Woodland	143,686	46,253	32	31,525	22
Desert Grassland	316,268	123,609	39	109,423	35
Juniper Savanna	324,153	54,718	17	85,627	26
Lava Beds	21,353*	21,353	100*	0	0
Montane Coniferous Forest	30,945	7,487	24	8,902	29
Montane Scrub	11,456	1,250	11	6,320	55
Plains-Mesa Grassland	258,389	43,002	17	34,734	13
Plains-Mesa Sand Scrub	201,015	67,758	34	12,995	6
Urban, Farmland or Open Water	15,518	727	5	353	2
Totals	**1,504,783**	**402,758**	**27**	**349,124**	**23**

SOURCE: Dick-Peddie 1993
NOTES: [a]Acreage based on best available GIS data.
*The data on which these calculations are based do not include some additional lava beds in northwestern Catron County. These areas are addressed in the text, as appropriate.

A north-south utility corridor would be established along the I-25 corridor. Construction in this utility corridor would result in a direct loss of vegetation due to ground-disturbing activities. However, due to

the presence of I-25 and development along it, about 40 percent of the vegetation in the corridor is likely to be previously disturbed. The number of acres per vegetation type managed within the utility corridor is summarized in Table 4-7. The utility corridor includes only a small amount of BLM-managed surface land of which urban areas, farmland, and open water—where vegetation has been previously disturbed—would be most potentially impacted.

TABLE 4-7
ACREAGE OF VEGETATION TYPE IN UTILITY CORRIDOR FOR ALTERNATIVE B

	Acres of BLM-Managed Surface Land	Utility Corridor (BLM-Managed Surface Land Only)	Percent of BLM-Managed Surface Land Population	Utility Corridor (All Land)
Chihuahuan Desert Scrub	168,059	704	0	31,490
Closed Basin Scrub	13,941	0	0	0
Coniferous And Mixed Woodland	143,686	0	0	0
Desert Grassland	316,268	0	2	1
Juniper Savanna (Ecotone)	324,153	0	0	0
Lava Beds	21,353	0	0	5,405
Montane Coniferous Forest	30,945	0	0	0
Montane Scrub	11,456	0	0	0
Plains-Mesa Grassland	258,389	0	0	0
Plains-Mesa Sand Scrub	201,015	0	0	20,784
Urban, Farmland Or Open Water	15,518	3,417	22	38,467
Totals:	**1,504,783**	**4,121**	**0**	**96,147**

SOURCE: Dick Peddie 1993

Impacts related to land acquisition would be the same as those under Alternative A. The BLM-managed surface land identified as suitable for disposal would be expanded to 89,447 acres. In these areas, vegetation could be lost in those areas if disposal occurs and surface-disturbing activities are initiated.

Management under Alternative B would focus on improving the ecological condition in forests and woodlands, which would increase the general health of vegetation throughout those areas. Although activities associated with woodcutting could cause loss of vegetation and increase the likelihood of invasive species, increased management of woodcutting through the criteria the described in Chapter 2 and the best management practices for forestry and weed management (Appendix C) would minimize the potential for these effects to occur.

As with Alternative A, mineral development activities could result in loss of vegetation and the potential for spread of noxious weeds, but these effects would be mitigated through measures identified through additional NEPA analysis. However, more vegetation would be protected in areas closed to minerals leasing under Alternative B (1,543,095 acres of Federal mineral estate, of which 375,157 acres are on BLM-managed surface land). As summarized in the Table 4-8, desert grassland, coniferous and mixed woodland, and plains-mesa grassland would be most protected. Some areas with lava beds in northwestern Catron County (additional to the acres noted in Table 4-8) would be open to fluid mineral leasing under standard terms and conditions; however, mitigation measures would be identified as appropriate during additional NEPA analysis.

TABLE 4-8
ACREAGE OF VEGETATION TYPE CLOSED TO FLUID MINERALS LEASING FOR ALTERNATIVE B[A]

Vegetation Type	Acres of Federal Mineral Estate	Federal Mineral Estate Closed to Leasing	Percent of Population on Federal Mineral Estate
Chihuahuan Desert Scrub	378,821	192,292	51
Closed Basin Scrub	122,868	83,473	68
Coniferous And Mixed Woodland	1,248,813	221,527	18
Desert Grassland	585,991	204,829	35
Juniper Savanna (Ecotone)	1,020,984	187,578	18
Lava Beds	21,370*	21,337	100*
Montane Coniferous Forest	1,459,415	221,761	15
Montane Grassland	44,451	789	2
Montane Scrub	75,986	57,280	75
Plains-Mesa Grassland	546,079	36,791	7
Plains-Mesa Sand Scrub	398,119	224,118	56
Subalpine Coniferous Forest	131,501	69,629	53
Urban, Farmland or Open Water	41,777	15,663	37
Total	**6,076,174**	**1,537,067**	**25**

SOURCE: Dick-Peddie 1993
NOTE: [a]Acreage based on best available GIS data.
*The data on which these calculations are based do not include some additional lava beds in northwestern Catron County. These areas are addressed in the text, as appropriate.

Approximately 3,200 acres would be available for coal leasing, subject to site-specific NEPA analysis. Extraction of coal would result in loss of vegetation during any ground-disturbing activities; fewer areas would be subject to these types of impacts than under Alternative A due to the change in acreage that is identified as "not unsuitable."

Mineral material disposals would be excluded from approximately 340,066 acres of BLM-managed surface land under Alternative B. Vegetation within these areas would be protected by restrictions on ground-disturbing activities associated with mineral material extraction. However, there is little actual difference from Alternative A since most of the excluded areas are within WSAs that are already managed in accordance with the Interim Management Policy.

In addition to the 11,408 acres already withdrawn from mineral entry, approximately 72,369 acres of Federal mineral estate would be petitioned to be withdrawn from mineral entry. Vegetation occurring within these areas would be protected from ground-disturbing activities associated with locatable mineral development. More vegetation would be protected from impacts associated with mineral entry under Alternative B than Alternative A.

The types of effects and factors influencing impacts from grazing would be the same as Alternative A.

The type of impacts on vegetation from recreation would be the same as those under Alternative A. Although some vegetation would be lost due to site-hardening measures or trampling that results directly from recreational use, the management emphasis on accommodating recreation in SRMAs may divert use that is creating impacts elsewhere to locations where it can be managed effectively, limiting overall effects on vegetation from recreational uses.

The Gordy's Hill SRMA (7,647 acres of BLM-managed surface land) would be managed to limit vehicle use to designated routes, which would limit further loss of vegetation when compared to the current

management allowing cross-country travel in this area. Alternative B would eliminate the cross-country travel, increasing protection in those areas from loss of vegetation or impacts on soils that could affect vegetation. The number of acres per vegetation type within each OHV area designation is summarized in Table 4-9. The most common vegetation types within OHV areas are juniper savanna and Chihuahuan desert scrub. Some areas with lava beds in northwestern Catron County (additional to the acres noted in Table 4-9) would be managed as limited to designated routes, which would ensure that resource values that require protection would be closed to motorized travel through the transportation planning process.

4.4.7 Wildlife, Riparian Habitat, and Special Status Species

A total of 117,682 acres of BLM-managed surface land would be designated as special designations focused on protection of wildlife habitats and special status species. The number of acres designated specifically for wildlife habitat management under Alternative B would be greater than Alternative A. The larger Ladron Mountain-Devil's Backbone Complex ACEC would expand the protection of habitats that support rare and endemic species, desert bighorn sheep crucial habitat and travel corridors, special status bat species, crucial mule deer habitat, and riparian habitat that supports southwestern willow flycatcher and other resident and non-resident bird species.

This alternative would protect raptor wintering and nesting habitat, especially habitat for northern aplomado falcon through the closure of up to 40,104 acres of BLM-managed surface land (43,952 acres of Federal mineral estate) of potential aplomado falcon habitat areas to fluid mineral leasing, exclusions from right-of-way authorizations, exclusions from mineral material disposals, and limits on OHV use. In addition, management prescriptions to protect acres that meet criteria for aplomado falcon habitat would be implemented as described in Appendix L. These measures would increase protection of grassland habitats that support aplomado falcon. Best management practices for special status species also would be followed to protect aplomado falcon and special status species. The best management practices include survey protocols, raptor nest survey and avoidance requirements, wet-period avoidance for surface-disturbance activities, avoidance of occupied habitat, and others (Appendix C). OHV prescriptions within aplomado falcon and other special status species habitat include the use of wide, flat-tread balloon tires and all-terrain vehicles rather than large vehicles and the timing of activities to avoid wet periods.

Removal of the Walnut Canyon SMA designation would affect an area with habitat for golden eagles, prairie falcons, great horned owls, and a variety of big game species. However, site-specific NEPA requirements and BLM guidance would continue to protect these species and habitats for specific surface-disturbing activities, and fluid mineral leasing stipulations and OHV limitations still would be applied to the former Walnut Canyon SMA area under Alternative B.

In Alternative B, protection of special status plant species, a large, established yucca population, and native grasslands that provide prey base habitat and nesting structure for the aplomado falcon, also would be achieved through special designations. The Sawtooth Proprietary ACEC (Zuni fleabane) and San Pedro Proprietary SMA (Fugates blue star) would provide management of special-status plant species through restrictions on rights-of-way, minerals and energy exploration, and OHV use, as well as continued inventory and survey activities. An increase in acreage associated with use restrictions under Alternative B would result in less surface-disturbing activities that could lead to loss or degradation of wildlife habitat, edge effects, and habitat fragmentation, especially in desert scrub, mountain coniferous forest, and grassland habitats that are most susceptible to OHV use. The Iron Mine Ridge and Taylor Canyon SMAs would be removed as special designations due to delisting of special status species that are located within their boundaries. Similar to Alternative A, management within special designations to protect critical watersheds also would protect and enhance wildlife habitat and riparian systems.

TABLE 4-9
ACREAGE OF VEGETATION TYPE ON BLM-MANAGED SURFACE LAND BY OHV AREA DESIGNATION FOR ALTERNATIVE B[A]

Vegetation Type	Acres of BLM-Managed Surface Land	Closed to OHV		OHV Limited to Designated Roads		OHV Limited to Existing Roads		Open to Cross-Country Travel	
		Acres	Percent of BLM-Managed Surface Land Population	Acres	Percent of BLM-Managed Surface Land Population	Acres	Percent of BLM-Managed Surface Land Population	Acres	Percent of BLM-Managed Surface Land Population
Chihuahuan Desert Scrub	168,059	7,118	4	77,949	46	82,992	49	0	0
Closed Basin Scrub	13,941	0	0	6,717	48	7,224	52	0	0
Coniferous and Mixed Woodland	143,686	34,594	24	63,401	44	45,690	32	0	0
Desert Grassland	316,268	35,123	11	236,125	75	45,018	14	0	0
Juniper Savanna	324,153	28,361	9	114,459	35	181,320	56	0	0
Lava Beds	21,353*	0	0	21,352	100	0	0	0	0
Montane Coniferous Forest	30,945	7,485	24	10,580	34	12,879	42	0	0
Montane Scrub	11,456	0	0	11,418	100	38	0	0	0
Plains-Mesa Grassland	258,389	1,956	1	215,063	83	41,361	16	0	0
Plains-Mesa Sand Scrub	201,015	3,283	2	137,914	69	59,817	30	0	0
Urban, Farmland or Open Water	15,518	0	0	6,205	40	9,265	60	0	0
Totals	**1,504,783**	**117,921**	**8**	**901,184**	**60**	**485,605**	**32**	**0**	**0**

SOURCE: Dick-Peddie 1993
NOTES: [a]Acreage based on best available GIS data.
*The data on which these calculations are based do not include some additional lava beds in northwestern Catron County. These areas are addressed in the text, as appropriate.

The type of impacts from management of visual resources would be the same as under Alternative A, although more acres would be managed as VRM Class I and II (516,872 acres of BLM-managed surface land) and less land would be managed as VRM Class IV (509,432 acres). All proposed projects would be subject to NEPA and Endangered Species Act review and mitigation on an individual basis prior to implementation.

Effects on wildlife and riparian habitat from management of land and realty in this alternative would be similar to those under Alternative A, but there would be a ten-fold increase in exclusion area acreage and a 24 percent decrease in avoidance area acreage, as noted in Table 4-1. Because management as an exclusion area would prohibit future rights-of-way, this would result in an overall decrease in the potential for habitat fragmentation and edge effects in a variety of wildlife habitats within the exclusion areas (refer to Table 4-7). Special status species that use these habitats would be protected from surface-disturbing activities. The establishment and use of a 2-mile-wide utility corridor would not substantially change the current condition of wildlife habitats in areas that are previously disturbed. The greatest potential to affect habitats would occur on lands that are not managed by the BLM. For instance, the corridor would cross the Bosque Del Apache National Wildlife Refuge. Impacts from individual projects would be evaluated during further NEPA analysis.

Land disposal and acquisition would have similar effects to those described under Alternative A, except that slightly more land would be identified as suitable for disposal under this alternative, resulting in greater potential for impacts on wildlife and special status species habitat if more land is disposed. However, isolated parcels generally are selected for disposal and would not be likely to result in negative impacts on wildlife habitats (see Table 4-1). Nonpublic land within and adjacent to special designations would be pursued for acquisition as the opportunity allows to consolidate areas for the best management potential. This would minimize the potential for habitat fragmentation or disturbance of local wildlife movement corridors and maintain the quality of game and nongame wildlife and special status species habitat within those areas.

Potentially there could be localized loss or short-term impacts from plant harvesting activities, but plant harvesting would be within management prescriptions, providing products for the public through salvage or in designated areas. Management would work toward achieving ecological goals toward habitat improvement. Monitoring would prevent over-harvesting of a particular plant product. Additionally, the establishment of criteria that must be met before woodcutting or plant materials sales permits would be granted would limit the surface disturbance associated with the collection of plant materials, subsequently minimizing loss of vegetation and wildlife habitat in comparison with Alternative A.

The types of effects on wildlife and riparian habitats as a result of mineral extraction would be similar to those described for Alternative A. However, more acres would be closed to fluid mineral leasing under Alternative B (see Table 4-1) and implementation of fluid mineral leasing stipulations on 1,516,824 acres of federal mineral estate would mitigate potential impacts in sensitive areas. Additional mitigation could be identified on a site-specific basis in accordance with NEPA and the Endangered Species Act. Habitat in areas that would be closed to fluid mineral leasing (1,543,095 acres of mineral estate, of which 375,157 acres are BLM-managed surface land) would be protected from the effects of fluid mineral development activities. Although all special designations for wildlife resources offer varying levels of protection from mineral exploration, several designations in this alternative are more specific and offer increased levels of protection to wildlife and special status species habitats, and are identified as the Horse Mountain, Ladron Mountain-Devil's Backbone, Sawtooth Proprietary, and Pelona Mountain ACECs and San Pedro SMA. Areas withdrawn from mineral entry (up to 83,777 acres of Federal mineral estate) would be protected from the effects of mineral development. Mineral withdrawal within the Sawtooth Proprietary ACEC would me maintained under all alternatives. There is minimal actual effect

from the exclusions from mineral material disposals in Alternative B, since most of the excluded areas are within WSAs that are already managed in accordance with the Interim Management Policy. However, additional protection would occur in 48,240 additional acres outside of WSAs, primarily in potential aplomado falcon habitat areas.

The types of impacts from livestock grazing and range management would be the same as Alternative A, except that additional acreage would be excluded from domestic sheep and goats in the Ladron Mountain-Devil's Backbone Complex. In addition, NEPA analysis and mitigation would be required for each project on a site-specific basis.

The types of impacts from recreation management would be the same as described under Alternative A, but with greater emphasis on protection of wildlife and special status species resources. The expanded acreage that would be managed for recreation uses within special designations under Alternative B (a total of 100,358 acres of BLM-managed surface land) could increase recreational uses and associated effects in those areas. However, if the management in these areas diverts use that is creating impacts elsewhere on locations where it can be managed effectively, overall effects on habitat and wildlife from recreational uses may be reduced.

The types of impacts associated with OHV use would be similar to those described for Alternative A, but variations in OHV area designations under Alternative B would lead to long-term benefits to wildlife and riparian habitats by minimizing impacts associated with OHV and motorized vehicle use. Under Alternative B, the closure of routes within WSAs (Appendix J) would protect wildlife and wildlife habitat in those areas, as would restriction of motorized vehicle use to existing or designated trails, where minimal loss of habitat would occur as existing trails and roads are already disturbed. However, unauthorized OHV use in the Planning Area could cause an increased potential for loss or degradation of wildlife habitat and associated edge effects.

4.4.8 Wildland Fire Ecology and Management

Under Alternative B, fuels treatments would be conducted to meet resource objectives, which would restore those areas to FRCC 1 and consequently reduce the risk for large wildfires. Similar to Alternative A, surface-disturbing hazardous fuels reductions and fireline construction likely would be limited within special designations (a total of 297,555 acres of BLM-managed surface land). This protection would be applied to 31 percent of BLM-managed surface land, compared with 16 percent under Alternative A (see Table 4-1). Fuels treatments would be focused around the perimeters of these areas in order to prevent direct mortality of special status plants resulting from wildfire spread.

Potential indirect adverse impacts associated with wildland-urban interface areas and the designation of Horse Mountain ACEC would be the same as those described under Alternative A. Although the Horse Mountain ACEC would be expanded under this alternative, the corresponding wildland-urban interface area to the north would not change. Similar to Alternative A, hazardous fuels treatments that result in discernible changes in color, line, form, and texture within the landscape would be limited in VRM Class I and II areas, which would include 516,872 acres under Alternative B.

Impacts on fire management associated with right-of-way exclusion and avoidance areas would be similar, but more widespread compared to those described under Alternative A. Under Alternative B, 406,283 acres of BLM-managed surface land would be excluded from right-of-way and 349,343 acres would be designated as right-of-way avoidance areas. Land disposal would have similar impacts on those described under Alternative A, but these effects could be somewhat more widespread under this alternative because there would be 89,447 acres (6 percent) of BLM-managed surface land identified as suitable for disposal.

Development within a utility corridor could have indirect impacts on fire suppression activities by creating additional hazards to fireline personnel, but also could minimize these impacts elsewhere in BLM's Decision Area if utilities are consolidated in one location rather than dispersed throughout multiple areas. However, the location of this corridor primarily off of BLM-managed surface land would mean few, if any changes to fire management on BLM-managed surface land.

Treatment techniques used to improve the ecological condition of forests and woodlands, reduce high-tree-density woodland sites, and promote herbaceous understory likely would rely heavily on fire management. In areas where wildland fire use is employed rather than traditional suppression activities, fire management would realize a direct cost savings benefit over the short term. The average per acre cost of fire suppression is higher than the average per acre cost of wildland fire use activities. Long-term impacts on fire management would include a reduction of surface fuels where wildland fire use, prescribed fires, mechanical treatments, chemical treatments, or biological treatments were used. The reduction of surface fuels in these areas would decrease the likelihood of large canopy fires, resulting in both a reduction in the cost of suppression and a safer environment for fireline personnel.

Commercial and personal woodcutting activities would be allowed in accordance with criteria identified in Chapter 2. More areas would be open to woodcutting activities under this alternative than under Alternative A. These activities reduce fuel loadings in areas of historic suppression activities and surface fuels in excess of historic ranges. The cost of hazardous fuels reduction in woodcutting areas would be borne by the commercial or personal entity, rather than BLM, resulting in a direct cost savings to BLM. In addition, a reduction in tree density and ladder fuels resulting from woodcutting would reduce the potential for large canopy fires that endanger lives and private property.

Allocation of vegetation to wildlife, watershed, and livestock may impact fuel loadings depending on the amount of vegetation left on the landscape for watershed and wildlife. Fine fuels could increase in site-specific areas where herbaceous species are left for wildlife and watershed protection but not used by wildlife. The overall impact on fire management would be less than slight.

Vegetative treatments that control the spread of undesirable vegetation would benefit fire management by reducing surface fuels in treated areas. Treatments that increase the abundance of desirable vegetation also would increase surface fuels; however, the plant community structure of desirable vegetation established might more closely resemble native plant communities, resulting in no impact on fire management.

Impacts from increased ignition potential in areas open to cross country OHV use would be similar but less widespread than those described in Alternative A. The elimination of the cross-country travel under Alternative B reduces the potential areas where this would be likely to occur. In addition, closed areas, where probability of human-caused ignition is reduced, would be expanded to 117,921 acres. Closing 26 miles of roads outside of special designations would indirectly limit the potential for human-caused ignitions along these roads.

4.4.9 Cultural Resources

The potential impacts of activities and projects associated with the management of cultural and natural resources under Alternative B would be similar to and addressed as described under Alternative A. Alternative B would maintain three of the eight SMAs designated under Alternative A specifically to protect cultural resources (Mockingbird Gap, Fort Craig, and Playa Pueblos). The other five would be modified. The Newton Site SMA would be substantially expanded from 37 acres to 6,789 acres. The Mogollon Pueblo SMA would be eliminated but would be incorporated into the expanded Cerro Pomo SMA and the ruin and associated sites would continue to be managed to protect cultural resources.

Similarly, the Rio Salado SMA would be eliminated but the land would be incorporated into the Ladron Mountain-Devil's Backbone ACEC and the cultural resources would continue to be managed for protection. The Penjeacu/Teypama SMA would be reduced from 37 to 11 acres to reflect the actual extent of the site on public land. The Town of Riley SMA would be eliminated because it is not needed to protect the traditional cultural values of the community, which is mostly on private land.

One ACEC (Tinajas) and two SMAs (Cerro Pomo and Zuni Salt Lake), designated to protect cultural resources along with recreational or hydrological resources, also would be expanded, and Zuni Salt Lake would be expanded and redesignated as an ACEC. In total, 149,179 acres would be managed within special designations to protect cultural resources as a primary or secondary objective. Special designations for protection of natural resources also would be expanded under Alternative B, providing additional, coincident protection of cultural resources compared with Alternative A.

In contrast to Alternative A, heritage tourism is identified as a program goal under Alternative B. Designation of the Quebradas Back County Byway SRMA, Continental Divide National Scenic Trail SMA, and Socorro Nature Area SRMA under Alternative B may provide additional opportunities for public interpretation of cultural resources in conjunction with the recreational and educational uses of those resources. Other opportunities would be considered in response to community and public support and partnership opportunities. Designation of the Gordy's Hill SRMA (7,647 acres or about 12 square miles) would provide an opportunity to better manage ongoing recreational uses. In conjunction with development of a transportation plan network, inventories of designated routes would be conducted to identify and protect cultural resources.

Alternative B also would provide more protection for cultural resources compared with Alternative A by modified management of the uses of other resources on the public land. Proposed realty actions would be evaluated on a case-by-case basis for the potential to affect cultural resources, just as with Alternative A. Identification of retention and disposal areas and right-of-way avoidance restrictions under Alternative B incorporate data that were not available when the 1989 RMP was written, and identification of utility corridors could help reduce impacts on cultural resources outside the corridors (particularly from access, erosion, and alterations of site settings).

Although proposals related to mineral exploration and extraction would be analyzed on a case-by-case basis, just as in Alternative A, more acres would be protected under Alternative B by imposing restrictions in areas of special designation. In some areas, stipulations would provide additional specific protection for cultural resources, for example, by requiring not only surface surveys but also subsurface testing to identify potential buried archaeological resources in areas of shifting sands. In other areas, increased restrictions would benefit cultural resources by reducing access, erosion, and changes in site settings that could occur with development.

Impacts on cultural resources from recreation activities requiring a permit, such as commercial and competitive events, are addressed through NEPA and Section 106 processes. Recreational use of public land is increasing greatly due to population growth in metropolitan areas, proliferation of urban interface areas associated with subdivisions, and the increasing popularity of outdoor recreation activities. Alternative B would increase protection of cultural resources over Alternative A by eliminating cross-country travel. This change would further reduce impacts on cultural resources if implemented through a combination of public education and enforcement of restrictions. Closing routes should help protect cultural resources in WSAs (Appendix J) and areas with other limited use designations as well.

4.4.10 Paleontological Resources

Under Alternative B, the expansion of special designations would increase protection for paleontological resources in those areas as a result of the regulation of surface disturbance. Due to changes in the boundaries of some special designations under Alternative B, the designations would provide additional protection for geologic formations with the potential for paleontological resources within the following areas:

- Horse Mountain ACEC
- Ladron Mountain-Devil's Backbone Complex ACEC (including areas known to contain paleontological resources)
- Pelona Mountain ACEC
- Cerro Pomo ACEC (including important known paleontological resources)
- Tinajas ACEC
- Zuni Salt Lake ACEC (including highly fossiliferous geologic units)

The increase in areas that are closed to OHV use (117,921 acres, or over 400 percent more than Alternative A) also could protect areas with paleontological resources from surface disturbance. The increase in acres that would be limited to designated or existing routes (1,389,624 acres, or 146 percent more than Alternative A) would have a similar effect of reducing the amount of public land that would be exposed to surface disturbance from OHV use. Under Alternative B, there would be no areas designated as open to cross-country travel, which would eliminate a likely source of resource degradation in those areas.

4.4.11 Visual Resources

Under Alternative B, public land managed within special designations to protect natural or cultural resources would increase to 297,555 acres, and management to protect habitat for the aplomado falcon would be established on 40,104 acres of BLM-managed surface land. These measures would expand the areas managed to limit disturbances that could alter the natural landscape or impair experiences by sensitive viewers.

Potential impacts on visual resources from construction activities associated with land use authorizations or mineral development would be similar to those under Alternative A, except that the land identified for right-of-way exclusion and avoidance would increase to 755,626 acres of BLM-managed surface land. The increase in protective management would reduce the potential for effects on visual resources in these areas. However, though fewer acres would be open to development of rights-of-way, the actual amount of disturbance to scenic quality and sensitive viewers would depend on the type and location of facilities that are constructed.

The establishment of a designated utility corridor would consolidate utilities along a major transportation route, reducing overall visual impacts throughout the Planning Area. However, sensitive viewers where residences are clustered along the highly traveled I-25 transportation corridor would be affected by the addition of a utility corridor in that area if new utilities are developed within their viewshed. The utility corridor runs adjacent to the northwest corner of the Veranito WSA, a VRM Class II area. Rights-of-way authorized adjacent to the WSA would impact sensitive viewers within the WSA if visible from within the WSA.

Similar to Alternative A, any acquisitions that consolidate public land would enhance management ability to preserve scenic quality in those areas. The disposal of public land in the future (of up to 89,447 acres) could affect viewshed if disposed land is developed; site-specific impacts and mitigation would be identified during additional NEPA analysis when a disposal is proposed. The public land identified as suitable for disposal would increase 2,989 acres over Alternative A, and land identified for retention would decrease to 1,412,057 acres; this would slightly decrease the effectiveness of visual resource management in comparison with Alternative A if more land is actually disposed. Retention areas are generally large blocks of land, which facilitates management of visual resources.

The types of impacts on visual resources from minerals development would be similar as described under Alternative A. However, the acres associated with fluid mineral leasing stipulations are greater in Alternative B than in Alternative A, and it is expected that appropriate mitigation would be identified under standard terms and conditions or additional stipulations determined on a site-specific basis.

Closures to mineral leasing on 1,543,095 acres of Federal mineral estate (approximately 25 percent) and petitioning to withdraw an additional 72,369 acres of Federal mineral estate from mineral entry would help protect scenic quality and avoid impacts on sensitive viewers in those areas.

Mineral exploration and development activities adjacent to VRM Class I areas could impact distant views from within the Class I area. Alternative B designates 1,810 fewer acres as VRM Class I than Alternative A, resulting in slightly more potential for impacts on sensitive viewers in VRM Class I areas; however, future NEPA analysis would be expected to identify appropriate mitigation measures for proposed projects and activities.

Under Alternative B, the land potentially available for coal leasing would be reduced, resulting in less potential for change to the landscapes in those areas, as compared with Alternative A. Extraction of saleable minerals and coal could result in major changes to landform and natural setting. Mitigation for visual resource impacts resulting from any future proposed project would be identified in subsequent NEPA analysis.

Impacts associated with nonmotorized recreation would be the same as those described for Alternative A. Under Alternative B, cross-country travel would be eliminated; visual impacts from OHV activity (related to vegetation disturbance and dust) would therefore be less widespread under Alternative B. OHV-use areas adjacent to special designations (i.e., the Ladron Mountain-Devil's Backbone Complex ACEC, and the Puertecito and Continental Divide Trail SMAs) could affect sensitive viewers, depending on the intensity and conditions of OHV use.

Alternative B also identifies substantially more land as closed to OHV, reducing the possibility of impacts on the visual setting due to motorized travel in those areas. Designating more land as limited or closed to OHV use than Alternative A allows more areas to revegetate back to the natural landscape.

4.4.12 Cave and Karst Resources

Under Alternative B, the potential impacts on cave and karst resources would be similar to those under Alternative A, but special designations would increase (to 297,555 from 238,936 acres) and would provide more coincidental protection of those resources. The increase in acreage under special designations would protect more area of high karst potential, such as land adjacent to the Puertecito SMA and the White Sands Missile Range Safety Evacuation Zone. The elimination of cross-country travel may provide protection to some resources by reducing access to some areas.

4.4.13 Wilderness Characteristics

The impacts on wilderness characteristics would be similar to those under Alternative A, but more land within WSAs would be undisturbed by OHV use. Under Alternative B, OHV travel would be restricted to designated routes in most WSAs, except where complete closures would occur. A total of 33,888 acres within five WSAs (Devil's Reach, Horse Mountain, Presilla, Sierra de las Canas, and Veranito) would be closed to motorized travel (versus 13,185 acres under Alternative A). Portions of the Sierra Ladrones and Continental Divide WSAs would be closed to motorized travel (see maps in Appendix J). The reductions in motorized access due to route closures would enhance wilderness character.

The authorization of a north-south utility corridor would cause indirect effects on the WSAs located within or adjacent to the corridor. Although the 1995 Interim Management Policy precludes the authorization of rights-of-way within WSAs, facilities that are located close to the WSAs could affect wilderness characteristics such as naturalness and solitude if they are visible from the WSA or associated access routes increase motorized access to the general area. Under Alternative B, the utility corridor would run adjacent to the northwest corner of the Veranito WSA and the Presilla WSA.

Intense OHV use in the Gordy's Hill SRMA could diminish wilderness characteristics in the adjacent Veranito and Presilla WSAs by generating dust and noise. However, more intensive management of this area would mitigate effects on and from OHV users.

A summary of how WSAs would be managed should they be released from wilderness review is provided in Table 2-3.

4.4.14 Lands and Realty

Under Alternative B, the BLM-managed surface land that generally would be available for land use authorizations would decrease from Alternative A, to about 751,271 acres. About 349,343 acres would be managed as right-of-way avoidance areas, where land use authorizations would be permitted within limited dimensions. The primary effect of management would be to increase the acreage that would be excluded from right-of-way authorizations by 367,135 acres over the area in Alternative A.

Federal agencies manage the majority of surface estate east of I-25 (refer to Map 1-1 or 2-12). BLM-managed surface land would provide the most suitable opportunities for locating utilities and/or infrastructure east of I-25, since such utilities are largely incompatible with the missions and mandates associated with other Federal land in that area (such as the national wildlife refuges and the White Sands Missile Range). Because of the right-of-way exclusion and avoidance areas on BLM-managed surface land located to the east of I-25 (see Map 2-12), the placement of east-west utilities on public land could be hindered in this area under this alternative. Limited opportunities would exist to cross BLM surface-managed land east of I-25 in Socorro County, if such an alignment were necessary.

The establishment of a utility corridor under Alternative B would promote the consolidation of locations for new linear facilities along I-25. It is expected that the land available within the utility corridor would be adequate to accommodate the anticipated volume of right-of-way applications. Because the corridor is adjacent to a major roadway, locating rights-of-way in this corridor would reduce additional impacts if previously disturbed areas are used. However, the location of the corridor may be incompatible with adjacent right-of-way exclusion and avoidance areas (see sections 4.4.11 and 4.4.13).

Although more land is identified as suitable for disposal under Alternative B than under Alternative A, an increase of 2,989 acres, this management would not impact existing and planned land uses within the

resource area. If a disposal were proposed, additional NEPA analysis would evaluate the potential effects on land uses that would be relevant to the specific parcel and circumstances.

More land would be managed as VRM Class I and II areas relative to Alternative A (516,872 versus 416,124 acres), but this management would not be expected to effectively prohibit particular land uses since mitigation for any future proposed projects would be applied on a site-specific basis to promote compliance with the visual resource management objectives.

Under Alternative B, more area would be closed to fluid mineral leasing than under Alternative A (1,543,095 versus 1,418,415 acres of Federal mineral estate). Based on land requirements for fluid mineral development predicted in the RFD, it is anticipated that there would be adequate land available for leasing to meet demand. (Note: the availability for leasing land with high potential for the occurrence of fluid minerals is described in the Minerals section.)

Under Alternative B, fewer acres would be available for coal leasing (3,200 versus 31,649 acres). Similar to Alternative A, a cluster of coal extraction activities in high potential areas could effectively limit or exclude other land uses in those areas. Mandatory, site-specific NEPA analysis would be required for any mineral development project, and would identify potential impacts on land uses and appropriate mitigation measures.

Under Alternative B, the majority of BLM-managed surface land in the Planning Area would be open for mineral material disposals; 23 percent (340,066 acres) would be excluded from such uses. However, based on the RFD, impacts would be similar to those described under Alternative A because the relatively small amount of land identified in the RFD would be readily available, and mitigation measures would be identified during NEPA analysis.

More public land would be closed to OHV use relative to Alternative A (117,921 versus 29,117 acres), and Alternative B also would result in a substantial reduction in the acreage that is designated as open to cross-country travel (reducing to 0 acres from 851,234 acres under Alternative A). Indirect impacts on land uses from OHV-related noise and dust would be confined to areas along existing or designated routes. The additional areas that would be designated as closed or limited to designated routes could result in loss of access for some uses, particularly some types of recreation. About 188 miles of roads and trails would be closed, which would result in negligible impact on land uses (beyond those described in the wilderness characteristics and recreation sections).

4.4.15 Forestry and Woodland Management

Vegetative treatments that control the spread of undesirable vegetation, reduce surface fuels, or provide for a native plant community that is better adapted to disturbance from fire, would improve the ability of forested systems to withstand disturbance, particularly the risk of stand-replacing fires.

Woodcutting and vegetative material sales may be permitted in portions of the Pelona Mountain, Ladron Mountain, and Horse Mountain ACECs. Woodcutting activities and vegetative material sales would reduce fuel loads in areas that are in need of fuels reductions, resulting in benefits to forest structure. The surface disturbance associated with woodcutting activities and vegetative material sales could have an adverse impact on forest and woodland soils; however, these impacts would be slight and soils would likely recover over the short term with the application of best management practices for forestry (see Appendix C). Vegetative treatments and harvest of forest resources that result in a discernible change in color, line, form, and texture within a landscape would be limited in VRM Class I areas, 28,533 acres of BLM-managed surface land under this alternative. The impact on forest and woodland management would be less than slight due to the relatively small size of the area affected.

