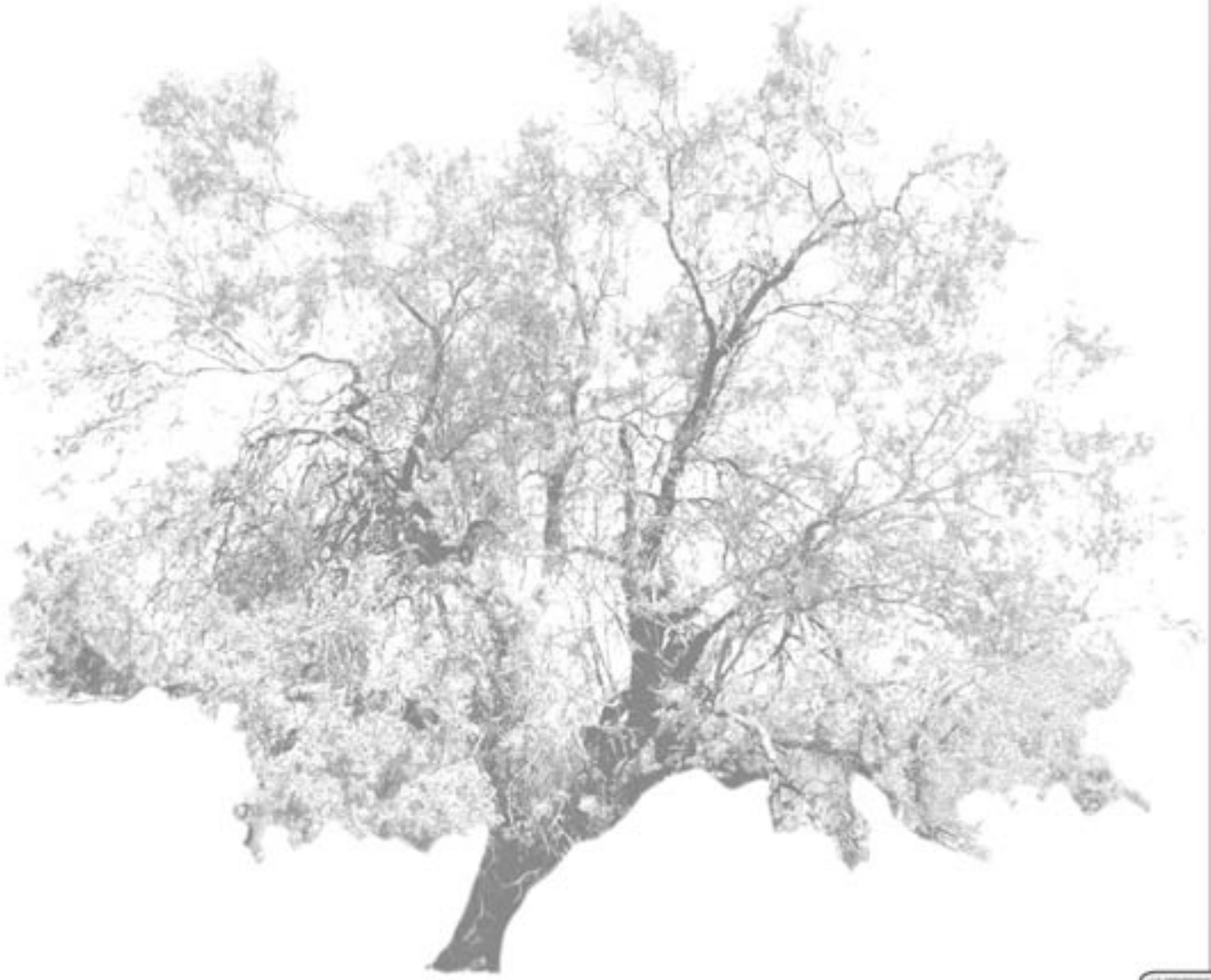
BLM

IRONWOOD FOREST NATIONAL MONUMENT

# Draft Resource Management Plan and Environmental Impact Statement



Tucson Field Office

**March 2007**

The Ironwood Forest National Monument Draft Resource Management Plan and Environmental Impact Statement (RMP/EIS) describes and analyzes four alternatives for managing approximately 128,400 acres of public land in southern Arizona, north and west of Tucson, Arizona. Information provided by the public, other agencies and organizations, and BLM personnel have been used to develop and analyze the Alternatives in this Draft RMP/EIS. *Alternative A* is the No Action alternative and represents continuation of current management. *Alternative B* emphasizes preservation of monument objects through restrictions on uses. *Alternative C,* BLM's preferred alternative, provides greater opportunities for human uses than Alternative B and fewer restrictions than Alternative D, while still protecting monument objects—with the greatest restrictions in localized areas. *Alternative D* emphasizes the maintenance of existing public access to monument lands and provides for continuing uses, to the extent possible with continued protection of monument objects in localized areas. Issues addressed in the Draft RMP/EIS include management of vegetation, wildlife habitat, cultural resources, recreation and public access (including motorized and non-motorize routes), areas having wilderness characteristics, and visual resources.

BLM/AZ/PL-02/004

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Dear Reader:

Enclosed is the Ironwood Forest National Monument (IFNM) Draft Resource Management Plan and Environmental Impact Statement (RMP/EIS) for your review and comment. This document describes four alternative plans for the management of the IFNM, a National Landscape Conservation System unit established by Presidential Proclamation 7320 in June 2000.

The Draft RMP/EIS represents the integration of considerable public collaboration into the BLM management of the Ironwood Forest National Monument. The BLM wishes to express its appreciation to all of those who contributed their time and expertise to this planning effort through participation in the planning process since the IFNM was established. We welcome and encourage your continued participation in this ongoing planning effort.

The release of the Draft RMP/EIS begins a 90-day comment period. During this period, we encourage you to review the document and provide us with your comments about the management alternatives. Comments received will be considered in the development of the Proposed RMP and Final EIS. Comments are most useful when they address one or more of the following:

- Errors in the analysis;
- New scientific information that would have a bearing on the analysis;
- Misinformation that would affect the outcome of the analysis;
- Requests for clarification; and,
- A substantive new alternative whose mix of allocations differs from those under any of the alternatives.

When commenting on a particular statement or map in the document, please refer to the section number and title, or map number and title that contain the information that you are commenting on.

To ensure you have opportunities to share your comments about the Draft RMP/EIS, public meetings will be held in Tucson, Sells, Sahuarita, and Chandler. Additional meeting locations will be considered if deemed necessary.

Please note that public comments, including names and street addresses of respondents, will be available for public review at the Bureau of Land Management Tucson Field Office, 12661 E. Broadway, Tucson, AZ 85748 during regular business hours (8:00 a.m. to 4:00 p.m.) Monday through Friday, except holidays. Comments may be published as part of the Final EIS or other related documents. 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 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 inspection in their entirety.

The public comment period for this Draft RMP/EIS ends 90 days after the Environmental Protection Agency publishes its Notice of Availability for this document in the *Federal Register*. Written comments should be sent to the attention of: Mark Lambert, IFNM Planning Lead, BLM Tucson Field Office, 12661 East Broadway, Tucson, AZ 85748-7208. An electronic copy of the Draft RMP/EIS also is available for review via the Internet at http://www.blm.gov/az/env_docs/library/rmps/rmps.htm. For additional information or to request a printed copy or CD version of the Draft RMP/EIS, please contact Mark Lambert at 520-258-7200 or by e-mail at AZ_IFNM_RMP@blm.gov. We appreciate your interest and encourage your continued involvement in the planning process.

Sincerely,

Patrick Madigan
Field Manager

Enclosures: IFNM Draft RMP/EIS

# DRAFT
# Ironwood Forest National Monument Resource Management Plan and Environmental Impact Statement

Prepared by

U.S. Department of the Interior
Bureau of Land Management
Tucson Field Office
Arizona

March 2007

Elaine Y. Zielinski

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Arizona State Director

# SUMMARY

## INTRODUCTION

The Ironwood Forest National Monument (IFNM) was established on June 9, 2000 with the signing of Presidential Proclamation 7320 (Proclamation) to protect objects of scientific interest, including geological, biological, and archaeological resources. The IFNM encompasses approximately 189,600 acres of land. Approximately 128,400 acres within the monument boundaries are public land administered by the Bureau of Land Management (BLM); the balance of the land consists of approximately 54,700 acres of State Trust land (administered by the Arizona State Land Department) and approximately 6,000 acres that are privately owned.

The BLM, Tucson Field Office, has prepared this Draft Resource Management Plan and Environmental Impact Statement (RMP/EIS) to identify four alternative management approaches for public land in the IFNM and analyze the potential effects of implementing each alternative. Where possible, the Draft RMP/EIS also identifies appropriate measures to mitigate potential impacts on natural resources, cultural resources, public uses, and social or economic conditions. The EIS has been developed in compliance with the National Environmental Policy Act (NEPA) of 1969, Council on Environmental Quality regulations implementing NEPA, Federal Land Policy and Management Act (FLPMA) of 1976, and other associated regulations. Together, the RMP and EIS analyze and establish BLM's management practices for these lands in response to the Presidential Proclamation, current legislation and policies, and the demand to use public land and its resources.

## AREA DESCRIPTION

The IFNM lies in the heart of the Sonoran Desert ecosystem in southern Arizona, and is a unique scenic area of rolling desert and ironwood woodlands including the Silverbell, Waterman, Sawtooth, and Roskruge Mountains. Much of the vegetation in the area is classic Sonoran Desert upland habitat dominated by cacti such as saguaro, Bigelow's cholla, and staghorn cholla. Other common plants include ironwood, paloverde, creosote, brittlebush, triangle-leaf bursage, ocotillo, and white thorn acacia. The upper slopes of the Silverbell Mountains possess a chaparral community dominated by jojoba. The lower bajadas contain inter-braided streambeds that carry water after heavy rains. These desert wash habitats are characterized by large ironwood, blue paloverde, and mesquite trees. Within these natural environments, the IFNM contains habitat for two endangered species, including the lesser long-nosed bat and Nichol Turk's head cactus, as well as several other species of concern.

In addition to the natural environment, abundant cultural resources occur within the IFNM. The IFNM includes a site listed in the National Register of Historic Places (National Register), two archaeological districts listed in the National Register, historic mining camps, and other cultural resources that are eligible for listing in the National Register.

Public lands within the IFNM provide for various uses including grazing, land use authorizations (such as rights-of-way for utilities), and dispersed recreational opportunities.

## PURPOSE AND NEED

The purposes of the RMP are: (1) to specifically address management of lands within the IFNM consistent with the monument designation to protect objects of scientific interest; and (2) to implement BLM's policy to prepare a stand-alone RMP for all National Landscape Conservation System (NLCS) units, which includes the IFNM. Presently, the land within the IFNM is managed under the 1989 Phoenix Resource Area RMP (Phoenix RMP) as amended by the Arizona Standards for Rangeland Health and Guidelines for

Grazing Administration and the Arizona Statewide Land Use Plan Amendment for Fire, Fuels, and Air Quality Management, and the 1987 Eastern Arizona Grazing EIS, when decisions in these documents are consistent with the Proclamation. Wildlife habitat plans, such as the Silver Bell Habitat Management Plan, and allotment management plans provide specific management direction and actions for wildlife and range programs on lands within and immediately adjacent to the IFNM. In addition, BLM has been following an interim guidance document for managing public land within the IFNM until the new RMP is completed and approved.

An RMP is needed for the IFNM due to the numerous changes that have occurred requiring reconsideration of existing management decisions since the Phoenix RMP and Eastern Arizona Grazing EIS were developed. The most significant change in relation to this RMP is the establishment of the IFNM, but other changes are also relevant. For example, the continuing urban growth of the Tucson and Marana metropolitan areas has increased the demand for public land to accommodate many forms of recreational activity, and these pressures demand increased consideration of management for the protection of monument resources and values.

## PLANNING ISSUES

Key planning issues considered for developing alternatives in this Draft RMP/EIS included specific concerns regarding vegetation, wildlife and wildlife habitat, special status species, cultural resources, visual resources, wilderness characteristics, energy and mineral resources, grazing and livestock management, recreation, lands and realty, and travel management. Most issues focused on how BLM should protect natural, cultural, and visual resources while managing current and increasing numbers of visitors and increased uses resulting from nearby development of lands (e.g., State Trust lands). The planning issues used for developing alternatives were derived from the public scoping process, during which BLM solicited input from agencies and the public about opportunities, conflicts, or problems with the management and use of public lands within the IFNM. Additional public input gathered at numerous public meetings, as well as from letters and e-mails, was considered throughout the development of the Draft RMP/EIS.

## ALTERNATIVES

BLM developed four alternative management strategies for managing public lands within the IFNM in accordance with NEPA and BLM regulations that require development of a reasonable range of alternatives to address the planning issues. Alternative A is a "No Action Alternative," that is, it proposes no new plan. Under this alternative, management of public land within the IFNM would continue under existing planning documents, as modified by the Proclamation and additionally guided by BLM's Interim Management Policy. Alternatives B, C, and D (the "action alternatives") would each affect more change in management—each include proactive responses to existing conditions and circumstances, which in many cases may have changed since the existing planning documents now in force were written. Establishment of the monument is, of course, the best example of this.

Each alternative has a management emphasis that reflects a different response to the Federal mandate to balance use and conservation of resources on public lands. All four alternatives comply with the Proclamation and with all other applicable laws, regulations, and policies. Uses of land and resources that are not permitted by the Proclamation have been excluded from consideration.

### Alternative A, No Action

Alternative A, the "No Action" Alternative, would continue management of public land within the IFNM according to the management prescriptions of the 1989 Phoenix RMP and the Eastern Arizona Grazing

EIS, as amended by the Arizona Statewide Land Use Plan Amendment for Fire, Fuels, and Air Quality Management and the Arizona Standards for Rangeland Health and Guidelines for Grazing Administration. Alternative A would include modifications to management mandated by the Proclamation, which BLM has already implemented with current management guidance for the IFNM.

### Alternative B

The management theme of Alternative B is preservation—it is the most restrictive strategy, designed to protect the monument's resources by limiting use of the area's resources to an allowable minimum. This alternative places more restrictions on motorized travel throughout the monument and favors dispersed, non-motorized recreational activities over motorized recreational activities. The types of allowable uses and the intensity of those uses are restricted to provide the strongest, reasonable protection for objects of historic, scientific, and aesthetic interest within the monument.

### Alternative C

Alternative C is BLM's preferred alternative. It incorporates elements from each of the other alternatives to strike a balance between long-term conservation of public land and resources within the IFNM, and uses that have traditionally taken place on the land within the monument, such as grazing and recreation. In sensitive resource areas, Alternative C would provide a higher level of resource protection and less public use; however, greater opportunities for public use would be allowed outside those areas.

### Alternative D

The management theme of Alternative D is access—it emphasizes the maintenance of existing public access to monument lands and resources. It identifies areas that are most appropriate to accommodate various uses—especially those identified as desirable during public scoping —and emphasizes those uses, particularly with respect to transportation and recreation. It includes the most miles of routes designated for motorized use, would allow for the establishment of more recreational sites (e.g., campsites), and the entire monument would be available for grazing.

## AFFECTED ENVIRONMENT

The affected environment documents the existing conditions and establishes a baseline for evaluating impacts within the IFNM. The current resources and land uses and their conditions are introduced below.