Impacts on forest and woodland resources associated with right-of-way exclusion and avoidance areas would be similar to those under Alternative A. However, approximately 234,512 acres of forested BLM-managed surface land would be designated as right-of-way exclusion and avoidance areas, limiting surface-disturbing activities in more areas than Alternative A. Impacts from land disposal, land acquisition, and minerals development would be similar to those described under Alternative A. However, slightly more land would be designated as suitable for disposal under this alternative.

Forest and woodland management would impact forest health over the short and long term under this alternative. Treatment techniques used to improve the ecological condition of forests and woodlands, reduce high-tree-density woodland sites, and promote herbaceous understory would likely improve the FRCC of these forest types, especially in piñon-juniper, ponderosa, and mixed-conifer types. A reduction of surface fuels and corresponding reduction in the likelihood of stand-replacing fires would lead to an improvement of ecological condition and an increase in the ability of these areas to withstand disturbance from insects and disease.

The types of impacts from commercial and personal woodcutting activities would be similar to those described for Alternative A. The harvest of forest products would result in surface disturbance with impacts on forest health with the degree dependent on the type of equipment used and amount of erosion that results. However, areas (forest and woodland) meeting the criteria listed in Chapter 2 are limited on BLM-managed surface land.

Personal-use plant or plant materials sales would have short-term impacts on forest resources due to the surface disturbance associated with the activity. These activities could potentially reduce hazardous fuel levels that have accumulated, depending on the specific location. Harvest areas would likely recover over the long term from plant material sales.

Impacts of rangeland management would be the same as described for Alternative A. Allocation of vegetation to wildlife, watershed, and livestock at the proposed levels would not have any appreciable impact on forest and woodland resources. The exclusion of domestic sheep and goats to all areas of the Ladron Mountain ACEC within 10 miles of bighorn sheep habitat would have similar types of impacts as those under Alternative A.

Woodcutting or thinning would only be allowed in the Continental Divide National Scenic Trail SMA (outside the Continental Divide WSA), Datil Well SRMA, The Box SRMA, and Cerro Pomo ACEC to support BLM–authorized projects to meet management objectives of woodland or forest health. Harvest of young trees (1 to 10 inches diameter breast height, depending on forest type) within these areas could result in improving or maintaining FRCC, as described above. Impacts associated with woodcutting in these areas are anticipated to be negligible and localized because of the relatively small percentage of BLM-managed surface land in forested areas that would be affected.

4.4.16 Rangeland Management

The impacts on grazing from water-control measures (such as erosion control structures like spreader dams or retention structures), vegetation treatments, or rehabilitation of identified sites would be the same as those Alternative A. However, special designations for the protection of natural and cultural resources, which are more likely to be subject to this management, would be increased to a total of 297,555 acres of BLM-managed surface land; therefore, overall positive or negative impacts would have the potential to occur over a greater area than in Alternative A. Impacts associated with grazing exclusions would be less than under Alternative A, with a total of 214 acres closed to grazing in the Penjeacu and Playa Pueblos SMAs. Under Alternative B, the exclusions to domestic sheep and goat use would be eliminated in the Horse Mountain and Pelona Mountain ACECs, but would be applied to a larger Ladron Mountain ACEC

(57,474 acres of BLM-managed surface land) plus a 10-mile buffer of bighorn sheep habitat. Since there are currently no authorized sheep or goat operations on BLM-managed surface land, there would be no impact on current conditions.

Promotion of heritage tourism on BLM-managed surface land could have long-term direct impacts on livestock grazing by creating disturbances for livestock, limiting the area available for distribution of livestock, and reducing available forage through site-hardening measures. However, these impacts generally would be very site-specific and would affect a limited number of acres.

Substantially more acreage would be excluded from right-of-way authorizations under Alternative B (406,283 acres) than under Alternative A (39,148 acres), and less would be included in avoidance areas (about 109,653 fewer acres). The potential for noise and other disturbances from activity and infrastructure within rights-of-way and utility corridors would therefore be reduced in those areas, as would the impacts on available forage. Limitations on right-of-way authorizations would have the indirect effect of limiting construction of access roads, which might have been used for range management activities.

Potential effects on grazing from land acquisition and disposal would be the same as Alternative A, since any acquisitions likely would be part of an existing grazing allotment and mitigation would be identified as part of the NEPA analysis.

Under Alternative B, use restrictions associated with woodlands harvesting or vegetation sales would increase relative to Alternative A. With increased restrictions, indirect impacts associated with a reduced canopy would be diminished. Reduced plant material sales could limit direct impacts associated with forage loss. However, it is expected that vegetative materials would not be harvested to the extent that it will impede individuals to reproduce. Typical plant species of interest to the public would be small shrubs, yucca, hedgehog cactus species and prickly pear species. This would not affect forage other than in a positive manner, allowing for perennial grasses to colonize areas that experienced the short-term effects of plant removal or soil disturbance.

Under Alternative B, there are more restrictions on mineral development but the RFD would be the same. In localized areas where restrictions are increased over Alternative A, this alternative would result in fewer short-term direct impacts (i.e., disturbances associated with construction, such as noise and accessibility of forage) and more long-term indirect impacts (less competition with other uses if mineral activities are excluded) for livestock grazing. Impacts associated with the overall RFD would be the same as Alternative A.

Impacts from dispersed, nonmotorized recreational activity would be the same as Alternative A. Cross-country travel would be eliminated; therefore, direct impacts associated with forage loss and livestock disturbance, and indirect impacts associated with invasive species and wildfire would be reduced in areas where motorized travel is excluded (117,921 acres, 88,804 more than under Alternative A) or restricted (1,389,624 acres, 826,723 more than under Alternative A), resulting in fewer impacts on livestock grazing than Alternative A.

4.4.17 Minerals

Closures to fluid mineral leasing would exclude those areas from extraction of resources such as oil, gas, carbon dioxide, and helium, and fluid mineral leasing stipulations that control surface use and limit surface occupancy could increase the cost and difficulty of exploration and development of fluid mineral resources to a point where these activities become economically infeasible. The effect of placing a no-surface-occupancy stipulation over large areas would have the same effects as described for

Alternative A. However, under Alternative B, 1,543,095 acres of Federal mineral estate would be closed to leasing, which includes 1,418,415 acres of nondiscretionary closures and an additional 124,680 acres compared with Alternative A. Lease stipulations would be attached to 1,516,824 acres of Federal mineral estate (an additional 780,824 acres over Alternative A).

Of the acreage proposed for closure to fluid mineral leasing, 82,216 acres of Federal mineral estate are within northwestern Catron County, an area of cultural significance to the Zuni Tribe and other tribes. This area also has moderate potential for oil and gas resources. Throughout the entire Planning Area, closed areas overlap with 0 acres of high potential for oil and gas, and 761,155 acres of closed Federal mineral estate are associated with moderate potential for oil and gas (or 18 percent of moderate potential areas in the Planning Area). The remainder are areas of low potential for these resources.

In September and October 2003, active leasing of State land occurred in northwestern Catron County, driven by the discovery of economically developable carbon dioxide and helium resources in the St. John's field in eastern Apache County, Arizona, and westernmost Catron County, New Mexico. Under Alternative B, 36,345 acres of Federal mineral estate with high potential for carbon dioxide and helium resources would be closed to fluid mineral leasing (or 11 percent of high potential areas) and 596,249 acres of Federal mineral estate with moderate potential would be closed (or 16 percent of moderate potential areas in the Planning Area).

The revenue lost to the U.S. general fund resulting from these closures to fluid mineral leasing is uncertain, but may be substantial. Revenue lost from Federal lease sales, using an estimated lease fee of $2.00 per acre per year, could total $100,000 per year if 50,000 acres were leased. The loss of royalties for production of carbon dioxide and helium also is uncertain. Using the St. John's field as an analogy, 50,000 acres of Federal land could contain up to 2.5 trillion cubic feet of carbon dioxide and 11 billion cubic feet of helium. If half of those estimated carbon dioxide reserves are recovered, sales of 1.25 trillion cubic feet of carbon dioxide could generate up to $1.25 billion at $1.00 per thousand cubic feet delivered. If half of those estimated helium reserves are recovered, sales of 11 billion cubic feet of helium could generate up to $577 million using the $52.50 per thousand cubic feet sales price for helium established by the Federal government in 2003 (USGS 2004).

The RFD for fluid minerals predicts that 1,000 acres would be required for development of oil and gas and 50,000 acres for carbon dioxide and helium over the next 15 years. There would be adequate Federal minerals available to accommodate this demand, since 3,035,925 acres of Federal minerals would be open under standard terms and conditions, and 1,516,824 acres of Federal minerals would be available with stipulations. These areas include 1,642,632 acres that are of moderate potential for oil and gas resources.

To protect wildlife, vegetation, and cultural resources, BLM would petition to withdraw additional acres from mineral entry in the high and medium mineral resource potential areas in Ladron Mountain ACEC (23,567 acres), 43,952 acres of Federal mineral estate identified for protection of potential aplomado falcon habitat, 1,500 acres within and in the vicinity of Tinajas ACEC, all Federal minerals within the Protection Zone of the Zuni Salt Lake ACEC (2,881 acres), 320 additional acres in The Box SRMA, and 149 acres within Fort Craig SMA (when all minerals are acquired). If these proposed withdrawals are completed, the locations of some of these withdrawals would include areas with high or moderate locatable mineral resource potential.

As part of this RMPR, the BLM completed a coal screening assessment of high coal potential areas within the Planning Area that included application of 20 unsuitability criteria (see Appendix I). The analysis resulted in the classification of about 3,200 acres as not unsuitable for coal leasing in the Salt Lake Coal Field, in northwestern Catron County. As a result, about 28,440 fewer acres with high potential would be available for consideration for coal leasing on BLM-managed surface land compared to

Alternative A. The RFD estimates that one new coal field producing 80 million tons of coal would be permitted and developed within the Planning Area. Opportunities to achieve this RFD on public land within the high coal potential area near the Salt Lake Coal Field would be limited due to the reduced acreage identified as "not unsuitable" for coal leasing. In addition, the unavailability of BLM-managed surface land in this high coal potential area would affect coal development opportunities on adjacent State and private land if the lack of contiguous development opportunities limits the ability to have a large enough coal extraction operation to be cost-effective.

Approximately 340,066 acres would be excluded from mineral material disposal. This would effectively represent only a slight increase in restrictions over Alternative A, since under both alternatives about 291,826 acres are in WSAs and would be managed under the Interim Management Policy, which generally disallows activities that would be incompatible with the nonimpairment criteria. The overall availability of salable mineral resources for extraction from public land would not be compromised, because mineral materials deposits are available in moderate to high potential areas throughout BLM-managed surface land.

Decisions about access and realty could indirectly encourage or restrict exploration and development of mineral resources in a similar way as described for Alternative A, except under Alternative B the exclusions and restrictions on right-of-way and access increase. Under Alternative B, a total of 755,626 acres would be managed as right-of-way exclusion or avoidance areas (an increase of 257,482 acres over Alternative A). A total of 117,921 acres would be closed to OHV (an increase of 88,804 acres over Alternative A) and 902,782 acres of BLM-managed surface land would be limited to designated routes (an increase over Alternative A). The expansion of areas with restrictions on access could affect the ability to develop the infrastructure needed to explore and develop mineral resources in some areas. The impacts associated with the land acquisitions would be the same as Alternative A.

4.4.18 Recreation

Similar to Alternative A, management within special designations and to meet VRM Classes I and II objectives would enhance opportunities for primitive recreation. However, special designations for the protection of these resources would increase to 297,555 acres and VRM Classes I and II areas would expand to 516,872 acres. Relative to Alternative A, Alternative B would provide more opportunities for primitive types of recreation due to the expansion of the Zuni Salt Lake ACEC and the Ladron Mountain-Devil's Backbone Complex ACEC, while potentially diminishing opportunities for motorized recreation. However, given the opportunities for these types of uses elsewhere on BLM-managed surface land, these restrictions would not be expected to impact the overall availability and/or quality of recreational opportunities throughout the Planning Area.

Under Alternative B, 406,283 acres (27 percent of BLM-managed surface land) would be allocated as right-of-way exclusion areas, and 349,343 acres (23 percent) would be allocated as right-of-way avoidance areas. Restrictions on right-of-way and land use authorizations within special designations are consistent with maintaining a more primitive, dispersed recreational setting that is typically associated with those areas. In areas outside of right-of-way exclusion or avoidance areas (on 50 percent of BLM-managed surface land as opposed to 67 percent under Alternative A, refer to Table 4-1), the resulting impact on recreational opportunities would be the same as those discussed under Alternative A.

Under Alternative B approximately 2,989 additional acres would be identified as suitable for disposal compared to Alternative A. Land identified as suitable for disposal typically is dispersed and remote, and does not provide special or unique recreational opportunities. If all land identified was disposed of, areas open for OHV use would not be reduced and compared with Alternative A, there are no specific areas where recreation would be affected by disposals of surface estate adjacent to existing special designation.

In addition, BLM would acquire non-Federal cultural resource areas as the opportunity allows based on criteria for significance, feasibility, tourism potential, etc. These land acquisitions could bring more recreation users to those areas, which provides for additional opportunities for recreation users. Alternatively, land acquisitions only for the purposes of protecting cultural resources could result in restrictions to recreation uses and opportunities (e.g., area closures to motorized access or OHV activities).

The types of impacts on recreation from management of minerals would be the same as those under Alternative A. The overall balance of recreational opportunities within the Planning Area would not likely be affected by fluid mineral leasing, as a variety of recreation settings would still be widely available and not directly affected by exploration and development activities. However, the increased acreage closed to leasing could result in more protection for existing primitive and semi-primitive recreation settings in the Fence Lake and Ladron Mountain areas due to the exclusion of equipment, access roads, and activities from those areas. There could be localized impacts on the character of the recreation setting in areas where mineral development activities are clustered into smaller areas of mineral development potential.

Under Alternative B, impacts related to coal extraction and mineral material disposals would be similar to Alternative A. In addition, given the small acreage identified for coal extraction (less than 0.04 percent of the Planning Area), overall impacts on recreational opportunities in the Planning Area would be expected to be negligible.

OHV use would be more restricted under Alternative B than under Alternative A. No BLM-managed surface land would be designated as open for cross-country travel, resulting in fewer opportunities for this type of motorized recreation. However, about 1,389,624 acres (or 92 percent) of BLM-managed surface land would continue to allow motorized travel (and its associated recreational uses) on existing or designated routes. About 117,921 acres (or 8 percent) of BLM-managed surface land would be closed to OHV travel compared with 2 percent under Alternative A. The additional areas that would be designated as closed under Alternative B include 60 percent of the existing routes within WSAs (Appendix J). Based on the change from limited to closed in WSAs, existing OHV uses in these areas would be displaced to other areas and/or routes; but closure of these areas also would provide increased opportunities for primitive (nonmotorized) recreation and solitude within the WSAs. Although the effects from these closures would be greater compared with impacts under Alternative A, impacts would be negligible considering the existing, extensive route network.

4.4.19 Renewable Energy

Impacts would be similar to Alternative A, except the management to minimize the intensity and location of surface-disturbing activities would be expanded over a larger area of special designations to protect natural and cultural resources (297,555 acres of BLM-managed surface land, or 58,619 acres more than Alternative A). In addition, right-of-way exclusion areas would be increased by 367,135 acres to total 406,283 acres of BLM-managed surface land. As stated for Alternative A, these effects would be most relevant in areas of moderate to high wind, solar, and biomass resource potential (identified in the February 2005 Management Situation Analysis).

Management of VRM Class I and II areas could affect the placement of or required mitigation for renewable energy facilities as described for Alternative A, but the acreage managed under these VRM classes would be expanded to 516,872 acres (100,748 acres more than Alternative A).

4.4.20 Transportation and Travel Management

Management to protect natural or cultural resources associated with special designations would be applied to additional acreage under Alternative B (for a total of 297,555 acres of BLM-managed surface land compared with 238,936 acres under Alternative A). The types of impacts associated with management in special designations would be the same as those under Alternative A. However, new limitations placed on existing uses and access could cause the diversion of travel to other routes, affecting the intensity of use on nearby routes or causing the development of additional unauthorized routes to accommodate demand. Restrictions would not be expected to affect overall travel throughout the Planning Area because of the relatively low acreage that would be impacted.

The types of impacts associated with right-of-way exclusion and avoidance areas are similar to those described under Alternative A, but under Alternative B these designations would be expanded to include a total of 50 percent of BLM-managed surface land (755,626 acres). The establishment of a utility corridor under Alternative B would be expected to result in the co-location of utilities along the I-25 corridor. Overall, access roads that would be associated with any new rights-of-way in the corridor would improve overall access to public land from I-25, the primary transportation route in the Planning Area, by expanding the network of roads within the corridor. Impacts from land disposal or acquisition would be similar to Alternative A. Under both alternatives 6 percent of BLM-managed surface land is identified for disposal, with 2,989 additional acres identified for disposal under Alternative B compared with Alternative A. Land identified as suitable for disposal is typically dispersed and remote, and disposal would not diminish transportation opportunities in the Planning Area.

The types of impacts on transportation from minerals management would be similar to those described under Alternative A, in that new public access typically accompanies mineral development. However, the reduction in acres that would be potentially available for coal leasing would result in fewer routes and less truck traffic from coal extraction activities than would be expected under Alternative A. In addition, the specific areas where localized impacts could occur would vary due to the increased areas closed to fluid mineral leasing and identified exclusion areas for mineral material disposals compared to Alternative A.

Similar to Alternative A, restriction of travel could result in localized impacts. However, 92 percent of BLM-managed surface land (1,389,624 acres) would accommodate motorized travel (Table 4-1). Under this alternative, there would be 157 miles of route closures within WSAs, a 23 percent increase over Alternative A (Appendix J). Twenty-six miles of road also would be closed outside WSAs to accommodate wildlife concerns; no roads have been identified for closure outside WSAs in Alternative A. Closures could cause an increase in traffic volume on routes that remain open, and localized impacts requiring higher levels of maintenance could occur.

4.4.21 Social and Economic Conditions

Under Alternative B, areas managed to protect natural and cultural resources within special designations would be expanded to 297,555 acres, a 25 percent increase over Alternative A. This management also would preserve and enhance scenic views and primitive recreation settings; this could contribute to positive perceptions of the area, increase visitation, and thus impact local economies in the Planning Area. However, since the Planning Area does not provide some of the variables that typically correlate with the ability to translate these types of amenities into economic development potential, the incremental effect over Alternative A of the additional acreage that would be managed to protect natural and cultural resources under Alternative B is expected to be minimal.

With regard to Zuni Salt Lake, a conservative management approach under this alternative would reduce the likelihood of impacts on the quantity and quality of water resources (and consequently the associated

sociocultural values) in the lake; however, a better understanding of the incremental effect of Alternative B over Alternative A would require additional hydrogeologic study (see Section 4.4.5). In addition, the development of a memorandum of understanding between the BLM and Zuni Tribe would have the effect of formalizing communication regarding future activity on public land in the area of this culturally important resource, with the potential effect of improving collaborative local decision-making.

Under Alternative B, the expansion of right-of-way exclusion areas (to 406,283 acres of BLM-managed surface land) and designation of a right-of-way corridor could result in denial of some linear developments based on location alone, but would likely streamline the approval/review process. Cost of development for utility companies could increase if the corridor is not ideally compatible, but commonality of location would increase efficiencies (e.g., established access points). Socioeconomic impacts associated with land acquisition and disposal would be the same as Alternative A.

The socioeconomic impacts of fluid mineral, coal, and locatable extraction activity in areas that are open to such activities under standard terms and conditions would be the same as Alternative A. These include direct and induced income generation, payment of royalties to the State of New Mexico and U.S. General Fund, and tax payments to local jurisdictions. However, under Alternative B 124,680 additional acres of Federal mineral estate would be closed to fluid mineral leasing to achieve other resource objectives. Areas that would be closed to fluid minerals leasing include 36,345 acres with high potential for carbon dioxide and helium and 761,155 acres with moderate potential for oil and gas resources. In these areas, the closures would eliminate the possibility of capitalizing on economic opportunities to extract these fluid minerals. In addition, BLM would petition to withdraw 72,369 acres of Federal mineral estate, an additional 70,861 acres as compared with Alternative A.

Similar to Alternative A, controlled surface use lease stipulations and limits on surface occupancy would curtail fluid mineral leasing and development activities if restrictions increase the cost and difficulty of exploration for and development of mineral resources such that these activities cease to be economically feasible (for example, if more expensive directional drilling is required). However, under Alternative B the areas subject to these stipulations would expand to 1,516,824 acres, or more than double the acreage with stipulations under Alternative A.

Under Alternative B, a smaller area (about 3,200 acres) is identified as potentially suitable for coal leasing. As a result, 59,504 acres of areas with high potential for coal in Catron County would be excluded from coal leasing in order to achieve other resource objectives, although the difference in "not unsuitable" areas compared to Alternative A would be about 28,440 acres. Economic and social effects that would result from this management include lost opportunities for wage income from employment, lost induced income from wages that would circulate through the local economy, lost revenue generation for the State of New Mexico and U.S. General Fund from royalties, and lost tax revenue generation for local jurisdictions.

There are also factors influencing private decisions to develop coal resources in this area that are outside of BLM's authority, as demonstrated by Salt River Project's decision to relinquish its permits to extract coal from the Fence Lake Mine for reasons unrelated to BLM management, including as a response to public controversy. Although closures to coal leasing of public land in this area certainly disallows the economic opportunity altogether, historically, the availability of public land for coal extraction has not been the sole factor in predicting outcomes related to the type of economic development that occurs.

Under Alternative B, 340,066 acres would be excluded from mineral material disposals. About 291,826 acres (or 86 percent) of this total are within WSAs. In accordance with the Interim Management Policy (which would provide management direction in WSAs under all alternatives), the sale and free use of mineral materials would not be allowed in WSAs in most instances because it would be incompatible

with the nonimpairment criteria. Therefore, the more formal exclusion of these areas under Alternative B in these areas would not likely result in an actual decrease in the land that would be approved for mineral material disposals. Due to the fairly small (relative to the size of the Planning Area) RFD and the fact that exclusions within the potential aplomado falcon habitat areas make exception for areas in proximity to Highway 380 (the most likely locations to experience demand for mineral materials extractions), overall socioeconomic effects from this management would be negligible.

Under Alternative B, there would be adjustments to vegetative sales areas for protection of resources, although no measurable social or economic impact is expected to result due to the low volume of sales and the flexibility in the management to continue to meet local and regional needs.

Similar to Alternative A, management of public land would continue to provide opportunities for grazing and would result in the sustainable management of grazing (through adherence to public land health standards). This supports the continued viability of ranching, an important component of local economies. Under Alternative B, there would be changes in the areas closed to domestic sheep and goats (expanded area for Ladron Mountain-Devil's Backbone Complex ACEC, discontinued for the Pelona Mountain and Horse Mountain ACECs). However, associated social and economic impacts would likely be minor given that domestic sheep and goats are not the primary livestock grazed in the Planning Area. Areas in special designations where livestock grazing is currently excluded would be reduced due to changes in SMA boundaries with grazing exclusions (Penjeacu SMA reduced from 17 acres to 11 acres and Playa Pueblos SMA would remain at 245 acres). This could have localized socioeconomic impacts on affected livestock operators if it increases available forage and area available for grazing uses. In addition, the expansion of special designations under this alternative could affect grazing management or the forage available for grazing in those areas.

The types of socioeconomic impacts from recreation management would be similar to those under Alternative A. However, management under Alternative B would expand the areas managed in special designations for recreation use to 100,358 (an increase of 75,997 acres over Alternative A). This type of management could accommodate more people at developed recreation sites, improve the recreation setting and experience, and convey to the public that these areas are available as recreation destinations. All of these effects could contribute to increases in visitation to developed sites and on public land generally. This would result in increases in fees received by BLM; however, the more substantial economic effects would include increased local expenditures in local communities such as Datil, Socorro, and other communities along I-25 that would provide services and equipment to visiting recreationists. The types of expenditures that would be likely are estimated under Alternative A in Table 4-5. In addition, the identification of specific recreation areas could contribute to local economic development efforts that are built on tourism.

Although the management of OHV area designations varies from Alternative A, social and economic resources generally are not expected to experience incremental impacts from those changes since overall travel throughout the Planning Area would not be inhibited.

4.4.22 Environmental Justice

Under Alternative B, management to make additional Federal minerals and land unavailable for fluid mineral leasing or locatable mineral development through closure or withdrawal could have socioeconomic effects in low-income areas. The reduced acreage of public land potentially suitable for coal development would have a similar effect. Possible locations where these impacts would occur are in northwestern Catron County, where such management is proposed in the vicinity of the Salt Lake Coal Field and areas with high potential for carbon dioxide and helium, and moderate potential for oil and gas resources. BLM management would exclude development opportunities related to these resources through

closure; as noted in Section 4.4.17, a stipulation of no-surface-occupancy over an area greater than one square mile (although this distance could vary depending on site-specific conditions) would result in a de facto closure since the area could not be accessed via directional drilling. It is difficult to isolate the fiscal effects of this management since specific development proposals have not been made and, as noted in Section 4.4.21 above, factors outside of BLM's authority also have influenced the development of resources in the area.

Census tract 9762 encompasses all of Catron County, and its poverty rate of 24.4 percent exceeds the statewide figure of 18.4 percent. Communities such as Quemado and Pie Town could be affected by the restrictions on mineral development, as loss of potential for mineral development would eliminate potential for direct, indirect, and induced income from mining, as well as tax revenue for those communities. However, direct employment effects from mining would be minimal if skilled labor were to relocate to the area to fill any new mining jobs; a large mining labor pool does not currently exist within the community. In this case, though, mining would still provide indirect and induced income in local communities. In addition to these effects, potential development of mineral resources on State and private land in the area could be affected, where economies of scale were inhibited through unavailability of developable land, and if specific locations with higher resource value were not available.

Conversely, the restrictions on mineral development have as their objective the protection of resources with significant cultural and religious value to American Indians, another environmental justice population. The area within the Zuni Salt Lake ACEC proposed under Alternative B conforms to the area with a formal Determination of Eligibility to the National Register of Historic Places. The area has historic value as a location where six tribes have traditionally ceased hostilities to allow salt gathering. Zuni Salt Lake is considered to be a sacred site with ceremonial importance. The impact analysis determined that Alternative B would not result in impacts on Zuni Salt Lake, due to established Federal and State law and policy and management to minimize surface disturbance in the area of the lake.

4.5 ALTERNATIVE C

4.5.1 Summary of Management Direction

Alternative C provides greater emphasis on resource protection than Alternative B. This would be achieved primarily through more management emphasis on protection of resource values associated with special designations and special status species. In some areas, commodity production would be excluded to protect sensitive resources. A summary of Alternative C also is provided in Table 2-1, Chapter 2, while a summary of management prescriptions for ACECs and SMAs in Alternative C is provided in Table 2-2.

4.5.2 Summary of Aggregate Effects of Alternative C

Under Alternative C, management to minimize surface disturbance would be expanded, largely in the northwestern corner of Catron County. Generally, Alternative C includes the most restrictive management—more resource uses (i.e., mineral extraction, OHV use) would be excluded or limited over a larger area. The effects of this management would include localized and overall reduction of soil and vegetation loss, and consequent maintenance or enhancement of habitat. In addition, reduced surface disturbance also would result in less habitat degradation and fragmentation, and would reduce disturbance to wildlife movement corridors. Acreages that would be managed to minimize various types of surface use are identified in Table 4-1.

The total area within special designations to protect natural and cultural resources would be expanded to 336,609 acres, due primarily to expansion of the Zuni Salt Lake ACEC to 156,601 acres of BLM-managed surface land. This would reduce potential for soil erosion and vegetation loss over Alternatives

A and B. It is unclear whether the larger ACEC would have an incremental protective effect on groundwater resources over what is proposed in Alternative B due to a lack of knowledge regarding the hydrogeology of the area. Public land within the Zuni Salt Lake ACEC that has moderate potential for oil and gas resources would be closed to fluid mineral leasing. As a result, valuable carbon dioxide and helium resources would not be developed on public land; however, those resources could be drained by development on adjacent State and fee land. The unavailability of these areas for leasing could result in lost opportunities for wage income, induced income as wages circulate through local economies, revenue for the State of New Mexico and the U.S. General Fund from royalties, and tax revenue for local jurisdictions.

Alternative C would increase the protection of habitat for the aplomado falcon and other species that utilize Chihuahuan semi-desert grassland. These habitat areas would be managed to reduce surface disturbance from minerals exploration and development, right-of-way development, and other surface-disturbing activities through land allocations (Table 4-1) and management described in Appendix L. These protective measures would increase overall protection of general wildlife and special status species habitat and would expand the effects that would occur in Alternative B throughout a larger portion of the Decision Area.

Management under this alternative would still accommodate diverse uses, although impacts on mineral development are anticipated. The expanded acreage managed within special designations (and therefore typically subject to a combination of the restrictive management listed in Table 4-1) would support the maintenance or enhancement of primitive and semi-primitive recreation settings over a greater area. In addition, localized effects would occur as opportunities for motorized recreation would be diminished due to more closures to OHV use as compared with Alternatives A and B. The types of impacts on minerals would be similar to Alternative B, except for the restrictions in the Zuni Salt Lake ACEC that would further inhibit fluid minerals leasing as described above.

Under Alternative C, a total of 27,780 BLM-managed surface land would be designated as special designations to manage recreation uses. The change in acreage from Alternative B is due to smaller SRMAs and a substantial reduction in the size of the Continental Divide SMA. The effects of recreation management under Alternative C would be similar to those under Alternative B, although there could be additional dispersed recreational use under Alternative C. However, the designations would have the same type of localized effect with regard to increasing visitation as the result of the presence of developed facilities, improved recreation settings, and public knowledge that a particular area is an intended recreation destination.

4.5.3 Air Quality

Expansion of the Pelona Mountain ACEC to 52,336 acres could serve to improve the protection of air quality in the Gila Wilderness Class I area, located to the south, similar to Alternative B but to a greater degree than Alternative A. The potential for direct air quality effects from mineral development under Alternative C would also be the same as Alternative B as the same acreage of land is identified as potentially suitable for coal leasing.

Changes in allocated utilization of OHV use area designations also could result in incremental direct benefits for air quality, as compared with Alternative A. As noted in Table 4-1, Alternative C would eliminate cross-country travel and increase the acreage closed to OHV use 5-fold compared with Alternative A and an additional 19 percent compared with Alternative B. As a result, the aggregated particulate and engine exhaust emissions throughout the Planning Area under Alternative C would be expected to be less than both Alternatives A and B.

4.5.4 Geology

Potential impacts on geologic resources from surface disturbance could occur as described for Alternative A; however, the use restrictions within special designations and some other areas that provide coincidental protection of geological resources would be expanded under Alternative C (see Table 4-1). Similar to Alternative A, it is expected that potential impacts from surface-disturbing activities would be mitigated through measures identified through site-specific NEPA analysis.

Similar to Alternative B, there would not be any areas open to cross-country travel under Alternative C. The potential for localized disturbances to geologic resources from dispersed recreation activities such rock-climbing or mountain-climbing would be the same as described for Alternative A.

4.5.5 Soil and Water Resources

Similar to Alternative A, the application of best management practices and other mitigation that would be identified during additional NEPA analysis would address the potential for site-specific impacts on soils from surface-disturbing activities. However, under Alternative C, there would be an expansion of special designations for the protection of natural and cultural resources to 336,609 acres, an increase of 97,673 acres (41 percent) over Alternative A. The management within expanded special designations would reduce overall soil disturbances, compaction and erosion; prevent water quality degradation from sediment; and maintain or increase soil productivity. Potential aplomado falcon habitat areas would be protected on 63,808 acres of BLM-managed surface land, producing the same types of effects on soils over a larger area in southern and central Socorro County.

Under Alternative C, there would be an expansion of right-of-way exclusion areas to 716,100 acres of BLM-managed surface land (676,852 acres over Alternative A), areas associated with fluid mineral leasing stipulations to 947,044 acres (an additional 211,044 acres), and areas closed to fluid mineral leasing to 1,856,116 acres (an additional 437,701 acres). This type of management to limit surface disturbance would reduce soil erosion and increase soil infiltration and productivity.

Under Alternative C, the current 4,839-acre Zuni Salt Lake SMA would be replaced with the Zuni Salt Lake ACEC on approximately 156,601 acres of BLM-managed surface land. This area would be closed to fluid mineral leasing, BLM would petition to withdraw it from location and entry under the mining laws, and it would be excluded from mineral material disposals. In addition, the restrictions on commercial water wells would support other management limiting surface disturbance within the area. Due to incomplete knowledge about the hydrogeology of the area, it is unclear whether the management within the larger ACEC would have an incremental protective effect on groundwater resources over what is proposed in Alternative A or B.

The impacts associated with the utility corridor would be the same as Alternative B, except the potential for soil disturbance in sensitive areas would increase where the corridor overlaps with right-of-way exclusion areas.. The areas managed as VRM Class I and II areas would be expanded to 742,799 acres (a 79 percent increase over Alternative A). Soil and watershed resources would be protected or enhanced in those areas as a result of the management emphasis on maintaining existing vegetation and terrain features in those areas.

The management of commercial and personal-use woodcutting and plant material sales under Alternative C would reduce the potential for catastrophic wildfires and improve surface water infiltration. The exclusion of new road building would further decrease the amount of land accessible to disturbance from these activities. Impacts on soil and water resources from grazing are described as part of the Vegetation discussion (Section 4.5.6).

Impacts associated with the identification of about 3,200 acres as potentially suitable for coal leasing would be the same as Alternative B. Under Alternative C, the areas where mineral material disposals are excluded would be expanded to 484,133 acres of BLM-managed surface land, increasing protection from soil disturbance.

Under Alternative C, no BLM-managed surface land would be open to cross-country travel, and there would a substantial increase in acres with limitations on OHV use relative to Alternative A (1,366,866 versus 562,901 acres of BLM-managed surface land). This would reduce the potential for soil loss and water quality impacts due to OHV use over a wider area; the degree and pattern of impacts would depend on the intensity, location, and type of OHV use.

The designation of additional "closed" and "closed and rehabilitated" routes within WSAs would reduce disturbance to soil and water resources, similar to Alternative B. Alternative C would add additional route closures, primarily in the Antelope, Continental Divide, Eagle Peak, Horse Mountain, and Mesita Blanca WSAs (Appendix J).

4.5.6 Vegetation

Management in critical watershed areas would protect vegetation by reducing erosion and improving water quality within those watersheds. The types of impacts on vegetation associated with management to minimize surface disturbance in special designations would be the same as described under Alternative A. However, special designations to protect natural and cultural resources would total 336,609 acres, 41 percent more than Alternative A. Approximately 63,808 acres of potential aplomado falcon habitat areas on BLM-managed surface land would be managed to minimize surface disturbance, indirectly affecting vegetation. Monitoring would occur to ensure a stable or increasing trend on allotments with aplomado habitat. More vegetation would be protected from surface disturbance within special designations to protect natural and cultural resources, bighorn sheep habitat, and potential aplomado falcon habitat under Alternative C than all other alternatives.

The types of impacts identified for land and realty and visual resources management under Alternatives A and B would be the same under Alternative C. However, right-of-way exclusion areas would total 716,100 acres, avoidance areas would total 419,120 acres, and VRM Class I and II would be expanded to 742,799 acres. Protection of vegetation associated with these land allocations would be greatest under Alternative C. The number of acres per vegetation type managed as right-of-way exclusion and avoidance areas is summarized in Table 4-10. Exclusion areas would protect coniferous mixed woodland, desert grassland, plains-mesa grassland, and plains-mesa sand scrub. In avoidance areas, juniper savanna would be the most represented type. Some areas with lava beds in northwestern Catron County (additional to the acres noted in Table 4-10) generally are identified as right-of-way exclusion and avoidance areas.

TABLE 4-10
ACREAGE OF VEGETATION TYPE IN RIGHT-OF-WAY (ROW) EXCLUSION AND AVOIDANCE AREAS FOR ALTERNATIVE C[A]

Vegetation Type	Acres in BLM-Managed Surface Land	Right-of-Way Exclusion	Percent of population	Right-of-Way Avoidance	Percent of Population
Chihuahuan Desert Scrub	168,059	65,814	39	39,787	24
Closed Basin Scrub	13,941	4,529	32	987	7
Coniferous And Mixed Woodland	143,686	65,606	46	46,810	33
Desert Grassland	316,268	212,155	67	78,812	25
Juniper Savanna	324,153	117,032	36	111,783	34
Lava Beds	21,353*	21,345	100*	0	0

Vegetation Type	Acres in BLM-Managed Surface Land	Right-of-Way Exclusion	Percent of population	Right-of-Way Avoidance	Percent of Population
Montane Coniferous Forest	30,945	11,084	36	15,240	49
Montane Scrub	11,456	3,050	27	4,524	39
Plains-Mesa Grassland	258,389	114,779	44	62,088	24
Plains-Mesa Sand Scrub	201,015	98,631	49	53,282	27
Urban, Farmland or Open Water	15,518	995	6	4,955	32
Total	**1,504,783**	**715,020**	**48**	**418,268**	**28**

SOURCE: Dick-Peddie 1993
NOTE: [a]Acreage based on best available GIS data.
*The data on which these calculations are based do not include some additional lava beds in northwestern Catron County. These areas are addressed in the text, as appropriate.

Impacts related to land acquisition, land disposal (up to 74,313 acres), would be the same as those under Alternatives A and B. Under Alternative C, the north-south utility corridor would be in a slightly different location than Alternative B. The Alternative C corridor would be located further off of the I-25 corridor, resulting in impacts to more acres of Chihuahuan desert scrub and desert grasslands. About 15 percent of the corridor would be located in previously disturbed areas. The number of acres per vegetation type managed within the utility corridor is summarized in Table 4-11.

TABLE 4-11
ACREAGE OF VEGETATION TYPE IN UTILITY CORRIDOR FOR ALTERNATIVE C

	Acres of BLM-Managed Surface Land	Utility Corridor (BLM-Managed Surface Land Only)	Percent of BLM-Managed Surface Land Population	Utility Corridor (All Lands)
Chihuahuan Desert Scrub	168,059	19,532	12	58,465
Closed Basin Scrub	13,941	0	0	0
Coniferous And Mixed Woodland	143,686	0	0	0
Desert Grassland	316,268	5,883	2	22,368
Juniper Savanna (Ecotone)	324,153	0	0	0
Lava Beds	21,353	0	0	0
Montane Coniferous Forest	30,945	0	0	0
Montane Scrub	11,456	0	0	0
Plains-Mesa Grassland	258,389	0	0	0
Plains-Mesa Sand Scrub	201,015	0	0	0
Urban, Farmland Or Open Water	15,518	2,794	18	14,545
Totals:	**1,504,783**	**28,209**	**2**	**95,378**

SOURCE: Dick Peddie 1993

The types of impacts from forestry and woodland management under Alternative C would be the same as those under Alternative B, except more areas would be closed to woodcutting under Alternative C because commercial woodcutting is permitted only in areas with existing roads (no temporary roads could be constructed). Therefore, more vegetation would be protected under Alternative C than the other alternatives.

The emphasis on wildlife and water resources over grazing resource objectives under Alternative C may result in changes to grazing management in some areas. For example, range improvements might not be permitted in some special designations or would be built to suit resource objectives other than grazing. Although this management may result in some localized effects on vegetation, the overall difference in

impacts on vegetation from grazing compared to Alternative A may not be substantial, since BLM would manage public land to meet public land health standards regardless of alternative.

The types of impacts on vegetation that would result from ground-disturbing activities associated with mineral exploration and development are the same as Alternative A. However, more vegetation would be protected from ground disturbance in areas closed to minerals leasing under Alternative C. Desert grassland, juniper savanna, and plains-mesa sand scrub would be most commonly protected; the number of acres per vegetation type managed for minerals leasing is summarized in Table 4-12. Some areas with lava beds in northwestern Catron County (additional to the acres noted in Table 4-12) would be managed under a controlled surface use lease stipulation.

TABLE 4-12
ACREAGE OF VEGETATION TYPE CLOSED TO FLUID MINERALS LEASING FOR ALTERNATIVE C[A]

Vegetation Type	Acres on Federal Mineral Land	Federal Mineral Estate Closed to Leasing	Percent of Population on Federal Mineral Estate
Chihuahuan Desert Scrub	378,821	209,407	55
Closed Basin Scrub	122,868	86,147	70
Coniferous And Mixed Woodland	1,248,813	224,339	18
Desert Grassland	585,991	305,555	52
Juniper Savanna (Ecotone)	1,020,984	253,756	25
Lava Beds	21,370*	21,395	100
Montane Coniferous Forest	1,459,415	221,761	15
Montane Grassland	44,451	789	2
Montane Scrub	75,986	61,914	81
Plains-Mesa Grassland	546,079	117,817	22
Plains-Mesa Sand Scrub	398,119	256,619	64
Subalpine Coniferous	131,501	69,629	53
Urban, Farmland or Open Water	41,777	15,663	37
Total	**6,076,174**	**1,844,791**	**41**

SOURCE: Dick-Peddie 1993
NOTE: *The data on which these calculations are based do not include some additional lava beds in northwestern Catron County. These areas are addressed in the text, as appropriate.

The number of acres available for coal leasing under Alternative C is the same as identified for Alternative B; therefore, the impacts would be the same. Approximately 484,133 acres would be excluded from mineral material disposal. In addition to the 11,408 acres managed as withdrawn from mineral entry, BLM would petition to withdraw approximately 497,391 acres of Federal mineral estate from mineral entry. More vegetation would be protected from impacts associated with vegetation loss due to mineral material extraction or locatable mineral development under Alternative C than the other alternatives.

The impact types associated with management of recreation identified under Alternative C would be the same as those under Alternative A, although special designations managed to protect and manage recreation resources would total 27,780 acres. Management of the Datil Well, Quebradas Backcountry Byway, and Socorro Nature Area SRMAs would be the most restrictive of activities that result in ground-disturbance under Alternative C, as compared with all the other alternatives. The Gordy's Hill SRMA would be managed to limit vehicle use to existing routes; this would limit further loss of vegetation when compared to the current management of open OHV use throughout the entire area.

The types of impacts from management associated with transportation identified under Alternative C would be the same for Alternatives A and B. In general, more vegetation would be protected under this alternative, because it includes the most acreage closed to OHV use (139,971 acres of BLM-managed surface land). Vegetation closely associated with designated or existing roads would be directly impacted in these areas, but vegetation further from these roads would be protected from further impact. The number of acres per vegetation type managed for transportation is summarized in Table 4-13. Some areas with lava beds in northwestern Catron County (additional to the acres noted in Table 4-13) would be managed as limited to designated routes, which would ensure that resource values that require protection would be closed to motorized travel through the transportation planning process.

4.5.7 Wildlife, Riparian Habitat, and Special Status Species

The types of impacts from management of special designations to protect natural and cultural resources would be the same as those under Alternative A, but would apply to the greatest number of acres (336,609 acres) under Alternative C. In addition, Alternative C would result in more protective measures, stipulations and designations than any other alternative (see Table 4-1).

Wildlife habitat would be managed much the same as in Alternative B, but with slightly more acreage managed under special designations focused on wildlife habitat and special status species (118,321 acres of BLM-managed surface land). The resulting effects on wildlife and riparian habitats would be the same with two exceptions that increase protection of wildlife. A 20-mile-wide buffer instead of a 10-mile-wide buffer would be established to exclude domestic sheep and goats from occupied and historic desert bighorn sheep habitat. Approximately 68,679 acres of Federal mineral estate underlying potential aplomado falcon habitat areas would be closed to fluid mineral leasing. Areas that meet criteria for aplomado falcon habitat would be subject to the management prescriptions described in Appendix L. Best management practices for special status species would also be followed to protect aplomado falcon habitat and other special status species. Potential aplomado falcon habitat areas on 63,808 acres of BLM-managed surface land also would be excluded from right-of-way authorizations (an increase of 23,704 acres over Alternative B). These measures to protect special status species would effectively protect wildlife habitat in general.

The type of impacts from management of visual resources would be the same as under Alternative A, although more acres of BLM-managed surface land would be managed as VRM Class I and II (742,799 acres) and less land would be managed as VRM Class IV (513,997 acres). All proposed activities would be subject to NEPA analysis on a site-specific basis, and impacts on wildlife and special status species within the specific sites would be minimized and mitigated through the NEPA process.

The types of impacts that would result from management of land and realty, such as construction of right-of-way or other land use authorizations, would be the same as Alternative A. However, more vegetation would be protected from the effects of these activities due to the expansion of right-of-way exclusion and avoidance areas to 1,135,152 acres, or 75 percent of BLM-managed surface land (an increase in protection in every habitat type from all other alternatives), which increases protection from the effects of surface disturbance (such as habitat fragmentation) in these areas (see Table 4-1). Rights-of-way constructed within the 2-mile-wide utility corridor would be more likely to affect desert scrub and desert grassland habitats located within the corridor. The effects resulting from land identified for disposal or to be retained and acquisition of nonpublic land would be the same as in Alternative B. However, compared with the other alternatives, the greater number of acres under this alternative identified for special designation could lead to the acquisition of more nonpublic land within and adjacent to special designations as the opportunity allows to consolidate areas for the best management potential.

TABLE 4-13
ACREAGE OF VEGETATION TYPE ON BLM-MANAGED SURFACE LAND BY OHV AREA DESIGNATION FOR ALTERNATIVE C[A]

Vegetation Type	Acres on BLM-Managed Surface Land	Closed to OHV	Percent of Population	OHV Limited to Designated Roads	Percent of Population	OHV Limited to Existing Roads	Percent of Population	Open to Cross-Country Travel	Percent of Population
Chihuahuan Desert Scrub	168,059	18,528	11	66,532	40	82,999	49	0	0
Closed Basin Scrub	13,941	0	0	6,717	48	7,224	52	0	0
Coniferous and Mixed Woodland	143,686	34,853	24	63,264	44	45,562	32	0	0
Desert Grassland	316,268	40,081	13	243,730	77	32,457	10	0	0
Juniper Savanna	324,153	32,569	10	106,980	33	184,599	57	0	0
Lava Beds	21,353*	0	0	21,353	100*	0	0	0	0
Montane Coniferous Forest	30,945	7,486	24	9,652	31	13,804	45	0	0
Montane Scrub	11,456	0	0	11,416	100	40	0	0	0
Plains-Mesa Grassland	258,389	1,985	1	216,208	84	40,189	16	0	0
Plains-Mesa Sand Scrub	201,015	3,631	2	137,555	68	59,829	30	0	0
Urban, Farmland or Open Water	15,518	837	5	5,369	35	9,263	60	0	0
Total	**1,504,783**	**139,971**	**9**	**889,958**	**59**	**476,908**	**32**	**0**	**0**

SOURCE: Dick-Peddie 1993
NOTE: [a]Acreage based on best available GIS data.
The acre totals may not equal the calculations for area designations in Chapter 2, due to variations in datasets and calculation methods.
*The data on which these calculations are based do not include some additional lava beds in northwestern Catron County. These areas are addressed in the text, as appropriate.

Management of forests and woodland materials would be the same as under Alternative B, except that no new roads would be permitted for personal or commercial woodcutting, and personal use of plants or plant material sales would be permitted in designated areas and salvage areas only. In addition, any temporary access routes would be permitted and impacts mitigated on a project-by-project basis under the NEPA process. This would decrease the potential for loss or degradation of wildlife and riparian habitats, habitat fragmentation, edge effects, or disruption of local wildlife movement corridors.

The types of effects on wildlife and riparian habitats as a result of mineral extraction would be similar to those described for Alternative A, although more areas (1,856,116 acres) would be closed to fluid mineral leasing (see Table 4-1). In addition, Alternative C would exclude the greatest number of acres from mineral material disposals. About 484,133 acres (32 percent of the BLM-managed surface land) would be excluded from saleable mineral material disposals, which represent a substantial increase in protection of habitats from surface disturbance over Alternatives A and B (see Table 4-1). Although protective measures increase in nearly every habitat type, the habitats with the greatest increase in protection would be plains-mesa sand scrub, juniper savanna, and desert grassland habitats, which support aplomado falcon and other native and special status wildlife species. Impacts on special status species are discussed in detail in the Biological Assessment for this RMPR, on file in the Socorro Field Office. Best management practices and the analysis under NEPA process would also be followed throughout the Planning Area for any projects that are proposed or implemented.

The impact types associated with management of recreation identified under Alternative C would be the same as those under Alternative A, although special designations managed to protect and manage recreation resources would total 27,780 acres. Management of the Datil Well, Quebradas Backcountry Byway, and Socorro Nature Area SRMAs would be the most restrictive of activities that result in ground-disturbance under Alternative C, as compared with all the other alternatives, and the Gordy's Hill SRMA would be managed to limit vehicle use to existing routes. These management actions would limit further loss of habitat, habitat fragmentation, and edge effects when compared to the current management of cross-country travel throughout the entire area.

Road construction or maintenance can lead to alteration of wildlife habitat, edge effects, and potential disruption of local wildlife movement corridors. The types of impacts associated with OHV use would be the same as those described for Alternative A, but substantially more public land would be closed to OHV use or placed under limitations (see Table 4-1). Additionally, OHV use would be limited in areas that meet criteria for aplomado falcon habitat. This would result in an increase in protection of wildlife habitats and special status species over Alternative A, especially in Chihuahuan desert scrub, juniper savanna, plains-mesa sand scrub, and desert grassland habitats.

4.5.8 Wildland Fire Ecology and Management

Impacts on fire management under this alternative would be similar to those described under Alternative B; however, additional acres likely would be restored to FRCC 1 from FRCC 2 or 3. If restoration efforts were to bring increased acres into FRCC 1, wildfires would generally be smaller and less intense. Restoration efforts would occur on more acres under this alternative than any of the others. Surface-disturbing activities, including fireline construction and hazardous fuels reduction, could be limited on a total of 336,609 acres (22 percent of BLM-managed surface land) as a result of special designations to protect natural and cultural resources, more than any other alternative (see Table 4-1).

The incorporation of the former Agua Fria ACEC into the Zuni Salt Lake ACEC could present potential indirect impacts on fire management associated with the wildland-urban interface area directly to the north of the ACEC. These impacts would be similar but more widespread than those described for the Agua Fria ACEC under Alternative A because the expanded Zuni Salt Lake ACEC would be associated

with additional wildland-urban interface areas to the west. Although the Horse Mountain ACEC would be expanded under this alternative, the corresponding wildland-urban interface area to the north would not change. Therefore, potential indirect impacts associated with wildland-urban interface areas and designation of the Horse Mountain ACEC would be the same as those described under Alternative A.

Similar to Alternatives A and B, hazardous fuels treatments that result in discernible changes in color, line, form, and texture within the landscape would be limited in VRM Class I and II areas, which would include 742,799 acres (49 percent of BLM-managed surface land) under Alternative C.

The management of right-of-way exclusion areas would have similar but more widespread impacts than those under Alternatives A and B because of larger right-of-way exclusion and avoidance areas (a total of 1,135,220 acres). The impacts associated with designation of a north-south utility corridor would be the same as those described under Alternative B. Land disposal would have impacts similar to those under Alternative A, but would not be as widespread; 42, 913 acres (3 percent) of BLM-managed surface land would be designated for disposal, the fewest acres of any alternative (see Table 4-1).

Restrictions on woodcutting would have the same effects as described under Alternative B. However, under Alternative C, areas excluded from woodcutting would include the Horse Mountain, Ladron Mountain, Pelona Mountain, and Zuni Salt Lake ACECs; Continental Divide and Town of Riley SMAs; and Datil Well SRMA. These areas total 284,758 acres (19 percent) of BLM-managed surface land.

Impacts from rangeland management would be similar to those under Alternative B. Fine fuels in areas where forage increases were reserved for watershed and wildlife needs would likely increase; this would result in a very slight increase in ignition potential and fire rate of spread.

The types of impacts associated with the Continental Divide National Scenic Trail SMA would be similar to those under Alternative A, but would be applied over a larger area (11,755 acres) under this alternative. Under Alternative C, 139,971 acres of BLM-managed surface land (9 percent) would be closed to motorized travel, reducing the potential for ignition from motorized vehicles in more areas than Alternative A or B. Similar to Alternative B, the closure of 26 miles of roads outside special designations would indirectly limit the potential for human-caused ignitions along these roads.

4.5.9 Cultural Resources

The potential impacts of activities and projects associated with the management of cultural and natural resources under Alternative C would be similar to Alternative A and would be addressed as described for Alternative A. The heritage tourism goals and opportunities under Alternative C would be similar to those under Alternative B.

Alternative C would maintain four of the eight SMAs designated under Alternative A specifically to protect cultural resources (Mockingbird Gap, Fort Craig, Playa Pueblos, and Town of Riley). The other four would be modified, as they would be under Alternative B.

Alternative C would eliminate the Cerro Pomo SMA (which was designated to protect cultural and recreational resources), but would incorporate it into a greatly expanded Zuni Salt Lake ACEC. Alternative C also would expand the Tinajas ACEC more than Alternative B (7,767 acres compared to 1,062 acres). A total of about 240,382 acres (16 percent) of BLM-managed surface land would be designated to protect cultural resources as a primary or secondary purpose. Under Alternative C, the total acreages of special designations would be higher than under any of the other alternatives, providing some increase in coincidental protection of cultural resources.

As described for Alternative B, Alternative C also provides more protection for cultural resources than Alternative A through modified management of the use of other resources on the public land. Compared to Alternative A, Alternative C would expand the acreage that would be managed within land allocations to minimize surface disturbance, with the overall effect of reducing potential effects on cultural resources over a greater area relative to the other alternatives.

4.5.10 Paleontological Resources

Under Alternative C, the expansion of special designations for the protection of natural or cultural resources to 336,609 acres (97,673 acres more than Alternative A) would further protect resources from surface disturbance. Some areas with geologic formations with the potential for paleontological resources are included within ACECs and would receive protective management, including the following:

- Horse Mountain ACEC
- Ladron Mountain-Devil's Backbone Complex ACEC (including areas containing paleontological resources)
- Pelona Mountain ACEC
- Tinajas ACEC
- Zuni Salt Lake ACEC (with some highly fossiliferous geologic units; includes the Cerro Pomo sites with important known paleontological resources)

Alternative C would increase the area closed to OHV use to 139,971 acres of BLM-managed surface land (110,854 acres more than Alternative A), which would protect paleontological resources from surface disturbance that could degrade or damage resources. Similar to Alternative B, there would be no areas that are open to cross-country travel, which would limit OHV as a source of potential degradation relative to Alternative A.

4.5.11 Visual Resources

Under Alternative C, public land managed for the protection of natural and cultural resources within special designations would increase to 336,609 acres, and management to protect potential aplomado falcon habitat areas would be established on 63,808 acres of BLM-managed surface land. These measures would expand the areas managed to limit disturbances that could alter the natural landscape or impair experiences by sensitive viewers over both Alternatives A and B.

Under Alternative C, public land identified for right-of-way exclusion and avoidance would increase to 1,135,220 acres (or 75 percent) of BLM-managed surface land. Alternative C provides protection of natural landscapes by identifying more land as exclusion and avoidance areas than Alternatives A or B, which typically contributes to the enhancement or protection of scenic values within the natural landscape by minimizing right-of-way authorizations in those areas. However, though fewer acres would be open to development of rights-of-way, the actual amount of disturbance to scenic quality and sensitive viewers would depend on the type and location of facilities that are constructed.

The types of potential impacts on scenic values and sensitive viewers from the designated utility corridor would be similar to Alternative B. However, the Alternative C corridor crosses fewer previously disturbed acres than Alternative B.

Similar to Alternative A, any acquisitions that consolidate public land ownership would enhance management ability to preserve scenic quality in those areas. The disposal of public land in the future (of up to 42,913 acres) could affect viewsheds if disposed lands are developed; site-specific impacts and

mitigation would be identified during additional NEPA analysis when a disposal is proposed. The land identified as suitable for disposal decreased by 43,545 acres compared to Alternative A and land identified for retention increased to 1,461,191 acres (approximately 97 percent of BLM-managed surface land), which would increase BLM's ability to manage visual resources compared to Alternatives A and B if more land is retained.

The types of potential impacts on visual resources from mineral development activities would be similar to those described under Alternative A, except that Alternative C would close more mineral estate to fluid mineral leasing (1,856,116 acres), exclude mineral material disposals on 484,133 acres, and 497,391 acres of Federal mineral estate would be petitioned to be withdrawn from mineral entry, all of which would reduce the potential for future land disturbance.

Mineral exploration and development activities adjacent to VRM Class I areas could impact distant views from within the Class I area. Alternative C designates 3,250 fewer acres as VRM Class I than Alternative A, although future NEPA analysis would be expected to identify appropriate mitigation measures for proposed projects and activities.

Impacts associated with nonmotorized recreation would be the same as Alternative A. Under Alternative C, no BLM-managed surface land would be designated as open to cross-country travel and 139,971 acres would be closed to OHV use. Visual impacts from OHV activity (related to vegetation disturbance and dust) would therefore be less widespread under Alternative C compared to Alternative A. Designating more land as limited or closed to OHV use than Alternative A also would allow areas that were previously subject to more intense use to revegetate back to natural landscape conditions.

4.5.12 Cave and Karst Resources

Under Alternative C, the potential impacts on cave and karst resources would be similar to those under Alternative A, but special designations for the protection of natural or cultural resources would increase to 336,609 acres (97,673 acres more than Alternative A) and could provide more coincidental protection of those resources. Similar to Alternative B, the elimination of areas open to cross-country travel may provide protection to some resources by reducing access to some areas.

4.5.13 Wilderness Characteristics

The impacts on wilderness characteristics would be similar to Alternative B, but more land within WSAs would be closed to OHV use. Six WSAs would be completely closed to OHV travel—Antelope, Devil's Reach, Horse Mountain, Presilla, Sierra de las Canas, and Veranito WSAs—totaling 54,429 acres (versus 13,185 acres in Alternative A) (see maps in Appendix J). The reductions in motorized access due to route closures would enhance wilderness character.

Impacts from designation of a north-south utility corridor would be similar to Alternative B, except the utility corridor identified under Alternative C is located further away from the Priscilla WSA.

Similar to Alternative B, OHV use in the Gordy's Hill SRMA could diminish wilderness characteristics in the Veranito WSA; activity in the intensely used OHV area has potential to generate enough dust and noise to affect the wilderness characteristics and recreation experience in that WSA. However, more intensive management within the SRMA would mitigate effects on and from OHV users. The Gordy's Hill SRMA would not be adjacent to the Presilla WSA under Alternative C.

A summary of how these WSAs would be managed should they be released from wilderness review is provided in Table 2-3.

4.5.14 Lands and Realty

Under Alternative C, the BLM-managed surface land within right-of-way exclusion areas would total 716,100 acres of BLM-managed surface land. About 419,120 acres would be managed as right-of-way avoidance areas, where land use authorizations would be permitted within limited dimensions. The overall effect of management would be to increase the acreage that would be excluded from right-of-way authorizations by 676,952 acres over the area in Alternative A.

The expansion of right-of-way exclusion areas under Alternative C could affect the ability to develop facilities on adjacent land or in some communities. Expanded right-of-way exclusion areas in areas with checkerboard ownership patterns, near rural residential areas near I-25, and in the Zuni Salt Lake ACEC could experience these limitations. In addition, under Alternative C the utility corridor would cross right-of-way exclusion and avoidance areas that may be incompatible with the purpose of the corridor.

Although less land is identified as suitable for disposal under Alternative C than under Alternative A, a decrease of 43,545 acres, this management would not impact existing and planned land uses within the resource area. If a disposal is proposed, additional NEPA analysis would evaluate the potential effects on land uses that would be relevant to the specific parcel and circumstances.

More land would be managed as VRM Class I and II areas relative to Alternative A (742,799 versus 416,124 acres), but this management would not be expected to effectively prohibit particular land uses since mitigation for any future proposed projects would be applied on a site-specific basis to promote compliance with the visual resource management objectives.

Under Alternative C, more area would be closed to fluid mineral leasing than under Alternative A (1,856,116 acres versus 1,418,415 acres of mineral estate). Because the RFD predicts land requirements for fluid mineral development to be less than 700 acres, it is anticipated that there would be adequate land available for leasing to meet demand. (Note: the availability of land with high potential for fluid minerals is described in the Minerals section.)

The land identified as suitable for coal leasing under Alternative C is the same as under Alternative B. However, the expanded right-of-way exclusion area associated with the Zuni Salt Lake ACEC would effectively limit the development of this area by excluding any additional right-of-way authorizations.

Under Alternative C, the majority of BLM-managed surface land in the Planning Area would be open for mineral material disposals; 32 percent (484,133 acres of BLM-managed surface land) would be excluded from such uses. However, impacts would be similar to those described under Alternative A because the relatively small amount of land identified in the RFD would be readily available, and mitigation measures would be identified during NEPA analysis. Additionally, although no areas are formally excluded under Alternative A, of the exclusion areas identified for Alternative C, 291,826 acres are within WSAs, and would be managed under the Interim Management Policy, which generally disallows activities that would be incompatible with the nonimpairment criteria.

More public land would be closed to OHV use relative to Alternative A (171,406 versus 29,117 acres), and Alternative C also would result in a substantial reduction in the acreage that is designated as open to cross-country travel (reducing to 0 acres from 851,234 acres under Alternative A). Indirect impacts from OHV-related noise and dust would be confined to areas along existing or designated routes. The additional areas that would be designated as closed or limited to designated routes could result in loss of access for some uses, particularly some types of recreation. About 209 miles of roads and trails would be closed, which would result in negligible impact on land uses (beyond those described in the wilderness characteristics and recreation sections).

4.5.15 Forestry and Woodland Management

Impacts on forest health under this alternative would be similar to those described under Alternative B. However, this alternative would have greater potential to maintain and/or improve forest and woodland structure over the long-term than either Alternative A or B due to an emphasis on restoration. The degree of benefit would depend on the number of acres restored to FRCC 1 from FRCC 2 or 3. Where successful restoration brought increased acres into FRCC 1, wildfires would generally be smaller and less intense, resulting in a lower risk of fires within these areas spreading into adjacent forests and causing tree mortality. Fires that do spread into adjacent forests would likely be smaller, less intense fires that promote a natural maintenance of forest ecosystems through a key ecological process.

Surface-disturbing activities within areas managed for wildlife habitat would be more restricted under this alternative than Alternatives A or B. In contrast to Alternative B, woodcutting would be excluded throughout the Ladron Mountain, Horse Mountain, and Pelona Mountain ACECs. Vegetative material sales would be excluded throughout the Pelona Mountain and Horse Mountain ACECs and most of the Ladron Mountain ACEC. Impacts from vegetative material sales that take place inside the Ladron Mountain ACEC would be the same as those described for Alternative B. Woodcutting and timber sales would be excluded on a total of 284,758 acres (19 percent of BLM-managed surface land) as a result of these designations. Vegetative plant material sales would be excluded on 62,666 acres within specially designated areas plus the area within a 1/4-mile of the Quebradas Backcountry Byway.

Impacts associated with surface disturbance and alteration of the plant community due to vegetative plant material sales would still occur within the Ladron Mountain ACEC. The exclusion of timber sales and woodcutting in areas designated for wildlife management would reduce the areas available for the agency to generate income from the harvest of forest products.

Impacts on forests and woodland from VRM Class I designated areas would be similar to those described under Alternative B. However, VRM Class II areas would total 715,706 acres, or 48 percent of BLM-managed surface land compared with 17 percent under Alternative A and 32 percent under Alternative B (see Table 4-1).

Impacts on forest and woodland resources associated with right-of-way exclusion and avoidance areas and mineral development would be similar to those described under Alternative A. However, approximately 367,488 acres of forested BLM-managed surface land would be designated as right-of-way exclusion and avoidance areas, limiting surface-disturbing activities in more areas than Alternatives A or B.

Impacts associated with woodland management and commercial woodcutting would be similar to those described under Alternative B. However, there would be less potential for impacts on forest and woodland soils under this alternative than under either Alternatives B or D because no new roads would be constructed. In addition, restoration activities would emphasize wildland fire use and prescribed fire and less emphasis would be placed on mechanical fuels treatments under this alternative.

Personal-use plant or plant materials sales would have similar, but less widespread, impacts compared to those described under Alternative B because plant material sales would be permitted in designated areas and salvage areas only. These activities could take place in fewer areas that meet identified criteria depending on public demand compared to Alternative B.

There would be five SRMAs, one ACEC, and one SMA designated to manage and protect recreational resources under this alternative. Of the areas designated, only three have forest resources that could be impacted. Woodcutting would be excluded from both the Datil Well SRMA and Continental Divide National Scenic Trail SMA; therefore, surface-disturbing activities associated with woodcutting would be reduced in these areas.

4.5.16 Rangeland Management

Generally, the impacts on grazing from water-control measures (such as erosion control structures like spreader dams or retention structures), vegetation treatments, or rehabilitation of identified sites would be the same as those Alternative A. However, special designations for the protection of natural or cultural resources, which are more likely to be subject to this management, would be increased to a total of 336,609 acres of BLM-managed surface land. In addition, management decisions regarding forage increases and range improvements would prioritize wildlife and watershed needs over livestock. While Alternative C could result in a reduced number of range projects for improving conditions for livestock, it would not reduce or restrict the current stocking rates. However, by prioritizing watershed health and not increasing animal units per month (AUMs) for livestock, overall range conditions are likely to improve at a faster rate. Improving the overall range conditions of an allotment would indirectly result in long-term impacts by reducing the potential for not meeting or making progress toward upland and riparian standards, which would also decrease the potential for future AUM reductions, restrictions, or exclusions.

Under Alternative C, the area excluded to domestic sheep and goat use would be larger than in Alternative B because the exclusion would be applied to a larger (20-mile) buffer area around bighorn sheep habitat in the Ladron Mountain ACEC. However, as described for Alternative B, there would be no impact on current conditions. The former allotment 1152 would continue to be closed to livestock grazing. Impacts on grazing from management for heritage tourism would be the same as Alternative B.

Substantially more acreage would be managed as right-of-way exclusion and avoidance areas under Alternative C (1,135,220 acres) than under Alternative A (498,144 acres). The potential for noise and other disturbances from activity and infrastructure within rights-of-way and utility corridors would therefore be reduced in those areas, as would the impacts on available forage. However, by limiting the area available for rights-of-way authorizations, access roads also would be limited.

Potential effects on grazing from land acquisition and disposal would be the same as Alternative A, since any acquisitions likely would be part of an existing grazing allotment and mitigation would be identified as part of the NEPA analysis. Impacts from woodland harvesting and vegetation sales would be the same as Alternative B, except that Alternative C would place greater restrictions on access.

Alternative C generally excludes more mineral estate from mineral leasing and development than any other alternative. Overall, this alternative would result in the fewest short-term direct (i.e. disturbances associated with construction such as noise, accessibility of forage) and the most long-term indirect impacts (less competition with other uses if mineral activities are excluded) for livestock grazing of the four alternatives.

Impacts from dispersed, nonmotorized recreational activity would be the same as Alternative A. OHV use would be limited substantially in comparison to Alternative A; therefore, direct impacts associated with forage loss and livestock disturbance, and indirect impacts associated with invasive species and wildfire would be reduced in areas where motorized travel is excluded (139,971 acres, 110,854 more than under Alternative A) or restricted to designated or existing routes (1,366,866 acres, 803,965 more than under Alternative A), resulting in fewer impacts on livestock grazing than Alternative A.

4.5.17 Minerals

Closures to fluid mineral leasing would exclude those areas from extraction of resources such as oil, gas, carbon dioxide, and helium, and fluid mineral leasing stipulations that control surface use and limit surface occupancy could increase the cost and difficulty of exploration and development of fluid mineral resources to a point where these activities become economically infeasible. The effect of placing a no-surface-occupancy stipulation over large areas would have the same effects as described for Alternative A. However, under Alternative C, 1,856,116 acres of federal mineral estate would be closed

to leasing, which includes 1,418,415 acres of nondiscretionary closures and an additional 437,701 acres compared with Alternative A. Lease stipulations would be attached to 947,044 acres of Federal mineral estate (an additional 211,044 acres over Alternative A). Under Alternative C, the overall effect would be to close more Federal land to fluid mineral development and increase the management restrictions associated with natural and cultural resources protection.

Of the acreage proposed for closure to fluid mineral leasing, 315,490 acres of Federal mineral estate are located within northwest Catron County, an area of cultural significance to the Zuni Tribe and other tribes. This area also has moderate potential for oil and gas resources. Overall, closed areas overlap with 1,022,038 acres of moderate potential for oil and gas (or 25 percent of moderate potential areas in the Planning Area). The remainder are areas of low potential for these resources.

In September and October 2003, active leasing of State land occurred in this area driven by the discovery of economic carbon dioxide and helium resources in eastern Apache County, Arizona and westernmost Catron County, New Mexico. For example, Ridgeway Petroleum has 280,000 acres of State and fee land leased in the St. John's field, with estimated reserves of 14 trillion cubic feet of carbon dioxide and 64 billion cubic feet of helium (Ridgeway Petroleum Corporation 2002). Under Alternative C, 135,578 acres of high potential for carbon dioxide and helium resources would be closed to fluid mineral leasing (or 42 percent of high potential areas) and 722,982 acres of moderate potential would be closed (or 19 percent of moderate potential areas in the Planning Area).

Approximately 484,133 acres of BLM-managed surface land would be excluded from mineral material disposal. Discounting the WSAs managed under the Interim Management Policy, which generally disallows activities that would be incompatible with the nonimpairment criteria, this is an increase in restrictions of 192,307 acres over Alternative A. These restrictions would result in localized impacts on the ability to extract saleable resources. However, the overall availability of salable mineral resources for extraction from public land would not be compromised, because mineral materials deposits are available in moderate to high potential areas throughout BLM-managed surface land.

To protect wildlife, vegetation, and cultural resources, 497,391 additional acres of Federal mineral estate would be petitioned for withdrawal from mineral entry. The change in acreage is due to the proposed withdrawal in the entire Ladron Mountain ACEC, a larger Zuni Salt Lake ACEC, and 400 acres within The Box SRMA. If these proposed withdrawals are completed, the two proposed ACEC withdrawals would exclude mining from areas with high potential for leaseable and locatable mineral resources. The impact on the ability to develop coal resources is the same as for Alternative B.