### Air Quality

A portion of the IFNM is located within the Rillito particulate matter ($PM_{10}$) nonattainment area, where nearby air quality monitors indicate that National Ambient Air Quality Standards (NAAQS) are not being met. The remainder of the IFNM lies within attainment areas for $PM_{10}$, as well as other pollutants regulated by the NAAQS. Within the IFNM, there are no major stationary sources of emissions and vehicle travel (on-road) represents the largest single air pollutant-source-category.

### Geology and Cave Resources

The IFNM is located within the Basin and Range physiographic province, which is characterized by long, narrow, block-faulted mountain ranges oriented northwest-southeast that are separated by broad, relatively flat valleys containing several thousand feet of alluvial sediments.

The jagged mountaintops and steep cliffs, such as Ragged Top and Wildcat Peak, are composed of resistant Cretaceous to Tertiary volcanic plugs or necks, while the Samaniego Hills and Sawtooth Mountains consist of thick sequences of volcanic flows and sediments. The Silver Bell Mountains are formed from Laramide-age granitic and volcanic rocks that host a major porphyry copper deposit.

No caves have been reported in the IFNM, but several have been noted in other portions of southern and eastern Arizona. There are two caves, Silverbell and Rattlesnake, in the Waterman Peak area, that are located within the vicinity of the IFNM; however, these are not located on public land.

**Soil and Water Resources**

More than half of the soils in the IFNM are composed of fan terraces that have been incised by drainages. The soils in fan terraces are used primarily for rangeland and the IFNM does not contain soils that qualify as prime farmland soils. Biological soil crust occurrence in the IFNM has been noted; however, detailed information on the location and extent of these biological soil crusts has not been compiled. In addition, small patches of weakly varnished youthful desert pavement occur in the IFNM. Varnished pavements occur in two areas: (1) on the bajada on the south side of the West Silver Bell Mountains and (2) on the west side of the Sawtooth Mountains, where the most extensive and interesting varnished pavements occur.

Within the IFNM, there are no wells that are monitored routinely for water quantity or quality. However, groundwater within and around the IFNM provides a variety of beneficial uses, including domestic, commercial, agricultural, and industrial uses. Surface water flows within the IFNM are entirely ephemeral.

**Vegetation**

Vegetation within the IFNM generally is classified within two upland plant communities. The paloverde-cacti-mixed scrub community is dominated by foothill paloverde with scattered cacti, mostly saguaro, and contains other associated species such as mesquite and ironwood. The creosotebush-white bursage community is dominated by creosotebush and white bursage, with scattered triangle-leaf bursage, ocotillo, and prickly pear cactus. In addition, a minor plant community of jojoba chaparral, dominated by the jojoba plant, is found near the summit of Silver Bell Peak. Xeroriparian communities also occur throughout the IFNM along dry washes.

Approximately 54 non-native plant species occur in IFNM. These plants have special adaptations that allow them to quickly invade and out-compete many native species. Species that pose the greatest threats include buffelgrass, Sahara mustard, and Bermuda grass.

**Wildlife and Wildlife Habitat**

The fauna of the IFNM include a diversity of game and nongame wildlife species, as well as migratory birds, typically found in the Sonoran Desert. Several species are restricted to certain locales while others occur widely in suitable habitats. It is estimated that more than 674 animal species, including 64 mammal species and over 70 bird species, occur in the Silver Bell Mountains alone (Averill-Murray and Averill-Murray 2002).

Big game species known to occur in the planning area include desert bighorn sheep, mule deer, and javelina. Small game species that occur in the planning area include desert cottontails, jackrabbits, and quail. Non-game species, including songbirds, raptors, reptiles and one amphibian, are also found within the IFNM.

Land use patterns on the IFNM influence wildlife habitat connectivity. Factors contributing to fragmentation of wildlife habitats within the IFNM include roads, residential development, mines, undocumented immigrant (UDI) traffic, and off-road driving. Wildlife corridors could connect habitats between the Silver Bell Mountains, West Silver Bell Mountains, and Sawtooth Mountains. The primary function of wildlife corridors is to connect fragmented habitat areas. All washes in the IFNM serve as corridors for wildlife. These corridors facilitate dispersal of individuals between patches of remaining habitat.

**Special Status Species**

Special status species include the following: (1) species currently listed or considered for listing as threatened or endangered by U.S. Fish and Wildlife Service (USFWS); (2) species listed as sensitive by BLM; (3) species listed as Wildlife of Special Concern in Arizona by Arizona Game and Fish Department (AGFD); (4) Priority Vulnerable Species in Pima County; and (5) plants that have special protection under the Arizona Native Plant Law.

As identified by BLM, USFWS, AGFD, and Pima County's Sonoran Desert Conservation Plan, 122 special status species occur in Pima and Pinal Counties. Of this total, two species with Federal status have the potential of occurring in the planning area: lesser long-nosed bat and Nichol Turk's head cactus. Of those special status species that are not federally listed, 36 have the potential to occur in the IFNM.

**Fire Ecology and Management**

All of the lands within the IFNM are designated as current condition Class 1, where vegetation species, composition, and structure are intact and functioning within historic range. The BLM's Arizona Statewide Land Use Plan Amendment for Fire, Fuels and Air Quality Management provides general direction for fire management to meet statewide goals (USDI, BLM 2003a). The IFNM is considered a full suppression area. Fuels treatments could occur on a case-by-case basis, generally in areas where treatments would be necessary for removal of invasive or exotic species.

**Cultural Resources**

The primary motivation for protecting and preserving cultural resources is to enhance public and professional interpretation and appreciation of our cultural heritage. Public interpretation within the IFNM has been limited primarily to occasional guided tours of Hohokam petroglyph sites. Future opportunities for public interpretation include heritage publications, other media products, interpretive signs and kiosks, and visitor centers.

Archaeological sites reflecting both prehistoric and historic-era occupation of the region are so abundant that only a small percentage of the sites have been recorded. Twenty-one documented surveys have, in the aggregate, inventoried approximately 21,194 acres (33.1 square miles) for cultural resources within the IFNM. The surveys encompass about 12 percent of the public land and about 9 percent of the nonpublic lands within the IFNM.

To date, no specific places within the IFNM have been identified as having traditional cultural significance, but an inventory study has not been conducted. Tribes with traditional cultural affiliations with the region are known to have concerns about treatment of human remains, funerary objects, sacred objects, and objects of cultural patrimony that are sometimes present within archaeological sites. Members of the Tohono O'odham Nation, which borders the IFNM, also might consider some places within the IFNM that were used traditionally, such as stands of saguaro where fruit was collected, as having cultural significance.

## Paleontological Resources

Paleontological resources in southern Arizona are typically found in the Quaternary deposits. There are a few limited known occurrences of paleontological resources on the IFNM; however, no significant fossils are known to occur within the IFNM. Several neotoma (packrat) middens located in late Pleistocene and subrecent deposits have yielded various animal and plant species in the Wolcott Peak area of the IFNM.

With respect to fossil sensitivity or the potential for discovering fossils, the IFNM is mainly Class 1 and Class 2. Class 1 includes igneous and metamorphic geologic units and sedimentary geologic units where vertebrate fossils or uncommon nonvertebrate fossils are unlikely to occur and Class 2 includes sedimentary geologic units that are known to contain or have unknown potential to contain fossils that vary in significance, abundance, and predictable occurrence. A few Class 3 areas also occur, which are areas where geologic units are known to contain fossils but have little or no risk of human-caused adverse impacts and/or low risk of natural degradation.

## Scenic and Visual Resources

The IFNM is a landscape of contrasts. Its broad, flat valleys are interrupted by rugged, steep-sloped mountains, and punctuated by isolated hills. The gently sloping bajadas that soften the transitions between jagged mountain and valley floor are dissected by dry, desert washes that nevertheless support a variety of colors. A variation of green-hued vegetation is found in abundance, and the reds and yellows of native flowers appear in their seasons. The richness of the ecosystem is manifest in the sometimes dramatic, sometimes subtle variations in colors and textures that cover, yet fail to obscure, the striking landforms that hint at the geological processes that formed this southwestern region of the United States. The sculptural forms of Sonoran Desert cacti add an almost museum quality to some of the landscapes within the monument.

Under the current management plan, the entire monument is currently managed as Visual Resource Management (VRM) Class III, which would require partial retention of the existing character of the landscape, while allowing a moderate level of change to the characteristic landscape.

## Wilderness Characteristics

BLM completed a wilderness characteristics assessment to determine if wilderness characteristics are present within the IFNM. The assessment was done in accordance with BLM Washington Office Instruction Memorandum 2003-275, Change 1, Consideration of Wilderness Characteristics in Land Use Plans, issued on October 23, 2003. The assessment utilized data gathered for the Draft RMP/EIS in the visual, recreation, vegetation, ecological site, and wildlife habitat resource inventories.

The wilderness characteristics assessment confirmed the presence of wilderness characteristics on approximately 36,990 acres of BLM-administered land, including areas of the Sawtooth, West Silver Bell, Silver Bell, and Roskruge Mountains.

## Energy and Mineral Resources

BLM manages approximately 149,360 acres of Federal mineral estate within the IFNM boundaries. The Federal mineral estate lies under surface areas administered by the BLM, as well as areas of State Trust land (14,680 acres) and private land (3,220 acres). As a result of the Proclamation, all of the lands and interests in lands, including minerals, within the IFNM boundaries have been withdrawn from location, entry, and patent under the mining laws and from disposition under all laws relating to mineral and geothermal leasing.

BLM is responsible for managing leasable, locatable, and salable minerals within the IFNM. There are no known leasable minerals (oil, gas, or geothermal resources) within the IFNM. Locatable minerals, which include metallic and nonmetallic minerals have been reported in the IFNM. There are 225 valid existing claims for metallic minerals, though no active mining of metallic or nonmetallic minerals presently is occurring on public land. Salable minerals, which include sand, gravel, aggregate, and other building stone, have historically been extracted from public lands in the IFNM; however, no mineral removal operations presently are occurring.

**Livestock Grazing**

The entire IFNM is available for grazing, which includes approximately 128,400 acres of public land. Currently, grazing leases are held for 11 allotments.

**Recreation**

The IFNM is easily accessible from both Tucson and Marana, and provides outstanding recreational opportunities to the residents of those urban areas. Visitors are able to enjoy the scenic beauty of the monument through a variety of authorized recreational activities, including camping, hunting, target shooting, horseback riding, hiking, biking, and touring by vehicle. Universal access is provided in some areas of the monument that are open to mechanized vehicles. A recent University of Arizona study identified some of the preferred recreational activities within the IFNM. These include (in order of expressed preference) hiking/walking/running, sightseeing, wildlife viewing, camping, vehicle touring, picnicking, target shooting, hunting, and horseback riding. The study identified the Ragged Top Mountain area as the primary destination within the IFNM for wildlife viewing.

Currently, there are two commercial operations under special recreation permits within the IFNM – one for cattle drive/horseback riding activities and one for orienteering activities.

**Lands and Realty**

BLM administers approximately 128,400 acres of public land (surface estate) in the IFNM. Adjustments to land tenure within the IFNM boundaries can occur under a variety of realty actions. However, under the Proclamation, all land and interests in land (i.e., surface and subsurface estate) within the IFNM boundaries will remain under BLM's administration unless an exchange would further the protective purposes of the monument.

In addition to land tenure adjustments, BLM manages utility corridors to accommodate rights-of-way for major facilities and communication sites. There are three utility corridors, where rights-of-way for pipelines and electrical transmission lines have been issued. Rights-of-way for other utilities and facilities also are present in the IFNM, including two communication sites: Pan Quemado and Confidence Peak. Presently, there are 27 rights-of-way authorized by BLM within the IFNM.

**Travel Management**

There are approximately 347 miles of routes on public lands within the IFNM. The majority of these routes are dirt roads. These are typically single-lane roads that are passable by two-wheel-drive, high-clearance vehicles, but not by passenger vehicles or larger vehicles, and that show no evidence of improvement or regular maintenance. Vehicle travel is limited to these existing routes and county-maintained routes through the IFNM, including Sasco, Avra Valley, Silverbell, Manville, Mile Wide, El Tiro, and Pump Station Roads.

## Special Designations

The Waterman Mountains ACEC, which includes 2,240 acres of public land, is the only special designation within the IFNM. It was established in the 1989 Phoenix RMP primarily for the protection of the Nichol Turk's head cactus, and is one of the most popular destinations within the monument.

## Social and Economic Conditions

Overall, social and economic trends for the study area over the past 30 years indicate a shift among the dominant employment sectors and the major sources of personal income. Employment in Pima and Pinal Counties over the past 30 years has been characterized by a large increase in jobs in the services and professional sector. This trend is statewide; over the past 30 years, the Services and Professional sector has provided approximately 75 percent of new jobs in Arizona. Conversely, employment in the mining sector has declined in terms of both relative significance and total number of jobs. New job growth in the government sector has occurred over the thirty-year timeframe in both counties. The farm and agricultural services sector remained flat in Pima County, but declined in Pinal County.

# 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. The following sections summarize the results of the impact analysis for each alternative.

## Impacts on Air Quality

Under all alternatives, surface-disturbing activities including vehicle travel, recreational uses, land use authorizations, and livestock grazing (at least until leases expire under Alternative B) would result in localized degradation of air quality. Under Alternative B, surface-disturbing activities in fragile or sensitive soils would be prohibited and fewer miles of routes would be designated for motorize use compared to other alternatives, resulting in greater protection of air quality. Under Alternatives A, C, and D, BLM would allow increased surface disturbance compared to Alternative B; however, erosion prevention and/or control, and site-specific mitigation of impacts from surface disturbance in fragile or sensitive soils would minimize the potential for impacts on air quality under these alternatives.

## Impacts on Geology and Caves Resources

Under all alternatives, surface-disturbing activities including vehicle travel, recreational uses, collection of paleontological resources, and land use authorizations could degrade geological resources in localized areas. However, maintaining and improving soil cover and productivity through erosion preventative measures would indirectly help maintain geological resources. Under Alternative A, designating the IFNM as VRM Class III would allow for surface-disturbing activities that could degrade geological resources. Under Alternative B, designating 125,100 acres of VRM Class I and II, closing 30,040 acres to vehicle travel, and managing 36,990 acres for wilderness characteristics could limit surface-disturbing activities in these areas, subsequently protecting geological and cave resources throughout a majority of the IFNM. Under Alternative C, designating 124,900 acres of VRM Class II, closing 10,880 acres to vehicle travel, and managing 9,510 acres for wilderness characteristics could protect geological and cave resources similar to Alternative B, though across less area of the IFNM. Under Alternative D, designating 122,580 acres of VRM Class II would provide protection of geological and cave resources, similar to Alternatives B and C, though across less area of the IFNM. Under Alternatives A, C, and D, utility

corridors (8,240, 980, and 2,660 acres, respectively) would provide opportunities for land use authorizations that could degrade geological resources.