Decisions about access and realty could indirectly encourage or restrict exploration and development of mineral resources in a similar way as described for Alternative A, except under Alternative C the exclusions and restrictions on right-of-way and access increase. Under Alternative C, a total of 1,135,220 acres of BLM-managed surface land would be managed as right-of-way exclusion or avoidance areas (an increase of 637,076 acres over Alternative A). A total of 139,971 acres would be closed to OHV (an increase of 110,854 acres over Alternative A) and 889,958 acres of BLM-managed surface land would be limited to designated routes (an increase over Alternative A). The expansion of areas with restrictions on access could affect the ability to develop the infrastructure needed to explore and develop mineral resources in some areas. The impacts associated with the land acquisitions would be the same as Alternative A.

4.5.18 Recreation

Impacts from management of cave and karst resources, visual resources, and natural and cultural resources under Alternative C are similar to Alternative A. However, the extent and specific locations where ground-disturbing activities could occur would decrease because more acreage (approximately

336,609 acres overall) would be managed within special designations. More acres also would be identified as VRM Classes I and II (742,799 acres). The expansion of management to protect existing resources under this alternative would provide the most support for opportunities for primitive types of recreation (e.g., sightseeing, hiking, backpacking, and opportunities for solitude), while potentially diminishing more opportunities for motorized recreation.

Under Alternative C, approximately 47 percent of BLM-managed surface land would be allocated as a right-of-way exclusion area and approximately 28 percent would be allocated as a right-of-way avoidance area (refer to Table 4-1). The exclusion or restriction of new rights-of-way across 75 percent of BLM-managed surface land in the Decision Area would increase protections supportive of primitive or semi-primitive recreation. In areas where rights-of-way would be authorized (up to 25 percent of BLM-managed surface land), the resulting impacts would be similar as described for Alternative A. Authorization of rights-of-way would not be expected to result in the loss of recreational opportunities throughout the Planning Area, though there could be some localized, negligible impacts (e.g., displacement during development of the right-of-way).

Impacts on recreational opportunities from land acquisition or disposal would be similar to Alternative B. Under Alternative C, only 3 percent of BLM-managed surface land would be identified as suitable for disposal (3 percent less than Alternative A or B). Therefore, any effects on recreation uses or opportunities from land disposal would be negligible.

Impacts on recreation from fluid mineral leasing would be the same as Alternative B, except that less acreage would be open to leasing and there would be a greater emphasis on resource protection. Impacts on recreation from leasing for coal development and the exclusion of mineral material disposals (about 484,133 acres) would be the same as Alternative B due to the relatively small amount of disturbance expected based on the RFD.

Under Alternative C, OHV use area designations and impacts would be similar to Alternative B, although more area (approximately 11 percent of BLM-managed surface land) would be closed to OHV travel compared to 8 percent under Alternative B and 2 percent under Alternative A (see Table 4-1). The additional areas designated as closed under Alternative C are within WSAs and generally were designated as limited in Alternative B, resulting in similar impacts as Alternative B (Appendix J). Based on the change from limited to closed, there would be displacement of existing OHV uses in these areas to other areas and/or routes, but the closure of these areas also would provide increased opportunities for primitive recreation and solitude within the WSAs.

4.5.19 Renewable Energy

Impacts would be similar to Alternative A, except the management to minimize the intensity and location of surface-disturbing activities would be expanded over a larger area of special designations for the protection of natural or cultural resources (336,609 acres of BLM-managed surface land, or 97,673 acres more than Alternative A). In addition, right-of-way exclusion areas would be increased by 676,952 acres to total 716,100 acres of BLM-managed surface land. As stated for Alternative A, these effects would be most relevant in areas of moderate to high wind, solar, and biomass resource potential (identified in the February 2005 Management Situation Analysis).

Management of VRM Class I and II areas could affect the placement of or required mitigation for renewable energy facilities as described for Alternative A, but the acreage managed under these VRM classes would be expanded to 742,799 acres (326,675 acres over Alternative A).

4.5.20 Transportation and Travel Management

Management to protect natural or cultural resources associated with special designations would be applied to additional acreage under Alternative C (for a total of 336,609 acres of BLM-managed surface land compared with 238,936 acres under Alternative A). New limitations placed on existing uses and access could cause the diversion of travel to other routes, affecting the intensity of use on nearby routes or causing the development of additional unauthorized routes to accommodate demand. Restrictions would not be expected to affect overall travel throughout the Planning Area because of the relatively low acreage that would be impacted.

The types of impacts from land and realty management under Alternative C would be similar to those described in Alternative A except that management of right-of-way exclusion and avoidance areas would be applied to about 75 percent of the surface land managed by BLM (1,135,220 acres). The remaining 25 percent of BLM-managed surface land would be open for rights-of-way subject to additional NEPA analysis, allowing for establishment of additional motorized access routes. This could result in potential increases in access and motorized vehicles uses in the open areas, but much less than under Alternative A or B. Similar to Alternative A, authorization of rights-of-way would not be expected to result in the loss of transportation uses or motorized access throughout the Planning Area, though there could be some localized, negligible impacts (e.g., displacement during development of the right-of-way). Impacts would be similar to those described under Alternative A regarding land tenure adjustments, with the exception that 5 percent of BLM-managed surface land could be disposed (compared to 6 percent in Alternative A).

The types of impacts from minerals management would be similar to those described under Alternative A, in that new public access typically accompanies mineral development. However, the specific areas where localized impacts could occur would vary due to the increased areas closed to fluid mineral leasing and identified exclusion areas for mineral material disposals compared to Alternatives A and B. Impacts associated with the areas available for coal leasing would be the same as described for Alternative B.

Impacts from transportation and travel management would be similar to those described under Alternative B except that this alternative would provide for 184 miles of route closures within WSAs, compared to about 162 miles in Alternative B (Appendix J). Impacts from route closures outside of WSAs would be the same as Alternative B.

4.5.21 Social and Economic Conditions

Under Alternative C, areas managed to protect natural or cultural resources within special designations would be expanded to 336,609 acres, a 41 percent increase over Alternative A. The types of socioeconomic impacts from this management would be similar to those described under Alternative B. Although Alternative C would provide greater protection of the natural landscape and cultural resources via expanded management to minimize surface disturbance, the incremental socioeconomic effects would be expected to be minimal.

The socioeconomic impacts on Zuni Salt Lake as a sociocultural resource would be the same as Alternative B, with the exception that the much larger Zuni Salt Lake ACEC would create a larger buffer around the lake within which changes to the landscape on public land would be limited. Although this could contribute to maintaining the visual and natural landscape, the effects could be limited by uses that would occur on nonfederal land in the area.

The types of socioeconomic impacts associated with right-of-way exclusion and avoidance areas would be similar to those described under Alternative B, except that right-of-way exclusion areas would be expanded to 716,100 acres. Under Alternative C, the effects of increased costs on utility companies would be more pronounced if the expanded restrictions on right-of-way approval further limit the options for

locating needed facilities. Given that the anticipated right-of-way demand is not expected to grow substantially, the incremental effect of Alternative C over Alternative B may be negligible.

Under Alternative C, socioeconomic impacts associated with the utility corridor would be the same as Alternative B. Socioeconomic impacts associated with land acquisition and disposal would be the same as Alternative A.

The types of impacts associated with closure of an area to fluid mineral leasing or withdrawal from location and entry under the mining laws would be the same as described for Alternative B. However, under Alternative C, 437,701 additional acres would be closed to fluid mineral leasing and the BLM would petition to withdraw an additional 495,883 acres compared to Alternative A. About 135,578 acres of high potential for carbon dioxide and helium and 1,022,038 acres of medium potential for oil and gas are included within areas that would be closed to fluid mineral leasing. In these areas, the closures would eliminate the possibility of capitalizing on economic opportunities to extract these fluid minerals. Socioeconomic impacts associated with the land identified as potentially suitable for coal leasing are the same as Alternative B.

The additional acreage that would be excluded from mineral material disposals would result in localized socioeconomic impacts if mineral sources proximate to roadway projects or other sites where those minerals are utilized would be unavailable. However, the overall effect would be limited because the fairly small RFD suggests that adequate resources would be available to meet demand throughout the Planning Area.

Socioeconomic impacts related to vegetative sales would be the same as Alternative B.

Similar to Alternative A, management of public land would continue to provide opportunities for grazing and would result in the sustainable management of grazing (through adherence to public land health standards). This supports the continued viability of ranching, an important component of local economies. The expansion of the area that would be closed to domestic sheep and goats would not impact existing conditions, similarly to Alternatives A and B. Localized impacts would occur as areas where grazing would be excluded are expanded. However, the small portion of BLM's Decision Area and the allotments on it that would be affected suggests that the overall socioeconomic effect on grazing operations that rely on public land grazing would be limited.

Although the acreage that would be managed within special designations for recreation would be reduced under Alternative C, opportunities for recreation within more primitive settings would be enhanced as a result of management efforts to enhance protection of natural resources. Therefore, the type of socioeconomic effects from recreation use would be similar to Alternative B. However, localized impacts on OHV users would occur due to greater restrictions on access under Alternative C. Because non-market values associated with protection of resources have a tendency to be more regional or national issues (i.e., special interest groups), this alternative potentially would be perceived as having the greatest social value among these interest groups.

4.5.22 Environmental Justice

Environmental justice considerations would be similar to Alternative B, although the closures to fluid mineral leasing and planned petitions to withdraw areas from location and entry under the mining laws would be expanded to encompass a larger area. As a result, the economic effects on local low-income communities described for Alternative B would have a more pronounced effect with regard to lost opportunities for local economies to the extent that additional high and moderate potential areas are restricted from development.

Impacts on Zuni Salt Lake would disproportionately affect the Zuni Tribe, for whom the lake is a significant religious and historic resource. Under Alternative C, no impacts on Zuni Salt Lake are anticipated, and the expanded ACEC would provide an additional buffer within which surface disturbance would not occur that could impact the landscape.

4.6 ALTERNATIVE D

4.6.1 Summary of Management Direction

Alternative D emphasizes commodity production and use, including mineral leasing and mineral material sales, grazing, commercial recreation and tourism, and woodland-products harvesting. Under Alternative D, constraints on commodity production would be the least restrictive while still complying with applicable law, regulation, and BLM policy. Potential impacts on sensitive resources would be evaluated on a case-by-case basis. A summary of Alternative D also is provided in Table 2-1, Chapter 2, while a summary of management prescriptions for ACECs and SMAs in Alternative D is provided in Table 2-2.

4.6.2 Summary of Aggregate Effects of Alternative D

Alternative D is the alternative most oriented towards commodity production in BLM's Decision Area. However, management within special designations would result in protected or enhanced habitat due to the combination of restrictive management that would be applied in those areas and monitoring to ensure public land is moving toward or meeting the New Mexico Standards and Guidelines. Under Alternative D, acreages that would be managed to minimize various types of surface use are identified in Table 4-1.

Generally, the effects of minimizing surface disturbance through these land allocations would occur over a much smaller area in Alternative D than in Alternative B or C. Alternatives A and D have similar effects, with the exceptions of no closed OHV areas under Alternative D and more right-of-way exclusion areas under Alternative D. In addition, special designations to protect sensitive resources are expanded in Alternative D over Alternative A, with the expanded Cerro Pomo ACEC, Tinajas ACEC, and Newton Site SMA. Several impacts would be expected as the result of these variations. Impacts that could result from overall increases in areas where motorized travel is permitted could result in increased particulate and engine exhaust emissions; increased potential for soil erosion, sediment transport across public land and water quality degradation, and vegetation loss; and greater potential for conflicts with wildlife. However, impacts associated with OHV use could vary depending on the intensity and frequency of use as well as the type of vehicle and the type of soils in a particular location. The expansion of protective management would reduce access and subsequently the potential for vandalism at Newton Site, and reduce access to the pueblos and other cultural resources within Cerro Pomo.

Management of aplomado falcon habitat would be similar to Alternative A, with protection occurring largely through statutory compliance. Although this management is expected to result in measures to identify potential site-specific impacts and mitigation to protect the aplomado falcon, Alternative D does not include the type of use restrictions to avoid surface disturbance in potential habitat areas as in Alternatives B and C. The higher acreages of Federal land identified for disposal could result in increased land use intensity and edge effects, which in turn may result in habitat fragmentation, degradation, and disruption of wildlife movement corridors.

Similarly to the other alternatives, the management under Alternative D would still accommodate diverse resource uses. Access for motorized recreation would be most extensive under Alternative D. Overall, this would enhance recreation opportunities for OHV users and others who use OHV (such as hunters), and primitive and semi-primitive settings would still be available throughout the Planning Area.

4.6.3 Air Quality

Discernable effects on air quality from management of natural resources under Alternative D would not differ substantially from Alternative B. Expansion of the Pelona Mountain ACEC to 34,547 acres would involve fewer acres under this alternative than Alternatives B and C, but the change in acreage managed in this ACEC still would represent about a 32 percent increase compared to Alternative A. Even this more limited increase may serve to improve the protection of air quality in the Gila Wilderness Class I area, located to the south.

There is a marked increase in the linear mileage of utility corridor designation under Alternative D. These corridors may be found suitable for utility, pipeline, or roadway development, to support a generally increased level of commodity production activity. The potential for additional surface-disturbing activities under Alternative D could result in more incremental direct effects on air quality in localized areas along the corridors compared with Alternative A, based on air pollutant emission factors described in Section 4.3.3. However, as previously noted, impacts from construction generally would be limited to the actual period of construction and to an extent of less than 1 mile surrounding an activity.

Over time, the aggregated particulate and engine exhaust emissions throughout the Planning Area would be expected to increase under Alternative D as compared to Alternative A, as the reduction in cross-country OHV use would not offset the increase in the acreage open to existing routes. Generally, Alternative D allows for a general increase over Alternatives B and C in the acreage open to existing routes; and a decrease in acreage open to cross-country OHV use compared to Alternative A (see Table 4-1). Alternative D does not designate any areas as closed to OHV use.

4.6.4 Geology

Use restrictions within special designations to protect natural, cultural, and recreational resources would protect geological resources on 149,478 acres; this provides protection over a larger area than Alternative A, which includes 128,555 acres of special designations (not including areas of overlap with WSAs).

The potential for localized disturbances to geologic resources from dispersed recreation activities such rock-climbing or mountain-climbing would be the same as described for Alternative A.

4.6.5 Soil and Water Resources

Similar to Alternative A, the application of best management practices and other mitigation that would be identified during additional NEPA analysis would address the potential for site-specific impacts on soils from surface-disturbing activities. Alternative D would increase the protection for soil and water resources by expanding the special designations for the protection of natural or cultural resources to 149,478 acres, an increase of 20,923 acres (16 percent) over Alternative A when overlap with WSAs are discounted. The expansion of right-of-way exclusion areas to 301,081(an additional 261,933 acres over Alternative A) and areas closed to fluid mineral leasing to 1,419,456 acres of Federal mineral estate (an additional 1,041 acres) would reduce erosion and increase soil infiltration and productivity in those areas. Areas associated with fluid minerals leasing stipulations would include 785,484 acres, 49,484 acres more than under Alternative A. The increase of right-of-way exclusion areas is largely due to the increased protection in WSAs.

Under Alternative D, the 4,839-acre Zuni Salt Lake SMA would be replaced with a 2,107-acre ACEC. The difference in acreage between Alternatives A and D is the result of eliminating the area of overlap with WSAs. Management of the Zuni Salt Lake ACEC under Alternative D would produce the same effect on soil and water resources as management under Alternative A, although the additional limitation

on motorized travel (since travel would be limited to designated routes under Alternative D, rather than limited to existing routes under Alternative A) would reduce the likelihood of localized soil disturbance.

The establishment of four utility corridors under Alternative D would increase the vulnerability of soil and water resources within those corridors, but co-location of facilities within the corridors could result in an overall decrease in soil disturbance on BLM-managed surface land, as compared with Alternative A. The potential for soil disturbance in sensitive areas would increase where corridors would overlap with special designations.

Management of visual resources under Alternative D would designate 354,222 acres as VRM Class II areas, and there would be no VRM Class I designations (versus 30,343 Class I areas and 385,781 Class II areas under Alternative A). Though more area would be managed as one of the two classifications under Alternative D, Class I areas under Alternative A would receive greater protection against change to the existing vegetation and terrain (and related effects on soil and watershed resources).

The effects of the management of commercial and personal-use woodcutting would be the same as Alternative B. The effects on soils and water resources from grazing are addressed as part of the Vegetation discussion (Section 4.6.6).

Impacts associated with the identification of about 3,200 acres as potentially suitable for coal leasing would be the same as Alternative B. Under Alternative D, about 291,859 acres of BLM-managed surface land would be excluded from mineral material disposals. However, with the exception of the Tinajas ACEC (22 acres) and 11 acres with Penjeacu SMA, these areas coincide with WSAs that are already managed as de facto exclusion areas in accordance with the Interim Management Policy. Therefore, the effects of this management would be the same as Alternative A.

Management of OHV use under Alternative D would designate fewer areas as open to OHV use relative to Alternative A (0 versus 851,234 acres under Alternative A), and the acreage with limitations on OHV use to designated or existing routes would increase (to about 1.5 million acres, or all BLM-managed surface land versus 562,901 acres under Alternative A). The more restrictive management in some areas would result in reduced impacts from soil disturbance, including soil loss and erosion. No land would be closed to OHV use (versus 29,117 acres under Alternative A). The return of motorized travel to these areas could increase soil loss and affect water quality; the degree of impact would depend upon the frequency, duration, and intensity of travel that occurs in the area.

OHV use would have potential to impact two streams in the Planning Area that are on the Clean Water Act 303 (d) list: Alamosa Creek for sedimentation/siltation; and the East Fork of the Gila River for chronic aluminum. Probable sources of aluminum impairment are OHV use, other recreation uses, silviculture practices, and fire suppression. The probable source of impairment in the Alamosa Creek is a low water crossing where vehicles drive through the creek, directly impacting soil and water resources.

Twice as many vehicle miles would be designated as open within WSAs compared to Alternative B (see Appendix J), which would increase the potential for soil erosion due to vehicle disturbance in these areas. The degree and pattern of this impact would depend on the location, intensity, and type of motorized travel on open routes.

4.6.6 Vegetation

Management in critical watershed areas would protect vegetation by reducing erosion and improving water quality within those watersheds. The types of impacts on vegetation associated with management in special designations to minimize surface disturbance would be the same as described under Alternative A. However, more vegetation would be protected from surface disturbance within special designations to

protect natural and cultural resources, a total of 149,478 acres under Alternative D, 16 percent more than Alternative A if areas of overlap with WSAs are discounted. The types of impacts associated with visual resource management would be the same as those that would occur under Alternative A, although no land would be managed as VRM Class I and Class II land would total 354,222 acres.

The types of impacts from realty decisions identified under Alternative A would be the same under this alternative, although the least amount of vegetation would be protected from surface-disturbing activities associated with right-of-way development under Alternative D compared to all other alternatives. Desert grassland would be the most common vegetation type in right-of-way exclusion areas. In avoidance areas, desert grassland juniper savanna would be most represented. The number of acres per vegetation type managed as exclusion and avoidance areas is summarized in Table 4-14. Some areas with lava beds in northwestern Catron County (additional to the acres noted in Table 4-13) would be available for right-of-ways; however, additional mitigation measures would be identified during the required NEPA analysis.

Four utility corridors identified by the Western Utility Group Corridor Study would be proposed under this alternative. Construction in these utility corridors would result in a direct loss of vegetation due to ground-disturbing activities. As summarized in Table 4-15, 11 percent of vegetation on BLM-managed surface land would be in the utility corridors, of which urban or open water (previously disturbed areas along I-25 corridor), desert grassland, and Chihuahuan desert scrub would potentially be the most impacted. One of the proposed utility corridors would cross lava beds in northwestern Catron County. More land is identified for disposal under Alternative D (up to 212,323 acres) than all the other alternatives, which could result in a direct loss of vegetation currently managed by the BLM. Impacts related to land acquisition would be the same as Alternative A.

The impacts of forestry and woodland management under Alternative D would be same as those identified under Alternative B, while the types of effects from grazing would be the same as Alternative A.

TABLE 4-14
ACREAGE OF VEGETATION TYPE IN RIGHT-OF-WAY (ROW) EXCLUSION AND AVOIDANCE AREAS FOR ALTERNATIVE D[A]

Vegetation Type	Acres of BLM-Managed Surface Land	Right-of-Way Exclusion	Percent of population	Right-of-Way Avoidance	Percent of population
Chihuahuan Desert Scrub	168,059	12,434	7	34,660	21
Closed Basin Scrub	13,941	1,072	8	3,076	22
Coniferous And Mixed Woodland	143,686	44,006	31	22,265	15
Desert Grassland	316,268	88,756	28	42,849	14
Juniper Savanna	324,153	51,240	16	44,504	14
Lava Beds	21,353*	21,353	100*	0	0
Montane Coniferous Forest	30,945	7,483	24	3,423	11
Montane Scrub	11,456	1,250	11	1,603	14
Plains-Mesa Grassland	258,389	44,101	17	10,335	4
Plains-Mesa Sand Scrub	201,015	28,659	14	14,363	7
Urban, Farmland or Open Water	15,518	726	5	215	1
Total	**1,504,783**	**301,080**	**20**	**177,293**	**12**

SOURCE: Dick-Peddie 1993
NOTE: [a]Acreage based on best available GIS data.
The acre totals may not equal the calculations for area designations in Chapter 2, due to variations in datasets and calculation methods.
* The data on which these calculations are based do not include some additional lava beds in northwestern Catron County. These areas are addressed in the text, as appropriate.

TABLE 4-15
ALTERNATIVE D UTILITY CORRIDORS

	Acres of BLM-Managed Surface Land	Utility Corridors (BLM-Managed Surface Land Only)	Percent of BLM-Managed Surface Land Population	Utility Corridors (All Land)
Chihuahuan Desert Scrub	168,059	39,222	23	116,621
Closed Basin Scrub	13,941	807	6	8,423
Coniferous And Mixed Woodland	143,686	6,759	5	73,797
Desert Grassland (Ecotone)	316,268	47,258	15	172,738
Juniper Savanna (Ecotone)	324,153	24,975	7	107,760
Lava Beds*	21,353	0	0	4,524
Montane Coniferous Forest	30,945	1,878	6	90,833
Montane Scrub	11,456	0	0	0
Plains-Mesa Grassland	258,389	30,458	12	105,443
Plains-Mesa Sand Scrub	201,015	15,896	8	41,492
Urban, Farmland or Open Water	15,518	3,860	25	18,736
Totals:	**1,504,783**	**171,113**	**11**	**740,367**

SOURCE: Dick-Peddie 1993
NOTE: Acreage based on best available GIS data.
The acre totals may not equal the calculations for area designations in Chapter 2, due to variations in datasets and calculation methods.
*The data on which these calculations are based do not include some additional lava beds in northwestern Catron County. These areas are addressed in the text, as appropriate.

The types of impacts on vegetation that would result from ground-disturbing activities associated with mineral exploration and development and amount of vegetation that would be protected in areas closed to minerals leasing are the same as Alternative A. In areas closed to minerals leasing, 23 percent of vegetation on Federal mineral estate would be protected from ground disturbance, of which the most common vegetation types would be coniferous and mixed woodland, grassland and montane coniferous forest. The number of acres per vegetation type managed for minerals leasing is summarized in Table 4-16. Some areas with lava beds in northwestern Catron County (additional to the acres noted Table 4-16) would be open to fluid mineral leasing under standard terms and conditions; however, mitigation measures would be identified as appropriate during additional NEPA analysis.

TABLE 4-16
ACREAGE OF VEGETATION TYPE CLOSED TO FLUID MINERALS LEASING FOR ALTERNATIVE D[A]

Vegetation Type	Acres of Federal Mineral Estate	Federal Mineral Estate Closed to Leasing	Percent of Population on Federal Mineral Estate
Chihuahuan Desert Scrub	378,821	182,661	48
Closed Basin Scrub	122,868	82,375	67
Coniferous And Mixed Woodland	1,248,813	221,529	18
Desert Grassland	585,991	157,964	27
Juniper Savanna (Ecotone)	1,020,984	161,759	16
Lava Beds	21,370*	21,368	100*
Montane Coniferous Forest	1,459,415	221,763	15
Montane Grassland	44,451	789	2
Montane Scrub	75,986	57,280	75
Plains-Mesa Grassland	546,079	36,802	7

Vegetation Type	Acres of Federal Mineral Estate	Federal Mineral Estate Closed to Leasing	Percent of Population on Federal Mineral Estate
Plains-Mesa Sand Scrub	398,119	184,251	46
Subalpine Coniferous Forest	131,501	69,628	53
Urban, Farmland or Open Water	41,777	15,663	37
Total	**6,076,174**	**1,413,832**	**23**

SOURCE: Dick-Peddie 1993
NOTE: [a]Acreage based on best available GIS data.
*The data on which these calculations are based do not include some additional lava beds in northwestern Catron County. These areas are addressed in the text, as appropriate.

The same number of acres potentially available for coal leasing under Alternative D is the same as identified for Alternative B; therefore, the impacts would be the same. Approximately 291,859 acres would be excluded from mineral material deposits; impacts on vegetation would be similar to Alternative A. Approximately 11,408 acres would be managed as withdrawn from mineral entry, the least of any alternative.

The impact types associated with management of recreation identified under Alternative D would be the same as those under Alternative A, although more land would be managed to accommodate recreation together with other resource objectives within special designations under Alternative D (22,398 acres) than Alternative A. The Gordy's Hill SRMA would be managed to limit vehicle use to existing routes under Alternative D, which would limit further loss of vegetation when compared to the current management under Alternative A that allows cross-country travel throughout the entire area.

The types of impacts from management associated with transportation identified under Alternative A would be the same for this alternative, although Alternative D would provide no closed OHV areas and the associated protection for vegetation. The number of acres per vegetation type managed for transportation is summarized in Table 4-17. Some areas with lava beds in northwestern Catron County (additional to the acres noted in Table 4-17) would be managed as limited to existing routes, which would limit motorized travel in that area compared to Alternative A.

4.6.7 Wildlife, Riparian Habitat, and Special Status Species

The types of impacts associated with special designations for natural and cultural resources management would be the same as Alternative A, except that there would be an increase in acres of special designations over Alternative A (see Table 4-1). Acres of special designations that are focused on management of wildlife habitat and special status species would total 60,220 acres, a slight increase over Alternative A. Areas of potential aplomado falcon habitat would be managed to protect the Plains-Mesa sand scrub and desert grasslands habitats and minimize potential loss of foraging habitat for raptor species from surface-disturbing activity, including measures to regulate surface use and occupancy (see Appendix L).

The type of impacts from visual resources management would be the same as under Alternative A, except more land would be managed as VRM Class I and Class II than in Alternative A. In this alternative, 1,046,399 acres would be managed as VRM Class IV, which is an increase over all alternatives. All proposed activities would be subject to NEPA analysis on a site-specific basis, and impacts on wildlife and special status species within the specific sites would be minimized and mitigated through the NEPA process.

TABLE 4-17
ACREAGE OF VEGETATION TYPE ON BLM-MANAGED SURFACE LAND BY OHV AREA DESIGNATION FOR ALTERNATIVE D[A]

Vegetation Type	Acres of BLM-Managed Surface Land	Closed to OHV	Percent of Population	OHV Limited to Designated Roads	Percent of Population	OHV Limited to Existing Roads	Percent of Population	Open to OHV	Percent of Population
Chihuahuan Desert Scrub	168,059	0	0	98,462	59	69,588	41	0	0
Closed Basin Scrub	13,941	0	0	4,228	30	9,713	70	0	0
Coniferous and Mixed Woodland	143,686	0	0	80,953	56	62,699	44	0	0
Desert Grassland	316,268	0	0	181,825	57	134,419	43	0	0
Juniper Savanna	324,153	0	0	150,275	46	173,797	54	0	0
Lava Beds	21,353*	0	0	21,351	100*	0	0	0	0
Montane Coniferous Forest	30,945	0	0	13,700	44	17,239	56	0	0
Montane Scrub	11,456	0	0	7,564	66	3,890	34	0	0
Plains-Mesa Grassland	258,389	0	0	55,535	21	202,837	79	0	0
Plains-Mesa Sand Scrub	201,015	0	0	85,264	42	115,733	58	0	0
Urban, Farmland or Open Water	15,518	0	0	5,621	36	9,841	69	0	0
Total	**1,504,783**	**0**	**0**	**704,778**	**47**	**799,756**	**53**	**0**	**0**

SOURCE: Dick-Peddie 1993
NOTES: [a] Acreage based on best available GIS data.
The acre totals may not equal the calculations for area designations in Chapter 2, due to variations in datasets and calculation methods.
*The data on which these calculations are based do not include some additional lava beds in northwestern Catron County. These areas are addressed in the text, as appropriate.

Effects on wildlife and riparian habitats from management of land and realty under this alternative and the types of impacts associated with this management would be similar to Alternative A. However, a total of 478,371 acres would be managed as right-of-way exclusion and avoidance areas, which equates to approximately 32 percent of BLM-managed surface land (a decrease from 34 percent under Alternative A).

Compared with Alternative A, more acreage would be identified as right-of-way exclusion areas but less identified as avoidance areas (see Table 4-1). The greatest decrease in protection from right-of-way exclusions and avoidance would occur in Chihuahuan desert scrub, desert grassland, mountain coniferous forest, plains-mesa sand scrub, and plains mesa grassland habitats, which support diverse wildlife species, including aplomado falcon and other raptor nesting and wintering habitats.

All utility corridors recommended by the Western Utility Group Corridor Study would be established. Approximately 171,113 acres would be affected, comprised mainly of Chihuahuan desert scrub, desert grassland, plains-mesa grassland, plains-mesa sand scrub, and juniper savanna habitats throughout BLM-managed surface land. Establishment of new power line corridors could increase the potential for loss of raptor and migratory bird species from collisions with new power lines. However, the best management practices in Appendix L include standards that would be required for all new power line construction for constructing power lines to protect raptor species.

Up to 212,323 acres of isolated parcels would be identified for disposal, and 1,292,952 acres would be retained within Federal ownership. If additional land is disposed and developed as a result of the increased acreage identified as suitable for disposal, then this alternative could result in an increase in land use intensity, which would result in a higher potential for loss or degradation of wildlife habitat, habitat fragmentation, edge effects and disruption of local wildlife movement corridors throughout BLM-managed surface land. However, isolated parcels are generally selected for disposal and would not be likely to result in negative impacts on larger wildlife habitat areas. Each proposed disposal would be further evaluated and mitigation measures identified through additional NEPA analysis.

Additional nonpublic land within and adjacent to special designations would be pursued for acquisition to meet various resource objectives. Acquisitions would consolidate habitat areas for the best management potential.

Management of forestry and woodland products would be similar to Alternative B. When economically feasible, emphasis would be placed on the use of mechanical treatments and secondarily on wildland and prescribed fire, chemical treatment, or biological treatments to achieve goals of woodland and forest health. Temporary effects on wildlife and riparian habitats would be the same as in all other alternatives, and include removal of wildlife habitat and forage and increased erosion potential in riparian habitats. Long-term effects would be similar to those in Alternatives B and C.

Management actions associated with leasable fluid minerals would have similar effects on wildlife habitats and special status species to those described for Alternative A, although Alternative D would provide more area open to fluid mineral leasing under standard terms and conditions. A total of approximately 3,888,528 acres of Federal mineral estate would be open to fluid mineral leasing activities with standard terms and conditions while 1,419,456 acres would be closed to leasing activities (see Table 4-1).

Impacts associated with saleable mineral material disposals would be the same as those described under Alternative A. About 291,859 acres would be excluded from saleable mineral material disposals; no potential aplomado falcon habitat would be excluded. This would effectively represent only a slight

increase in restrictions over Alternative A, since under both alternatives about 291,826 acres are in WSAs and would be managed under the Interim Management Policy, which generally disallows activities that would be incompatible with the nonimpairment criteria. Effects associated with locatable minerals would be the same as in Alternative A.

This alternative is less restrictive to mineral material extraction than any of the other alternatives. The amount of mineral exploration and extraction that would occur under this alternative would create a substantial increase in land use intensity, and would result in greater potential for loss or degradation of wildlife and riparian habitats that support special status species. Habitat fragmentation, edge effects, and disruption of local wildlife movement corridors throughout the Planning Area could also occur as a result of this alternative.

The impact types associated with management of recreation identified under Alternative D would be the same as those under Alternative A. Slightly more land would be managed to protect and accommodate recreation within special designations under Alternative D (22,398 acres) than Alternative A (24,361 acres). Management for the Datil Well SRMA, Quebadras Backcountry Byway SRMA, and Socorro Nature Area SRMA would be the least restrictive of activities that result in ground-disturbance under Alternative D when compared to all the other alternatives, which may result in higher impacts on wildlife in these areas if management results in increased or concentrated recreational use in those areas. The Gordy's Hill SRMA would be managed to limit vehicle use to existing routes under Alternative D. These management actions would limit further loss of habitat, habitat fragmentation, and edge effects when compared to the current management of open cross-country travel on 1,200 acres.

Under Alternative D, impacts from motorized travel would be similar to Alternative A except no surface area under BLM management would be closed to OHV use. In this alternative 57 miles of routes within WSAs would be closed compared to 36 miles under Alternative A (Appendix J). A total of 799,757 acres of BLM-managed surface land would be limited to existing roads (or about 53 percent of BLM-managed surface land in the Planning Area), and 704,783 acres (47 percent) would be limited to designated routes (see Table 4-1). This would result in increased land use intensity in some locations that are designated as closed under Alternatives B and C. However, the elimination of cross country motorized travel would decrease the potential for loss or degradation of wildlife and riparian habitats, that may support special status species, and associated edge effects in those areas.

4.6.8 Wildland Fire Ecology and Management

Impacts on fire management under this alternative would be similar to those described under Alternative B; however, fewer acres likely would be restored due to the emphasis on commodity production. Surface-disturbing activities including fireline construction and hazardous fuels reduction could be limited on a total of 149,478 acres (10 percent of BLM-managed surface land) as a result of special designations for the protection of natural or cultural resources. Though the Horse Mountain ACEC would be expanded under this alternative, the corresponding wildland-urban interface area to the north would not change and impacts would be similar to those described under Alternative A.

Similar to Alternatives A and B, hazardous fuels treatments that result in discernible changes in color, line, form, and texture within the landscape would be limited in VRM Class II areas, which would include 354,222 acres (24 percent of BLM-managed surface land) under Alternative D.

Right-of-way exclusion areas would total 301,081 acres (20 percent of BLM-managed surface land) and avoidance areas would total 177,290 acres (12 percent of BLM-managed surface land) resulting in similar types of impacts on those described under Alternative A, but in more locations. The designation of four

utility corridors would have similar types of impacts as those described under Alternative B, although the impacts would occur in more locations due to the increase in the number of corridors.

Land disposal would have similar impacts on those described under Alternative A but could be more widespread as this alternative would designate the most acres of land for disposal than any other alternative, up to 212,323 acres (14 percent) of BLM-managed surface land.

Allocating forage increases to livestock before wildlife and watershed protection may result in an increase in utilization over Alternative A and could indirectly result in a reduction of fine fuel loadings. However, in accordance with public land health standards, utilization would not exceed 50 percent. Therefore, the changes to fire management compared to Alternative A would be negligible.