**Impacts on Soil and Water Resources**

Under all alternatives, surface-disturbing activities including vehicle travel, recreational uses, collection of paleontological resources, and land use authorizations could result in the loss of soil resources or degradation of water quality in localized areas. However, maintaining and improving soil cover and productivity through erosion preventative measures would indirectly help maintain soil and water resources. Under Alternative A, designating the IFNM as VRM Class III would allow for surface-disturbing activities that could degrade soil and water resources. Under Alternative B, designating 125,100 acres of VRM Class I and II, closing 30,040 acres to vehicle travel, and managing 36,990 acres for wilderness characteristics could limit surface-disturbing activities in these areas, subsequently protecting soil and water resources throughout a majority of the IFNM. Under Alternative C, designating 124,900 acres of VRM Class II, closing 10,880 acres to vehicle travel, and managing 9,510 acres for wilderness characteristics could protect soil and water resources similar to Alternative B, though across less area of the IFNM. Under Alternative D, designating 122,580 acres of VRM Class II would provide protection of soil and water resources, similar to Alternatives B and C, though across less area of the IFNM. Under Alternatives A, C, and D, utility corridors (8,240, 980, and 2,660 acres, respectively) would provide opportunities for land use authorizations that could result in surface-disturbing activities, resulting in degradation of soil and water resources in localized areas.

**Impacts on Vegetation**

Under all alternatives, restrictions on surface-disturbing activities and measures to minimize soil erosion would help retain existing vegetation diversity, species composition, and successional states and patterns. Construction of facilities, vehicle travel, recreational uses, and land use authorizations could result in the loss of vegetation in localized areas. Under Alternative A, designating the IFNM as VRM Class III would allow for surface-disturbing activities that could result in trampling or removal of vegetation. Under Alternative B, designating 125,100 acres of VRM Class I and II, closing 30,040 acres to vehicle travel, and managing 36,990 acres for wilderness characteristics could limit surface-disturbing activities in these areas, subsequently protecting vegetation and reducing the potential for the spread of invasive species compared to Alternative A. Under Alternative C, designating 124,900 acres of VRM Class II, closing 10,880 acres to vehicle travel, and managing 9,510 acres for wilderness characteristics could protect vegetation similar to Alternative B, though across less area of the IFNM. In addition, allocating 2,240 acres as the Waterman Mountains Vegetation Habitat Management Area (VHA) and 6,780 acres as the Ragged Top VHA would limit surface-disturbing activities in these areas, resulting in protection of vegetation in these areas under both Alternatives B and C. Under Alternative D, designating 122,580 acres of VRM Class II would provide protection of vegetation, similar to Alternatives B and C, though across less area of the IFNM. In addition, allocating 2,240 acres as the Waterman Mountains VHA and 6,500 acres as the Ragged Top VHA would limit surface-disturbing activities in these areas, resulting in protection of vegetation in these areas. Under Alternatives A, C, and D, utility corridors (8,240, 980, and 2,660 acres, respectively) would provide opportunities for land use authorizations that could result in surface-disturbing activities, resulting in trampling or removal of vegetation in localized areas, as well as the potential for spreading of invasive species in disturbed areas.

**Impacts on Wildlife and Wildlife Habitat**

Under all alternatives, restrictions on surface-disturbing activities and measures to minimize soil erosion would help retain existing vegetation, subsequently retaining wildlife habitat. Vehicle travel and recreational uses could result in surface-disturbing activities that would degrade wildlife habitat in

localized areas. Under Alternative A, designating the IFNM as VRM Class III would allow for surface-disturbing activities that could degrade wildlife habitat. Under Alternative B, designating 125,100 acres of VRM Class I and II, closing 30,040 acres to vehicle travel, and managing 36,990 acres for wilderness characteristics could limit surface-disturbing activities in these areas, subsequently protecting vegetation and reducing the potential for degradation of wildlife habitat compared to Alternative A. In addition, allocating 29,820 acres as the Desert Bighorn Sheep Wildlife Habitat Management Area (WHA) and 2,240 acres as the Waterman Mountains VHA would limit surface-disturbing activities in these areas, resulting in protection of wildlife habitat. Under Alternative C, designating 124,900 acres of VRM Class II, closing 10,880 acres to vehicle travel, and managing 9,510 acres for wilderness characteristics could protect wildlife habitat similar to Alternative B, though across less area of the IFNM. Alternative C would include protection of wildlife habitat in the Desert Bighorn Sheep Wildlife WHA and Waterman Mountains VHA similar to Alternative B. Under Alternative D, designating 122,580 acres of VRM Class II would provide protection of wildlife habitat, similar to Alternatives B and C, though across less area of the IFNM. Under Alternatives A, C, and D, utility corridors (8,240, 980, and 2,660 acres, respectively) would provide opportunities for land use authorizations that could result in surface-disturbing activities, resulting in trampling or removal of vegetation, which would degrade wildlife habitat in localized areas.

**Impacts on Special Status Species**

Under all alternatives, surface-disturbing or disruptive activities could displace special status species, fragment habitat, or result in the loss of habitat. Under Alternative A, designating the IFNM as VRM Class III would allow for surface-disturbing activities that could degrade special status species habitat. Under Alternative B, designating 125,100 acres of VRM Class I and II, closing 30,040 acres to vehicle travel, and managing 36,990 acres for wilderness characteristics could limit surface-disturbing activities in these areas, subsequently protecting vegetation and reducing the potential for degradation of special status species habitat compared to Alternative A. In addition, allocating 29,820 acres as the Desert Bighorn Sheep WHA and 2,240 acres as the Waterman Mountains VHA would limit surface-disturbing activities in these areas, resulting in protection of special status species habitat in those areas. Under Alternative C, designating 124,900 acres of VRM Class II, closing 10,880 acres to vehicle travel, and managing 9,510 acres for wilderness characteristics could protect special status species habitat similar to Alternative B, though across less area of the IFNM. Alternative C would include protection of wildlife habitat in the Desert Bighorn Sheep Wildlife WHA and Waterman Mountains VHA similar to Alternative B. Under Alternative D, designating 122,580 acres of VRM Class II would provide protection of special status species habitat, similar to Alternatives B and C, though across less area of the IFNM. Under Alternatives A, C, and D, utility corridors (8,240, 980, and 2,660 acres, respectively) would provide opportunities for land use authorizations that could result in surface-disturbing activities, resulting in direct conflicts with special status species or the loss or fragmentation of their habitat.

**Impacts on Fire Ecology and Management**

Under all alternatives, management actions to limit surface disturbance would reduce opportunities for the establishment of noxious weeds and invasive species, which would indirectly help retain the existing fire regime. Under Alternative A, the potential for unwanted ignitions would be minimized on the 820 acres closed to motorized vehicle travel. Under Alternative B, 38,040 acres would be closed to motorized vehicle travel, reducing the potential for unwanted ignitions in those areas. However, managing 36,990 acres to maintain wilderness characteristics could preclude some types of fuel reduction treatments in those areas. Under Alternative C, 10,880 acres would be closed to motorized vehicle travel, reducing the potential for unwanted ignitions in those areas. However, managing 9,510 acres to maintain wilderness characteristics could preclude some types of fuel reduction treatments in those areas. Under Alternative D, no areas would be closed to motorized travel (though motorized travel would be limited to designated routes), resulting in the potential for unwanted ignitions along roads.

**Impacts on Cultural Resources**

Under all alternatives, surface-disturbing activities including vehicle travel, recreational uses, land use authorizations, and livestock grazing (at least until leases expire under Alternative B) could result in disturbance of cultural resources. Under Alternative A, closing 820 acres to motorized vehicles and allocating the 2,720-acre Avra Valley Cultural Resource Management Area would help protect cultural resources by reducing surface disturbance in those areas. Under Alternative B, surface-disturbing activities in fragile or sensitive soils would be prohibited, 38,040 acres would be closed to motorized travel, and fewer miles of routes would be designated for motorize use compared to other alternatives, resulting in greater protection of cultural resources in those areas. In addition, surface disturbance for research would not be permitted. Under Alternatives A, C, and D, BLM would allow increased surface disturbance compared to Alternative B, including surface disturbance for research; however, erosion prevention and/or control, and site-specific mitigation of impacts from surface disturbance in fragile or sensitive soils would minimize the potential for impacts on cultural resources under these alternatives.

**Impacts on Paleontological Resources**

Under all alternatives, surface-disturbing activities including vehicle travel, recreational uses, land use authorizations, and livestock grazing (at least until leases expire under Alternative B) could result in disturbance of paleontological resources. Under Alternative A, closing 820 acres to motorized vehicles would provide limited protection for paleontological resources by reducing surface disturbance in those areas. Under Alternative B, surface-disturbing activities in fragile or sensitive soils would be prohibited, 38,040 acres would be closed to motorized travel, and fewer miles of routes would be designated for motorize use compared to other alternatives, resulting in greater protection of paleontological resources in those areas. Under Alternatives A, C, and D, BLM would allow increased surface disturbance compared to Alternative B; however, erosion prevention and/or control, and site-specific mitigation of impacts from surface disturbance in fragile or sensitive soils would minimize the potential for impacts on paleontological resources under these alternatives.

**Impacts on Scenic and Visual Resources**

Under Alternative A, BLM would allow for the greatest modification of the visual environment, as the IFNM would be managed under objectives for VRM Class III. Under Alternatives B, C, and D, much less modification to the scenic and visual environment would be anticipated as a majority of the IFNM under these alternatives would be managed such that changes to the landscape should not be noticeable. Alternative B would include 36,990 acres of public land managed as VRM Class I, and 88,120 acres of public land managed as VRM Class II. Alternatives C and D would not include any VRM Class I, but would include 124,900 or 122,580 acres, respectively, managed as VRM Class II.

**Impacts on Wilderness Characteristics**

Under Alternatives A, B and C, wilderness characteristics would be protected in areas that are closed to OHV travel; however, the area closed under Alternative B would be greater than under any other alternative. Under Alternative B, 36,990 acres of public land would be managed to maintain wilderness characteristics, and these areas would be managed as VRM Class I, resulting in few if any surface-disturbing activities. In addition, surface-disturbing activities in fragile or sensitive soils would be prohibited and fewer miles of routes would be designated for motorized use compared to other alternatives, resulting in greater protection of wilderness characteristics in those areas. Under Alternatives C, 9,510 acres of public land would be managed to maintain wilderness characteristics, and these areas would be managed as VRM Class II, resulting in coincidental protection of wilderness characteristics in those areas. Though no areas would be managed to maintain wilderness characteristics under Alternative D, increased

protection of such characteristics would occur compared to Alternative A as a result of VRM class designations (mainly VRM Class II under Alternative D), which would limit surface disturbance, and as a result of the designation of routes for motorized or non-motorized travel (fewer miles would be designated for motorized travel compared to Alternative A).

**Impacts on Energy and Mineral Resources**

The Proclamation designating the IFNM withdrew the area from location, entry and patent under mining laws and from disposition under all laws relating to mineral and geothermal leasing, subject to valid existing rights. Under all alternatives, mining activity would continue to be administered on a case-by-case basis for mining claims. No impacts on the development of valuable minerals would result from any of the alternatives, as the RMP would not affect valid existing mining claims. Impacts to renewable energy resources are discussed under land use authorization in the lands and realty section.

**Impacts on Livestock Grazing**

Under all alternatives livestock grazing would be adjusted when necessary to continue to comply with Arizona Standards for Rangeland Health. Although these adjustments would help enhance rangeland conditions and increase long-term forage production, animal unit month (AUM) use could decrease for some livestock operators. Managing vegetation and wildlife habitat, and implementing programs to reduce unwanted wildfire ignitions, would enhance vegetation community conditions and could increase forage. Recreation, mining activities, and activities associated with cultural resource management could either disrupt livestock or result surface disturbance removing vegetation, including livestock forage, from localized areas. Under Alternative A, designating 128,400 acres of BLM-administered lands in the IFNM to meet VRM Class III, providing 8,240 acres for utility corridors, and continuing custodial management of recreation could result in surface disturbance removing vegetation and forage. Under Alternative B, designating 125,100 acres as VRM Class I and II, managing 36,990 acres for wilderness characteristics, and managing 60,000 acres as semi-primitive non-motorized could help retain vegetation resources by reducing surface disturbance activities. However, this could restrict the type or location of rangeland improvement projects. Under Alternative B, making BLM-administered lands unavailable for livestock grazing after existing leases expire could reduce the number of livestock operators in the area. Impacts on livestock grazing until leases expire from closing 36,990 acres to motorized use, and managing the IFNM as an exclusion area for right-of-way could help maintain forage available for livestock grazing. Under Alternatives C and D, managing 124,900 and 117,940 acres, respectively, as VRM Class II could reduce surface disturbing activities, retaining vegetation and forage. Under Alternative C, managing 9,510 acres for wilderness characteristics could restrict rangeland improvement projects.

**Impacts on Recreation**

Under all alternatives, retaining all public lands within the IFNM and acquiring non-Federal lands could provide continued recreation opportunities in the IFNM. Managing the IFNM for full suppression of fires and maintaining or improving soil productivity could help maintain the recreation setting. Under Alternative A, continued custodial management of recreation could provide opportunities for vehicle-based recreation throughout the IFNM. However, this dispersed use could result in increased surface disturbance in localized areas and may diminish recreational settings over time. Managing 127,580 acres as limited to designated or existing routes would provide opportunities for motorized recreation. Designating the IFNM (128,400 acres) as VRM Class III and managing 8,240 acres as utility corridors would allow surface disturbing activities that could reduce naturalness and degrade recreational settings. Closing 820 acres to OHV use could help preserve naturalness and maintain the recreational setting. Under Alternative B, C, and D, managing the IFNM using recreation management zones (RMZs) could help maintain the recreational setting over time by reducing surface disturbance in localized areas. Under Alternative B,

managing 36,990 acres for wilderness characteristics, managing 60,000 acres as a semi-primitive non-motorized recreation zone, and managing 38,040 acres as closed to motorized use would maintain primitive and non-motorized recreational opportunities. Under Alternative C, managing 117,520 acres as limited to designated routes would maintain opportunities for motorized recreation throughout a majority of the IFNM. Closing 10,880 acres to motorized use, managing 57,450 acres as semi-primitive non-motorized recreation zone, and managing 9,510 acres for wilderness characteristics would maintain primitive and non-motorized recreational opportunities. Under Alternative D, managing the IFNM (128,400 acres) as limited to designated routes would maintain opportunities for motorized recreation. Managing 47,770 acres for semi-primitive non-motorized recreation use would provide opportunities for non-motorized recreation.

**Impacts on Lands and Realty**

Under all alternatives, BLM could acquire land and incorporate those lands into the IFNM. Acquisitions would be dependent upon having a willing seller. In accordance with the Proclamation, no lands would be transferred out of Federal ownership. Under Alternative A, land tenure adjustments would focus on the acquisition of non-Federal land in the Waterman Mountains, Sawtooth Mountains, Agua Blanca Ranch area, Cocoraque Butte area, Silver Bell Mountains and three sections of land in the West Silver Bell Mountains. Closing 820 acres to OHV travel could restrict land use authorizations in these areas as a result of access limitations that would be enforced as part of the OHV closure. Under Alternatives B, C and D, land tenure adjustments would focus on acquisition of non-Federal land throughout the IFNM, on an opportunistic basis, rather than within specific areas. This would provide greater flexibility for BLM in prioritizing land for acquisition and would account for changing conditions in and around the IFNM. Under Alternative B, allocating the IFNM as an exclusion area without identifying any utility corridors would result in considering land use authorizations for rights-of-way only when required by law. Closing 38,040 acres to OHV travel could restrict land use authorizations in these areas as a result of access limitations that could be enforced as part of the OHV closure. Under Alternative C, closing 10,880 acres to OHV travel could restrict land use authorizations in these areas as a result of access limitations that could be enforced as part of the OHV closure. Allocating the IFNM as an avoidance area (except for 980 acres that are identified as a utility corridor) would limit opportunities for rights-of-way unless no other viable alternatives exist to avoiding placement of facilities within the IFNM. Corridors on 980 acres would provide limited opportunities for major utilities. Under Alternative D, allocating the IFNM as an avoidance area (except for identified utility corridors) would limit opportunities for rights-of-way unless no other viable alternatives exist to avoiding placement of facilities within the IFNM. The three corridors on 2,660 acres would provide limited opportunities for major utilities.