Impacts associated with the Continental Divide National Scenic Trail SMA would be similar but more widespread to those described under Alternative A. The Continental Divide National Scenic Trail SMA would be expanded to 8,703 acres (less than 1 percent of BLM-managed surface land) under this alternative.

No areas would be closed to motorized vehicle travel under this alternative. This would result in increased ignition potential from vehicles and humans in areas previously closed. No public land would be designated as open to cross-country OHV use, reducing the area where potential ignitions from motorized vehicles could occur. Closing 26 miles of roads outside special designations would indirectly limit the potential for human-caused ignitions along these roads.

4.6.9 Cultural Resources

The potential impacts of activities and projects associated with the management of cultural and natural resources under Alternative D would be similar to and addressed as described for Alternative A. The heritage tourism goals and opportunities under Alternative D would be similar to those for Alternative B. Alternative D would maintain four of the eight SMAs designated under Alternative A specifically to protect cultural resources (Mockingbird Gap, Fort Craig, Playa Pueblos, and Rio Salado). Four others would be modified as they would be under Alternative B (Mogollon Pueblo, Newton Site, Penjeacu/ Teypama, and Town of Riley). The total area encompassed in these cultural resource SMAs would be about 21,781 acres of BLM-managed surface land.

The one ACEC (Tinajas) and four SMAs (Cerro Pomo, Datil Well, San Lorenzo Canyon, and Zuni Salt Lake) identified in Alternative A for special management of cultural resources and other resources (particularly recreation) are also included in Alternative D, except that Zuni Salt Lake and Cerro Pomo would be redesignated as ACECs. The total acreage included in these special designations would be same as Alternative A, except the Cerro Pomo ACEC would increase by 449 acres (discounting overlap with the Mesita Blanca and Eagle Peak WSAs) and the Zuni Salt Lake ACEC would decrease to 2,107 acres (eliminating 2,732 acres of overlap with the Eagle Peak WSA). However, these areas would be much larger under Alternatives B and C, providing greater protection to cultural resources under those alternatives compared with Alternative D.

Under Alternative D, a total of about 25,330 acres (or 2 percent of BLM-managed surface land) would be designated to protect cultural resources as a primary or secondary purpose (compared to 2 percent for Alternative A, 10 percent for Alternative B, and 16 percent for Alternative C). The total area of special designation for Alternative D that would provide either direct or coincident protection of cultural resources would be 127,749 acres (8 percent) of BLM-managed surface land, slightly more than Alternative A but much less than Alternatives B and C (see Table 4-1).

Like Alternatives B and C, Alternative D also provides more protection than Alternative A for cultural resources by modified management of other resource use on the public land. Under Alternative D, OHV use on 704,783 acres would be limited to designated routes, and the remainder of BLM-managed surface land in the Planning Area would be limited to existing routes. This increase protection for resources over Alternative A due to the elimination of cross-country travel, but reduces protection relative to Alternatives B and C, because no public land would be closed to OHV use and fewer acres would be limited to designated routes, the more restrictive category.

4.6.10 Paleontological Resources

Under Alternative D, special designations for the protection of natural or cultural resources would be expanded to 149,478 acres, 20,923 acres more than Alternative A (discounting overlap with WSAs), increasing protection for paleontological resources from surface disturbance. The following special designations have geologic units varying in significance, abundance and predictable quality and include:

- Horse Mountain ACEC
- Ladron Mountain-Devil's Backbone Complex ACEC (some areas contain paleontological resources)
- Pelona Mountain ACEC
- Sawtooth ACEC
- Fence Lake SMA (some highly fossiliferous geologic units)
- Cerro Pomo ACEC (including important known paleontological resources)
- Tinajas ACEC
- Zuni Salt Lake ACEC (including highly fossiliferous geologic units)

Under Alternative D, no BLM-managed surface land would be closed to OHV use. About 29,117 acres that are currently closed could experience OHV use and the potential impacts related to surface disturbance, although travel would be limited to roads that are previously disturbed. Similar to the other action alternatives, Alternative D would eliminate cross-country travel, improving protection on 851,234 acres of BLM-managed surface land compared to Alternative A.

4.6.11 Visual Resources

Under Alternative D, public land managed for the protection of natural or cultural resources within special designations would increase to 149,478 acres. These measures would expand the areas managed to limit disturbances that could alter the natural landscape or impair experiences by sensitive viewers.

The impacts on visual resources from right-of-way authorizations would be similar to those described under Alternative A, except land identified for right-of-way exclusion and avoidance would expand to 478,371 acres (or 32 percent) of BLM-managed surface land, an increase of 261,933 acres within exclusion areas over Alternative A. Therefore, the potential to alter the natural landscape through vegetation loss and/or addition of new elements within the landscape due to construction of right-of-way authorizations would be reduced in those areas. However, though fewer acres would be open to development of rights-of-way, the actual amount of disturbance to scenic quality and sensitive viewers would depend on the type and location of facilities that are constructed.

Four utility corridors designated in Alternative D would allow for greater ability to consolidate utilities throughout the Decision Area, reducing the potential for dispersed rights-of-way that could impact sensitive viewers in more locations. Alternative D may result in impacts on fewer locations than Alternative A, if rights-of-way are consolidated in accordance with BLM policy and demand for new right-of-way is consistent across the alternatives.

However, the utility corridors in Alternative D cross special designations (Pelona Mountain ACEC, Eagle Peak WSA, Continental Divide Trail SMA, Datil Well SRMA, San Lorenzo SRMA, Veranito WSA, The Box SRMA, Fort Craig SMA, Sierra de las Cañas WSA, Quebradas Back County Byway SRMA, and Penjeacu SMA) resulting in potential impacts on sensitive viewers by the addition of structures in areas designated for special management that typically supports preservation of natural landscapes. Therefore, Alternative D could result in impacts on sensitive viewers if rights-of-way are constructed in the proposed utility corridors throughout the Planning Area.

Similar to Alternative A, any acquisitions that consolidate public land ownership would enhance management ability to preserve scenic quality in those areas. The disposal of public land in the future (of up to 212,323 acres) could affect the viewshed if disposed land is developed; site-specific impacts and mitigation would be identified during additional NEPA analysis when a disposal is proposed. The public land identified as suitable for disposal would increase by 125,865 acres over Alternative A. This would result in greater potential for diminishing natural landscapes if land is actually disposed and no longer under the public domain.

The types of impacts on visual resources from minerals development would be similar to the impacts described under Alternative A. Although Alternative D would designate more land as open to mineral leasing under standard terms and conditions, visual resources would not necessarily vary substantially because higher-quality resources identified with special designations would continue to have protective restrictions and it is expected that appropriate mitigation would be identified under standard terms and conditions or additional stipulations determined on a site-specific basis and in accordance with the appropriate VRM classification. In addition, closures to mineral leasing on approximately 1,419,456 acres (23 percent) of BLM-managed mineral estate (an increase of 1,041 acres over Alternative A) and maintaining withdrawals on 11,408 acres of BLM-managed surface land from mineral entry would help protect scenic quality and avoid impacts on sensitive viewers in those areas.

Mineral exploration and development activities adjacent to VRM Class I areas could impact distant views from within the Class I area. Alternative D designates 30,343 fewer acres as VRM Class I and 31,559 fewer acres as VRM Class II than Alternative A, although future NEPA analysis would be expected to identify appropriate mitigation measures for proposed projects and activities.

Impacts on visual resources from nonmotorized recreation would be the same as described under Alternative A. Under Alternative D, no public land would be designated as open to cross-country travel, compared to 851,234 open acres under Alternative A. Therefore, visual impacts from intense OHV use areas would decrease throughout BLM-managed surface land, depending on the change in the type and intensity of use and subsequent effect on the landscape. Areas that were designated as open to cross-country travel adjacent to special designations (i.e., Ladron Mountain-Devil's Backbone Complex ACEC, Puertecito SMA, Rio Salado SMA, San Lorenzo SRMA, Horse Mountain ACEC, Continental Divide Trail SMA, Mesita Blanca WSA, Eagle Peak WSA) would be less likely to result in impacts on sensitive viewers, compared to Alternative A.

4.6.12 Cave and Karst Resources

Under Alternative D, the potential impacts on cave and karst resources would be similar to those under Alternative A, but special designations for the protection of natural or cultural resources would increase slightly (to 149,478 acres from 238,936 acres) and could provide more coincidental protection of those resources. Similar to Alternative B, the elimination of cross-country travel may provide protection to some resources by reducing access to some areas.

4.6.13 Wilderness Characteristics

The impacts on wilderness characteristics would be similar to Alternative B, but OHV travel would be allowed on designated routes within all WSAs, exposing some previously closed areas (Continental Divide, Horse Mountain, and Sierra Ladrones WSAs) to vehicle-related dust and noise and impacting the wilderness character in the areas previously not exposed to vehicle traffic.

The authorization of utilities within the multiple utility corridors would cause indirect effects on some WSAs that are located within the corridors. Although the 1995 Interim Management Policy precludes the authorization of rights-of-way within WSAs, facilities that are located close to the WSAs could affect wilderness characteristics such as naturalness and solitude if they are visible from the WSA or associated access routes increase motorized access to the general area. Under Alternative D, the utility corridors would cross or include parts of the Eagle Peak WSA, Continental Divide WSA, and Veranito WSA.

Potential impacts on the Veranito and Presilla WSAs resulting from OHV use in the Gordy's Hill SRMA would be similar to those described under Alternative B. Should any of these WSAs be released from wilderness review, impacts could be experienced in portions of the Horse Mountain, Continental Divide, Sierra Ladrones, and Presilla WSAs. A summary of how these areas would be managed is provided in Table 2-3.

4.6.14 Lands and Realty

Under Alternative D, the BLM-managed surface land that would be managed within right-of-way exclusion areas would increase from Alternative A, to about 301,081 acres. In addition, 177,290 acres would be managed as right-of-way avoidance areas, where land use authorizations would be permitted within limited dimensions. The overall effect of management would be to increase the acreage that would be excluded from right-of-way authorizations by 261,933 acres over the area in Alternative A.

Designation of multiple utility corridors would encourage co-location of facilities on public land in the Planning Area, which could limit the proliferation of linear facilities in the Planning Area and consequently reduce changes to land uses. The increased number of corridors would provide additional flexibility for future planning in locating utilities on public land and could encourage major right-of-way and/or large energy project development. However, the corridor locations identified in Alternative D are incompatible with some special designations that are crossed (see Maps 2-43 and 2-56). The corridors would overlap with right-of-way exclusion areas associated with the Eagle Peak WSA, Continental Divide WSA, and Veranito WSA. The 1995 Interim Management Policy would disallow the authorization of new rights-of-way in WSAs, and would take precedence over the utility corridor. The corridors also would cross right-of-way avoidance areas located north of Eagle Peak WSA, in Pelona Mountain ACEC, on public land west of San Antonio and south of the The Box SRMA, and in the San Lorenzo SRMA. Although some right-of-way authorizations would be permitted within right-of-way avoidance areas, there would be limitations on the size and type of those rights-of-way that might conflict with the purpose of the utility corridor to accommodate most rights-of-way.

Under Alternative D, more acreage (212,323 acres of BLM-managed surface land) would be identified as suitable for disposal than under Alternative A (86,458 acres). This change in management would not directly impact existing and planned land uses within the resource area, although more public land would be available to support subdivisions and the growth of rural communities. If a disposal were proposed, additional NEPA analysis would evaluate the potential effects on land uses that would be relevant to the specific parcel and circumstances.

Less land would be managed as VRM Class I and II areas relative to Alternative A (354,222 versus 416,124 acres), but this management would not be expected to impact particular land uses since mitigation for any future proposed projects would be applied on a site-specific basis to promote compliance with the visual resource management objectives.

Under Alternative D, slightly more area would be closed to fluid mineral leasing than under Alternative A (1,419,456 acres versus 1,418,415 acres of mineral estate). Because the RFD predicts land requirements for fluid mineral development to be less than 1,000 acres, it is anticipated that there would be adequate land available for leasing to meet demand. (Note: the availability of land with high potential for fluid minerals is described in the Minerals section.) Impacts from coal leasing and extraction activities would be the same as discussed under Alternative B, except that there are fewer right-of-way avoidance areas in the vicinity of high-potential areas in the northwestern section of the Planning Area, which would better facilitate the location of linear facilities to support coal operations.

Under Alternative D, the majority of BLM-managed surface land in the Planning Area would be open for mineral material disposals; 19 percent (291,859 acres) would be excluded from such uses. However, based on the RFD, impacts would be similar to those described under Alternative A because the relatively small amount of land identified in the RFD would be readily available, and mitigation measures would be identified during NEPA analysis. Additionally, with the exception of 22 acres, all of the land excluded is located within WSAs, and would be managed under the Interim Management Policy, which generally disallows activities that would be incompatible with the nonimpairment criteria.

No areas would be closed to OHV travel under Alternative D. However, Alternative D also would eliminate cross-country travel on BLM-managed surface land (reducing to 0 open acres from 851,234 acres under Alternative A). This would result in the loss of access for some activities, including recreational activity. Similar to Alternative A, dust and noise generated from OHV travel could result in indirect impacts on nearby land. About 83 miles of roads and trails would be closed under this alternative; resulting impacts on land uses would be negligible (beyond those described in the wilderness and recreation sections).

4.6.15 Forestry and Woodland Management

Special designations managed for natural and cultural resource management would include approximately 149,478 acres, resulting in impacts similar to Alternative B, except across fewer forest and woodland acres overall. Surface-disturbing activities would be less restricted under this alternative than any other.

Woodcutting and the disposal of timber and other forest products would be allowed within the Pelona Mountain ACEC (34,547 acres of BLM-managed surface land), the Ladron Mountain ACEC (20,155 acres, or 1 percent of BLM-managed surface land), and Horse Mountain ACEC (2,596 acres, or less than 1 percent of BLM-managed surface land). Impacts from surface disturbance and forest structure alteration would be similar to those described under Alternative B. In contrast to the other alternatives, there would be no acres designated for VRM Class I. VRM Class II designations would total 354,222, slightly less than Alternative A.

Impacts on forest and woodland resources associated with right-of-way exclusion and avoidance areas would be similar to those described under Alternative A. However, approximately 172,921 acres of forested BLM-managed surface land would be designated as right-of-way exclusion and avoidance areas, allowing for surface-disturbing activities in more forested areas than the other alternatives.

The designation of four utility corridors would allow rights-of-way to pass through forested areas of BLM-managed surface land (approximately 8,637 acres) whereas in Alternatives B and C the utility corridor did not affect forested areas. This reduction in tree cover could involve either tree mortality or pruning in order to make room for utility infrastructure. Indirect impacts would result where road construction in forested areas occurred in conjunction with these utility corridors.

Land disposal and acquisition would have the same impacts on forest and woodland resources as those described under Alternative B. Management actions associated with leasable fluid minerals would have similar but more widespread impacts on those described under Alternative B because 3,888,528 acres would be open to fluid mineral leasing activities with standard terms and conditions. This alternative provides more area open to fluid mineral leasing under standard terms and conditions than any other alternative. Impacts associated with saleable mineral material disposals would be similar to Alternative A.

Allocations of forage to livestock over wildlife and watershed function would reduce herbaceous cover in site-specific forested areas during years when increased forage was available. Increased potential for adverse impacts on forest soils would occur where livestock congregate. These impacts would be more widespread than under Alternative C because wildlife use patterns would be dispersed across the landscape more than livestock. These impacts would be only slightly more widespread under this alternative when compared to Alternative B.

Impacts on forest and woodland resources would be similar those described under Alternative B. As with Alternative B, there would be a restoration of FRCC through the alteration of forest and woodland structure; however under this alternative there would be greater emphasis on mechanical fuels than on wildland fire use and prescribed fire compared to other alternatives. There would be more potential for surface disturbance and soil erosion in forest and woodland cover types under this alternative than under Alternative C due to road construction activities. Indirect impacts from the surface disturbance associated with new road construction would be the same as under Alternative B.

Of the eight areas designated especially for management of recreation under this alternative, only four have forest resources that could be impacted. These include the Continental Divide National Scenic Trail SMA, San Lorenzo SRMA, The Box SRMA, and Datil Well SRMA. Impacts on forest resources associated with management of the Continental Divide National Scenic Trail SMA are discussed in Section 4.6.7. Specific impacts would be similar to those described Alternative B, though on slightly different acres. Woodcutting and harvest of forest resources would be allowed within the 2,320-acre San Lorenzo SRMA (less than 1 percent of BLM-managed surface land). Harvest of forest resources would be allowed within the 300-acre The Box SRMA (less than 1 percent of BLM-managed surface land). Woodcutting and harvest of forest resources would be allowed within the 669-acre Datil Well SRMA (less than 1 percent of BLM-managed surface land).

4.6.16 Rangeland Management

Generally, the impacts on grazing from water-control measures (such as erosion control structures like spreader dams or retention structures), vegetation treatments, or rehabilitation of identified sites would be the same as those under Alternative A. However, special designations for the protection of natural or cultural resources, which are more likely to be subject to this management, would be increased to a total of 149,478 acres of BLM-managed surface land. Alternative D would likely increase the number of range

projects for improving conditions for livestock, and could allow for augmented stocking rates. As a result, livestock grazing would benefit more and the increase of AUMs could be greater compared with the other alternatives. Range condition would not be compromised because management objectives still would include meeting public land health standards.

Exclusions to domestic sheep and goat use would be applied to a 10-mile buffer around bighorn sheep habitat in the 20,155-acre Ladron Mountain ACEC. As described for Alternative B, this would not result in impacts on existing conditions.

Under Alternative D, approximately 301,081 acres would be excluded from right-of-way authorizations (261,933 more than Alternative A) and 177,290 acres would be designated as avoidance areas (281,706 acres fewer than Alternative A). The potential for noise and other disturbances from activity and infrastructure within rights-of-way and utility corridors would therefore be reduced in those areas, as would the impacts on available forage. The designation of four utility corridors would not be expected to have a pronounced impact on grazing outside of the specific areas that could be affected along the corridors, and it is expected that mitigation measures would be identified during the required NEPA analysis.

Potential effects on grazing from land acquisition and disposal would be the same as Alternative A, since any acquisitions likely would be part of an existing grazing allotment and mitigation would be identified as part of the NEPA analysis. Potential impacts associated with woodlands harvesting or vegetation sales would be the same as Alternative B.

Alternative D would exclude roughly the same amount mineral estate from mineral leasing and development as Alternative A (1,419,456 acres, 1,041 acres more than Alternative A), there would be fewer acres withdrawn from mineral entry and a greater number of acres would be open without stipulations. In addition, a greater number of acres would be excluded from mineral material disposals (291,859 acres total). However, this would effectively represent only a slight increase in restrictions over Alternative A, since under both alternatives about 291,826 acres are in WSAs and would be managed under the Interim Management Policy, which disallows activities that would be incompatible with the nonimpairment criteria. The impacts associated with the RFD would be the same as Alternative A.

Under Alternative D, no areas would be closed to access and OHV use, and most BLM-managed surface land would be managed as limited to existing routes. Direct impacts associated with forage loss and livestock disturbance, and indirect impacts associated with invasive species and wildfire, would be more widespread than Alternative B or C.

Impacts from dispersed, nonmotorized recreational activity would be the same as Alternative A. OHV use would be limited in comparison to Alternative A; therefore, direct impacts associated with forage loss and livestock disturbance, and indirect impacts associated with invasive species and wildfire would be reduced in areas where cross-country motorized travel previously was allowed (851,234 acres).

4.6.17 Minerals

Closures to fluid mineral leasing would exclude those areas from extraction of resources such as oil, gas, carbon dioxide, and helium, and fluid mineral leasing stipulations that control surface use and limit surface occupancy could increase the cost and difficulty of exploration and development of fluid mineral resources to a point where these activities become economically infeasible. The effect of placing a no-surface-occupancy stipulation over large areas would have the same effects as described for Alternative A. However, under Alternative D, 1,419,456 acres of Federal mineral estate would be closed to leasing, which includes 1,418,415 acres of nondiscretionary closures and an additional 1,041 acres

compared with Alternative A. Lease stipulations would be attached to 785,484 acres of Federal mineral estate (49,484 acres more than Alternative A). Although more public land would be excluded from fluid mineral leasing, under Alternative D more public land also would be available for leasing under standard terms and conditions.

Under Alternative D, closed areas overlap with 648,312 acres of moderate potential for oil and gas (or 16 percent of moderate potential areas in the Planning Area). The remainder are areas of low potential for these resources. The closed areas also include 28,582 acres of high potential for carbon dioxide and helium (or 9 percent of high potential areas in the Planning Area), and 491,343 acres of moderate potential (or 13 percent of moderate potential areas in the Planning Area).

Approximately 11,408 acres would be withdrawn from mineral entry, and no additional acreage would be petitioned for withdrawal. Fewer areas would be excluded from locatable mineral development under Alternative D than all other alternatives, since no additional public land would be petitioned for withdrawal.

Approximately 291,859 acres would be excluded from mineral material disposal. This acreage represents the area within WSAs and would be managed under the Interim Management Policy, which generally disallows activities that would be incompatible with the nonimpairment criteria. An additional 22 acres in the Tinajas ACEC and 11 acres within the Penjeacu SMA that are not included in the WSA also would be excluded. Impacts would be the same as described in Alternative A. The impact on the ability to develop coal resources is the same as for Alternative B.

Decisions about access and realty could indirectly encourage or restrict exploration and development of mineral resources in a similar way as described for Alternative A, except under Alternative D the overall exclusions and restrictions on right-of-way would decrease, but right-of-way exclusions would increase in some areas. Under Alternative D, a total of 478,371 acres would be managed as right-of-way exclusion or avoidance areas (a decrease of 19,773 acres from Alternative A). Although no public land would be closed to OHV under Alternative D (a decrease of 29,117 acres from Alternative A), all cross-country travel would be eliminated. In addition, areas limited to designated routes would increase to 704,783 acres (from 562,901 acres under Alternative A). The additional restrictions on access could affect the ability to develop the infrastructure needed to explore and develop mineral resources in some areas. The impacts associated with the land acquisitions would be the same as Alternative A.

4.6.18 Recreation

Under Alternative D, impacts on recreation from management of cave and karst, visual, natural, and cultural resources are similar to Alternative A. However, although more acres would be in special designations for protection of natural or cultural resources (approximately 149,478 acres overall) compared with Alternative A, less acreage would be designated as special designations compared with Alternatives B and C. Therefore, the extent and specific locations where ground-disturbing activities could occur would increase over Alternatives B and C. In addition, no acres would be designated as VRM Class I, while 354,222 acres would receive a Class II designation.

The types of impacts on recreation from rights-of-way and other land use authorizations would be similar to those described under Alternative A, although Alternative D would include more acres within right-of-way exclusion areas. Under Alternative D, approximately 20 percent of BLM-managed surface land would be allocated as right-of-way exclusion areas (301,081 acres) and approximately 12 percent would be allocated as a right-of-way avoidance areas (177,290 acres). These exclusion and avoidance areas generally correspond to existing WSAs and ACECs and SMAs proposed under this alternative, resulting in no impacts on existing recreational opportunities within special designations. In areas where rights-of-

way would be authorized following site-specific environmental analysis (on 68 percent of BLM-managed surface land), the resulting impact on recreational opportunities could include increased access for motorized recreation in localized areas. Authorization of rights-of-way would not be expected to result in the loss of recreational opportunities throughout the Planning Area, though there could be some localized, negligible impacts (e.g., displacement during development of the right-of-way).

Although 14 percent of BLM-managed surface land is identified as suitable for disposal under Alternative D, compared with 6 percent under Alternative A (see Table 4-1), impacts would be similar to Alternative A as most of the areas identified for disposal provide recreational opportunities that would still be available on BLM-managed surface land and within the overall Planning Area. In addition, the dispersed and remote nature of the land identified for disposal does not provide special or unique recreational opportunities. The types of impacts on recreational opportunities resulting from land (and access) disposals or acquisitions would be similar to those described for Alternative A.

Impacts on recreation from fluid mineral leasing would be the same as Alternative A as the acreage that would be closed to fluid mineral leasing would be very similar under these two alternatives, and the variations related to application of stipulations would not be expected to affect the types of potential impacts. Although Alternative D excludes 291,859 acres from mineral material disposals, the impacts associated with saleable minerals management also would be the same as Alternative A, since the exclusion areas are within WSAs, which generally disallows activities that would be incompatible with the nonimpairment criteria. Additionally, mineral material disposals would not impact the balance of recreational opportunities available within the Planning Area. Impacts on recreation from coal development would be the same as Alternative B. Mineral withdrawals on about 11,408 acres would not impact recreational opportunities available within the Planning Area.

The elimination of the closed OHV area designation and designation of fewer acres as limited to designated routes than Alternative B or C would result in increased opportunities for this type of motorized recreation throughout the Planning Area. Alternative D would limit OHV use to a higher degree than Alternative A, primarily due to the lack of areas open to cross-country travel. More routes would be closed in WSAs (57 miles), resulting in similar impacts as those described for Alternative A.

4.6.19 Renewable Energy

Impacts would be similar to Alternative A, except the management to minimize the intensity and location of surface-disturbing activities would be expanded over a slightly larger area of special designations for the protection of natural or cultural resources (149,478 acres of BLM-managed surface land, or 20,923 acres more than Alternative A when areas of overlap with WSAs are discounted). Under Alternative D, right-of-way exclusion areas would be increased by 261,933 acres to total 301,081 acres of BLM-managed surface land. This change would reduce the opportunities to site renewable energy and transmission projects in those areas. These effects would be most relevant where special designations overlap with areas of moderate to high wind, solar, and biomass resource potential (identified in the February 2005 Management Situation Analysis).

Management of VRM Class I and II areas could affect the placement of or required mitigation for renewable energy facilities as described for Alternative A, but the acreage managed under these VRM classes would be decreased to 478,371 acres (19,773 acres less than Alternative A).

4.6.20 Transportation and Travel Management

The types of impacts associated with management to protect natural or cultural resources in special designations under Alternative D (149,478 acres) would be the same as those under Alternative A.

However, this management would be applied to less acreage than Alternatives B and C and to slightly more acreage than Alternative A. These restrictions would not be expected to affect overall travel throughout the Planning Area because of the relatively low acreage that would be impacted.

The type of impacts from management of land and realty under Alternative D would be similar to those described for Alternative A, except that right-of-way exclusion areas would encompass about 20 percent and right-of-way avoidance areas 12 percent of surface land managed by BLM. The remaining 68 percent of BLM-managed surface land would be open for rights-of-way, allowing for establishment of additional motorized access routes, slightly more than Alternative A (see Table 4-1).

Additional utility corridors proposed under Alternative D would not be expected to have a notable incremental effect on travel compared with the utility corridors proposed under Alternatives B and C. Land tenure adjustments would result in impacts similar to those described under Alternative A, with the exception that 14 percent of BLM-managed surface land could be disposed (compared to 6 percent in Alternative A) and result in the loss of public access in localized areas and possible displacement of motorized travel onto other routes crossing public land.

The types of impacts from minerals management also would be similar to those described for Alternative A, except the specific areas where localized impacts could occur would vary due to the increased area closed for fluid mineral leasing. Impacts associated with saleable minerals management also would be the same as Alternative A, since the exclusion areas are within WSAs managed under the Interim Management Policy, which generally disallows activities that would be incompatible with the nonimpairment criteria. Conversely, Alternative D may allow for the development of more roads associated with minerals development compared to Alternatives B and C due to less areas closed to fluid mineral leasing and excluded from mineral materials development.

Impacts from transportation and travel management would be the same as described under Alternative A except that this alternative provides for 57 miles of route closures within WSAs compared to 36 miles in Alternative A (Appendix J). Impacts from route closures outside of WSAs would be the same as Alternative B.

4.6.21 Social and Economic Conditions

Under Alternative D, areas managed to protect natural and cultural resources within special designations would be expanded to 149,478 acres, an 16 percent increase over Alternative A (when areas of overlap with WSAs are discounted). The types of socioeconomic impacts from this management would be similar to those described under Alternative B. Although Alternative D would provide greater protection of the natural landscape and cultural resources via expanded management to minimize surface disturbance, the incremental socioeconomic effects would be expected to be minimal.

The socioeconomic impacts on Zuni Salt Lake as a sociocultural resource would be the same as Alternative A.

The types of socioeconomic impacts associated with right-of-way exclusion and avoidance areas would be similar to those described under Alternatives A, B, and C. Under Alternative D, utility companies would have more leeway to site facilities in the most economically efficient locations than under Alternatives B or C, reducing the potential that additional costs would be incurred by project proponents. Under Alternative D, the expansion of right-of-way exclusion areas (to 301,081 acres of BLM-managed surface land) could result in denial of some linear developments based on location alone. Cost of development for utility companies could increase if the corridor is not ideally compatible. Of all the alternatives, the inclusion of multiple utility corridors in Alternative D maximizes the potential for

gaining efficiencies from commonality of location (e.g., established access points along the utility corridors) and from streamlining of the review process, which would reduce expenses for both the BLM and project proponent.

Socioeconomic impacts associated with land acquisition and disposal would be the same as Alternative A.

The types of impacts associated with closure of an area to fluid mineral leasing or withdrawal from location and entry under the mining laws would be the same as described for Alternative B. However, under Alternative D, 1,041 additional acres would be closed to fluid mineral leasing and the BLM would not petition to withdraw any additional acres, compared to Alternative A. About 28,582 acres of high potential for carbon dioxide and helium and 648,312 acres of moderate potential for oil and gas are included within areas that would be closed to fluid mineral leasing. In these areas, the closures would eliminate the possibility of capitalizing on economic opportunities to extract these fluid minerals.

Socioeconomic impacts associated with the land identified as potentially suitable for coal leasing are the same as Alternative B. Socioeconomic impacts associated with exclusions of mineral material disposals would be the same as Alternative A, since the land identified for exclusion is within WSAs and therefore such disposals would be similarly limited under all alternatives.

Similar to Alternative A, management of public land would continue to provide opportunities for grazing and would result in the sustainable management of grazing (through adherence to public land health standards). This supports the continued viability of ranching, an important component of local economies. The closures to domestic sheep and goats would not impact existing conditions. Localized impacts on grazing operators would be the least under Alternative D because it includes the fewest acres on which grazing would be excluded. Socioeconomic impacts related to vegetative sales would be the same as Alternative B.

It is anticipated that the socioeconomic impacts associated with the designation of SRMAs would trigger the same types of impacts on visitation as described for Alternative B. Since there are no areas closed to OHV use under Alternative D, localized impacts on OHV users would be minimized in certain locations. In addition, the lack of closures to OHV use under Alternative D could distribute that type of recreation use (and any associated expenditures) over a larger area and might increase the likelihood that large organized events could be held in the Planning Area, which would result in short-term, localized increases in expenditures in nearby communities.

4.6.22 Environmental Justice

Impacts with regard to mineral development and protective measures associated with Zuni Salt Lake would be the same as described for Alternative A.

4.7 CUMULATIVE IMPACTS

Regulations prepared by the Council on Environmental Quality for implementing NEPA require Federal agencies to analyze and disclose effects that could result from the incremental effect of an action "when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR 1508.7).

For the cumulative impacts analysis, potential impacts were considered within the Planning Area boundary, which encompasses all of Socorro and Catron Counties, New Mexico. The timeframe considered for the analysis is between 15 and 20 years, although some resource-specific considerations

may vary as noted in the individual resource discussions in Section 4.7.2. Because proposed management decisions in this RMPR are plan-level, broad land allocations and management objectives, it is not always possible to quantify cumulative impacts on specific resources or resource uses. The types of cumulative impacts that could occur often would be dependent on the location or scale of a future action or proposal, and are discussed qualitatively in the absence of information on specific future actions. Additionally, it is assumed that future, site-specific proposals on public land would require additional NEPA analysis. As appropriate, any variation in cumulative impacts among the alternatives is discussed in Section 4.7.2.

4.7.1 Past, Present, and Reasonably Foreseeable Future Actions

This section summarizes the key past, present, and reasonably foreseeable future actions that were evaluated in combination with the alternatives to assess cumulative impacts.

Past Actions. Past actions are events that have occurred and accumulated to create the existing conditions in the Planning Area. Key past actions within the Planning Area include the following.

- A transportation infrastructure is present that has evolved from County, State, and local road improvements; BLM road maintenance; and the creation of roads and trails due to use by motorized and mechanized vehicles.
- Land exchanges and disposals have occurred since the 1989 RMP (Map 1-1)
- The Rio Grande has experienced dewatering due to upstream dams and other water projects.
- Historic grazing has occurred throughout the Planning Area.
- Military activities occur on withdrawn public land on White Sands Missile Range in the southeastern portion of the Planning Area.
- Campgrounds and other recreational facilities have been established at Datil Well, Fort Craig, Box Canyon, and other dispersed locations throughout the Planning Area.
- BLM partnered with the State of New Mexico to establish the El Camino Real International Heritage Center within Socorro County; about 120 acres of public land were transferred to the State for the site.
- There has been sporadic oil and gas exploration in Socorro and Catron Counties since the 1920s, with a total of 85 exploratory wells drilled. Much of northwestern Catron County has been leased for oil and gas exploration, with the most recent lease sales of State land in October 2003. No oil and gas production has occurred in the Planning Area and there are no documented proven reserves.
- There has been substantial carbon dioxide and helium exploration in the Planning Area since 1998. Five wells testing producible carbon dioxide and helium have been completed in that area by the Ridgeway Corporation.

Present Actions. There is extensive federally managed land (over 50 percent of total surface area) within the Planning Area. The BLM manages just over 17 percent of the surface land area within the Planning Area. The Forest Service manages over 32 percent of the Planning Area, including almost half of the land area within Catron County. The management actions and uses on Federal land substantially represent the ongoing activities in the Planning Area.

Throughout the Planning Area, livestock grazing occurs on public, State, and private land. In 2005, there were 232 permittees in the Planning Area authorized to use 229,000 AUMs on 252 allotments. These allotments vary in size from about 17 acres to 167,000 acres, with grazing preferences ranging from less

than 10 AUMs to 11,880 AUMs. About 3 million acres are included within grazing allotments throughout the Planning Area (note that allotments may include land managed by parties other than BLM). Additional information on ongoing grazing activities is provided in Chapter 3 and Appendix H.

Recreation activities such as OHV use, hiking, hunting, wildlife watching, and mountain biking occur on BLM-managed surface land and throughout the Planning Area. Estimated recreational use of public land administered by the BLM in New Mexico totaled over 2.1 million visits and nearly 1.8 million visitor days in Fiscal Year 2004 (BLM 2004a). Visitor use of Datil Well Campground has been increasing between 1995 and 2004, reaching an estimate of 4,875 visits in 2004. Additional information on recreation is provided in Chapter 3. In addition, the Socorro Field Office issues and administers approximately 25 or more special recreation permits per year. The majority of permits are related to outfitting for hunting. Other permits include dog trials, motorcycle races, endurance horse races, astronomy events, mountain bike races, model rocket launches, climbing, reenactments at Fort Craig, and a variety of other activities. Dispersed recreation activities also occur on land managed by the Forest Service and U.S. Fish and Wildlife Service, including wildlife viewing in wildlife refuges and primitive recreation opportunities in Gila National Forest. The Gila has averaged 1,300 visitor-days for the last five years.

There is continued significant interest in leasing Federal land as shown by the numerous Expression of Interest nominations for parcels in Catron County. These Expression of Interest nominations are currently in pending status. In Catron County, there is leasing activity in the Zuni Basin area specifically targeting carbon dioxide exploration and development.

In eastern Socorro County, leasing for oil and gas exploration currently is active in the Chupadera Mesa-Carrizozo Basin area. Leasing activity near Bingham has included Federal and State land, and all Federal mineral estate in this area has been leased or nominated for leasing in the past year. Leasing activity is ongoing in the Albuquerque-Belen Basin in northern Socorro County.

Other current mineral development activities in the Planning Area include several saleable mineral pits on private land. Historic locatable mining districts are not currently active. Additional information regarding current mineral exploration and development is in Chapter 3 and the 2003 Energy and Mineral Resource Potential Report, available from the Socorro Field Office.

Reasonably Foreseeable Future Actions. Reasonably foreseeable future actions are projections of the uses and activities that are likely to occur in the Planning Area in the foreseeable future. New Mexico, as well as the southwestern United States generally, is projected to continue experiencing population growth. Residential development is expected to occur in the Planning Area, particularly along the I-25 corridor and in some communities like Pie Town. Growth may be more rapid in communities that are outside of the Planning Area, and this could have the effect of increasing the population of nearby recreation users that travel to the Planning Area.

In BLM's Decision Area, ongoing administrative activities would result in surface disturbance. The types and extent of these administrative activities are described by resource or resource use in Section 4.7.2. Generally, administrative activities include development of access roads, recreation trails and facilities, signage; vegetation treatments; data recovery (cultural resources); and mineral materials disposals.

The Forest Service also conducts administrative actions such as fuel reduction projects, including wildland urban interface fuel breaks; implementation of various management plans (i.e., mining and wildlife); range improvements; new wildlife water structures; improvements of access to private inholdings; watershed management; vegetation treatments; special use permit renewals for recreation and

utilities; mining permits for saleable minerals; and mine and landfill reclamation. Grazing allotments on Forest Service land are managed in accordance with operating instructions that are updated annually.

Management of all National Forests is guided by a Land and Resources Management Plan prepared in compliance with the National Forest Management Act. The purpose of the Land and Resources Management Plan is to guide all natural resource management activities for a 10- to 15-year period. Both the Cibola and Gila National Forests will be updating their Land and Resources Management Plans beginning in 2007. Additionally, the President's fiscal year 2007 budget includes a legislative proposal that would grant the Forest Service authority to sell small tracts of forest land that are isolated or inefficient to manage due to their location or other characteristics. Land that is potentially eligible for this proposal has been identified in the Cibola National Forest.

Training and testing activities at the White Sands Missile Range will continue into the foreseeable future. However, as is the nature of military facilities, the military mission for this facility could change at any time, either reducing or increasing military activity on the Range. The website for the White Sands Missile Range notes that there is an increased emphasis on joint operations and that the facility continues to develop its capabilities for testing of major missile and rocket systems (White Sands Missile Range 2006).

As part of an Energy and Mineral Resource Potential Report dated 2003, RFDs for mineral development were estimated for the entire Planning Area. The analysis to generate the RFD is based on available geologic information, and does not address market and production economics, conflicts with other resources, or land ownership. Projected mineral development activities in the Planning Area include:

- The RFD for oil and gas development in the Planning Area estimates that 22 exploratory wells will be drilled. Compared to the previous 15 years when 14 wells were drilled, an estimated 1.5 wells per year will be drilled in the next 15 years. An estimated two exploratory wells (10 percent of the total drilled) will lead to the discovery and production of two small economic oil and gas (or coalbed methane) fields in the next 15 years. The two discovered fields will be small (less than 500 acres). An estimated 12 development or production wells will be drilled to delineate and exploit each oil and gas discovery field, approximately one per 40 acres.

- The RFD for carbon dioxide and helium development in the Planning Area estimates that 150 exploratory and development wells will be drilled. This assumes one 50,000-acre field will be discovered and developed with a well spacing of 320 acres.

- The RFD for coal development in the Planning Area estimates that one new coal field will be permitted and developed. A total of 80 million tons of coal will be mined during the 50-year life of the mine (affecting up to 18,000 acres).

- The RFD for geothermal resource development in the Planning Area expects that no leasing, exploration, or development will occur in the next 15 years. Costs to develop low-temperature geothermal resources are prohibitive compared to the potential revenue generation and limited uses of those resources.

- The RFD for solar energy resources in the Planning Area is that two right-of-way permits will be issued in the next 15 years. Incentives to develop solar energy resources will include Federal and State programs designed to encourage use of renewable energy resources, such as tax incentives and low-interest business loans.

- The RFD anticipates permitting one right-of-way totaling 40 acres for construction of a wind farm facility. The facility will occupy most of the permitted acreage with 40 wind turbines (approximately one per acre), access roads, battery storage facilities, and power transfer stations. The wind farm will require a right-of-way permit for an estimated 50 total miles of transmission lines to the end-user or regional transmission lines.

- The RFD for locatable mineral resources in the Planning Area expects that some exploration will occur in the next 15 years and two underground locatable mineral deposits will be developed.

- An estimated five new salable mineral pits or community pits will be permitted or reactivated in the next 15 years. The type and volume of salable minerals disposed is uncertain and depends on the increase in community development. An estimated 50,000 cubic yards will be removed per year from each pit in the next 15 years, for a total disposal of 3,750,000 cubic yards.

Additional future actions throughout the Planning Area may include development of carbon dioxide and helium in northwestern Catron County on State and private land, consistent with the RFD and locations of high potential areas identified for those resources.

4.7.2 Cumulative Impacts

Over 58 percent of the Planning Area is managed by Federal agencies (see Table 4-18). Management of most of this area is guided by mandates to protect sensitive resources in accordance with all applicable environmental regulations and to sustainably manage multiple resources and uses (including grazing and dispersed recreation). Some portions of federally managed land, such as wildlife refuges, are managed with the objective of protecting vegetation and habitat resources. Military areas such as White Sands Missile Range generally exclude public access and resource uses, and military activities often impact a relatively small percentage of the acreage, resulting in overall minimal disturbances to environmental resources. The overall goal of Federal management in the Planning Area is to promote environmental analysis of future proposed actions, conservation of sensitive or unique environmental resources, accommodation of multiple resource uses, and a comprehensive, landscape-oriented management approach on much of the land in the Planning Area.

TABLE 4-18
FEDERAL LAND MANAGEMENT IN THE PLANNING AREA

Federal Agency	Acres in Planning Area	Percent of Planning Area
Surface land managed by BLM	1,507,126	17.3
Surface land managed by Forest Service	2,809,876	32.3
Surface land managed by USFWS	284,721	3.3
Surface land managed by National Park Service	782	0
Surface land managed by other Federal agencies (Bureau of Reclamation, Department of Defense)	456,892	5.3
Total acres managed by Federal agencies	5,059,397	58.2

SOURCE: Bureau of Land Management 2003a

Special designations are a key element of the management strategy in each of the alternatives for this RMPR. Table 4-19 provides a comparison of the special designations among alternatives. Special designations represent areas where resource uses are managed to minimize effects from surface disturbance on environmental resources. Generally this management would correspond to greater conservation and/or restoration of natural resources and would have incidental beneficial effects on primitive recreation settings from management to conserve existing natural landscapes. In combination with management on other public land in the Planning Area, protective management in special

designations would contribute to the preservation of an undeveloped, natural landscape within most of the Planning Area. This environment would continue to be well-suited for many types of primitive and semi-primitive recreation and grazing activities. There is some variation in this effect among alternatives. As shown in Table 4-19, Alternatives B and C would result in protective management on about 40 percent of BLM-managed surface land, which equates to about 7 percent of the entire Planning Area.

TABLE 4-19
MANAGEMENT BY BLM IN SPECIAL DESIGNATIONS

	Alternative A	Alternative B	Alternative C	Alternative D
Surface land managed by BLM	1,507,126	1,507,126	1,507,126	1,507,126
Surface land managed by BLM within special designations (including WSAs, ACECs, SMAs, SRMAs)	420,381	589,381	628,435	441,304
Percent of BLM-managed surface land managed within special designations	27.9	39.1	41.7	29.3
Percent of Planning Area managed within BLM special designations	4.8	6.8	7.2	5.1

SOURCE: Bureau of Land Management 2006

Additional cumulative effects are characterized below by resource or resource use, as appropriate. Each discussion specifies the contribution of past and present actions in the Planning Area to the current conditions and the additional effect of reasonably foreseeable future actions on each resource or resource use.

4.7.2.1 Air Quality

Past Actions. Emissions in the Planning Area from past actions have resulted from the evolution of the transportation network due to population growth and increased use, mineral exploration, and various construction projects. The Springerville and Coronado generating stations in Arizona, 10 miles west of the New Mexico border, are the largest source of emissions located in the region, with an additional eight permitted sources in the Planning Area qualified as minor sources. However, the area is still qualified as "unclassified" with regards to the NAAQS, indicating that there have been no cumulative effects from these actions resulting in emission levels exceeding New Mexico or Federal ambient air quality standards.

Present Actions. Current management allows the use of cross-country travel on some portions of BLM-managed land, resulting in a proliferation of routes and potential dust emissions. Oil and gas exploration is active in portions of the Planning Area. However, cumulative impacts to air quality have not resulted in exceeding state or Federal air quality standards. The Perlite Plant in Socorro continues to operate within the allowable emission rates for all criteria pollutants, with the exception of volatile organic compounds.

Reasonably Foreseeable Future Actions. Cumulative impacts on air quality would result when the geographic areas experiencing direct effects from different activities overlap. For instance, if a mineral recovery project is undertaken near an area where wood harvesting or a prescribed burn will take place, the separate activities would contribute to cumulative impacts in a certain locale. A heavily traveled unpaved road, in combination with other road traffic activity, would increase inhalable particulate concentrations.

In the Decision Area, it is estimated that about 40 percent of BLM's annual vegetation treatments would utilize fire, or an annual average of 20,500 acres (BLM 2004c). Prescribed burns also could occur on land

managed by the Forest Service, which would have an additive effect on air quality. The New Mexico Environment Department's Air Quality Bureau regulates smoke from all sources and has the discretion to stop, reduce, or postpone prescribed burns, to ensure compliance with the NAAQS. Consequently, the cumulative effect of burns would not violate air quality standards. Under all alternatives, the risk of wildfire (and associated air emissions) would be reduced through fuels treatments in accordance with resource objectives and the statewide RMPA for Fire and Fuels Management.

In cases where commodity production or industrial projects qualify for air quality permitting, the assessments required to obtain the permit would identify the possibility for cumulative impacts. If such impacts violate regulatory criteria, then the permit would impose mitigation as appropriate.

As there are no specific project locations identified under the alternatives, the geographic areas that could be subject to cumulative impacts are not identifiable. The types of locations most at risk for cumulative impacts would be areas surrounding paved or unpaved roads. The application of best management practices to the development of unpaved roads and road expansion projects would mitigate the cumulative impacts from other projects near the road. However, because growth is occurring in the area, short-term cumulative effects could occur if development on adjacent land occurs in proximity to any projects occurring on BLM land.

Because Alternative A would allow cross-country travel and designate fewer acres of special designations with associated limitations on surface disturbance, cumulative effects on air quality would be higher under this alternative if coincident development and fugitive dust from travel resulted in short-term, localized impacts to air quality. Although Alternative D would eliminate areas open to cross-country travel, cumulative impacts under this alternative also could be higher than those under Alternatives B and C as fewer areas would be subject to protective management within special designations and no acres would be closed to OHV use.

4.7.2.2 Soil and Water Resources

Past Actions: Groundwater withdrawals in the Planning Area increased 8 percent between 1975 and 1995. Studies regarding the flow of the Rio Grande and impacts to the San Acacia reach have been ongoing, with the Bureau of Reclamation managing the flow in the river through releases at upstream dams. The Gila National Forest has conducted watershed restoration along the San Francisco River involving removal of non-native vegetation and replanting native species as part of the Collaborative Forest Restoration Program (Forest Service 2006).

Present Actions: Because BLM has adopted the New Mexico Standards and Guidelines, cumulative impacts from grazing on soil and water resources would be managed sustainably (to achieve public land health standards) throughout the Planning Area under all alternatives. These range management strategies are currently consistent with the research on arid-southwestern-grasslands, ecological science, and would be adapted to future research and the condition of the Planning Area as appropriate to maintain conformity to BLM policy and regulations. In addition, because of the strong reliance of the New Mexico Standards and Guidelines on basic science and data collection, cumulative water and soil impacts on habitat and ecosystem health from grazing and recreation would be monitored and addressed.

Reasonably Foreseeable Future Actions. Cumulative water and soil impacts would occur as other management decisions combine to deplete or impair resources over time. In most cases, NEPA documentation would identify the cumulative impacts, if any, from individual watershed restoration activities.

BLM's management to meet public land health standards would continue under all alternatives, and therefore cumulative water and soil impacts on habitat and ecosystem health from resource uses would be monitored and addressed as needed to ensure sustainable management of resources. Cumulative watershed impacts also would continue to be assessed as watershed plans and environmental assessments are implemented.

Despite all of this, some inevitable cumulative watershed impacts would be expected when all of the alternatives are compared to other foreseeable future actions on the Planning Area. As disturbance in the watershed increases, the hydrologic function of a watershed tends to degrade, as soil erosion and gullying are followed by lowered plant productivity and increased sedimentation. The severity of these cumulative impacts would be dependent upon prompt identification of the problems and long-term observation of the performance of the watershed, in addition to the implementation of best management practices or other mitigation measures to reduce direct and cumulative impacts.

Closure or restrictions on fluid mineral leasing on public land would occur in the Zuni Salt Lake area to some extent under all alternatives. However, the potential for coal and fluid mineral production in northwestern Catron County is such that activities to extract resources could be undertaken on State and private land in the area. Future coal mining and fluid mineral production could have a cumulative effect on the water resources of Salt Lake Coal Field and the lake itself. Particularly under Alternative D, which allows for more mineral development on public land in the area, cumulative impacts could increase if a change in exploration and mineral value sharply increased. Although development of mines and production wells in the Moreno Hill Formation does not suggest an impact (USGS 2004), there is no way at this time of assessing an impact on water resources from a prodigious increase in exploration and development activity. However, because the Zuni Tribe has senior rights to the waters of the lake, any new diversion of ground or surface water would require that these rights not be impaired. In addition, the Federal Surface Mining Control and Reclamation Act and State surface coal mining regulations specifically require that a Cumulative Hydrologic Impact Analysis be completed and regularly updated for rapidly expanding coal fields, as has occurred for the Salt Lake coal field (New Mexico Energy, Minerals, and Natural Resources Department 1994). These studies would require review by BLM and the cooperating agencies to assure an adequate characterization of cumulative impacts on water quantity and quality. Because of the general recognition of the importance and fragility of the Zuni Salt Lake, these issues would be addressed.

The potential for general oil and gas exploration and development cumulatively affecting the Zuni Salt Lake seems a more likely consequence of expected future growth than coal or coalbed methane development. Under current management guidance, each lease application would receive full BLM and NEPA scrutiny as it is proposed. Thus cumulative effects would be addressed incrementally, as directed by BLM NEPA policy guidance.

Water resources are scarce in the Planning Area and the support of existing and planned uses of the land require adequate ground water to continue. The Planning Area supports grazing and wildlife use with ground water wells and stock tanks, which also would supply wildlife. These needs, along with BLM's general responsibility for water conservation, suggest that ground water resource conservation in the Planning Area is critical. Actions taken by all entities with the authority to influence groundwater use in the Planning Area will influence the availability of water for uses on BLM-managed surface land and elsewhere in the Planning Area.

4.7.2.3 Vegetation

Past Actions. BLM management measures to improve vegetation have included brush control, grazing deferment, erosion control, and prescribed burns. Within the Planning Area, the Forest Service also has

conducted vegetative treatments and fuel reduction projects. The Gila National Forest has completed forest restoration treatment on 450 acres near Reserve in the Sheep Basin area as part of the Collaborative Forest Restoration Program.

Outside of public land, the Planning Area has experienced population growth, particularly along the I-25 corridor and in towns along major roads. This has resulted in the loss of vegetation and the introduction of noxious weeds or invasive species in those areas.

Present Actions. Current management of livestock, vegetation, and wildlife is intended to facilitate achievement of the standards for public land health. This management approach would reduce erosion and improve ecological processes that support the desired diversity of native vegetation. The ongoing implementation of programs to manage noxious weeds continue to address and reduce the problem though inventory, treatment, and public outreach programs. .

Reasonably Foreseeable Future Actions. The primary impact on vegetation is a result of activities that cause surface disturbance, which could lead to vegetation loss and the potential introduction of noxious weeds. Direct, localized impacts on vegetation would occur to varying degrees on Federal, State, or private land as a result of the RFDs (see Section 4.7.1) under any of the alternatives addressed in this document. However, the cumulative impact on vegetation is expected to be low due to the small, predicted disturbance area relative to the large size of the Planning Area. Special designations restricting surface-disturbing activities in each of the alternatives would reduce direct cumulative impacts to vegetation, with the most pronounced effects occurring under Alternative C. Under Alternatives B and C, cumulative effects on vegetation would be further reduced in areas (40,104 and 68,679 acres of BLM-managed surface estate, respectively) of potential aplomado falcon habitat areas that would be protected from surface-disturbing activities. Other Federal efforts to support the release of an experimental, nonessential aplomado falcon population in this area could have the coincidental effect of protecting or restoring native vegetation in the southern portion of the Planning Area.

The BLM expects to treat approximately 60,000 acres of vegetation annually using a variety of treatment methods (BLM 2004c), which would result in an improved condition for vegetation. The land in the Planning Area under the jurisdiction of other Federal agencies, notably the Forest Service and USFWS, generally would be managed to meet goals of sustainable use and habitat protection in accordance with applicable mandates, with the cumulative effect of maintaining or enhancing vegetation over a large portion of the Planning Area. The Forest Service is planning for forest restoration projects in several areas, in part associated with the Collaborative Forest Restoration Program.

Regional population growth potentially would increase the extent and intensity of all types of recreational use and development-related rights-of-way that could disturb vegetation and increase the likelihood of expanding invasive species distributions.

Cross-country travel has been eliminated under all action alternatives, potentially reducing cumulative impacts to vegetation because of the large area (about 851,234 acres) that would be affected by this management. If BLM restrictions result in the transfer of OHV activities to State or private land, impacts on vegetation could increase in those areas.

4.7.2.4 Wildlife and Riparian Habitat

Past Actions. The BLM developed four HMPs to improve and protect habitat for various wildlife species. BLM has also developed water catchments, spring enclosures, land treatment plans, identified ecologically unique areas, blocked access routes for the protection of wildlife, and implemented fencing

standards. The Forest Service and USFWS have completed projects to protect habitat and benefit wildlife on the land managed by each agency, which often is contiguous with BLM-managed land.

Developments within the Planning Area (such as residential growth or right-of-way development for roads and utilities) have had the effect of habitat fragmentation and loss, and creating wildlife-human interactions.

Present Actions. BLM conducts annual surveys for some species to determine distribution and if additional protective measures are necessary. BLM's annual ongoing efforts for the protection of wildlife include modifying livestock grazing management as necessary, developing escape ramps, protecting riparian habitat, suppressing fires in riparian areas, developing wildlife waters, installing antelope panels or passes where necessary, and conducting wildlife studies on various allotments to determine habitat capacity to support anticipated numbers of livestock and wildlife.

Projects to benefit wildlife also occur on land managed by the Forest Service and USFWS. On all Federal land in the Planning Area, compliance with the Endangered Species Act and NEPA is required, resulting in surveys and habitat protection. Cumulatively, these actions move towards adaptive management and protection of wildlife species, as federally managed land subject to these statutes covers over 58 percent of the Planning Area.

Reasonably Foreseeable Future Actions. Regional population growth would potentially increase the extent and intensity of all types of development-related activities and recreational use that could disturb wildlife and riparian habitats, lead to increased edge effects and habitat fragmentation, disruption of local wildlife movement corridors, and increase the likelihood of expanding invasive species distribution. Increased development adjacent to BLM-managed surface land could result in a direct loss of wildlife habitat due to construction of supporting infrastructure (roads, utilities, etc.) on BLM-managed surface land. Cumulative effects from right-of-way development could be more pronounced under Alternatives A and D as multiple utility corridors would be possible (rather than one corridor under Alternatives B and C), which would promote the viability of more locations outside of BLM-managed land.

Special designations for the protection of special status species and wildlife habitats (117,682 acres of BLM-managed surface estate under Alternative B and 118,321 acres under Alternative C) would mitigate cumulative effects from the pressures of adjacent development on private land by providing protection and restrictions to surface disturbance on public land. The Forest Service, responsible for the management of almost one-third of the Planning Area, also conducts forest restoration activities, such as the planned restoration of streams near Glenwood and Reserve to expand loach minnow and other native fish habitat (Forest Service 2006). Management that would protect the aplomado falcon under Alternatives B and C would reinforce other Federal efforts to support the release of an experimental, nonessential aplomado falcon population in the southern portion of the Planning Area. These activities also would provide coincident protection of other wildlife species and habitats.

4.7.2.5 Wildland Fire Ecology and Management, and Forestry and Woodland Management

Past Actions. Fire suppression policies of the past 100 years have been partially responsible for a reduction in fire frequency in the forests of the management area. While fires during this period have become less frequent, forest structure has been altered. Many forests now carry hazardous fuel loads that promote intense, large-scale fires that cause mortality to entire stands of timber when ignited. These fires are difficult to control, especially during times of extreme fire weather. The Healthy Forest Restoration Act, Healthy Forest Initiative, and National Fire Plan are intended in part to address these hazards.

Between 1968 and 2002, there were 158 wildfires on lands administered by the Socorro Field Office. In 2001 and 2002, efforts were made to create fuel breaks in several communities with potential wildland-urban interface fire risks. In the past 8 years, the Socorro Field Office has implemented more than 32,000 acres of fire-related treatments within designated fire management units.

Present Actions. Current fire management and treatment is guided by the 2004 Fire and Fuels Management Plan Amendment for BLM Lands in New Mexico and Texas, which outlines fire management units and categories that currently apply to the lands managed by the Socorro Field Office.

Reasonably Foreseeable Future Actions. Cumulative effects to fire management would result collectively from management of lands adjacent to those managed by the Socorro Field Office and facilities that present a barrier to effect fire suppression on public land (e.g., utility corridors). The Gila National Forest has been a leading area for restoration of forest health. Forests and woodlands within the Socorro Field Office jurisdiction that are adjacent to the Gila National Forest land would benefit as a result. Due to the active restoration of historic fire regimes and forest structure within the Gila National Forest, wildfires that originate in the Gila National Forest are less likely to become crown fires that spread into forests managed by the Socorro Field Office. However, projected development within Socorro and Catron Counties could result in a cumulative increase in wildland-urban interface areas, and consequently the threat to private property from wildland fire would increase. There also is a greater safety hazard from wildfires in wildland-urban interface areas.

The development of linear utilities outside of BLM-managed surface land could cause barriers and safety hazards during fire treatment and suppression. However, because of the extensive public land in the Planning Area, BLM's designation of a utility corridor(s) would have a broad effect in promoting the consolidation of linear facilities into one area. The designation of multiple utility corridors under Alternative D and none under Alternative A would allow the development of more barriers to effective fire suppression than the single corridor proposed in Alternatives B and C. Additionally, all action alternatives eliminate cross-country travel, therefore reducing the potential for human-caused wildfires.

4.7.2.6 Cultural and Paleontological Resources

Past Actions. Almost 7,500 archaeological and historical sites have been recorded within the Planning Area and almost 1,100 of those are on public land. The types and numbers of cultural components recorded on public land are similar to those recorded on nonpublic land. Only a small fraction of the Planning Area and public land has been intensively surveyed for cultural resources. Since the completion of the 1989 RMP, an average of about 3.5 square miles have been inventoried annually, primarily to facilitate project reviews in accordance with Section 106 of the National Historic Preservation Act. Almost 800 archaeological and historical sites were discovered by those surveys, which is an average of approximately 17 sites per square mile on public land. It is estimated that there could be as many as 210,000 to 220,000 archaeological and historical sites in the Planning Area, including approximately 35,000 to 40,000 on public land. About 80 percent of the recorded sites have been evaluated as having significant values that warrant protection.

Since the 1989 RMP was adopted, an average of about 18 archaeological and historical sites on public land were threatened annually by various proposed uses of the public land but impacts were avoided as a result of project review. An annual average of about 6 significant sites could not be entirely removed from the area of effect, and various mitigation measures were implemented including avoidance of all mechanical disturbance, monitoring, or in a few cases data recovery.

Present Actions. The cultural resource program initiates very few surface-disturbing projects; however data recovery (excavation) does occur through partnerships with research institutions and universities.

Additional surveys are completed in association with project reviews, as described above. An approximate 7,000 archaeological sites could occur in special designations for cultural resources as a primary or secondary consideration. Cross-country travel on public land (under Alternative A only) or on State and private land could impact as many as 22,000 archaeological sites. These sites may be exposed to more theft or damage than if access were limited to existing or designated routes, as under the action alternatives.

Reasonably Foreseeable Future Actions. Because of the effort and expense required for intensive inventory, only a small percentage of the resources potentially occurring in the Planning Area are ever likely to be identified, recorded, and evaluated. If BLM-initiated data recovery continued at predicted levels, data recovery would occur for four to six weeks per year at a total of five sites over the life of the plan. Up to 50, 1-meter square test pits would be excavated per year for a total of less than 1/10th of an acre per year. Over a 20-year period, the total estimated surface disturbance would be less than 2 acres.

Statistics indicate that something on the order of 250 archaeological and historical sites might be threatened over the next 10 years, and some direct or indirect effects on 60 significant sites might be unavoidable. Even if that estimate were doubled or tripled, only a fraction of a percent of the estimated total number of significant archaeological and historical sites on the public land would be affected. The Section 106 review process would ensure that those impacts are carefully considered, and there is good potential to satisfactorily mitigate those impacts through data recovery or other means. Additional sites could be adversely affected by natural erosion or vandalism.

All of the alternatives would provide some level of potential beneficial impacts on cultural resources through management of special designations. The available information about site density suggests that the numbers of archaeological and historical sites within ACECs, SMAs, and SRMAs with protection of cultural resources identified as primary or secondary management objectives are of the following magnitude:

- Alternative B 13,000 sites
- Alternative C 21,000 sites
- Alternative D 7,000 sites

Because cultural resources are essentially nonrenewable, damage or destruction of cultural resources represents a permanent, irreversible, and irretrievable loss. However, the potential for adequate mitigation measures and the beneficial impacts of special designations for protecting cultural resources are likely to offset, by a considerable margin, any cumulative adverse impacts regardless of which alternative is selected.

Reasonably foreseeable future actions include several potentially large-scale surface-disturbing activities primarily related to mineral and energy resources exploration and development, and increased public access to BLM-managed land. Increased access to public land may result in discovery, theft, or vandalism of cultural or fossil resources. Although BLM management addresses survey and assessment of mitigation for cultural and paleontological resources in the event of a proposed activity or use on public land, similar development on nonfederal land could result in damage or loss of resources.

4.7.2.7 Visual Resources

Past and Present Actions. Public land within the Planning Area was inventoried during 1979 and 1981 with some updates occurring in 1986; visual inventory classes were assigned as a result of this inventory. Management actions or proposals within the VRM classes must meet the objectives of the class, in some

instances requiring mitigation to reduce visibility or impacts to sensitive viewers. The Forest Service developed the Visual Management System to inventory, classify, and manage its visual resources. Population growth and development in the Planning Area has resulted in land use development and linear utility development that have altered views of the landscape.

Reasonably Foreseeable Future Actions. The presence of large amounts of Federal land within the Planning Area overall affects scenic resources since BLM, Forest Service, and USFWS land would be managed to protect scenic resources in higher quality areas or indirectly through habitat management. Although management activities by other Federal agencies likely would maintain or enhance scenic resources through management objectives or mitigation measures, surface-disturbing activities on nonfederal land adjacent to BLM-managed surface land could impact sensitive viewers, if activities that are incompatible with VRM Class I or II objectives occur within the viewshed of those areas. Under the alternatives, it is possible that Alternative D would have higher cumulative impacts to visual resources as no land is designated as Class I, and much more land is designated as Class IV, allowing the greatest level of change to the landscape.

4.7.2.8 Wilderness Characteristics

Past and Present Actions. Thirteen WSAs are located in the Planning Area and are managed according to the 1995 Interim Management Policy. A land exchange with the State of New Mexico resulted in BLM's acquisition of about 52,230 acres of lands within and adjacent to the Sierra Ladrones, Continental Divide, Devil's Backbone, and Horse Mountain WSAs, helping to facilitate management and preservation of wilderness characteristics in those areas. With the 1989 RMP, BLM closed 36 miles of ways within WSAs, preserving the characteristics of naturalness and primitive recreation in those areas.

Reasonably Foreseeable Future Actions. In the event that Congress releases any one of the WSAs in the Planning Area from wilderness review, there may be impacts on wilderness characteristics in those areas if uses occur that had been prohibited under the Interim Management Policy. However, the alternatives evaluated in this plan generally would provide protective management in the event an area is released from wilderness review (see also Table 2-3 for management of WSAs should they be released from wilderness review). Under all action alternatives cumulative effects on wilderness characteristics could be experienced in the Veranito WSA due to a north-south utility corridor located adjacent to the WSA, adjacent OHV use in the Gordy's Hill SRMA, and other activities on State or private land that would be compatible with BLM management in those areas. Effects on wilderness characteristics such as naturalness and solitude could be experienced if utilities are visible from the WSA, associated access routes increase motorized access to the general area, or dust and noise from OHV use penetrates the WSA. The elimination of cross-country travel under all action alternatives would mitigating potential impacts from OHV use in this area and adjacent to other WSAs. Additionally, Alternatives B and C would close substantially more routes within WSAs than either Alternative A or D, preserving wilderness characteristics in those areas.

Within the Decision Area, administrative actions would be completed in WSAs including the installation of up to 100 signs, disturbing up to 2 acres. In addition, up to 75 barriers would be built, disturbing up to 3 acres. Total surface disturbance anticipated over the next 20 years from these actions would be 5 acres or 0.0000016 percent of the BLM-managed surface land managed as WSAs. Cumulative effects from these administrative actions would be minimal due to the relatively small amount of land affected.

4.7.2.9 Land and Realty

Past Actions. Many of the linear facilities authorized under various right-of-way grants have led to the establishment of de facto right-of-way corridors. In 1992 the Western Utility Group identified five utility

corridors in the Planning Area to be considered during future planning efforts. (These are reflected in the proposed utility corridors under Alternative D.) Since the 1989 RMP, land tenure changes have resulted in the following changes of surface ownership:

- Transfer of 47,212 acres of public land into State ownership
- Transfer of 15,222 acres of public land into private ownership
- Transfer of 64,822 acres of State or private land into public ownership
- Disposal of public land in the Rio Grande Valley to resolve title disputes
- Conveyance of approximately 125 acres through two Recreation and Public Purchase patent transactions

Present Actions. No formal designated corridors exist on public land in the Planning Area, although the BLM manages avoidance and exclusion areas in accordance with the 1989 RMP. Applications for new rights-of-way are evaluated on a case-by-case basis. An effort is underway by the BLM, Forest Service, and other agencies to designate corridors on public land throughout the western U.S.

Reasonably Foreseeable Future Actions. Surface land disposals would allow conversion of land from current uses, likely grazing and potentially dispersed recreation, to other uses. Due to the remoteness of most of the land identified for disposal, changes to land uses would not be anticipated (i.e., ranch land would continue to be ranch land, just under different ownership). Potential disposal of land managed by the Cibola National Forest due to 5-year reauthorization of the Secure Rural Schools and Community Self-Determination Act of 2000 also would not be likely to result in changes to land uses. In this instance, the money received from these disposals would go towards funding states and counties impacted by the loss of receipts associated with lower timber harvests on Federal land.

Population growth is expected to continue, and Socorro and Catron Counties have recorded an increased number of plans for urban development. The proposed development areas in the I-25 corridor and those near the Arizona border tend to be surrounded primarily by public land. New development within the Planning Area and particularly adjacent to public lands would have the cumulative effect of increasing areas of urban interface, the demand for recreation opportunities, additional traffic, and the need for new utilities to serve development . Increased urban interface areas would cause effects on other resources such as wildlife, vegetation, and fire management (as described in those sections). The designation of a utility corridor could help reduce cumulative effects by minimizing surface disturbance caused by a network of linear rights-of-way and consolidating these facilities into a single corridor. Designation of a utility corridor also would help the Socorro Field Office to meet the multiple use mandate of Federal Land Policy and Management Act of 1976 (FLPMA). Because Alternative D identifies multiple utility corridors, rather than a single corridor as identified in Alternatives B and C, this alternative would be better able to meet adjacent demand for facilities but could result in higher cumulative impacts to other resources.

4.7.2.10 Rangeland Management

Past Actions: Many boundary fences and water developments were constructed by allottees in the Planning Area during the 1950s and 1960s. Livestock use in the Planning Area in the past 15 years has ranged from a low of 145,565 AUMs in 2002 to a high of 180,504 AUMs in 1998. Rangeland health assessments have been completed on 27 grazing allotments, all of which were concluded to be meeting the rangeland standards for upland and biotic health. BLM's approval of the New Mexico Standards for Public Land Health and Guidelines for Grazing Management initiated changes to range management. The

overall effect of these actions has been to more efficiently manage grazing and livestock movements, and meet or move towards meeting the public land health standards.

Present Actions: BLM's present actions relative to livestock grazing are described in Section 4.7.1 and Chapter 3. Current management of livestock, vegetation, and wildlife is intended to facilitate achievement of the standards for public land health. Guidelines for livestock grazing management guide the mitigation, restoration, or other measures needed to improve rangeland health.

Reasonably Foreseeable Future Actions. The surrounding population and the need for land development associated with residential and commercial properties is expected to increase in the future. As the amount of land required for these types of developed or urban uses increases, impacts on vegetation and other resources from land development, including expanded transportation corridors, utility corridors, and others also are likely to increase. The cumulative impacts on available forage from proliferation of travel routes or construction of utilities throughout the Planning Area to serve a growing population could be higher under current management than under the action alternatives. Cumulative impacts to grazing from additional travel routes or utility corridors also may be higher under Alternative D than Alternatives B and C because Alternative D provides four utility corridors and closes no areas to OHV use. These impacts likely would be expressed through a reduction in AUMs to help impacted areas meet or maintain public land health standards.

As these types of resource uses increase and public perceptions or needs shift, conflicts between new uses and historic livestock grazing could occur. These conflicts could result in a reduction in the land available for open range livestock grazing and increased interactions between livestock and the urban interface. This could result in increased potential for automobile-livestock accidents, as well as increased livestock damage to private property and amplified disturbance-related complaints from the public. Over time, public safety and disturbance issues could have a cumulative effect on livestock grazing by reducing available grazing locations, the duration and season of use, and utilization levels.