**Impacts on Travel Management**

Under all alternatives, fire suppression activities could require emergency access that may not be accommodated by the travel route system. Mining activity at valid existing claims could require additional access that may not be accommodated by the travel route system and could require additional routes be established for the specific purpose of a valid mining claim. Erosion prevention and land treatments to maintain or improve soil cover and productivity could improve road conditions. Acquiring lands would protect and potentially expand public travel and access within the IFNM because additional travel routes and access points could become available for public use. Under Alternative A, closing 820 acres to OHV travel and limiting motorized vehicle travel to existing or designated routes on approximately 127,580 acres would provide and extensive travel network on 347 miles throughout the IFNM. Under Alternative B, closing 38,040 acres to OHV travel and limiting motorized vehicle use to designated routes on the remaining 90,360 acres would provide a 71-mile travel network (plus County-administered and State Trust lands) throughout the IFNM. Under Alternative C, closing 10,880 acres to OHV travel and limiting motorized vehicle travel to designated routes on 142 miles would provide a travel network throughout the

IFNM. Under Alternative D, limiting motorized vehicle travel to designated routes on 128,400 acres would provide a 243-mile travel network throughout the IFNM.

**Impacts on Special Designations**

Under Alternative A, only decisions for special status species and special designations would affect the Waterman Mountain ACEC. The approximately 2,240 acres of BLM-administered lands would continue to be designated for the protection of the Nichol Turk's head cactus. Under Alternatives B, C and D the 2,240 acres of BLM-administered lands in the Waterman Mountain ACEC would not continue because the IFNM designation and managed proposed for the IFNM would provide protection of the special status species for which the ACEC was established.

**Impacts on Social and Economic Conditions**

Under all alternatives, management of the IFNM would protect monument objects recognizing the social value of resource preservation and conservation; this would include minor expenditures and earning associated with BLM management. Mining claims that predate the establishment of the IFNM could potentially be developed and economic gains would be realized commensurate with the scale of the development. Under Alternative A, livestock grazing would continue to generate economic gains from operators, depending upon stocking rates which would vary. Social values of ranching would continue under Alternatives A, C, and D. Under Alternative A, continuing custodial management of recreation would result in minor economic impacts (generally fees for permits); however, social conflicts would continue and possibly escalate over time if use of the IFNM increases. After existing grazing leases expire, under Alternative B, there would be a loss of economic activity associated with livestock grazing as well as a loss of the social value of ranching within the IFNM. Under Alternatives B, C, and D, opportunities for recreation would vary based on the differing allocation of RMZs, but all would provide for a variety of motorized and non-motorized recreational settings and opportunities. Under Alternative B, managing 36,990 acres for wilderness characteristics would recognize the social and non-market values of these areas; however, opportunities for uses that generate economic returns could be limited in these areas. Allocating the IFNM as an exclusion area for rights-of-way and not identifying any utility corridors would preclude opportunities for such facilities and the economic impacts. Under Alternative C, managing 9,510 acres for wilderness characteristics would recognize the social and non-market values of these areas; however, opportunities for uses that generate economic returns could be limited in these areas. Allocating the IFNM as an avoidance area for rights-of-way, except on 980 acres of identified utility corridors would limit, but not preclude, opportunities for such facilities and the associated economic impacts. Under Alternative D, allocating the IFNM as an avoidance area for rights-of-way except for 2,660 acres of identified utility corridors would limit, but not preclude, opportunities for such facilities and the associated economic impacts.

**Impacts on Public Safety**

Under all alternatives safety risks and hazards would exist to some degree. Emergency and rescue operations would be available on an as-needed basis regardless of the level of risk allowed under any of the alternatives. BLM's framework for hazardous materials management policies as provided in Manual Section 1703 (MS-1703) would be applicable to all alternatives. Implementing programs to reduce unwanted ignitions and maintaining full fire suppression would reduce risks and hazards. However, the use of hazardous materials, vehicles, or aircraft in association with these management activities could result in unintended spill or release of hazardous materials. Under Alternative A, allowing vehicle travel on 347 miles of existing or designated routes within the 127,580 acres open to motorized vehicles would present risks to public safety from vehicle based accidents. Under Alternatives A and D, allowing recreational shooting could present risks of exposure to hazardous materials and injuries in areas of intense recreational

use. Under Alternatives B and C, prohibiting recreational shooting except for permitted hunting would limit risks of exposure to hazardous materials and minimize risks to public safety from shooting activities. Under Alternative B, allowing vehicle travel on 71 miles of designated routes within the 90,360 acres available for vehicle travel would present risks to public safety from vehicle based accidents. Under Alternative C, allowing vehicle travel on 142 miles of designated routes within the 117,520 acres available for vehicle travel would present risks to public safety from vehicle based accidents. Under Alternative D, allowing vehicle travel on 243 miles of designated routes within the IFNM would present risks to public safety from vehicle based accidents.

**CUMULATIVE IMPACTS**

Potential cumulative impacts, projects, and actions in or near the IFNM were determined by examining other plans in the region, discussions with local governments and State and Federal land managers, and from information provided by BLM. The timeframe for this cumulative impact analysis encompasses past activities in the planning area since as early as 1860, but generally focuses on activities that occurred in the 1900s, present day activities and future activities that may extend 20 years into the future.

Cumulative impact on air quality could result in areas where direct impacts from different activities overlap. This could increase the amount of inhalable particulate matter such as $PM_{10}$ concentrations, which could contribute to continued $PM_{10}$ nonattainment status for air quality in portions of the IFNM and surrounding area.

Cumulative impacts on soil and water resources, and vegetation could occur from BLM management combined with proposed construction of additional urban and residential development, increased roads and highways, projects authorized as a result of the West-wide Energy Corridors, and the Southwest Transmission Company's Sandario Project could increase localized removal of or disturbance to vegetation. Comprehensive management plans as well as the IFNM RMP would restrict surface-disturbing activities, resulting in some mitigation of surface disturbance and vegetation removal.

The cumulative impact boundaries and impacts for wildlife and wildlife habitat vary by species. Cumulative impacts on the wildlife and wildlife habitat would result from surface disturbance and disruptive activities in and near the IFNM. Cumulative impacts from surface-disturbing activities could include habitat fragmentation, including some important movement corridors. State, county, and city comprehensive management plans would restrict surface disturbing activities, resulting in some mitigation of habitat degradation.

The cumulative impact boundaries for special status plant and wildlife vary by species. Cumulative impacts on the special status species habitat would result from surface disturbance and disruptive activities in and near the IFNM. Cumulative impacts from surface disturbing activities could include habitat fragmentation, including some important movement corridors. State, county, and city comprehensive management plans would restrict surface disturbing activities, resulting in some mitigation of habitat degradation.

With respect to fire ecology and management, increased residential development on private lands adjacent to the IFNM would increase the amount of wildland-urban interface (WUI) areas over the long term. Residential development and increasing recreational use would increase the potential for accidental human caused ignitions, which could spread into or out of the IFNM.

The proposed construction and additional residential development and infrastructure and/or utility improvements and expansions could disturb paleontological and/or cultural resources. These developments in conjunction with continued urban growth and recreational and other uses on public land also could

disturb paleontological and cultural resources. The loss of cultural resources resulting from development on non-public land adjacent to the IFNM and potential degradation of cultural resources could occur with increased visitation. Comprehensive management plans, including city and county plans may include provisions to protect and conserve paleontological and/or cultural resources.

Visual resources would continue to be affected by projects and activities that occur on lands that are not administered by the BLM, but which could be visible from public lands due to proximity and topography. Road construction, farming, mining, utility lines, and residential development tend to create visual contrasts along the borders of the IFNM. These types of activities combined with past actions have resulted in contrasts of texture, form, line and color that are often visible to the casual observer at varying distances. Future projects likely would involve increased residential development and road construction which would continue to create visual contrasts with the landscape. However, Pima County's Buffer Overlay Zone Ordinance, if applicable to the IFNM could require projects to "provide for an aesthetic visual appearance from and to Pima County's public preserves," resulting in some mitigation of the cumulative impacts on scenic and visual resources.

Major mining complexes and vehicle traffic associated with these facilities could diminish wilderness characteristics if these operations were in direct view from localized portions of the IFNM. Projects outside of the planning area could impact wilderness characteristics due to the visibility of the projects from within the IFNM. The development of residential housing to the north and east of the IFNM could be visible from higher elevations within the IFNM, such as the Sawtooth Mountains and the Samaniego Hills. However, wilderness characteristics in designated wilderness within 50 miles of the IFNM would be protected in perpetuity and cumulative impacts on these values would be very limited regionally.

Removal of vegetation as a result of surface-disturbing activities, the presence and abundance of grazing wildlife, and general human disturbance including illegal undocumented immigrant travel would result in diminished potential for livestock grazing within and outside of the IFNM. Increased recreation use, urban development, and the conversion of private or Arizona State Trust land to other uses could reduce forage and livestock numbers. Under Alternative B, managing BLM-administered lands as unavailable for livestock grazing after existing leases expire in conjunction with increased population growth and recreation demands could reduce the number of livestock operators. This could reduce the demand for livestock grazing on Arizona State Trust land and private land in the IFNM.

Various past, present, and reasonably foreseeable future actions affect, or could affect the supply and/or demand for recreational opportunities within the IFNM. The existence of other publicly accessible lands, including state and county parks, various State and regional trails, and the Sonoran Desert National Monument, provide various recreational opportunities. Increased vehicle-based recreation, closure of shooting ranges, and the growing urban and residential development, all would contribute to increased demand for recreational opportunities in the region.

Restrictions on rights-of-way and utilities near the IFNM could result from implementation of comprehensive plans, including HCPs, the Sonoran Desert Conservation Plan and Pima County Conservation Lands System. These plans, combined with areas protected as open space such as Saguaro National Park and other State and county parks, could concentrate rights-of-way in areas around, but outside of the IFNM. The West-wide Energy Corridor Programmatic EIS would not establish additional corridors within the IFNM, but could result in major utilities being located outside of the IFNM. Sales (or exchanges, if permitted in the future) of Arizona State Trust land could result in extensive change to surface management within the IFNM boundaries. If BLM acquired non-Federal lands, the demand for major and smaller-scale distribution facilities could decrease. However, BLM likely would need to increase rights-of-way issued if State Trust land within the IFNM boundaries was sold to private parties for future development.

Urban development patterns and areas protected from development have guided the location and development of many highways and roads near and within the IFNM. The continuing growth of vehicle-based recreation, urban development, planned road and highway projects and population growth are expected to increase demand and construction of transportation routes near the IFNM. Restrictions on the development of travel routes within the IFNM could increase the concentration of vehicles within the IFNM.

Trends such as population growth, increasing non-labor income, and the increasing importance of open space and preserved lands to the regional economy, are largely independent of the alternatives. However, as statewide and local economies shift towards the services sector and non-labor sources of income, BLM-administered lands take on a greater role in community economic development because they provide recreational opportunities and open space preservation to some extent. The small magnitude of socioeconomic impact of BLM's proposed actions relative to the increasing development of Pima and Pinal Counties are unlikely to impact tax revenues, employment, population growth, and development of the area overall. The presence of the IFNM may cause long-term increases in property values for adjacent landowners.

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# CHAPTER 1.0 INTRODUCTION

Under the authority provided in 16 United States Code (U.S.C.) 431, the Ironwood Forest National Monument (IFNM or monument) was established by Presidential Proclamation 7320 (Proclamation) for the purpose of protecting biological, cultural, geological, and other resource values (Appendix A). The U.S. Department of the Interior (USDI), Bureau of Land Management (BLM) Tucson Field Office has the responsibility of planning for and management of the IFNM.

In accordance with the Federal Land Policy and Management Act of 1976 (FLPMA), BLM is responsible for management of public lands and its resources based on the principles of multiple use and sustained yield. Management direction is provided by land use plans, which determine appropriate multiple uses, allocate resources, develop strategies to manage and protect resources, and establish systems to monitor and evaluate the status of resources and effectiveness of management. Land use plans are intended to guide management, allowing response to new legislation, changing policies, and changing uses of public land over extended time periods.

## 1.1 PURPOSE OF AND NEED FOR THE RESOURCE MANAGEMENT PLAN

A resource management plan (RMP) is being developed for the IFNM for two reasons: to specifically address management of lands within the IFNM in reference to the monument designation, and to implement BLM's policy to prepare a stand-alone RMP for all National Landscape Conservation System (NLCS) units, including the IFNM. Presently, the land within the IFNM is managed under the 1989 Phoenix Resource Area RMP (Phoenix RMP) as amended by the Arizona Standards for Rangeland Health and Guidelines for Grazing Administration (USDI, BLM 1997), the Arizona Statewide Land Use Plan Amendment for Fire, Fuels, and Air Quality Management (USDI, BLM 2003a), and the 1987 Eastern Arizona Grazing Environmental Impact Statement (EIS), when decisions in these documents are consistent with the Proclamation. Wildlife habitat plans, such as the Silver Bell Habitat Management Plan, and allotment management plans provide specific management direction and actions for wildlife and range programs on lands within and immediately adjacent to the IFNM. In addition, BLM has been following an interim guidance document for managing public land within the IFNM until the new RMP is completed and approved (USDI, BLM 2001a).

Since the Phoenix RMP and Eastern Arizona Grazing EIS were developed, numerous changes have occurred in the planning area that require reconsideration of existing management decisions. The most significant change in relation to this RMP is the establishment of the IFNM, but other changes are also relevant. For example, the continuing urban growth of the Tucson and Marana metropolitan areas has increased the demand for public land to accommodate many forms of recreational activity, and these pressures demand increased consideration of management for the protection of monument resources and values.

## 1.2 OVERVIEW OF THE PLANNING AREA

The IFNM lies in the Sonoran Desert ecosystem of southern Arizona, and is a unique scenic area of rolling desert and ironwood woodlands including the Silver Bell, Waterman, Roskruge, and Sawtooth Mountains. Much of the vegetation in this area is classic Sonoran Desert upland habitat, dominated by saguaro, Bigelow's cholla, and staghorn cholla cacti. Other common vegetation includes ironwood and paloverde trees, creosotebush, brittlebush, triangle-leaf bursage, ocotillo, and white thorn acacia. Jojoba dominates the chaparral community on the upper slopes of the Silver Bell Mountains. The lower bajadas contain inter-braided streambeds that carry water after heavy rains. These desert wash habitats are characterized by large ironwood, blue paloverde, and mesquite trees.

The IFNM encompasses most of the mountain ranges that are important to the diverse wildlife and plant communities associated with the ironwood/saguaro forest. In addition, the IFNM contains habitats for several endangered species and species of concern (e.g., desert tortoise), an area of critical environmental concern (ACEC) to protect an endangered cactus, and a desert bighorn sheep special management area. IFNM also includes a site and two archaeological districts listed on the National Register of Historic Places (National Register), and historical mining camps and other cultural resources that are eligible for listing on the National Register.

The IFNM is located in Pinal and Pima Counties, Arizona, approximately 80 miles south of Phoenix and 25 miles northwest of Tucson, Arizona (Map 1-1: Location of the Ironwood Forest National Monument in Arizona). The IFNM is bordered by the Tohono O'odham Indian Reservation on the west and unincorporated county land otherwise. The closest population center is the Town of Marana to the east. The IFNM boundaries encompass Federal public land, Federal military land, State Trust Land, and private land (Map 1-2: Surface Management). Table 1-1 summarizes acreages by surface manager or owner.

**Table 1-1: Surface Management/Ownership of Land Within the IFNM**

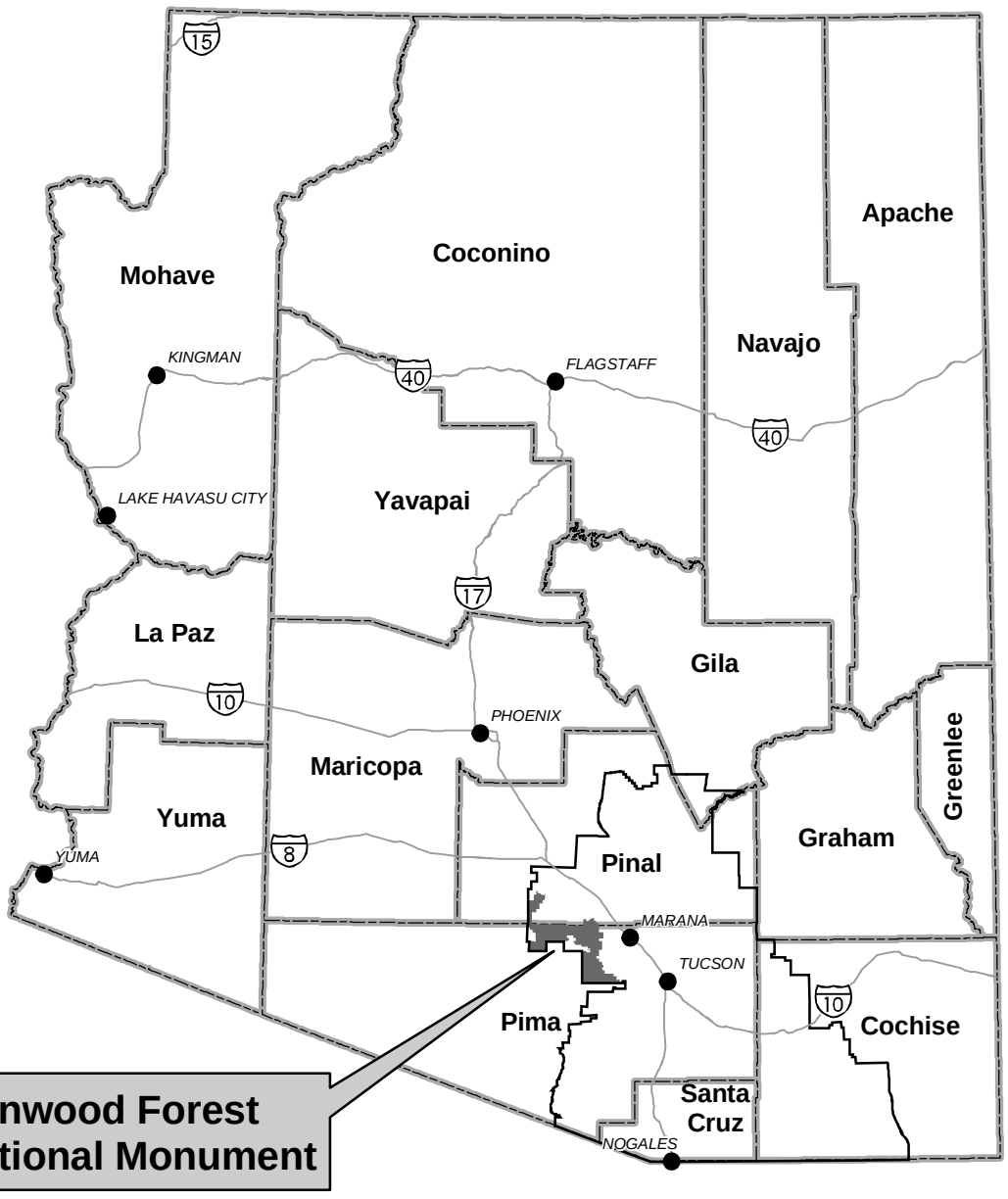
| Surface Administrator/Owner | Acres[1] within the Planning Area | Percent of Planning Area |
|---|---|---|
| BLM | 128,398 | 68 |
| State of Arizona | 54,741 | 29 |
| Pima County | 632 | <1 |
| Department of Defense | 299 | <1 |
| Private | 4,549 | 3 |
| **TOTAL** | **188,619** | **100** |

SOURCE: U.S. Department of the Interior, Bureau of Land Management 2003b
NOTE: [1] Unless otherwise noted, acreages specified in this document are derived from a geographic information system (GIS) based on the best available data.

Three terms used in this document describe the areas under study. The "planning area" includes all lands within the boundaries of the IFNM, regardless of ownership or jurisdiction. The planning area in this case is 188,619 acres. The "decision area" is all public land and all Federal mineral estate within the boundaries of the IFNM, over which BLM has decision authority. Federal mineral estate is sometimes located beneath land owned or managed by entities other than the Federal Government. Lands where this occurs are referred to as "split estate" lands. BLM's decision area comprises 128,398 acres of surface land and 149,360 acres of Federal mineral estate, about 17,900 acres of which are split estate. The land use allocations, designations, and management prescriptions presented in Chapter 2 apply only to public lands and mineral estate administered by the BLM. If non-Federal lands are acquired, they would be managed according to the allocations depicted on the maps. The term "study area" also is used to describe the area being studied. The aerial extent of the study area differs for some resources or resource uses. The study area for most resources is the planning area; however, certain resources or resource uses are more appropriately addressed using a larger area when potential effects would extend beyond the planning area. For example, this is the case with the effects on air quality and on social and economic conditions within the region.

## 1.3 PURPOSE, SIGNIFICANCE, VISION, AND GOALS OF THE IFNM

The IFNM was established to protect an area within the Sonoran Desert that is representative of the richness and diversity of this unique desert environment that stretches from the American Southwest into Mexico. The lands are significant because they are host to biological communities that have endured for centuries, and because they contain superb vistas of native vegetation against dramatic mountain scenery.

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**Legend**

**Planning Area**

- Ironwood Forest National Monument Planning Area
- Tucson Field Office Boundary

**General Reference**

- County Boundaries
- Interstate

Universal Tranverse Mercator
Zone 12, Units Meters
Clark 1866 Spheroid
NAD27 Datum

0 25 50 100 Miles

# Location of the Ironwood Forest National Monument in Arizona

Map 1-1

P:\BLM\Ironwood\GIS\Plots\RMP_EIS\Chapter_1\StateLocator.pdf

The vision statement for the IFNM reflects a concern to preserve this valuable resource, as well as make it available to an appreciative community that has enjoyed unrestricted access over the years. The sections below provide an expanded description of the purpose of the IFNM, the area's significance, and the vision statement that was developed to guard and showcase this natural resource, as well as the goals established for the protection of monument objects. All of these have been and will continue to be used to guide development of this RMP and subsequent management actions.

The overall management purpose is derived, principally, from the FLPMA, which recognizes the value of our Nation's public land and was established to protect the quality and health of public lands for the use and enjoyment of later generations. Other laws and legal mandates also are considered during the process, and help establish goals and objectives for the planning area. Partner agencies, American Indian tribes, and the public have all been invited to participate in the RMP process. The following statements of purpose and significance of the IFNM, and the goals established for the IFNM have been derived from an elaborate collaboration of effort that incorporated consideration of all of the above.

### 1.3.1 Purpose

The IFNM was designated to protect the richness of resources within the monument, including the drought-adapted vegetation of the Sonoran Desert within its borders. Stands of ironwood, paloverde, and saguaro populate the foothills beneath the rugged mountain ranges, including the Silver Bell Mountains and Ragged Top. The purpose of the IFNM is to preserve, protect, and manage the cultural and geological resources, and other objects of this area for future generations, and to further our knowledge and understanding of these resources through scientific research and interpretation.

### 1.3.2 Significance

The IFNM was established to preserve a quintessential part of the Sonoran Desert and preserve outstanding views of ancient legume and cactus forests. The variations in topography and geological features within the monument's boundaries provide the context for a rich diversity of biological communities. The ironwood, for which the monument is named and which is able to survive in excess of 800 years, generates a chain of influences on associated understory plants, affecting their dispersal, germination, establishment, and rates of growth. Ironwood is the dominant nurse plant in the region, providing, among other things, roosting sites for hawks and owls, forage for desert bighorn sheep, protection for saguaros against freezing, burrows for tortoises, flowers for native bees, dense canopy for nesting white-winged doves and other birds, and protection against sunburn for night blooming cereus.

The ironwood-bursage habitat in the Silver Bell Mountains is associated with more than 674 species, including 64 mammalian and more than 70 bird species. The IFNM is home to species listed as threatened or endangered by the Federal Government, including the Nichols Turk's head cactus and the lesser long-nosed bat. In addition, the IFNM provides habitat for desert bighorn sheep, Sonoran Desert tortoise, and other wildlife of special concern.

In addition to the rich biological and geological resources and objects, the planning area holds abundant rock art sites and other archaeological objects of scientific interest. Humans have inhabited the area for more than 5,000 years. More than 200 sites from the prehistoric Hohokam period (600 A.D. to 1450 A.D.) have been recorded in the area. Two archaeological districts have been identified within the IFNM and listed on the National Register—the Los Robles Archeological District and the Cocoraque Butte Archaeological District. The planning area also contains the remnants of the Mission Santa Ana de Cuiquiburitac, the last mission constructed in the Pimería Alta, which also has been listed on the National Register.

# Surface Management

**Ironwood Forest National Monument**
**Draft RMP/EIS**

## Legend

### Surface Management

- Bureau of Land Management
- National Park Service
- Bureau of Reclamation
- American Indian Reservation
- Military Reservations
- State Trust Lands
- State, County, City; Wildlife, Park and Outdoor Recreation Areas
- Private
- Pima County

Data Source:
Base Information: BLM 2003
Quadrangle Image: U.S. Geological Survey 1977 Tucson

### General Reference

- County Boundaries
- Central Arizona Project (CAP) Canal
- River
- Interstate 10
- Main public access routes to monument. County administered roads connecting monument travel route system to public highways.

### Planning Area

- Ironwood Forest National Monument

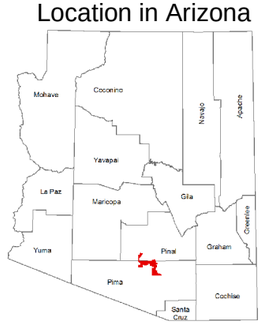
Universal Tranverse Mercator
Zone 12, Units Meters
Clark 1866 Spheroid
NAD27 Datum

No warranty is made by the Bureau of Land Management (BLM) for the use of this map for purposes not intended by BLM, or to the accuracy, reliability, or completeness of the information shown. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification.

0 1 2 4 Miles

0 2 4 8 Kilometers

Location in Arizona

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Map 1-2

### 1.3.3 Vision

BLM enlisted the public's participation in crafting a vision statement for the IFNM that would help guide development of the RMP. A series of public workshops held in the spring of 2004 to introduce BLM's programs and the planning process produced a statement calling for both preservation and access: "Ironwood Forest National Monument is a place where the Ironwood-rich Sonoran Desert ecosystem, including its open spaces, outstanding vistas, and unique resources, is conserved, protected, and enhanced while providing opportunities for recreation, education, and other allowable uses for the enjoyment and appreciation of present and future generations."

### 1.3.4 Overarching Goals

The following management goals have been derived from the vision for the IFNM, as described above:

- Protect, enhance, and restore biodiversity, habitat integrity, and population viability of the native biotic community.
- Protect cultural resources to conserve their integrity and values.
- Protect biological, geological, and archaeological objects of scientific interest, and views of the Sonoran Desert.
- Provide for compatible, sustainable multiple-use and safe enjoyment of public land.
- Encourage community and agency coordination and collaboration for managing and protecting the monument.
- Expand understanding and appreciation of the IFNM and its natural and cultural resources.
- Use a landscape-based approach to maintain and enhance the natural, cultural, and scenic resources of the IFNM.
- Pursue partnerships to promote social and economic benefits to local communities, visitors, organizations, interest groups, and future generations, and to enhance management of public land.

## 1.4 LEGISLATIVE REQUIREMENTS

The RMP process is both inspired and constrained by the Proclamation, FLPMA, and the National Environmental Policy Act (NEPA). These and other regulations and policies provide the framework for management of the IFNM.

### 1.4.1 Presidential Proclamation 7320

President William J. Clinton issued Presidential Proclamation 7320 to establish the IFNM on June 9, 2000. Its stated purpose is to reserve the public land within the boundaries of the IFNM established by the proclamation to protect sensitive biological, cultural, geological, and other resource values bound up in the land of that area. The Proclamation is provided in Appendix A.

### 1.4.2 Federal Land Policy and Management Act of 1976

FLPMA established in 1976 that public land be managed according to the principles of multiple use and sustained yield, and in a manner that affords protection to the natural environment. In accordance with

those goals, BLM manages public lands so that they are used in a combination that will best meet the present and future needs of the American people for renewable and nonrenewable natural resources.

### 1.4.3 National Environmental Policy Act

NEPA was signed into law in 1970. As a result of its passage, the Federal Government cannot undertake any "major federal action" unless and until the environmental consequences of that action have been thoroughly assessed. The act requires that the Federal Government adhere to a standard procedure for determining the environmental impact of decisions and/or projects, and encourages decision-makers within Federal agencies to consider the environmental impact of every major project with Federal involvement. NEPA also requires Federal agencies to involve interested groups and the public in its decision making process (42 USC 4331).

### 1.4.4 Other Regulations and Policies

This Draft RMP/EIS is being developed in accordance with the requirements set forth in the BLM H-1601-1 Land Use Planning Handbook, all current instruction memorandums and bulletins; Title 43, Code of Federal Regulations 1600 (43 CFR 1600); BLM supplemental guidance; Council on Environmental Quality (CEQ) guidelines for implementing NEPA (40 CFR 1500-1508), and other associated regulations and guidance.

## 1.5 PLANNING CRITERIA

BLM planning regulations (43 CFR 1610) require the preparation of planning criteria as preliminary to the development of all plans. Planning criteria establish the principles that will guide the development of the plan and influence all aspects of the planning process, including collection of resource and resource use inventory data, development of alternatives, analysis of impacts, and ultimately the selection of a preferred alternative. In effect, planning criteria ensure the planning process remains focused on the identified issues, and prevent unnecessary data collection and analysis.

Planning criteria are developed on the basis of applicable laws, agency guidance, public involvement, data analysis, professional judgment, and coordination with other Federal, State, and local governments and American Indian tribes. Appendix B provides the planning criteria for this planning effort and identifies the laws, regulations, and policies that form the basis for these criteria.