Overlapping land requirements and user conflict between private development and livestock operations also would require increased resources to manage livestock. To compensate for increased interactions, the BLM or livestock operator would have to expend more resources (man-hours, vehicles, signs, fences, etc.) managing active allotments and monitoring livestock movements. The result could be fewer resources available to the BLM for other projects or personnel.

The increased growth in the surrounding communities also is likely to lead to an enhanced need for recreational opportunities. Based on the availability of numerous recreational activities, the proximity to major cities, and the availability of maintained roads, there is a high probability that recreation use would continue to increase in the future. The increased public use in and around the area could lead to more human-caused wildfires, augmented dispersal of invasive plant and noxious weed species, and increased degradation of native plant communities, which could potentially reduce access to and the amount of available forage. If the conditions were to decline appreciably, livestock grazing activities could be restricted or eliminated to compensate.

Future development, shifting resource needs, and a potential increased expenditure of resources for livestock management could potentially restrict or exclude livestock grazing operations within portions of the Planning Area. Cumulative impacts due to population growth and development on private land could contribute to downward range condition trends on BLM-managed land, resulting in a potential reduction of AUMs to compensate. Subsequent impacts on livestock grazing could be more pronounced under Alternative C, as any forage increases would be first reserved for wildlife and watershed needs, and range improvements would be designed primarily for wildlife and watershed resources with livestock grazing as a secondary objective after other resource objectives have been met. Conversely, under Alternative D

both forage allocation and range improvements would prioritize livestock grazing, with other resources receiving secondary consideration, thus potentially reducing cumulative impacts on grazing compared with Alternative C. Alternative B would balance these impacts by allocating vegetation increases between livestock grazing and other resource needs evenly at 50 percent.

4.7.2.11 Minerals and Energy

Past Actions. Since the early 1920s, there have been 45 exploratory wells drilled for oil and gas in Socorro County, and 43 exploratory wells drilled in Catron County. Although there have been shows of oil and gas reported in several of the wells in each county, there has been no economic production to date. Mining districts in the Planning Area have been mined historically and are no longer active. Development of the Fence Lake Coal Mine was pursued, but ultimately the permits were relinquished and Salt River Project opted to not pursue the project. Recordation files identified 27 saleable mineral pits on BLM-managed surface estate; additional mineral material extraction occurs on State and private land.

Present Actions. Since the 1989 RMP, interest in fluid mineral increased after a carbon dioxide discovery was reported on the Arizona/New Mexico border. However, major production has not occurred. There is only one known active metallic mineral mine in the Planning Area, in Catron County. The majority of abandoned mines in the Planning Area are on private and Forest Service land.

The Socorro Field Office currently has 2 common-use areas, 2 community pits, 1 fee-use permit, and 2 negotiated sales covering 167 acres. The majority of continuing actions related to mineral material extraction are in response to highway construction and repair.

Reasonably Foreseeable Future Actions. Given the RFD and the potential for fluid mineral resource development in parts of the Planning Area, particularly northwestern Catron County and eastern Socorro County, it is likely State and private land would be developed in the future. Although leasing activity would be restricted on BLM-managed land in the northwestern corner of Catron County (primarily under Alternatives B and C), this management would not affect the ability to extract minerals from other areas. However, it may be more difficult to find suitable sites for fluid mineral and coal leasing due to the combination of BLM management under Alternative B or C and management of other Federal lands within the Planning Area.

While BLM's Decision Area contains a multitude of mining districts and old mines, these deposits are generally small in size. While the Socorro Field Office expects to continue to have one or two Notices of Intent per year, and a Plan of Operations every two or three years, it likely will not have any major new mines (defined as greater than 20 acres of disturbance). Total ground disturbance over the next 20 years is likely to be less then 200 acres. Based on past experience with the New Mexico Abandoned Mine Lands Program, five abandoned mines, totaling 20 acres, would be reclaimed in the next 20 years.

It is estimated that one action for the mining of saleable minerals would occur every year, disturbing 10 acres per action. Total ground disturbance over the next 20 years would be 200 acres. Overall, the additive effect of BLM management of locatable and saleable minerals would not affect the ability to extract these resources throughout the Planning Area.

4.7.2.12 Recreation and Transportation and Travel Management

Past Actions. BLM has developed campgrounds and other recreational facilities in several locations throughout the Planning Area, as noted in Section 4.7.1. Since 1989, legal access has been acquired to the Pelona Mountain SMA, Fort Craig SMA, Cottonwood Canyon, Bat Cave, and areas of the Continental Divide Trail. OHV registrations have increased substantially within the Planning Area over the last 10

years, in some instances resulting in a proliferation of routes, particularly during the fall and winter months when hunters pursue big game.

Present Actions. Current recreation use of BLM land is summarized in Section 4.7.1 and Section 3.3.5. Other recreation opportunities in the Planning Area are provided by two National Wildlife Refuges managed by the USFWS, three national forests, and two National Park Service properties. Recreation opportunities available in the Planning Area include developed recreational sites for camping, picnicking, and other activities; OHV use areas; and primitive settings for backpacking and wildlife viewing. Because the majority of the land in the Planning Area is managed by Federal agencies, there is a variety of opportunities for both developed and dispersed recreation. Hunting is managed by the NMDGF; data available between 1990 and 2000 show an increase in hunting as a recreational use. OHV also is a popular recreational activity, and under current management cross-country travel is allowed on 851,234 acres of BLM-managed surface area.

Reasonably Foreseeable Future Actions. Population growth in the Planning Area and the State overall could lead to increased demand for recreation opportunities. Potential impacts would occur if a setting is degraded or the experience diminished because of greater use. Increased demand for a variety of recreation uses also would increase the possibility of use conflicts.

If current trends persist, use of OHVs would continue and increase throughout the Planning Area, as population and the popularity of motorized sports increases. Limitations on cross-country travel on public land (which occur under Alternatives B, C, and D) could increase cross-country OHV use on private land, potentially affecting opportunities for primitive recreation experiences or other use conflicts.

As transmission lines, pipelines, and transportation routes are developed off of BLM-managed surface land, access roads to these linear facilities for operations and maintenance also could be used by the public for recreational access. If this occurs, it could trigger proliferation of access throughout the area, including on BLM-managed surface land. The establishment of one designated utility corridor under Alternative B and C would promote the consolidation of access routes into an area that is largely previously disturbed, which would limit the opportunities for public access to proliferate but could protect solitude and naturalness in other, more primitive recreation settings.

Over the life of this plan, it is anticipated that the BLM would complete administrative actions to improve recreational access and experiences in the Planning Area. These actions would include the construction or upgrading of up to 20 miles of access routes to provide improved and enhanced access to recreation sites. This would disturb up to 10 acres. Up to 5 restrooms would be constructed, disturbing up to 2 acres. Up to 5 parking areas would be constructed, disturbing up to 10 acres. Up to 10 trailheads would be constructed, disturbing up to 5 acres. Up to 25 miles of fencing would be constructed in and around recreation sites. Up to 50 signs would be installed at various recreation sites disturbing up to 2 acres. Up to 25 campsites would be developed, disturbing up to 5 acres. Up to 10 miles of trail would be constructed, disturbing up to 10 acres. Up to 50 barriers would be constructed disturbing up to 5 acres. Up to 20 wayside exhibits would be developed, disturbing up to 10 acres. Up to 6 entrance areas for recreation sites would be established, with up to 2 acres disturbed. Up to 6 bat gates would be installed, disturbing ½ acre. Total disturbance of these anticipated actions over the next 20 years would range from 62 to 65 acres, or .000043 percent of BLM's Decision Area.

4.7.2.13 Social and Economic Conditions

Past and Present Actions. Historical socioeconomic data on population and employment are discussed in Section 3.5.The Catron County Comprehensive Land Use Plan identifies three areas for coordinated planning with Federal agencies: (1) range improvement through piñon-juniper management, (2) timber

management through saw log and small diameter tree management, and (3) recreation development (Catron County 1992). The Socorro County Comprehensive Plan established Economic Development Goals including keeping farming as an industry in Socorro County and maintaining the current rural lifestyle (Socorro County 1998).

Reasonably Foreseeable Future Actions. Trends such as population growth, shifts in economic sector employment and earnings, growth in non-labor income, and the increasing importance of open space and preserved land to the economies of the Planning Area are largely independent of the alternatives, but have potential for additive or interactive effects with them. Cumulative impacts are evaluated in terms of the affected communities' capacity for change, which is interactive with the diversity of the economy and opportunities elsewhere locally and regionally.

As statewide and local economies shift towards the services sector and non-labor sources of income, the opportunities for recreation, tourism, and land preservation/open space on BLM-managed surface land would take a greater role in community economic development. All alternatives provide for generally consistent management for the most notable attractions in the Decision Area, such as Datil Well and the Quebradas Back Country Byway. Recreational demand would be expected to grow by virtue of the growing statewide population regardless of the alternative selected. Assuming that specially designated areas for management of recreation use would be most likely to experience the effects of increased recreation use/tourism, all alternatives would have the potential for cumulative beneficial socioeconomic impact when combined with other recreation opportunities in the area. Other recreation/tourism related attractions in the area include Gila, Apache, and Cibola National Forests and the Bosque del Apache and Sevilleta National Wildlife Refuges. If recreational demand is expanded and the alternatives promote or accommodate such use, there could be increased opportunities for private sector business growth.

Grazing would be permissible throughout the Planning Area under all alternatives, which supports the viability of the local ranching economy. Although a reduction in AUMs is not expected as a direct result of the alternatives, reduced AUMs could be a cumulative effect of the implementation of the New Mexico Standards and Guidelines, ongoing drought conditions, and development that encroaches on land available for open range livestock grazing. These impacts could lead ranchers to seek off-ranch forms of income or sell assets, place additional grazing pressure on private land, and/or increase the demand for hay or other forage alternatives. Any adverse impacts on ranching as a viable industry could translate into social impacts, in terms of changes to the long-standing social ties of the ranching lifestyle to custom and culture in the Planning Area. Effects on rural community stability would be dependent on the degree of reliance on public land for grazing and ranching for household income. The lack of diversification in the economy and historic reliance on ranching would potentially exacerbate the impact, particularly in Catron County. As noted in Section 3.5.7.2, the average ranch spends $20,000 a year in the local economy.

Socioeconomic activity related to mineral and energy resource development and land and realty actions on public land are influenced by industry demand and public interests. Interest in fluid mineral leasing exists in the Planning Area, particularly in eastern Socorro County and parts of Catron County. The past, present, and future development of coal in the Planning Area will continue to be largely driven by industry demand and public and tribal concerns about the impact of mining activity on other resources, particularly groundwater, in addition to BLM policies. The cumulative effects of continued construction activity to meet the needs of a growing population in the Planning Area would result in the development of more utility, transportation, and communication projects and salable mineral pits.

Public interests, attitudes, and values in public land emphasize the importance of the natural resources to the past and future economies of the area and a desire to preserve agricultural land and maintain the rural atmosphere. The RMPR could provide a positive cumulative effect in combination with county policies and goals by enhancing the natural environment while allowing for grazing on appropriate land and

providing the flexibility of additional grazing on newly acquired appropriate land. Public interests, attitudes, and values in public land would be expected to change commensurate with changes in demographics, community characteristics, and economic conditions. The action alternatives evaluated in this RMPR provide an incremental cumulative social and economic impact in that they would provide an updated management policy that is reflective of public interests, attitudes, and values of today rather than those of the 1989 RMP. Adoption of Alternative C, which is the alternative that places the most emphasis on resource protection, could add to the concern of some residents about increasing government control over public land. Adoption of Alternative D, which provides a greater emphasis on resource production and use, could contribute to an increasing concern for natural and cultural resource, to individuals and groups who place a high value on protection of these resources.

Chapter 5 - Consultation and Coordination

5.0 CONSULTATION AND COORDINATION

Consultation and coordination with Federal and intergovernmental agencies, organizations, American Indian Tribes, and interested groups and individuals is important to (1) ensure that the most appropriate data have been gathered and employed for the analyses and (2) ensure that agency and public sentiment and values are considered and incorporated into decision making. During the planning process for this Resource Management Plan Revision (RMPR)/Environmental Impact Statement (EIS), formal and informal efforts were made by the Bureau of Land Management (BLM) to involve Tribes, other Federal agencies, State and local governments, and the public.

Coordination efforts were initiated during the scoping period, from May to September 2002. A scoping notice to announce the commencement of the RMPR/EIS planning process was distributed to approximately 400 agencies, interested organizations, and individuals. In addition, a planning bulletin, media release, and paid notices in local newspapers announced the project. To facilitate continuous communication with interested parties, BLM established a toll-free information line, web page, and mailing list. Numerous agency coordination meetings, public meetings, and other collaborative efforts occurred during the scoping period and have continued as needed, appropriate, or requested since that time. Table 5-1, Summary of Agency Coordination Meetings and Public Involvement Events, summarizes key meetings that have occurred.

TABLE 5-1
SUMMARY OF AGENCY COORDINATION MEETINGS AND PUBLIC INVOLVEMENT EVENTS

Date	Meeting or Event	Attendance
August 5, 2002	Coordination meeting between BLM and New Mexico Department of Game and Fish	12
August 15, 2002	Meeting of cooperating agencies (BLM, Pueblo of Zuni, Socorro County, Catron County)	9
August 21, 2002	Public scoping meeting in Socorro, New Mexico	25
August 28, 2002	Public scoping meeting in Quemado, New Mexico	28
August 29, 2002	Public scoping meeting in Zuni, New Mexico	8
September 18, 2002	Coordination meeting between BLM and Bureau of Indian Affairs	6
September 18, 2002	Coordination meeting between BLM and New Mexico State Land Office	5
September 19, 2002	Coordination meeting between BLM and New Mexico Bureau of Geology and Mineral Resources	5
September 20, 2002	Coordination meeting between BLM and New Mexico Energy, Minerals and Natural Resources Department Oil Conservation Division	4
September 20, 2002	Coordination meeting between BLM and New Mexico Energy, Minerals and Natural Resources Department Mining and Minerals Division	8
March 26, 2003	Public meeting in Datil, New Mexico to discuss off-highway vehicle (OHV) issues	10
March 27, 2003	Public meeting in Albuquerque, New Mexico to discuss OHV issues	23
April 2, 2003	Public meeting in Socorro, New Mexico to discuss OHV issues	22
September 10, 2003	Coordination meeting between BLM and Catron County	6
March 16, 2005	Coordination meeting between BLM and Catron County	6
October 27, 2005	Update meeting between Zuni and BLM	9

The three public scoping meetings were held in August 2002 to obtain public input that would help BLM in determining the issues and the planning criteria that were relevant and appropriate to the RMPR/EIS process, and to determine the scope of the RMPR/EIS. Several displays illustrating or explaining the different components of the RMPR/EIS were stationed around the meeting room for those in attendance to review. Each meeting began with a presentation by BLM representatives, followed by a question-and-answer session. BLM received a total of 76 oral comments from attendants at those meetings, as well as follow-up input in the form of 214 comment forms and letters that were later submitted to BLM. The official scoping period ended on September 13, 2002; however, additional comments continued to be accepted after that time. A Summary Scoping Report was issued in September 2002 that provides further description of the scoping process and summarizes the public comments and the issues raised.

Four informational planning bulletins were submitted to the public by the date of this document; the fifth will be distributed to the public mailing list to announce the selection of a proposed RMPR. The first two bulletins introduced the project and provided a project update. The third bulletin, distributed in August 2005, provided a project update and requested information to update the public mailing list for the Draft RMPR/EIS. A postage-paid return form was included with the bulletin, advising recipients that should they wish to remain on the project mailing list or receive the draft RMPR/EIS they must return the form and verify their mailing information. The fourth bulletin announced the availability of the Draft RMPR/EIS.

1.1 DESCRIPTION OF CONSULTATION AND COLLABORATIVE EFFORTS

This section describes specific options to consult and coordinate Tribes; Federal, State, and local agencies and organizations; other interest groups; and the national mailing list.

1.1.1 Tribes

In the summer of 2002, BLM invited a number of agencies and governments to participate in the RMPR/EIS process as cooperating agencies. The Zuni Nation, Ramah Navajo Band, and Navajo Nation were among those invited. The Zuni Tribe accepted the invitation and a Memorandum of Understanding between the two parties—the Tribe and BLM—established the terms of the Tribe's participation in the process. The Tribe has since participated in the development of alternatives, review of draft materials, and other coordination efforts. Following the issuance of a Record of Decision, the BLM and Zuni Tribe would initiate a Memorandum of Understanding that will outline the procedures for consultation related to future actions that might affect the Zuni Salt Lake, a site of religious and historical importance to the Zuni.

In December 2002, BLM contacted the Pueblo of Acoma, Pueblo of Isleta, Pueblo of Laguna, Ysleta del Sur Pueblo, Hopi Tribe, Navajo Nation (and the Alamo and Ramah Navajo Chapters of the Navajo Nation), Mescalero Apache, and Fort Sill Apache to inform them that an RMPR/EIS was being prepared for Socorro and Catron Counties. BLM provided the Tribes with information about the plan for developing the cultural resource component of the RMPR/EIS, and requested that they identify any traditional cultural places and resources that should be considered as part of the RMPR/EIS process.

1.1.2 Intergovernmental Cooperation and Collaboration (State and Local Levels)

The New Mexico State Land Office, Socorro County, and Catron County also were invited to participate as cooperating agencies in the planning process. Catron County accepted and has been involved in the development of alternatives and in the review of draft materials, and has participated in coordination meetings (see Table 5-1).

As part of scoping, all Federal, State, County, and local agencies or governments that could have an interest in the process were issued invitations to participate in the preparation of the RMPR/EIS. Approximately 75 letters, which introduced the RMPR/EIS and invited the recipients' participation, were mailed to them during the week of September 23, 2002. BLM also made every effort to contact each agency or government by telephone to ensure that the agencies and governments were aware of the RMPR/EIS, and that the process would soon be commencing. Table 5-2, Agency Contacts, identifies agency contacts for this planning process.

TABLE 5-2
AGENCY CONTACTS

FEDERAL
Department of Defense
Army Corps of Engineers
Director, Planning Division
Albuquerque District
Chief, Albuquerque District
White Sands Missile Range
Brigadier General USA
Department of the Interior
Chief Operating Officer and Technical Director
Bureau of Indian Affairs
National Environmental Policy Act Coordinator, Albuquerque Area Office
Superintendent, Fort Apache Agency
Superintendent, Mescalero Agency
Director, Navajo Area Office
Phoenix Area Office
Superintendent, Southern Pueblos Agency
Bureau of Land Management
New Mexico State Office
Albuquerque Field Office
Farmington Field Office
District Manager, Las Cruces District Office
Manager, Roswell Field Office
Bureau of Reclamation
Manager, Socorro Field Office
Rio Grande Project
National Park Service
Regional Director, Intermountain Region
Superintendent, Intermountain Land Resource Program Center
Associate Director, Office of Natural Resource Stewardship and Science
United States Fish and Wildlife Service
Regional Director, Southwest Region 2
Chief, Division of Endangered Species
Chief, Division of Habitat Conservation
Chief, Refuge Management
Manager, Bosque del Apache National Wildlife Refuge
Manager, Sevilleta National Wildlife Refuge
Special Status Species
United States Geological Survey
New Mexico Water District Chief, Water Resources Division
Department of Agriculture
National Forest Service
Regional Geologist, Southwest Region

Forest Supervisor, Apache Sitgreaves National Forest
Planner, Cibola National Forest
Forest Supervisor, Gila National Forest
Planner, Gila National Forest
District Ranger, Magdalena District
District Ranger, Quemado Range
District Ranger, Reserve Ranger District
Natural Resource Conservation Service
District Conservationist, Datil Service Center
District Conservationist, Socorro Field Office
District Conservationist, Sierra District
State Conservationist
Other
Very Large Array
National Radio Astronomy Observatory
STATE OF NEW MEXICO
New Mexico Department of Game and Fish
Chief
Area Chief
Director
Invertebrate Zoologist
Wildlife of Concern
Department of Transportation
Environmental Design Department
Economic Development Department
Director, Economic Development Division
Energy, Minerals, and Natural Resources Department
Director
Cabinet Secretary
Director, Forestry Division
Special Plant Status
Director, Oil Conservation Division
Director, Mining and Minerals Division
Environmental Coordinator, Abandoned Mine Land Bureau
Environmental Department
Secretary
Administrator, Environmental Improvement Board
Chairperson, Environmental Improvement Board
Bureau Chief, Surface Water Quality
Office of Cultural Affairs
Chairman, Science Department
Director, State Historic Preservation Division
State Land Office
State Lands Resource Manager
Commissioner of Public Lands
Livestock Grazing Resource Area
Director, Oil, Gas, and Minerals Division

Units Manager, Oil, Gas, and Minerals Division
Socorro District
Water
Bureau of Geology and Mineral Resources
Director
Middle Rio Grande Conservancy District
New Mexico Office of the State Engineer
State Engineer
COUNTY
Catron County
Southwest Center for Resource Analysis
County Commissioners
Socorro County
County Manager
County Commissioners
LOCAL GOVERNMENTS
City of Socorro
Mayor
City Councilmembers
Village of Reserve
City Clerk
Village of Magdalena
City Clerk
Chambers of Commerce

Executive Director, Socorro County
President, Glenwood Area
TRIBAL
Governor, Ysleta del Sur
Governor, Ysleta Pueblo
President, Navajo Nation
Executive Director, Navajo Nation Division of Natural Resources
Navajo Nation Traditional Culture Program
Director, Navajo Nation Land Department
Navajo Nation Historic Preservation Office
Executive Director, Navajo Nation
Governor, Pueblo of Acoma
Ramah Navajo Band
Zuni Natural Resources Department
Governor, Zuni Pueblo
Zuni Tribal Council
Laguna Pueblo
Community Services Coordinator, Alamo Chapter of the Navajo Nation
President, Hopi Tribe
Chair, Mescalero Tribe
Chairperson, Fort Sill Apache

Initial meetings took place in September 2002 to introduce the RMPR/EIS process; ascertain the issues, concerns, and ideas germane to the task at hand; and discuss the various roles and responsibilities of the agencies. Representatives from the following State and local governments and agencies were included in those initial meetings:

- State Land Office, Public Land Resources
- New Mexico Bureau of Geology and Mineral Resources
- Environment Department, Surface Water Quality Division (Bureau Chief)
- Energy, Minerals, and Natural Resources Department
  - Oil Conservation Division (Senior Petroleum Geologist)
  - Mining and Minerals Division (Division Director)
- State Forestry Division
- Socorro and Catron Counties

BLM has consulted with several State agencies at various times throughout the planning process to address specific resources. Consistent with legislation protecting State-listed species, the New Mexico Department of Game and Fish and the New Mexico Energy, Mineral, and Natural Resources Department have been contacted regarding the presence (or potential presence) of State-listed threatened and endangered plant and animal species in the Planning Area.

In accordance with the New Mexico Protocol Agreement and the BLM National Programmatic Agreement, BLM notified the New Mexico State Historic Preservation Office (SHPO) in October 2002 that an RMPR/EIS was being prepared for public lands in Socorro and Catron Counties. In December 2002, BLM conferred with SHPO regarding the extent of the area of potential effect, data sources, and appropriate Tribal consultation.

The SHPO concurred with the proposed strategy to address cultural resources as appropriate and expressed a concern they had about the potential impacts of subdivision development in the Planning Area. The SHPO declined BLM's offer to prepare sections of the RMPR/EIS. BLM will solicit review comments from the SHPO on the Draft RMPR/EIS and, in accordance with the BLM National Programmatic Agreement and New Mexico Protocol, will continue to consult about undertakings pursued in accordance with an adopted RMP.

1.1.3 Federal Agencies

The Bureau of Indian Affairs (BIA) did not accept BLM's invitation to participate as a cooperating agency; however, representatives of the BLM and BIA met to discuss the RMPR/EIS as part of scoping in September 2002 (see Table 5-1). Other potentially interested Federal agencies were informed of the onset of the RMPR/EIS process. Table 5-2 lists agency contacts. The following Federal agencies participated in September 2002 meetings:

- BIA, Albuquerque Area Office
- U.S. Fish and Wildlife Service (USFWS)
  - Bosque del Apache Wildlife Refuge
  - Sevilleta National Wildlife Refuge
- U.S. Forest Service
  - Cibola National Forest
  - Gila National Forest
- Bureau of Reclamation, Socorro Field Office
- BLM New Mexico State Office and all New Mexico Field Offices (through Executive Management Team briefings)

The Fish and Wildlife Coordination Act (Title 16, United States Code, Sec. 661 et seq. [16 U.S.C. 661 et. seq.]) and the Endangered Species Act of 1973 (16 U.S.C. Sec 1531 et seq.) require consultation with the USFWS prior to initiation of any BLM project that has potential to affect any federally listed special-status species or its habitat. This RMPR/EIS is considered a major Federal action, and therefore consultation has been initiated. As part of the data collection effort, the USFWS provided a list of federally listed species that may occur in Socorro and Catron Counties. This letter is on file in BLM's Socorro Field Office. The USFWS data will be incorporated into the Biological Assessment that will be completed as a condition of issuing the Proposed RMPR/Final EIS. The Biological Assessment and associated correspondence also will be on file at the BLM Socorro Field Office.

1.1.4 Interest Groups

The BLM has coordinated with a variety of special interest groups during the planning process. Coordination has included maintaining contacts on the project mailing list and individual meetings. Special interest groups the BLM has worked with throughout the process include the New Mexico Wilderness Alliance, Continental Divide Trail Alliance, and Continental Divide Trail Society, among other organizations such as sportsmen or recreation groups.

In addition, attendants at the three August 2002 scoping meetings expressed diverse opinions about OHV use in the Planning Area. This lack of public concordance alerted BLM to the importance of further clarifying and refining the issues in order to develop adequate alternatives and ensure balanced OHV-use

decisions. After the initial scoping period was completed, BLM thoroughly reviewed the law and current policy associated with OHV use, and gathered a comprehensive set of data regarding trends and forecasts for the number of OHV registrations and hunting permits.

To gain a better understanding of the public sentiment regarding this issue, BLM also conducted three workshops focused on the issue of OHV use (see Table 5-1). The BLM used these workshops to inform the public about the law and policy governing OHV use, the current BLM management guidelines and practices, and the relevant land management challenges specific to this RMPR/EIS. The public was given the opportunity to respond with concerns, ideas, and suggestions for future OHV management on public land in the Planning Area. The workshops were announced in a planning bulletin sent to all entities on the mailing list, through media releases, and by telephone calls to individuals and organizations that had expressed interest in the issues surrounding OHV use. A total of 55 people attended the three workshops and a total of 19 comment forms and letters were received. An additional 108 oral comments were recorded at these meetings. Additional information is available in the OHV report, available from the Socorro Field Office or http:\\www.nm.blm.gov.

1.1.5 National Mailing List

The national mailing list was developed by the BLM to assist with distribution of the informational planning bulletins. The list includes local elected officials, interested publics, special interest groups, and agencies at the Federal, county, and local level, including cooperating agencies. The list was supplemented throughout the duration of the project to include meeting attendees and as requested by interested parties. After distribution of the third planning bulletin, the mailing list was reduced to those who returned the form included with the planning bulletin, indicating a desire to remain on the project mailing list or receive the Draft RMPR/EIS. The mailing form clearly stated that those who did not return it would be deleted from the list.

1.2 COMMENTS ON THE DRAFT RMPR/EIS

Concurrent with the distribution of the Draft RMPR/EIS, a Notice of Availability was published in the *Federal Register* announcing the availability of the draft document for public review and comment; this marks the beginning of the 90-day review and comment period. During the remainder of the review period for this Draft RMPR/EIS, BLM will hold public hearings for the purpose of soliciting and understanding public comments on the Draft RMPR/EIS. The Draft RMPR/EIS was sent to the agencies listed in Table 5-2, additional agencies with a potential interest, and as requested in responses to the August 2005 planning bulletin or through other means. The Draft RMPR/EIS also is available from http:\\www.nm.blm.gov.

Comments, including names and street addresses of respondents, will be available for public review at the BLM Socorro Field Office, 901 South Highway 85, Socorro, New Mexico, 87801, during regular business hours (7:45 a.m. to 4:30 p.m.), Monday through Friday, except holidays, and may be published as part of the Proposed RMPR/Final EIS. Individual respondents may request confidentiality. If you wish to withhold your name or street address from public review or from disclosure under the Freedom of Information Act, you must state this prominently at the beginning of your written comment. Such requests will be honored to the extent allowed by law. All submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, will be made available for public inspections in their entirety.

All written and oral comments received during the 90-day period will be compiled, analyzed, and summarized. A Proposed RMPR/Final EIS will be prepared that addresses and provides responses to the comments received on the Draft RMPR/EIS.

1.3 LIST OF PREPARERS

Table 5-3 lists the Draft RMPR/EIS preparers and members of the interdisciplinary team.

TABLE 5-3
LIST OF PREPARERS AND REVIEWERS

Name	Title	RMPR/EIS Responsibility
BLM		
Brian Bellew	Assistant Field Manager	Planning Team Leader (June 2006-Present)
Mark Lane	Assistant Field Manager	Management Oversight
John Merino	Field Manager	Management Oversight
Dwayne Sykes	Planning and NEPA Coordinator, New Mexico State Office	Planning Team Leader (January 2005-May 2006) New Mexico State Office Representative
Lois Bell	Realty Specialist, Environmental Planning Coordinator	Planning Team Leader (August 2003-December 2004) Lands and Access (May 2002-December 2004)
Charles Carroll	Environmental Planning Coordinator	Planning Team Leader (May 2002-July 2003)
Don Ellsworth	Acting Field Manager	Management Oversight (June 2005-Present)
Kate Padilla	Field Manager	Management Oversight (May 2002-May 2005)
Jon Hertz	Assistant Field Manager	Advisor, Management Oversight
Frank Lewark	Rangeland Management Specialist	Contracting Officer's Representative, Noxious Weeds
Jane Farmer	Geographic Information System Specialist	Geographic Information System
Mark Mathews	Rangeland Management Specialist	Range Management
Melanie Mendenhall	Natural Resource Specialist	Range Management
Wes Anderson	Wildlife Biologist	Wildlife, Vegetation, Threatened and Endangered Species (May 2002-August 2003)
Carlos Madril	Wildlife Biologist	Wildlife, Threatened and Endangered Species (2003-Present)
Jessica Rubado	Wildlife Biologist	Wildlife, Special Status Species (2005-Present)
Sheila Richmond-Williams	Natural Resource Specialist	Forestry and Woodland Management (2004-Present)
Brenda Wilkinson	Archaeologist	Cultural Resources
David Sitzler	Mining Engineer, Albuquerque Field Office	Geology, Energy and Minerals
Edward Wells	Geologist	Geology, Minerals (2002-March 2005)
Jonathan Smith	Fire Management Officer	Fire Management
Sarah Naranjo	Realty Specialist	Lands and Realty (2005-Present)
Sabrina Flores	Natural Resource Specialist	Soils and Water, Hazardous Materials (2005-Present)
Clarence Seagraves	Natural Resource Specialist	Hazardous Materials; Soils, Water, Air, Watershed (2002-December 2004)
Mike Bilbo	Outdoor Recreation Specialist	OHV, Recreation, Transportation, Caves (2004-Present)
Kevin Carson	Outdoor Recreation Specialist	Recreation, Visual, Wilderness (2002-Present)

TABLE 5-3
LIST OF PREPARERS AND REVIEWERS

Name	Title	RMPR/EIS Responsibility
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Patricia Hester	Regional Paleontologist	Paleontological Resources
J.W. Whitney	Program Analyst/Planning, New Mexico State Office	Planning and Environmental Coordination (May 2002-December 2004)
Signa Larralde	Planning, New Mexico State Office	Planning and Environmental Coordination (January 2005-Present)
URS Corporation and Subconsultants		
Cindy Smith	Principal	Project Management, Public Involvement
Jennifer Pyne	Environmental Planner	Project Management, Social and Economic Conditions (June 2004-Present)
Lyndy Long	Environmental Planner	Project Coordination, Public Involvement
Paige Rhodes, Weston Solutions	Environmental Scientist, Biologist	Project Management (July 2002-May 2004), Natural Resources Team Lead (October – December 2005)
Jennifer Wennerlund	Geographer	Geographic Information Systems
Glenn Emanuel	Geographer	Geographic Information Systems
Peter Martinez	Geographer	Geographic Information Systems
Bob Farmer, PhD	Chemical Engineering	Air Quality
Barbara Sprungl	Chemical Engineering	Air Quality
Mark Murphy, PhD	Environmental Scientist	Natural Resources Team Lead (July 2002-May 2004), Soils, Water Resources, Watershed
Jennifer Nelson	Environmental Planner	Soils, Water Resources
Karen Schwab	Water Resource Specialist	Soils (2002-2004)
Dave Palmer	Geologist	Geology, Energy and Mineral Resources, Caves and Karst
Barbara Murphy, Clear Creek Associates	Geologist	Paleontology
Pat Mock, PhD	Biologist	Vegetation, Wildlife, Special Status Species
Sheyna Wisdom	Biologist	Vegetation
Theresa Miller	Biologist	Wildlife, Special Status Species
Charlie Baun	Grazing and Range Management Specialist	Livestock Grazing and Rangeland Management
Kavi Koleini	Biologist	Fire Management, Forestry and Woodland Management
Jaime Wood	Environmental Planner	Visual Resources, Lands and Realty
Jennifer Frownfelter	Environmental Planner	Lands and Realty, Transportation and Travel Management, Recreation, Visual Resources, Wilderness Characteristics
Carol Wirth	Ecologist, Environmental Planner	Social and Economic Conditions (2002-2004)
A.E. (Gene) Rogge, PhD	Anthropologist	Cultural Resources
Kirsten Erickson	Historian	Cultural Resources
Tamara Carroll	Environmental Planner	Fire Management, Hazardous Materials (2002-2004)
Travis Bunger	Environmental Scientist	Hazardous Materials
Sunny Bush	Environmental Planner	Hazardous Materials

TABLE 5-3
LIST OF PREPARERS AND REVIEWERS

Name	Title	RMPR/EIS Responsibility
Kim Bidle	Environmental Planner	Transportation and Travel Management, Wilderness Characteristics, Recreation
Wendy Gabriel	Writer, Editor	Editing
Colleen Mahoney	Word Processor	Document Production
Mitch Meek	Graphic Artist	Graphics

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Glossary

GLOSSARY OF TERMS

Acre-foot: The volume (as of irrigation water) that would cover 1 acre to a depth of 1 foot (43,560 cubic feet).

Action: In the context of the National Environmental Policy Act, describes actions proposed to meet a specific purpose and need and that may have effects on the environment, which are potentially subject to Federal control and responsibility. Federal actions generally fall into the categories of adoption of official policy, formal plans, and programs; or approval of specific projects.

Agency: Any Federal, State, or county government organization with jurisdictional responsibilities.

Air quality: A measure of the health-related and visual characteristics of the air, often derived from quantitative measurements of the concentrations of specific injurious or contaminating substances.

Air quality standard: Levels of air pollutants prescribed by regulations that may not be exceeded during a specified time in a defined area.