## 1.6 PLANNING PROCESS AND COLLABORATION

After the IFNM was established by Presidential Proclamation in June 2000, the BLM Tucson Field Office initiated the collaborative process that would build a solid foundation of community trust and respect throughout the preparation of the Draft RMP/EIS. The initial public involvement effort occurred prior to public scoping, as there was strong public support for the IFNM and a corresponding interest in how it would be managed. Public informational meetings were held between August 2000 and March 2002 to encourage the community dialogue. These meetings were well attended and a diversity of interests were represented. Representatives from several conservation and user groups, as well as Federal, State, tribal, and local agencies were in attendance. Other public information efforts included presentations to community councils, business and social groups, and various organizations.

The formal public scoping process was initiated on April 24, 2002, with publication of a notice of intent to prepare the RMP/EIS in the *Federal Register*. A detailed description of all issues identified during scoping, can be found in the IFNM Scoping Report (USDI, BLM 2004a). The scoping report is available on the BLM's web site at http://www.blm.gov/az/lup/ironwood/reports.htm.

BLM hosted nine meetings in communities throughout southern Arizona. After public scoping was completed, BLM continued to have informal discussions with agencies, organizations, and individuals interested in the IFNM RMP/EIS. BLM also attended various organized meetings as a guest to provide information regarding the IFNM RMP/EIS.

BLM also hosted meetings in September and October 2004 to provide information regarding preservation of wilderness characteristics, access, educational opportunities, public health and safety, social and economic conditions near the IFNM, and military uses in and around the IFNM. BLM also arranged a series of field trips, as requested by the workshop participants. Seven field trips occurred between December 2004 and March 2005, covering the IFNM-related topics of mining, cultural resources, ranching uses, recreational uses, wildlife waters, vegetation, and wildflowers and birding.

In August 2005, BLM hosted a workshop on the preliminary draft alternatives to present the range of management strategies that would be considered for the IFNM. During and following this meeting, BLM accepted comments from the public on the preliminary draft alternatives, and used these comments to broaden the range of alternatives to what is now analyzed within this Draft RMP/EIS. In addition, BLM met with representatives of the Tohono O'odham Nation in January 2006 to review specific aspects of the alternatives.

### 1.6.1 Cooperating Agencies

(CEQ regulations, which are contained in 40 CFR 1501.6 and 1508.5, implement the NEPA mandate that Federal agencies responsible for preparing NEPA analysis and documentation do so "in cooperation with State and local governments" and other agencies with jurisdiction by law or special expertise (42 USC 4331(a), 4332(2)). Cooperating agency status allows interested agencies to assume responsibilities beyond attending public meetings, and to both review and comment on plan documents. In support of this mandate, BLM invited more than 200 Federal, State, local, and tribal agencies to become cooperating agencies on the development of the IFNM RMP, and a cooperating agency meeting was held at the BLM Arizona State Office on October 30, 2002, to discuss BLM's planning process, collaborative planning, and the meaning and responsibilities of cooperating agency status. Opportunities for involvement in BLM's planning process without becoming a cooperating agency also were discussed.

The Arizona Game and Fish Department (AGFD) established a Memorandum of Understanding (MOU) with the BLM Arizona State Office to work as a cooperating agency on various plans within the State, including the IFNM RMP. The MOU describes the responsibilities of BLM and AGFD with regard to the planning process. The agencies' responsibilities as outlined in the MOU are consistent with the Sikes Act (16 U.S.C. 670 et seq.), which authorizes the USDI, in cooperation with State agencies responsible for administering fish and game laws, to plan, develop, maintain, and coordinate programs for conserving and rehabilitating wildlife, fish, and game on public lands within its jurisdiction. Beyond the development of the RMP, BLM and AGFD will continue to work cooperatively to manage resources within the IFNM. BLM is responsible for managing wildlife habitat on BLM land and AGFD, through the authority of the Arizona Game and Fish Commission, has public trust responsibility to manage fish and wildlife. The close, cooperative nature of the relationship is cited throughout this document. At the writing of the Draft RMP/EIS, BLM and AGFD are revising the current Master MOU, which establishes protocols that direct the cooperative working relationship between the agencies. The MOU will provide context to better enable both agencies to work in partnership and to make decisions in a consistent manner across the state. The guidelines established in the MOU apply to implementation of this RMP.

Though no other State agency or county or local government agreed to be a cooperating agency during development of the Draft RMP/EIS, several have been actively engaged in the planning process. BLM has worked closely with the Arizona State Land Department (ASLD) to coordinate management on public

lands in the monument and set up a framework for future cooperative agreements regarding specific lands and routes that are administered by ASLD within the boundary of the IFNM. Pima and Pinal Counties initially expressed interest in becoming cooperating agencies, but instead have participated through various meetings with BLM, as well as the public meetings. In addition, the City of Marana established a specific agreement with the BLM to collaborate throughout the process.

### 1.6.2 Tribal Consultation

As part of the scoping effort, BLM contacted the following tribes to initiate consultations and reissue an invitation to participate as a cooperating agency:

- Tohono O'odham Nation
- Gila River Indian Community
- Ak-Chin Indian Community
- Pasqua Yaqui Indian Community

Though none chose to assume cooperating agency status, all elected to remain involved in the planning process. Due to their proximity to the IFNM, BLM also arranged meetings with the Gila River Indian Community in October 2004 and the Tohono O'odham Nation in August 2005 to brief tribal members on the progress of the planning process and identify ways to remain engaged. BLM also provided the preliminary draft alternatives to the tribes in September 2005. In addition, BLM met with representatives of the Tohono O'odham Nation in January 2006 to review specific aspects of the alternatives.

## 1.7 PLANNING ISSUES

Planning issues are derived from scoping, which takes place in the preliminary stages of the planning process to solicit public and agency input to help identify the relevant issues and define the range of environmental analysis to be undertaken for the Draft RMP/EIS.

The planning issues identified through the scoping process included a variety of resources and resource uses. The comments and issues identified assisted in determining the scope of the studies completed and addressed in this Draft RMP/EIS. However, some issues raised during scoping were considered but not analyzed in detail such as (1) wilderness designations, (2) the immediate elimination of livestock grazing, and (3) designation of a new route network, as recommended by a consortium of interested parties. These issues were not analyzed because BLM does not have authority to establish wilderness areas or wilderness study areas (WSAs); the Proclamation allows for continued grazing; and the proposed route network did not consider access to private inholdings or State Trust Land, where BLM could be required to provide access (see Section 2.2, Alternatives Considered but Not Analyzed in Detail). Potential decisions about the planning issues identified below are presented in Chapter 2 (Alternatives).

Key planning issues considered for developing alternatives in this Draft RMP/EIS included the following:

### 1.7.1 Vegetation

- What management actions will provide for preservation of existing plant communities and biodiversity?
- How will BLM manage potential impacts on plants from recreation, land development on State Trust Lands and private inholdings, grazing, and areas where there are existing mining claims?

- How will grazing and off-highway vehicle (OHV) use be managed for preventing the introduction and spread of noxious weeds into and within the IFNM?

### 1.7.2 Wildlife and Wildlife Habitat

- What management actions will protect wildlife and wildlife habitat?
- How will nearby human activity be managed to limit adverse impacts on the desert bighorn sheep population and lambing habitat?
- How will BLM manage potential conflicts with habitat and wildlife corridors from grazing, recreational shooting, camping activities, OHV use, land development on State Trust Lands and private inholdings, grazing, and areas where there are existing mining claims?

### 1.7.3 Special Status Species

- How will BLM give precedence to protection and restoration of habitat for threatened and endangered species and wildlife of special concern (as listed by the AGFD) species identified by local governments?

### 1.7.4 Cultural Resources

- How will BLM manage public access to potentially sensitive cultural resource sites?

### 1.7.5 Visual Resources

- How will BLM manage threats to scenic values of the IFNM from visitor facilities and OHV use?

### 1.7.6 Wilderness Characteristics

- How will BLM manage areas within the IFNM to protect wilderness characteristics?

### 1.7.7 Energy and Mineral Resources

- What management actions will be conducted to avoid potential impacts on wildlife, vegetation, water quality, and soil resources from ground-disturbing activities within the IFNM, including mining where valid existing rights occur?

### 1.7.8 Grazing/Livestock Management

- How will BLM manage grazing to be compatible with multiple uses within the IFNM?

### 1.7.9 Recreation (including visitor facilities)

- What management actions will be conducted to limit recreational activities (e.g., hiking, horseback riding, biking, camping, hunting, and recreational shooting) to protect resources within the IFNM from degradation?
- What visitor facilities should BLM provide within the IFNM?

### 1.7.10 Lands and Realty

- How will BLM evaluate and/or prioritize land acquisitions of private and State Trust Land within the IFNM boundaries?

### 1.7.11 Travel Management

- How will BLM manage access into the IFNM from adjacent lands and communities (e.g., State and private inholdings and Tohono O'odham Nation lands)?

## 1.8 RELATED PLANS

Based on the location of the IFNM, BLM reviewed and considered existing Federal, State, and local management plans that relate to the IFNM. Federal plans include recovery plans from the USFWS for federally listed species. The State plans cover the management of water resources through Active Management Areas (AMAs) by the Arizona Department of Water Resources (ADWR) and the management of fish, wildlife, and natural habitats through the Comprehensive Wildlife Conservation Strategy by the AGFD. Local plans include comprehensive plans for Pima and Pinal Counties (Pima County 1992; Pinal County 2001). In addition, the general plans for the cities of Tucson and Marana have been reviewed, though the IFNM lies outside the municipal boundaries of both cities (City of Tucson 2001; Town of Marana 2002). Relevant information from each of these plans is summarized below. The Tohono O'odham Nation, a neighboring jurisdiction, does not have a land use plan for areas near the IFNM. Planning decisions for land within the Tohono O'odham Indian Reservation typically are made on a case-by-case basis and involve community, district, and tribal leaders and elected officials in a decision-making process that parallels that of the U.S. Government. Land is primarily administered by the Tohono O'odham Tribal Council and political subdivisions of the Tohono O'odham Nation, called districts. The Schuk Toak and Sif Oidak districts parallel the western boundary of the IFNM.

### 1.8.1 Federal

In 1986, the USFWS developed a Recovery Plan and Habitat Management Plan for the endangered Nichol Turk's Head Cactus (*Echinocactus horizonthalonius var. nicholii*), which occurs within the IFNM. The recovery plan and the habitat management plan exist "to remove the species from the federally threatened and endangered list by managing and protecting the essential habitat of the existing population and by decreasing collection pressure" (USDI, USFWS 1986). The recovery plan is achieved by protecting seventy-five percent of the existing known habitat Alleviating threats to the species' habitat, enforcing laws against collection of the species, and development of a Habitat Management Plan are included as species recovery actions. The Habitat Management Plan identifies the following management objectives: (1) protect the habitat, (2) provide optimum habitat for naturally occurring populations, and (3) assist in the recovery of the plant (USDI, BLM 1986a).

In 1994, the USFWS developed the Lesser Long-nosed Bat (*Leptonycteris curasoae verbabuenae*) Recovery Plan. The plan requires protection of bat roost sites and columnar cacti (food source for bat), and monitoring and survey for undiscovered the roost sites and bat populations. The plan also calls for public education and information about the beneficial aspects of the bat species. USFWS also must conduct ongoing research of the bats' life history, population census, and reproduction and mating systems to assist in species recovery (USDI, USFWS 1994).

### 1.8.2 State

ADWR establishes management plans for AMAs throughout Arizona. Two AMAs are relevant to the IFNM, the Pinal and Tucson AMAs. The overall goals of the AMAs are to (1) achieve a safe-yield groundwater supply by 2025 so that the amount of groundwater pumping that occurs within AMAs does not exceed the natural or artificial recharge amount, and (2) preserve future water supplies coupled with the preservation of existing agricultural economies (ADWR 1999a, b). Both management plans consist of

water conservation programs for agriculture, industrial, and municipal programs along with plans for maintaining groundwater quality, aquifer recharge efforts, and implementation plans.

AGFD developed a Comprehensive Wildlife Conservation Strategy, which is a 10-year vision for managing Arizona's fish, wildlife and natural habitats. This effort included input and partnerships with various agency cooperators, sportsman and recreational groups, conservation organizations, special interest groups, Native American tribes, county and municipal governments, and the general public (AGFD 2006). The Comprehensive Wildlife Conservation Strategy serves to ensure that funds provided through the program are spent wisely and effectively on restoration and enhancement of wildlife populations and habitat. Projects supported by State wildlife grants can include restoration of degraded habitat, reintroduction of native wildlife, development of partnerships with private landowners, education of the public, and collection of data to find out more about declining species.

### 1.8.3 County and Local

#### 1.8.3.1 Pima County

The Pima County Comprehensive Plan promotes the conservation and preservation of Sonoran Desert ecology through public policy and community programs that address water conservation, habitat protection, and preservation of washes and protected ridges and peaks (Pima County 1992). The plan offers strategies to incorporate consideration of the "desert community" into all urban planning efforts in recognition of the region's unique scenic beauty, desert ecology, and cultural heritage. The Conceptual Land Use element priority program is a design review mechanism included in the plan to ensure that development responds to its natural surroundings. Pima County has developed this regional comprehensive plan to encourage each jurisdiction within the county to recognize and protect the unique features that characterize the county (Pima County 1992).

Pima County also developed the Sonoran Desert Conservation Plan, which integrates six conservation elements to protect the County's natural resources (Pima County 1998). BLM is identified in the plan as an active governmental agency committed to acquiring additional land for the purpose of natural resource conservation which, in some cases, makes county action unnecessary. Pima County recognizes the benefits to the larger regional planning process of the efforts of other agencies, including elements of BLM plans and the actions of other Federal, State, and local entities.

Lands adjacent to the IFNM are designated as low intensity rural, resource productive, and resource conservation areas, all three of which are special designations to protect the unique qualities or characteristics of the area or provide incentives to promote certain types of development. In order to preserve and protect significant open space in the vicinity of public preserves while encouraging reasonable use of lands for economic development, the Pima County Code Buffer Overlay Zone was created. The land use regulations for properties within the overlay zone stipulate that "mechanisms to protect public preserves and result in an ecologically sound transition between the preserves and more urbanized development will be established" and will "neither promote nor discourage changes in underlying zoning, but rather provide continuing performance standards for the unique lands" within the zone. Land parcels of 25 acres or more within 1 mile of public preserves are subject to Buffer Overlay Zone conformance standards.

#### 1.8.3.2 Pinal County

The Pinal County Comprehensive Plan states that growth is "transforming the region from an agricultural center to a vibrant commercial, industrial, and recreational hub. The comprehensive plan addresses the challenges facing the county and presents opportunities for the continuing success and diversity of the region." The natural environment element of the plan focuses on preserving and protecting the natural and

cultural heritage of Pinal County through protection of scenic areas, cultural resources, wildlife habitat, natural plant communities, wildlife corridors, and riparian areas. Goals and objectives have been developed to protect Pinal County's natural beauty and environmental quality and promote a balance between conservation of the natural environment and development (Pinal County 2001).

The Pinal County areas adjacent to the IFNM are designated as rural, a designation that includes lands that are non-urban and are suitable for lower density development including agriculture, grazing, mining, sand and gravel operations, large-acre home sites, small farms, minimal to non-existent public services, open space, and selected industrial uses (i.e., those not requiring an industrial use permit). Areas designated as rural are not suitable for urban development, only low-density housing is allowed. Single-family density housing cannot exceed one dwelling unit per acre and multiple-family development is "discouraged from locating in the rural land use category until it is reclassified to another land use."

#### 1.8.3.3 City of Tucson

The City of Tucson has developed a general plan to provide guidance and balance in areas of growth. The plan recognizes the Pima Association of Governments "Regional Vision Statement" and the benefits of coordinating with regional jurisdictions and agencies in planning for parks, recreation, open space, and trails. The plan encourages designation of natural preserves and establishment of large parks to complement open space on public lands.

The general plan provides for establishment of desert belts and expanded linear parks to link public lands while providing protection for plants and wildlife. It emphasizes Tucson's commitment to preservation of natural resources and establishes policy to preserve interconnected, undisturbed open spaces. These policies focus largely on providing open space for public use and the implementation of open space preservation principles to positively impact desert wildlife, natural habitats, cultural preservation, and critical and sensitive lands (City of Tucson 2001).

#### 1.8.3.4 Town of Marana

The Town of Marana has developed a general plan and supplemental plans to provide specific regulations for development (Town of Marana 2002). The plans emphasize three main goals: community values, orderly growth, and economic opportunity. Growth and economic development are closely linked to the natural environment and conservation of the large natural open space surrounding Marana, primarily managed by Federal, State, and local entities.

The plan emphasizes the need for preservation of natural and cultural resources and the provision of open space with the intent to guide future development in an environmentally sensitive manner. More specifically, it recommends that guidelines and mitigation standards be created for any development within 1 mile of Saguaro National Park, IFNM, and the Tortolita Mountains in order to protect unique biological habitat areas within natural open space ecological areas and riparian corridors, protect viewsheds of natural open space and significant natural features (Town of Marana 2002).

# CHAPTER 2.0 ALTERNATIVES

## 2.1 OVERVIEW OF THE ALTERNATIVES

Bureau of Land Management (BLM) has developed four alternative management strategies for managing public lands within the Ironwood Forest National Monument (IFNM). Alternative A is a "No Action Alternative;" that is, it proposes no new plan. Under this alternative, management of public land within the IFNM would continue under existing planning documents, as modified by Presidential Proclamation 7320 (Proclamation) and additionally guided by BLM's Interim Management Policy. Alternatives B, C, and D (the "action alternatives") would each affect more change in management—each includes proactive responses to existing conditions and circumstances, which in many cases may have changed since the existing planning documents now in force were written. Establishment of the IFNM is, of course, the best example of this. Each alternative has a different emphasis, or theme, of management that reflects a different response to the Federal mandate to balance use and conservation of resources on public lands. All four alternatives comply with the Proclamation and with all other applicable laws, regulations, and policies. Uses of land and resources that are not permitted by the Proclamation have been excluded from consideration.

**ALTERNATIVE A (NO ACTION)** – Alternative A would continue management of public land within the IFNM according to the management prescriptions of the 1989 Phoenix Resource Management Plan (RMP) and the Eastern Arizona Grazing Environmental Impact Statement (EIS), as amended by the Arizona Statewide Land Use Plan Amendment for Fire, Fuels, and Air Quality Management (USDI, BLM 2003a) and the Arizona Standards for Rangeland Health and Guidelines for Grazing Administration (USDI, BLM 1997). Alternative A also would include modifications to management mandated by the Proclamation. A description of this strategy outlines the current management guidance and the allowable uses as determined by these two planning documents, as modified by the Proclamation. The Interim Management Policy (Instruction Memorandum 2002-008) also would provide additional guidance until a new RMP takes effect. In other words, the No Action alternative is current policy and would continue to be in effect until another RMP is approved (USDI, BLM 2002a).

**ALTERNATIVE B** – The management theme of Alternative B is preservation—it is the most restrictive strategy, designed to protect the IFNM's resources by limiting use of the area's resources to an allowable minimum. This alternative places more restrictions on motorized travel throughout the IFNM and favors dispersed, non-motorized recreational activities over motorized recreational activities. The types of allowable uses and the intensity of those uses are restricted to provide the strongest, reasonable protection for objects of historic, scientific, and aesthetic interest within the IFNM. Livestock grazing would be prohibited on public land upon expiration of existing leases. While developing this alternative, BLM sought to determine the minimum amount of allowable uses of monument resources that would still conform to the guiding principle of multiple use of public lands, as set forth in the Federal Land Policy Management Act (FLPMA).

**ALTERNATIVE C** – Alternative C is BLM's preferred alternative. It incorporates elements from each of the other alternatives to strike a balance between long-term conservation of public land and resources within the IFNM, and uses that have traditionally taken place on the land within the IFNM, such as grazing and recreation. In sensitive resource areas, Alternative C would provide a higher level of resource protection and less public use; however, greater opportunities for public use would be allowed outside those areas. More routes would be designated as open for motorized travel (although fewer miles would be designated for motorized use as compared with Alternative D). Areas of public land within the West Silver Bell Mountains and the Roskruge Mountains would be managed to maintain wilderness characteristics. Cultural resource sites would be open to scientific and public uses, and livestock grazing

would be allowed perennially on all allotments that are meeting public land health standards and following guidelines for grazing administration.

**ALTERNATIVE D** – The management theme of Alternative D is access—it emphasizes the maintenance of existing public access to IFNM lands and resources. It identifies areas that are most appropriate to accommodate various uses—especially those identified as desirable during public scoping—and emphasizes those uses, particularly with respect to transportation and recreation. This alternative would include the most miles of roads and trails designated for motorized use, allow for establishment of more recreational sites (e.g., campsites), and the entire monument would be available for grazing. When developing this alternative, BLM sought to define a maximum amount of allowable uses of IFNM resources that would still provide adequate protection of the monument's objects and conform to the guiding principle of sustained yield of renewable resources on public land, as set forth by the Proclamation and FLPMA. That is, how many types of uses could be allowed (e.g., recreation and grazing) and how intense could those uses be (e.g., open versus restricted access, and year-round versus seasonal) without violating resource protection requirements, goals, and objectives.

## 2.2 ALTERNATIVES CONSIDERED BUT NOT ANALYZED IN DETAIL

This section briefly describes management actions that were recommended by the public through the scoping process or the preliminary draft alternatives workshop but were not incorporated in any of the alternatives carried forward for detailed analysis in this EIS. These are presented below, along with the rationale for excluding them from further detailed consideration.

### 2.2.1 Wilderness

BLM received suggestions from a citizen group that the new RMP establish new wilderness study areas (WSAs) within the IFNM. Consistent with BLM policy, the Secretary of the Interior's letter to Senator Robert Bennett (dated April 11, 2003), and the settlement in the case of Utah v. Norton (dated April 14, 2003), BLM has the authority under FLPMA Section 201 to inventory public land resources and other values, including characteristics associated with the concept of wilderness identified as naturalness, solitude, and primitive, unconfined recreation. Wilderness characteristics may be considered in land use planning when the BLM determines that those characteristics are reasonably present, of sufficient value (condition, uniqueness, relevance, importance) and need (trend, risk), and are practical to manage (USDI, BLM 2003c). However, BLM has no authority to establish new WSAs or to report such areas to Congress. BLM can, however, protect areas in their natural state using a wide range of designations that offer the same protections. Therefore, in response to this citizen group request and as a general management concern, BLM has considered management prescriptions in specific areas to protect wilderness characteristics, but has not included the establishment of new WSAs as part of any alternative. For any areas identified for management to maintain wilderness characteristics, BLM would not apply the "non-impairment" standard (Section 603 of the FLPMA) or the Interim Management Policy for Lands Under Wilderness Review (USDI, BLM 1995).

### 2.2.2 Livestock Grazing

BLM received comments recommending the elimination of livestock grazing from the IFNM. However, the Proclamation designating the IFNM indicates that the laws, regulations, and policies followed by BLM in issuing grazing leases on public land shall continue to apply within the IFNM. Therefore, BLM has not considered an alternative that would immediately remove livestock grazing from the IFNM, but has instead considered removal of livestock grazing from the IFNM as existing leases expire (as part of Alternative B).

### 2.2.3 Route Designations

BLM received a map proposing a route network within the IFNM from a coalition of citizen groups. This specific network was not considered as an alternative because it did not consider access to private inholdings or State Trust Land, where BLM could be required to provide access. Instead, BLM developed a minimum route network that could be established to effectively manage the IFNM, which is included under Alternative B.

## 2.3 MANAGEMENT COMMON TO ALL ALTERNATIVES

The alternative selected by the BLM for management of the IFNM must heed and be in accordance with all relevant laws, regulations, and policies of other government entities with jurisdiction over the IFNM. This management, common to all alternatives, is described below.

### 2.3.1 Presidential Proclamation

Presidential Proclamation 7320, which establishes the following management guidance for the IFNM, recognizes all valid rights in existence at the time of the monument designation (June 9, 2000). The Proclamation did not revoke any existing withdrawal, reservation, or appropriation of public lands or interests in lands. However, it did establish the national monument as the dominant reservation (use of public land).

With respect to minerals and mining, lands and realty, and land use authorizations, the Proclamation directs that "all Federal lands and interests in lands within the boundaries of this monument are hereby appropriated and withdrawn from all forms of entry, location, selection, sale, or leasing or other disposition under the public land laws, including but not limited to withdrawal from location, entry, and patent under the mining laws, and from disposition under all laws relating to mineral and geothermal leasing, other than by exchange that furthers the protective purposes of the monument." It additionally directs that all "lands and interests in lands within the proposed monument not owned by the United States shall be reserved as a part of the monument upon acquisition of title thereto by the United States."

With respect to transportation and travel management, the Proclamation directs that all off-road motorized and mechanized vehicle use be prohibited, except for emergency or authorized administrative purposes, and that a transportation plan address road closures or travel restrictions necessary to protect the objects of historic, scientific, and aesthetic interest within the IFNM.

The Proclamation also notes that the jurisdiction of the State of Arizona with respect to fish and wildlife management and the rights of American Indian tribes are neither enlarged nor diminished by the monument designation.

### 2.3.2 Arizona Standards for Rangeland Health

Land health standards are the goals for the desired condition of the biological and physical components and characteristics of rangelands, and apply to all resources and resource uses. Standards are measurable and attainable and comply with various Federal and State statutes, policies, and directives applicable to BLM rangelands. The Arizona Standards for Rangeland Health and Guidelines for Grazing Administration (USDI, BLM 1997) establish three land health standards as indicators for rangeland health on public lands, as described below. The guidelines for grazing administration, which also are common to all alternatives, are presented in Appendix C.

#### 2.3.2.1 Land Health Standard 1: Upland Sites

Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate and landform (ecological site).

Soil conditions support proper functioning of hydrologic, energy, and nutrient cycles. Many factors interact to maintain stable soils and healthy soil conditions, including appropriate amounts of vegetative cover, litter, and soil porosity and organic matter. Under proper functioning conditions, rates of soil loss and infiltration are consistent with the potential of the site.

Ground cover in the form of plants, litter or rock is present in pattern, kind, and amount sufficient to prevent accelerated erosion for the ecological site; or ground cover is increasing as determined by monitoring over an established period of time.

Signs of accelerated erosion are minimal or diminishing for the ecological site as determined by monitoring over an established period of time, as indicated by such factors as ground cover (including litter, live vegetation [amount and type, such as trees, shrubs, grasses], and rock) and signs of erosion (including flow pattern, gullies, rills, plant pedestaling).

#### 2.3.2.2 Land Health Standard 2: Riparian-Wetland Sites

Riparian-wetland areas are in properly functioning condition.

Stream channel morphology and functions are appropriate for proper functioning condition for existing climate, landform, and channel reach characteristics. Riparian-wetland areas are functioning properly when adequate vegetation, landform, or large woody debris is present to dissipate stream energy associated with high water flows, as indicated by such factors as gradient, width/depth ratio, channel roughness and sinuosity of the stream channel, bank stabilization, reduced erosion, captured sediment, groundwater recharge, and dissipation of energy by vegetation.

Riparian-wetland functioning condition assessments are based on examination of hydrologic, vegetative, soil and erosion-deposition factors. BLM has developed a standard checklist to address these factors and make functional assessments. Riparian-wetland areas are functioning properly as indicated by the results of the application of the appropriate checklist (USDI, BLM 1997).

The two exemptions to Standard 2 include (1) dirt tanks, wells, and other water facilities constructed or placed at a location for the purpose of providing water for livestock and/or wildlife and which have not been determined through local planning efforts to provide for riparian or wetland habitat; and, (2) water impoundments permitted for construction, mining, or other similar activities.

#### 2.3.2.3 Land Health Standard 3: Desired Resource Conditions

Productive and diverse upland and riparian-wetland plant communities of native species exist and are maintained.

Upland and riparian-wetland plant communities meet desired plant community objectives.

Plant community objectives are determined with consideration for all multiple uses.

Objectives also address native species, and the requirements of the Taylor Grazing Act, FLPMA, Endangered Species Act, Clean Water Act, and appropriate laws, regulations, and policies.

Desired plant community objectives will be developed to assure that soil conditions and ecosystem function described in Standards 1 and 2 are met. They detail a site-specific plant community, which when obtained, will assure rangeland health, State water quality standards, and habitat for endangered, threatened, and sensitive species. Thus, desired plant community objectives will be used as an indicator of ecosystem function and rangeland health, as indicated by composition, structure, and distribution.

The exception to Standard 3 includes ecological sites or stream reaches on which a change in existing vegetation is physically, biologically, or economically impractical.

### 2.3.3 BLM Policy

BLM has policy guidance already established under various instruction memorandums and information bulletins from both the Washington and Arizona State offices. For example, one such policy is that "no domestic sheep or goat grazing should be allowed within buffer strips less than 9 miles surrounding desert bighorn habitat, except where topographic features or other barriers prevent physical contact (IM WO-98-140)." There are numerous policies that apply to the IFNM, and all cannot be described here in detail. For more information on BLM policies applicable to land use planning, refer to BLM Handbook H-1601-1, Land Use Planning Handbook (2005) and the information bulletins and instruction memorandums available on BLM websites for the Washington and Arizona offices (http://www.blm.gov/nhp/efoia/wo/woerr.html and http://www.blm.gov/nhp/efoia/az/, respectively).

### 2.3.4 Administrative Actions

Administrative actions are the day-to-day activities required to serve the public and to provide optimum management of the IFNM's resources. These actions are allowable by regulation and do not require authorization within an RMP, but may require site-specific analysis under National Environmental Policy Act of 1969 (NEPA). For example, in day-to-day management of the IFNM, BLM is responsible for law enforcement activities that need not be authorized under the RMP. Additionally, BLM may authorize or restrict access in certain areas in emergency situations (with publication of a notice in the Federal Register) or coordinate with other agencies and organizations, such as Arizona Game and Fish Department (AGFD), for specific activities that may not require site-specific NEPA documentation efforts. These and other administrative actions will be conducted in the IFNM, sometimes in partnership with other landowners or agencies or entities. The degree to which these actions are carried out depends upon BLM policies, available personnel, funding levels and further environmental analysis and decision-making, as appropriate. Administrative uses and actions are listed in Appendix D.

## 2.4 FORMAT OF THE ALTERNATIVES

RMPs are broad-scale land management plans that establish desired outcomes (goals and objectives) for resource management, and identify the measures deemed likely to achieve those outcomes. The following presentation of the alternatives identifies the goals and objectives for each resource and resource use, and the measures, including management actions, allowable uses, and land use allocations, that would achieve those goals and objectives. Once an alternative is selected, the broad, plan-level decisions included in that alternative—the management actions, allowable uses, and land use allocations—will become the RMP and provide the framework for site-specific management decisions and actions. These implementation-level decisions typically occur following adoption of the RMP, but in some cases they are identified through the RMP process. For example, decisions about designating routes as motorized or non-motorized, which are implementation-level decisions, are part of the alternatives presented in this document. Prior to being initiated, all implementation actions will be subject to the appropriate level of analysis based on the NEPA process. Through this process, BLM will determine the most appropriate

method of implementation that achieves the goals of the project and is consistent with the Proclamation and other management goals and objectives for the IFNM.