Allocated uses: Bureau of Land Management allocates cultural resources to one of five categories including (1) scientific use, (2) conservation for future use, (3) traditional use, (4) public use, or (5) experimental use. If cultural resources are evaluated as lacking significant values, they are categorized as discharged from management.

Allotment (range): A designated area of land available for livestock grazing upon which a specified number and kind of livestock may be grazed under management of an authorized agency. An allotment generally consists of Federal rangelands, but may include intermingled parcels of private, State, or Federal lands. BLM and the Forest Service stipulate the number of livestock and season of use for each allotment.

Allotment management plan (AMP): A written program of livestock grazing management including supportive measures, if required. An AMP is designed to attain specific management goals in a grazing allotment and is prepared cooperatively with the permittee(s) or lessee(s).

All-terrain vehicle (ATV): A small motor vehicle with wheels or tractor treads often used for cross-country travel including traveling over rough ground, snow, or ice. For the purposes of this document, an all-terrain vehicle is defined as a motor vehicle that: (a) is designed primarily for recreational non-highway all-terrain travel, (b) is fifty or fewer inches in width, (c) has an unladen weight of eight hundred pounds or less, (d) travels on three or more low pressure tires, and (e) has a seat designed to be straddled by the operator, and handlebars for steering control. An ATV is a type of off-highway vehicle.

Alternative: Any one of a number of options for a project.

Ambient (air): The surrounding atmospheric conditions to which the general public has access.

American Indian tribe (or tribe): Any American Indian group in the conterminous United States that the Secretary of the Interior recognizes as possessing tribal status (listed periodically in the Federal Register).

Animal unit: A unit of measure for rangeland livestock equivalent to one mature cow or five sheep or five goats, all over 6 months of age. An animal unit is based on an average daily forage consumption of 26 pounds of dry matter per day.

Animal unit month (AUM): The amount of forage needed to sustain one cow, five sheep, or five goats, for a month. A full AUM's fee is charged for each month of grazing by adult animals if the grazing animal (1) is weaned, (2) is 6 months old or older when entering public land, or (3) will become 12 months old during the period of use. For fee purposes, an AUM is the amount of forage used by five weaned or adult sheep or goats or one cow, bull, steer, heifer, horse, or mule. The term AUM is commonly used in three ways: (1) stocking rate as X acres per AUM, (b) forage allocation as in X AUM's in allotment A, and (3) utilization as in X AUMs consumed from Unit B.

Aquifer: A water-bearing rock unit (unconsolidated or bedrock) that will yield water in a usable quantity to a well or spring.

Archaeology: The scientific study of the life and culture of past, especially ancient, peoples, by excavation of ancient cities, relics, artifacts, etc.

Archaeological site: A discrete location that provides physical evidence of past human use.

Area of critical environmental concern (ACEC): An area of public lands designated by Bureau of Land Management for special management attention to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life/provide safety from natural hazards. Areas designated as ACECs have met criteria for importance and relevance that are outlined in 43 CFR 1610.7-2(b).

Artifact: A human-made object.

Assessment: The act of evaluating and interpreting data and information for a defined purpose.

Attainment area: An area that meets a Federal primary or secondary ambient air quality standard for the pollutant.

Avoidance area: An environmentally sensitive area where rights-of-way may be granted only when no feasible alternative route is available.

Baseline: The existing conditions against which impacts of the proposed action and its alternatives can be compared.

Basin: A depressed area having no surface outlet (topographic basin); a physiographic feature or subsurface structure that is capable of collecting, storing, or discharging water by reason of its shape and the characteristics of its confining material (water); a depression in the earth's surface, the lowest part often filled by a lake or pond (lake basin); a part of a river or canal widened (drainage, river, stream basin).

Best management practices (BMPs): A suite of techniques that guide, or may be applied to, management actions to aid in achieving desired outcomes and help to protect the environmental resources by avoiding or minimizing the impacts of an action. BMPs are often developed in conjunction with land use plans, but they are not considered a land use plan decision unless the land use plan specifies that they are mandatory. They may be updated or modified without a plan amendment if they are not mandatory.

Bureau of Land Management (BLM): An agency of the U.S. Department of the Interior responsible for managing most Federal government subsurface minerals. It has surface management responsibility for Federal lands designated under the Federal Land Policy and Management Act of 1976.

Cave: The Federal Cave Resources Protection Act (FCRPA) of 1988 defines a cave as any natural occurring void, cavity, recess, or system of interconnected passages which occurs beneath the surface of the earth or within a cliff or ledge (including any cave resource therein, but not including any vug, mine, tunnel, aqueduct, or other manmade excavation), and which is large enough to permit an individual to enter, whether or not the entrance is naturally formed or manmade.

Chemical treatment: Involves the use of herbicides to target species to reduce their competitive effect on more desirable species as well as to reduce fuel loadings and wildfire risk.

Clean Air Act of 1990: Federal legislation governing air pollution. The Clean Air Act established National Ambient Air Quality Standards for carbon monoxide, nitrogen dioxide, ozone, particulate matter, sulfur dioxide, and lead. Prevention of Significant Deterioration classifications define the allowable increased levels of air quality deterioration above legally established levels. They include the following:

Class I – minimal additional deterioration in air quality (certain national parks and wilderness areas)

Class II – moderate additional deterioration in air quality (most lands)

Class III – greater deterioration for planned maximum growth (industrial areas)

Clean Water Act (CWA) of 1987: Federal legislation governing water quality. The CWA refers to a series of Federal laws and regulations that attempt to restore the beneficial uses of surface waters of the United States (also referred to as "waters of the U.S."). The CWA regulates such programs as the National Pollutant Discharge Elimination System, a permit-based set of regulations that control the discharge of pollution to U.S. waterways from an individual point (for example, the end of a pipe) and the discharge of concentrated storm water from highways, cities, and other built environments. The CWA also regulates the placing of fill in streams and washes for the construction of road crossings, pipelines, and power lines. The U.S. Environmental Protection Agency and the U.S. Army Corps of Engineers, which in some cases has extended responsibilities to the individual States, regulate these programs.

Closed: Generally denotes that an area is not available for a particular use or uses; refer to specific definitions found in law, regulations, or policy guidance for application to individual programs. For example, 43 CFR 8340.0-5 sets forth the specific meaning of "closed" as it relates to off-highway vehicle use, and 43 CFR 8364 defines "closed" as it relates to closure and restriction orders.

Community (natural community): The living part of an ecosystem. Communities change with succession, thereby forming distinctive ecological units both in time and space. The plant community and the animal community together form the biotic community. Size is not implied (i.e., organisms associated with a decaying log or with an entire forest each represent communities).

Cooperating agency: Assists the lead Federal agency in developing an environmental assessment or environmental impact statement. The Council on Environmental Quality regulations implementing the National Environmental Policy Act define a cooperating agency as any agency that has jurisdiction by law or special expertise for proposals covered by NEPA (40 CFR 1501.6). Any Federal, state, local government jurisdiction with such qualifications may become a cooperating agency by agreement with the lead agency.

Cubic foot/feet per second (cfs): As a rate of stream flow, a cubic foot of water passing a reference section in one second of time. One cfs flowing for 24 hours will yield 7.983 acre-feet of water.

Cultural resources: Any definite location of past human activity, occupation, or use, identifiable through inventory, historical documentation, or oral evidence. Cultural resources include archaeological, historic, or architectural sites, structures, places, objects, and artifacts.

Cumulative impacts (or effects): An impact on the environment that results from the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts are evaluated as part of the environmental impact statement, and may include consideration of additive or interactive effects regardless of what agency or person undertakes the other actions.

Decision Area: Public land and Federal mineral estate managed by the BLM within the Planning Area are referred to in this document as BLM's Decision Area.

Developed recreation: Recreation that requires facilities that result in further concentrated use of the area. For example, off-road vehicles require parking lots and trails; campgrounds require roads, picnic tables, and toilet facilities.

Dispersed recreation: Recreation that does not occur in a developed recreation site, such as hunting, backpacking, and scenic driving.

Distance zones: A subdivision of the landscape as viewed from an observer position. The subdivision (zones) includes foreground-middleground, background, and seldom seen.

- Foreground-middleground zone – The area that can be seen from each travel route for a distance of 3 to 5 miles where management activities might be viewed in detail. The outer boundary of this distance zone is defined as the point where the texture and form of individual plants are no longer apparent in the landscape.
- Background zone – The remaining area that can be seen from each travel route to approximately 15 miles. In order to be included within the distance zone, vegetation should be visible at least as patterns of light and dark.
- Seldom-seen zone – Areas that are not visible within the foreground-middleground and background zones, and areas beyond the background zones.

Easement: A right afforded a person, agency, or organization to make limited use of another's real property for access or other purposes.

Ecosystem: Any area or volume in which there is an exchange of matter and energy between living and nonliving parts; that is, the biotic community together with soil, air, water, and sunlight form an ecosystem. Ecosystems are the best units for studying the flow of energy and matter.

Edge effect: Edge effects occur when natural habitats are interrupted by development or other human-induced disturbances, including roads, structures, and trampling or vehicle tracks. Edge effects affect wildlife species in very different ways, depending on the life history of the species, and cause behavioral modifications that can lead to fragmentation of habitat. Some disturbance-adapted species, especially shrub/scrub bird species, thrive along edges of roads and other developed areas. Other wildlife species, especially large mammals, avoid human-disturbed areas and do not tend to cross roads. Roads also

increase mortality of small mammals from both increased vehicle collisions and increased predation from large mammals, while roads increase mortality of large mammals as a result of vehicle collisions. Pollution and bioaccumulation are secondary effects of roads and other development that increase edge effects on wildlife and wildlife habitats.

Effect (or impact): A modification of the existing environment as it presently exists, caused by an action (such as construction or operation of facilities). An effect may be direct, indirect, or cumulative. The terms effect and impact are synonymous under the National Environmental Policy Act.

Endangered species: A plant or animal that is in danger of extinction throughout all or a significant portion of its range.

Environmental assessment (EA): A concise public document for which a Federal agency is responsible. An EA serves (1) to briefly provide enough evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact; and (2) to aid an agency's compliance with the National Environmental Policy Act when no EIS is needed; and (3) to facilitate preparation of an EIS when one is needed.

Environmental impact statement (EIS): An analytical document that portrays potential impacts on the human environment of a particular course of action and its possible alternatives. Required by the National Environmental Policy Act, an EIS is prepared for use by decision makers to assess the environmental consequences of a potential decision.

Environmental justice: The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including racial, ethnic, or socioeconomic group should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of Federal, state, local, and tribal programs and policies (see Executive Order 12898).

Ephemeral stream: A stream that flows only in direct response to precipitation in the immediate watershed or in response to the melting of a cover of snow and ice and has a channel bottom that is always above the local water table.

Erosion: The wearing away of the land surface by running water, wind, ice, or other geologic agents and by such processes as gravitation creep.

Exclusion area: An environmentally sensitive area where rights-of-way would be granted only in cases where there is a legal requirement to provide such access.

Extraction: The removal of mineral resources from the land by mining, quarrying, or excavation.

Federal lands: Lands, or interests in lands (such as easements and rights-of-way), owned by the United States.

Fire regimes: The characteristics of fire in a given ecosystem, including factors such as frequency, intensity, severity, and patch size. The terms used for the different fire regimes are: Nonlethal, Mixed 1, Mixed 2, and Lethal. Nonlethal fires are generally of the lowest intensity and severity with the smallest patches of mortality, while lethal fires are generally of the highest intensity and severity with the largest patches of mortality. The others fall in between.

Fire Regime Condition Class (FRCC): An interagency, standardized tool for determining the degree of departure from reference condition vegetation, fuels, and disturbance regimes. Assessing FRCC can help guide management objectives and set priorities for treatments.

Fire intensity: The effects of fire on the above-ground vegetation generally described in terms of mortality.

Fire severity: Fire effects at and below the ground surface. Describes the impacts to organic material on the ground surface, changes to soils, and mortality of below-ground vegetative buds, roots, rhizomes, and other organisms.

Fire suppression tactics: The tactical approaches regarding suppression of a wildland fire. These range from Control, Confine, Contain, and Monitor. Control is the most aggressive tactic, while Monitor is the least.

Fire use: The combination of wildland fire use and prescribed fire application to meet resource objectives.

Floodplain: The land that borders a water body and is subject to flooding on a periodic basis.

Fluid minerals: In this case, oil, gas, geothermal resources, carbon dioxide, helium, and coal bed methane.

Fossil: Any remains, trace, or imprint of a plant or animal that has been preserved by natural process in the earth's crust since some past geologic time.

Geographic information system: A system of computer hardware, software, data, people and applications that capture, store, edit, analyze, and graphically display a potentially wide array of geospatial information.

Grazing: Consumption of native forage from rangelands or pastures by livestock or wildlife.

Grazing allotment: An area where one or more livestock operators graze their livestock. An allotment generally consists of Federal land but may include parcels of private or State-owned land.

Grazing district: An administrative unit of BLM-managed rangelands established by the Secretary of the Interior under the Taylor Grazing Act of 1934. Grazing units are not the same as BLM administrative districts.

Grazing fee: A charge, usually on a monthly basis, for grazing a specific kind of livestock.

Grazing lease: A document authorizing use of the public lands outside of an established grazing district. Grazing leases specify all authorized use including livestock grazing, suspended use, and conservation use. Leases specify the total number of animal unit months apportioned, the area authorized for grazing use, or both.

Grazing permit: An authorization that allows grazing on public lands. Permits specify class of livestock on a designated area during specified seasons each year. Permits are of two types: preference (10-year) and temporary nonrenewable (1 year).

Grazing preference: The total number (active and suspended non-use) of animal unit months of livestock grazing on public land, apportioned and attached to base property owned or controlled by a permittee.

Grazing season: On Federal lands, an established period for which grazing permits or leases are issued.

Grazing system: A systematic sequence of grazing use and nonuse of an allotment (pasture or management unit) to meet multiple use goals by improving the quality and amount of vegetation.

Ground water: Subsurface water that fills available openings in rock or soil materials to the extent that they are considered water saturated.

Guidelines: Actions or management practices that may be used to achieve desired outcomes, sometimes expressed as best management practices. Guidelines may be identified during the land use planning process, but they are not considered a land use plan decision unless the plan specifies that they are mandatory. Guidelines for grazing administration must conform to 43 CFR 4180.2. Guidelines: (1) typically identify and prescribe methods of influencing or controlling specific public land uses; (2) are developed and applied consistent with the desired condition and within site capability; and (3) may be adjusted over time.

Habitat: A specific set of physical conditions in a geographic area(s) that surrounds a single species, a group of species, or a large community. In wildlife management, the major components of habitat are food, water, cover, and living space.

Habitat corridors: A strip or block of habitat connecting otherwise isolated units of similar habitat that allows the dispersal of organisms and the consequent mixing of genes.

Habitat fragmentation: The division of large, continuous areas of habitat into smaller patches isolated from one another. The effects of habitat fragmentation include loss of habitat area and the creation of smaller, more isolated patches of remaining habitat.

Habitat management plan (HMP): A written and officially approved plan for a specific geographical area of public land that identifies wildlife habitat and related objectives, establishes the sequence of actions for achieving objectives, and outlines procedures for evaluating accomplishments.

Hazardous materials: Substances or mixtures of substances that have the capability of either causing or significantly contributing to an increase in mortality or an increase in serious irreversible or incapacitating reversible illness, or posing a substantial present or potential risk to human health or the environment.

Hazardous substance: Term used by the U.S. Environmental Protection Agency for chemicals that must be reported if released into the environment above a certain amount and, depending on the threat to the environment, Federal involvement in handling the incident can be authorized under the Comprehensive Environmental Response, Compensation, and Liability Act.

Hazardous waste: The Resource Conservation and Recovery Act defines hazardous waste as a solid waste that may cause an increase in mortality or serious illness or pose a substantial threat to human health and the environment when improperly treated, stored, transported, disposed of, or otherwise managed. A waste is hazardous if it appears on a series of lists compiled by the U.S. Environmental Protection Agency or exhibits characteristics of ignitability, corrosivity, reactivity, and/or toxicity.

Heritage tourism: The business and practice of attracting and accommodating visitors to a place or area based especially on the unique or special aspects of that locale's history, landscape (including trail systems), and culture.

Hydrology: The study of the movement, distribution, and quality of water throughout the earth, addresses both the hydrologic cycle and water resources.

Indirect effect (or impact): Secondary effects that occur in locations other than the initial action or later in time, but that are caused by the proposed action.

Interdisciplinary team: A team of varied land use and resource specialists formed to provide a coordinated, integrated information base for overall land use planning and management.

Interim Management Policy and Guidelines for Lands Under Wilderness Review: This policy provides guidance for managing existing Wilderness Study Areas to ensure that an area's wilderness values are not impaired prior to the establishment of a wilderness area or an area's release from consideration for this status.

Invasive species: A species that is not native to an ecosystem whose introduction does or is likely to cause economic or environmental harm or harm to human health.

Issue: Describes the relationship between actions (proposed, connected, cumulative, similar) and environmental (natural, cultural, and socioeconomic) resources. Issues may be questions, concerns, problems, or other relationships, including beneficial ones. Issues do not predict the degree or intensity of harm the action might cause, but alert the reader as to what the environmental problems might be. The National Environmental Policy Act document should address issues identified through interaction with agencies and/or the public, and/or through resource studies.

Jurisdiction: The legal right to control or regulate use of land or a facility. Jurisdiction requires authority, but not necessarily ownership.

Karst: Irregular limestone region with sinks, underground streams, and caverns. Karst landscapes owe their existence to the removal of bedrock in solution and to the development of underground drainage without the development of surface stream valleys. Within these broad constraints, karst landscapes show much variation and are usually described in terms of a dominant landform.

Karst feature: Cavities, sinkholes, or other solution features in karst terrain that seem to be a cave, but do not quite fit the definition given above. Lava tubes and bubbles, while not karst, are included as caves if they meet the cave definition.

Landform: A discernible natural landscape that exists as a result of geological activity, such as a plateau, plain, basin, or mountain.

Land use plan: A set of decisions that establish management direction for land within an administrative area, as prescribed under the planning provisions of Federal Land Policy and Management Act; an assimilation of land-use-plan-level decisions developed through the planning process outlined in 43 CFR 1600, regardless of the scale at which the decisions were developed. Resource management plans are land use plans.

Landscape: An area composed of interacting ecosystems that are repeated because of geology, landform, soils, climate, biota, and human influences throughout the area. Landscapes are generally of a size, shape, and pattern, which is determined by interacting ecosystems.

Lease: An authorization or contract by which one party (lessor) conveys the use of property, such as real estate, to another (lessee) in return for rental payments. In addition to rental payments, lessees also pay royalties (a percentage of value) to the lessor from resource production.

Leasable minerals: Those minerals or materials designated as leasable under the Mineral Leasing Act of 1920. They include coal, phosphate, asphalt, sulfur, potassium and sodium minerals, and oil, gas, and geothermal resources.

Locatable mineral: Any valuable mineral that is not salable or leasable, including gold, silver, copper, uranium, etc., that may be developed under the General Mining Law of 1872.

Management Situation Analysis (MSA): Assessment of the current management direction. It includes a consolidation of existing data needed to analyze and resolve identified issues, a description of current BLM management guidance, and a discussion of existing problems and the opportunities for solving them.

Mechanical treatment: Involves the use of various types of mechanized equipment to clear out understory, brush, and/or trees and then pile and burn it to reduce fuel loadings and wildfire risk.

Mineral entry: The location of mining claims by an individual to protect his/her right to a valuable mineral.

Mineral potential: The four categories of mineral potential are defined in BLM Manual 3031 and are based on the geologic environment, inferred geologic processes, and reported mineral occurrences. Mineral potential is designated as none, low, moderate, or high. In addition, each mineral potential category is supplemented with a designation of the level of certainty regarding the level of confidence in the assessed data.

Mineral rights: Outstanding third-party rights or an interest in minerals not owned by the person or party conveying the land to the United States. Mineral rights are an exception in a deed that is the result of prior conveyance separating title of certain minerals from the surface estate.

Mineral withdrawal: A withdrawal of public lands, which are potentially valuable for leasable minerals. This precludes the disposal of the lands except with a mineral reservation, or unless the lands are found to not be valuable for minerals.

Mitigation: The abatement or reduction of an impact on the environment by (1) avoiding a certain action or parts of an action, (2) employing certain construction measures to limit the degree of impact, (3) restoring an area to preconstruction conditions, (4) preserving or maintaining an area throughout the life of a project, (5) replacing or providing substitute resources to the environment, or (6) gathering data (e.g., archaeological or paleontological) prior to disturbance.

Multiple use: Multiple use as defined by the Multiple Use – Sustained Yield Act of 1960 means, (1) the management of all the various renewable surface resources so that they are used in the combination that will best meet the needs of the American people, (2) making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for

periodic adjustments in use to conform to changing needs and conditions, (3) that some land will be used for less than all of the resources, and (4) harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land, with consideration being given to the relative values of the various resources, and not necessarily the combination of uses that will be given the greatest dollar return or the greatest unit output.

National Ambient Air Quality Standards (NAAQS): The allowable concentrations of air pollutants in the air specified by the Federal government. The air quality standards are divided into primary standards (based on the air quality criteria and allowing an adequate margin of safety and requisite to protect the public health) and secondary standards (based on the air quality criteria and allowing an adequate margin of safety and requisite to protect the public welfare) from any unknown or expected adverse effects of air pollutants.

National Environmental Policy Act of 1969 (NEPA): An Act that encourages productive and enjoyable harmony between man and his environment and promotes efforts to prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; enriches understanding of the ecological systems and natural resources important to the Nation, and established the Council on Environmental Quality.

National Register of Historic Places (National Register): A listing of architectural, historical, archaeological, and cultural sites of local, State, or national significance. The list of sites was established by the Historic Preservation Act of 1966 and is maintained by the National Park Service.

Native species: With respect to a particular ecosystem, a species that, other than as a result of an introduction, historically occurred or currently occurs in that ecosystem.

Nonpoint source pollution: Pollution from diffuse sources caused by rainfall or snowmelt moving over and through the ground.

Notice of intent (NOI): The first formal step in the EIS process, consisting of a written notice that includes proposed actions and alternatives, proposed scoping process, and identification of a lead agency contact person.

Noxious weeds: Plant species that have been legally designated as unwanted or undesirable. This includes national, State, and county or local designations. Typically, an undesirable noxious weed species can crowd out more desirable species. According to the Federal Noxious Weed Law, native plant species are not designated "noxious." Native plant species that may be of management concern, such as poisonous plants or desert shrub and subshrub species, are not considered priorities for noxious weed work or funding.

Objectives: The planned results to be achieved within a stated time period. Objectives are subordinate to goals, more narrow in scope, and shorter in range. Objectives must specify time periods for completion, and products or achievements that are measurable.

Off-highway vehicle (OHV): A vehicle (including four-wheel drive, trail bikes, all-terrain vehicles, and snowmobiles, but excluding helicopters, fixed-wing aircraft, and boats) capable of traveling off road over land, water, ice, snow, sand, marshes, and other terrain. OHV designations are defined in Appendix J.

Open: Generally denotes that an area is available for a particular use or uses. Refer to specific program definitions found in law, regulations, or policy guidance for application to individual programs. For

example, 43 CFR 8340.0-5 defines the specific meaning of "open" as it relates to off-highway vehicle use.

Paleontology: The science of animal and plant fossil remains.

Particulate matter: Includes dust, soot, and other tiny bits of solid materials that are released into and move around in the air. Particulates are produced by many sources, including burning of diesel fuels by trucks and buses, incineration of garbage, mixing, and application of fertilizers and pesticides, road construction, industrial processes such as steel making, mining operations, agricultural burning (field and slash burning), and operation of fireplaces and woodstoves.

Perennial plant: A plant that has a life cycle of 3 or more years.

Perennial stream: A stream or that part of a stream that flows continuously during all of the calendar year as a result of ground-water discharge or surface runoff.

Permeability: The ease with which gases, liquids (water), or plant roots penetrate or pass through a bulk mass of soil or a layer of soil. Since different soil horizons vary in permeability, the particular horizon under question should be designated.

Permit: Permits are one of three forms of a land use authorization (the others are leases and easements). Permits are short-term, revocable authorizations to use public lands for specific purposes that involve either little or no land improvement, construction, or investment that can be amortized within the term of the permit. A permit conveys no possessory interest. The permit is renewable at the discretion of the authorized officer and may be revoked in accordance with its terms and applicable regulations.

Permitted livestock use: The forage allocated by, or under the guidance of, an applicable land use plan for livestock grazing in an allotment under a permit or lease and expressed in animal unit months.

Place-based values: Refers to an individual's or group's attachment to a specific geographic area. It relates to the concept of "sense of place," or a link between social experiences and geographic areas. Contributing qualities include personal memory, community history, physical landscape appearance, and emotional attachment. These values are subjective, and may be developed based on perceptions about amenities (such as recreational opportunities), historic or symbolic activities and places, or landscape and scenic vistas.

Planning Area: As used in this document, includes all land within Socorro and Catron Counties regardless of jurisdiction or ownership.

Planning criteria: The standards, rules, and other factors developed by managers and interdisciplinary teams for their use in forming judgments about decision making, analysis, and data collection during planning. Planning criteria streamline and simplify the resource management planning actions.

Point-source pollution: Pollution that comes from an identified source or location—"end-of-the-pipe" pollution.

Potable water: Water suitable for drinking.

Prescribed fire: Fire set intentionally in wildland fuels under prescribed conditions and circumstances. Prescribed fire should be used to mitigate the suppression of natural fires.

Prevention of significant deterioration: A Clean Air Act requirement to include a permit review process applicable to the construction and operation of new and modified stationary sources in attainment areas.

Programmatic environmental impact statement: A comprehensive National Environmental Policy Act document prepared to analyze the environmental consequences of alternative programs or management strategies under consideration. A programmatic EIS is prepared to help determine a consistent, broad management approach that can be used by BLM field-level staff for local land use planning. The programmatic environmental impact statement is intended to support and expedite site-specific analysis or NEPA efforts for individual projects.

Public land: Land or interest in land owned by the United States and administered by the Secretary of the Interior through the BLM without regard to how the United States acquired ownership, except lands located on the Outer Continental Shelf, and land held for the benefit of Indians, Aleuts, and Eskimos.

Raptors: Birds of prey, such as the eagle, falcon, hawk, owl, or vulture.

Reclaim/reclamation: The process of converting disturbed land to its former use or other productive uses. In some instances, the term is also used for the act of adapting wild or natural resources to serve a utilitarian purpose such as converting riparian habitats to agriculture.

Recreation experiences: Psychological outcomes realized either by recreation-tourism participants as a direct result of their onsite leisure engagements and recreation-tourism activity participation or by non-participating community residents as a result of their interaction with visitors and guests within their community and/or interaction with the BLM and other public and private recreation-tourism providers and their actions.

Recreation opportunities: Favorable circumstances enabling visitors' engagement in a leisure activity to realize immediate psychological experiences and attain more lasting, value-added beneficial outcomes.

Recreational opportunity spectrum (ROS): A conceptual planning tool that characterizes recreation opportunities in terms of setting, activity, and experience opportunities. ROS is based on a set of criteria according to a land's physical, social, and managerial settings, which in combination define a land area's capability and suitability for providing a particular range of recreational experience opportunities. In ROS, the setting, activities, and opportunities for experiences are arranged along a spectrum of six classes: (1) primitive, (2) semi-primitive non-motorized, (3) semi-primitive motorized, (4) roaded natural, (5) rural, and (6) urban. The resulting ROS analysis defines specific geographic areas on the ground, each of which encompasses one of the six classes.

Recreation settings. The collective, distinguishing attributes of landscapes that influence, and sometimes actually determine, what kinds of recreation opportunities are produced. These include opportunities for engaging in specific recreation activities, attaining both satisfying and dissatisfying recreation experiences, and attaining both beneficial and unbeneficial outcomes.

Rehabilitate: Restore to a state of good condition or operation (e.g., a management alternative and/or practice that restores landscapes to a desired condition).

Reserved mineral rights: The retention of ownership of all or part of the mineral rights by a person or party conveying land to the United States. Conditions for the exercising of these rights have been defined in the Secretary of the Interior's "Rules and Regulations to Govern Exercising of Mineral Rights Reserved Conveyance to the United States" attached to and made a part of deeds reserving mineral rights.

Restore/restoration: The process of restoring site conditions as they were before land disturbance. Note: restoration involves restoring a site to a specific point in time.

Resource management plan (RMP): A land use plan that establishes land use allocations, multiple-use guidelines, and management objectives for a given planning area. The RMP planning system has been used by the BLM since 1980.

Revision: The process of completely rewriting the land use plan due to changes in the planning area affecting major portions of the plan or the entire plan.

Right-of-Way: Land authorized to be used or occupied for the construction, operation, maintenance, and termination of a project, pursuant to a right-of-way authorization.

Riparian: Areas of wetland transition between permanently saturated wetlands and upland areas. These areas exhibit vegetation or physical characteristics reflective of permanent surface or subsurface water influence.

Riparian habitat: Riparian habitat is an ecological transition between an in-stream community of plants and animals and the adjacent, upland community. Normally the term is used for perennial, or year-round flowing streams. The term *xeroriparian habitat* is used to describe the distinct plant and animal communities that concentrate around dry washes and are sustained by desert storms.

Roadless: Refers to the absence of roads constructed and maintained by mechanical means.

Roads: Vehicle routes that are improved and maintained by mechanical means to ensure relatively regular and continuous use. (A way maintained strictly by the passage of vehicles does not constitute a road.)

Sacred sites (American Indian): Defined in Executive Order 13007 as "any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site."

Salable minerals: Minerals that may be sold under the Material Sale Act of 1947, as amended. Included are common varieties of sand, stone, gravel, and clay.

Saturated: When referring to soil, the maximum amount of water that can be held either when the soil is frozen or the spaces between the soil particles are filled with water. Any additional seepage over saturated soil will result in runoff.

Scenic area: An area with a landscape character that exhibits a high degree of variety and harmony among the basic elements that results in a pleasant landscape to view.

Scenic quality: The relative worth of a landscape from a visual perception point of view. The seven factors (landform, vegetation, water, color, adjacent scenery, scarcity, and cultural modifications) used to evaluate the scenic quality of a landscape. The relative scenic quality (A, B, or C) assigned to a landscape by applying the scenic quality evaluation key factors, with scenic quality A being the highest rating. The scenic-quality-rating unit is defined as a portion of the landscape that displays primarily homogenous visual characteristics of the basic landscape features (land and water form, vegetation, and structures).

Scoping: A term used to identify the process for determining the scope of issues related to a proposed action and for identifying significant issues to be addressed in an environmental impact statement.

Season of use: The time during which livestock grazing is permitted on a given range area, as specified in the grazing permit.

Sensitive species: Species not yet officially listed but that are undergoing status review for listing on the U.S. Fish and Wildlife Service official Threatened and Endangered list; species whose populations are small and widely dispersed or restricted to a few localities; and species whose numbers are declining so rapidly that official listing may be necessary.

Site hardening: Site hardening is a measure, or combination of measures, taken to make an archaeological or historic site less vulnerable to effects from visitation. These measures may include surface collection, signing, on-site hosts, vehicle barriers, data recovery, or other means.

Special management areas (SMAs): An area identified by the BLM for the management of a specific resource or resources.

Special recreation management area (SRMA): A public lands unit identified in land use plans to direct recreation funding and personnel to fulfill commitments made to provide specific, structured recreation opportunities (i.e., activity, experience, and benefit opportunities). The BLM recognizes three distinct types of SRMAs: community-based, intensive, and undeveloped big open.

Special status species: Includes proposed species, listed species, and candidate species under the Endangered Species Act; state-listed species; and BLM state director-designated sensitive species (see BLM Manual 6840, Special Status Species Policy).

Standard: A description of the physical and biological conditions or degree of function required for healthy, sustainable lands (e.g., Land Health Standards). To be expressed as a desired outcome (goal).

Structural diversity: The diversity of the composition, abundance, spacing, and other attributes of plants in a community.

Sustainable use (production): The continuation of livestock grazing at a uniform level while maintaining a healthy desired plant community.

Terms and conditions: Stipulations contained in livestock grazing permits and leases as determined by the Authorized Officer to be appropriate to achieve management and resource condition objectives for the public lands and other lands administered by BLM and to achieve standards for rangeland health and ensure conformance with guidelines for grazing administration. Terms and conditions also apply to fluid mineral leases, as defined in Appendix D.

Threatened species: Any animal or plant species likely to become endangered within the foreseeable future throughout all of a significant portion of its range. These species are listed by the U.S. Fish and Wildlife Service.

Total dissolved solids (TDS): A water quality criterion defining the concentration of dissolved organic and inorganic chemicals in water.

Travel and transportation management system: A program to be developed by BLM to manage access for motorized, mechanized, and nonmotorized recreation. Travel would be managed through a network of authorized routes and access points. A management plan would be developed to provide policy and guidance for addressing the regulation, maintenance, and monitoring of the routes and other components of the travel and transportation system.

Unclassified area (for air quality): An area that cannot be classified on the basis of available information as meeting or not meeting the Federal primary or secondary ambient air quality standard for the pollutant.

Utility corridor: A linear corridor usually designated for facilities such as power lines, pipelines, fiber optic cables, roads, etc.

Viable: A [wildlife] population that has the estimated numbers and distribution of reproductive individuals to insure its continued existence.

Viewshed: The landscape that can be directly seen under favorable atmospheric conditions, from a viewpoint or along a transportation corridor.

Visual resources: The visible physical features on a landscape (e.g., land, water, vegetation, animals, structures, and other features). Visual resources are managed by inventory and planning actions taken to identify resource values and to establish objectives for managing those values; and the management actions taken to achieve the visual management objectives.

Visual resource management (VRM): The inventory and planning actions taken to identify visual resource values and to establish objectives for managing those values, and management actions taken to achieve the established objectives.

Visual resource management classes: Categories assigned to public lands based on scenic quality, sensitivity level, and distance zones. There are four classes. Each class has an objective that prescribes the amount of change allowed in the characteristic landscape.

Ways: Primitive two-track trails located within wilderness study areas.

Wetlands: Areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Examples of wetlands include marshes, shallow swamps, lakeshores, bogs, muskegs, wet meadows, estuaries, and riparian areas.

Wilderness area: An area officially designated as wilderness by Congress. Wilderness areas will be managed to preserve wilderness characteristics and shall be devoted to "the public purposes of recreation, scenic, scientific, educational, conservation, and historical use."

Wilderness study area (WSA): Areas under study for possible inclusion as a wilderness area in the National Wilderness Preservation System.

Wildland fire (or wildfire): Any unplanned fire, as opposed to a prescribed fire, that occurs in a natural or wildland setting and does not involve a home or other structure. These fires may require suppression actions.

Wildland fire use (for resource benefits): The management of naturally ignited wildland fires to accomplish specific, pre-stated resource management objectives in predefined geographic areas outlined in fire management plans, such as in areas that would benefit from fuels reduction.

Wildland-urban interface: The line, area, or zone where structures and other human developments meet or intermingle with wildland or vegetative fuel. Interface is further delineated by (1) developed areas with residential structures where many structures border wildland on a broad front or (2) developed areas with private residential structures where developments are few in number scattered over a large area surrounded by wildland.

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