This Draft RMP/EIS addresses 17 resources or resource uses; goals and objectives and the proposed allowable uses and management actions are identified in each of the four alternatives described below.

As described above, four management alternatives have been developed for the IFNM. Each alternative addresses the management of the following:

- Air quality
- Geology and caves resources
- Soil and water resources
- Vegetation
- Wildlife and wildlife habitat
- Special status species
- Fire ecology and management
- Cultural resources
- Paleontological resources
- Scenic and visual resources
- Wilderness characteristics
- Energy and mineral resources
- Livestock grazing
- Recreation
- Lands and realty
- Travel management
- Special designations

As shown in the tables, the action alternatives (Alternatives B, C, and D) share the same goals and objectives (desired outcomes), which were identified through the planning and scoping process for this Draft RMP/EIS; the goals and objectives for the No-Action Alternative are different because they are directly derived from the current land use plans (when goals and objectives are identified in those plans). The goals and objectives are followed by different sets of management actions, allowable uses, and use allocations for each alternative—these identify areas and acreages where certain land uses would be prohibited, restricted, or allowed, as well as proactive management measures. Some implementation-level decisions have been included within the alternatives, and are analyzed as part of each alternative. Though all implementation decisions and administrative actions are influenced by the alternative ultimately selected by BLM as the new RMP, these do not need to be determined as part of the planning process for this RMP. The administrative actions that BLM is authorized to take outside of direction from a land use plan are listed in Appendix D.

## Table 2-1. Resource Management Alternatives for AIR QUALITY

<table>
<tr><th colspan="4">Desired Outcomes: Management Goals and Objectives</th></tr>
<tr><th>NO ACTION</th><th colspan="3">ACTION ALTERNATIVES</th></tr>
<tr><td><u>Goal</u>:<br>No land use plan-level (LUP-level) goals for air quality are presented in the existing land use plan.</td><td colspan="3"><u>Goal 1:</u> Manage use to maintain Federal and State air quality standards.</td></tr>
<tr><td><u>Objective</u>:<br>No LUP-level objectives for air quality are presented in the existing planning document; however, law requires compliance with Federal and State air quality standards.</td><td colspan="3"><u>Objective 1:</u> Follow the development of new and revised State regulations and designations of nonattainment area to determine what public lands will be affected.<br><u>Objective 2:</u> Ensure that activities on public lands comply with Federal and State requirements and the National Ambient Air Quality Standards (health standard).<br><u>Objective 3:</u> Emphasize low-polluting alternatives and fugitive-dust mitigation measures within and near the monument, especially as they pertain to unpaved roads that traverse public lands and ground-disturbing activities.</td></tr>
<tr><th colspan="4">Decisions for Management Actions, Allowable Uses, and Use Allocations</th></tr>
<tr><th>Alternative A (No Action)</th><th>Action Alternative B</th><th>Action Alternative C<br>(Preferred Alternative)</th><th>Action Alternative D</th></tr>
<tr><td>1. No existing decisions specifically address this action.</td><td>1. Control fugitive-dust emissions from unpaved roads and disturbed areas (e.g., parking pull-offs) regularly accessed by the public for various purposes (e.g., recreation) by using appropriate control methods, such as:<ul><li>posting signs or creating obstacles to speed (e.g. speed bumps)</li><li>applying dust suppressants or gravel</li><li>implementing road-use restrictions</li></ul></td><td>1. Same as Alternative B.</td><td>1. Same as Alternative B.</td></tr>
</table>

## Table 2-2. Management Alternatives for GEOLOGY AND CAVES

| Desired Outcomes: Management Goals and Objectives | | | |
|---|---|---|---|
| **NO ACTION**<br><br>**Goal**:<br>No LUP-level goals for geologic resources are presented in the existing land use plan. | **ACTION ALTERNATIVES**<br><br>**Goal 1:** Geologic features are available for public enjoyment (as opposed to mining or mineral potential). | | |
| **Objective**:<br>No LUP-level objectives for geologic resources are presented in the existing land use plan. | **Objective 1**: If unique or unusual geologic and cave resources are discovered, site-specific management actions will be developed. Management actions will include interpretation of the features for their scientific and educational value. | | |
| **Decisions for Management Actions, Allowable Uses, and Use Allocations** | | | |
| **Alternative A (No Action)** | **Action Alternative B** | **Action Alternative C**<br>(Preferred Alternative) | **Action Alternative D** |
| 1. No existing decisions specifically address this action | 1. If geologic resources are discovered that warrant special management, identify appropriate management actions, allowable uses, and allocations for the resource or site. | 1. Same as Alternative B. | 1. Same as Alternative B. |
| 2. No existing decisions specifically address this action. | 2. Prohibit collection of geologic resources. | 2. Prohibit collection of geologic resources; however, when officially authorized by permit allow collection and removal of geological resources for legitimate scientific research or educational uses. | 2. Same as Alternative C. |
| **Implementation-Level Decisions** | | | |
| 1. No implementation-level decisions are established for geologic resources. | 1. Provide adequate access to geologic sites and/or features for viewing and enjoyment where public access does not conflict with other resource goals or uses. | 1. Same as Alternative B. | 1. Same as Alternative B. |

## Table 2-3. Resource Management Alternatives for SOIL AND WATER RESOURCES

| Desired Outcomes: Management Goals and Objectives | | | |
|---|---|---|---|
| **NO ACTION** | **ACTION ALTERNATIVES** | | |
| **Goal**:<br>1. Land Health Standards (in Arizona Standards for Rangeland Health and Guidelines for Grazing Administration – see Section 2.3.2 of this Chapter) define desired outcomes for soil and water resources.<br>2. Ensure that all waters on public land meet or exceed Federal and State water quality standards. | **Goal 1:** Follow Land Health Standards to achieve desired outcomes for soil and water resources.<br>**Goal 2:** Ensure that all waters on public land meet or exceed Federal and State water quality standards.<br>**Goal 3:** Conserve sensitive soils such as desert pavement and biological soil crusts.<br>**Goal 4:** Manage land uses to protect the water supply needs of the biota and other natural resources.<br>**Goal 5:** Manage watersheds to maintain, where healthy, or restore, where degraded, upland, aquatic, riparian and xeriscopic ecosystems, water quality, and water quantity. | | |
| **Objective:**<br>Management activities would maintain or promote ground cover that would provide for infiltration, permeability, soil moisture storage, and soil stability appropriate for the ecological sites within management units. The ground cover should maintain soil organisms and plants and animals to support the hydrologic and nutrient cycles, and energy flow. | **Objective 1:** Manage land uses such that erosion and sedimentation rates are appropriate to natural processes, landscapes returning to natural processes, or landscapes under active restoration.<br>**Objective 2:** Manage land use to protect and maintain water quality in accordance with all applicable water quality standards.<br>**Objective 3:** Conserve areas of biological soil crusts and desert pavement, where practical.<br>**Objective 4:** Limit fugitive-dust pollution by reducing disturbance to soils. | | |
| **Decisions for Management Actions, Allowable Uses, and Use Allocations** | | | |
| **Alternative A (No Action)** | **Action Alternative B** | **Action Alternative C** (Preferred Alternative) | **Action Alternative D** |
| 1. No existing decisions specifically address this action. | 1. Minimize surface disturbance during construction, reconstruction, or maintenance of facilities. Develop mitigation plans and restore surfaces and stabilize soils in accordance with resource management and/or restoration objectives. | 1. Same as Alternative B. | 1. Same as Alternative B. |

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| 2. Maintain and improve soil cover and productivity through erosion-prevention measures and land treatments, and incorporate salinity control measures into erosion-prevention strategies and rehabilitation treatments. | 2. Same as Alternative A. | 2. Same as Alternative A. | 2. Same as Alternative A. |
| 3. No existing decisions specifically address this action. | 3. In areas of sensitive or fragile soils, prohibit new ground-disturbing activities. Mitigate existing ground-disturbing activities. | 3. In areas of sensitive or fragile soils, allow new and continuing ground-disturbing activities with mitigation. | 3. Same as Alternative C. |
| 4. No existing decisions specifically address this action. | 4. Prohibit surface-water diversions and groundwater pumping that removes water from the monument or adversely affects the monument's values. | 4. Same as Alternative B. | 4. Same as Alternative B. |
| 5. Designate the 16,699-acre Agua Blanca Ranch Multiple Resource Management Area. | 5. Discontinue the Agua Blanca Ranch Multiple Resource Management Area. | 5. Same as Alternative B. | 5. Same as Alternative B. |
| 6. Designate the 47,976-acre Cocoraque Butte-Waterman Mountains Multiple Resource Management Area. | 6. Discontinue the Cocoraque Butte-Waterman Mountains Multiple Resource Management Area. | 6. Same as Alternative B. | 6. Same as Alternative B. |
| **Implementation-Level Decisions** | | | |
| 1. Develop an activity plan for the Agua Blanco Ranch Multiple Resource Management Area and manage to improve watershed condition to satisfactory, increase soil cover, and reduce sediment. | 1. Do not develop an activity plan for the Agua Blanca Multiple Resource Management Area. | 1. Same as Alternative B. | 1. Same as Alternative B. |
| 2. Implement an activity plan for the Cocoraque Butte-Waterman Mountains Multiple Resource Management Area, and manage to improve watershed condition to satisfactory, increase soil cover, reduce sediment yield, improve ecological site condition to good, and promote the recovery of an endangered plant. | 2. Do not implement the activity plan for Cocoraque Butte-Waterman Mountains Multiple Resource Management Area. | 2. Same as Alternative B. | 2. Same as Alternative B. |

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| 3. No implementation decisions specifically address this action. | 3. Analyze existing flood- and erosion-control structures to determine if they still function and whether they need to be maintained or removed. | 3. Same as Alternative B. | 3. Same as Alternative B. |

## Table 2-4. Resource Management Alternatives for VEGETATION

| Desired Outcomes: Management Goals and Objectives | |
|---|---|
| **NO ACTION** | **ACTION ALTERNATIVES** |
| **Goal 1:** There is an appropriate cover and mix of natural plant species that have good vigor.<br>**Goal 2:** Each vegetation community is maintained within its natural range of variation in plant composition, structure, and function.<br>**Goal 3:** Follow Land Health Standards to achieve desired outcomes for vegetation resources. | **Goal 1:** Manage to achieve an appropriate cover and mix of natural plant species that have good vigor.<br>**Goal 2:** Manage each vegetation community to maintain its natural range of variation in plant composition, structure, and function. Communities within the monument include (1) paloverde–cacti-mixed scrub; (2) jojoba chaparral; (3) creosotebush–white bursage; (4) curly mesquite grass-scrub; and xeroriparian.<br>**Goal 3:** Protect, enhance, and restore, as appropriate, the diversity and distribution of existing natural plant communities.<br>**Goal 4:** Follow Land Health Standards to achieve desired outcomes for vegetation resources. |
| **Objective**:<br>No LUP-level objectives for vegetation are presented in the existing land use plan. | **Objective 1:** Limit the impact of invasive species and noxious weeds on natural resources and processes by reducing the distribution and abundance of these species.<br>**Objective 2:** Manage land uses to maintain, and restore where necessary, the natural and diverse plant composition and structure within the monument, thereby establishing a basis for adequate wildlife habitat and stable watershed function (i.e., proper functioning condition). Management should protect sensitive and unique vegetation assemblages, including the paloverde–cacti-mixed scrub community, jojoba chaparral community, creosotebush–white bursage community, curly mesquite grass-scrub community, and the xeroriparian community.<br>**Objective 3:** Manage collection and/or salvage of desert vegetation for personal and commercial uses (including firewood) in accordance with monument objectives and the State of Arizona Native Plant Law, while taking into consideration potential traditional and/or cultural uses.<br>**Objective 4:** Manage activities on the monument to maintain the following priority species: ironwood (*Olneya tesota*) and special status species (discussed further in Table 2-6, Special Status Species).<br>**Objective 5:** Manage activities on the monument to maintain the following priority habitats (1) dense or large iron-woods; (2) cholla forest; (3) cactus dunes; (4) creosote rings; (5) xeroriparian vegetation; (6) curly mesquite grassland; (7) jojoba chaparral; (8) the Ragged Top vegetation assemblage; and (9) Nichol Turk's head cactus. |

| Decisions for Management Actions, Allowable Uses, and Use Allocations | | | |
|---|---|---|---|
| **Alternative A (No Action)** | **Action Alternative B** | **Action Alternative C** (Preferred Alternative) | **Action Alternative D** |
| 1. No existing decisions specifically address this action. | 1. Minimize surface disturbance that results in loss of existing vegetation cover. Restrict surface-disturbing activities to methods that allow for re-sprouting of tree and shrub species unless permanent construction is required. | 1. Same as Alternative B. | 1. Same as Alternative B. |

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| 2. No existing decisions specifically address this action. | 2. Removal and/or use of living or dead and down native plant material is prohibited, with the following exceptions, when specifically authorized: (1) non-commercial Native American traditional use/collection, (2) seed collection and transplant for revegetation projects within the IFNM, (3) collection for scientific purposes as authorized with a BLM Special Use Permit, (4) administrative vegetation treatment to ensure adequate side and overhead clearance along designated routes, (5) consumption by wildlife, and (6) consumption by livestock (until grazing leases expire). | 2. Same as Alternative B, except (6) consumption by livestock. | 2. Same as Alternative C, with the addition of:<br>(7) collection of dead and down wood for firewood use while camping within the IFNM (except where BLM has determined through inventory and monitoring that firewood collection negatively impacts objects of the monument). |
| 3. No existing decisions specifically address this action. | 3. Pursue an integrated weed management approach to prevent the introduction of and control invasive species and noxious weeds using methods including mechanical, chemical, and biological treatments. Use biological control methods to control invasive plant species if appropriate safety measures are applied, and in coordination with appropriate Federal, State, County, municipal and tribal agencies. | 3. Same as Alternative B. | 3. Same as Alternative B. |
| 4. No existing decisions specifically address this action. | 4. Assign priority to the control of invasive species and noxious weeds that have a substantial and apparent impact on native plant communities and wildlife. When infestations are identified, they would be evaluated for their potential threat. Prioritize treatment of species that are identified as aggressive invasive species or are considered noxious weeds, and are located within priority vegetative habitats. Schedule other species for action in coordination with partners. | 4. Same as Alternative B. | 4. Same as Alternative B. |

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| 5. Develop an activity plan for the Cocoraque Butte-Waterman Mountains Multiple Resource Management Area and manage to improve watershed condition to satisfactory, increase soil cover, reduce sediment yield, improve ecological site condition to good, promote the recovery of an endangered plant, and enhance water quality and stream flow. | 5. Develop a land restoration plan as part of the implementation plan for the IFNM within two years following RMP approval. Include the following elements in the restoration plan:<br>• identification of disturbed areas<br>• inventory and description of the history of areas to be restored<br>• objectives and success criteria for the restoration efforts at each site<br>• restoration strategies to be implemented at each site<br>• duration and severity of restricted uses after restoration activities are implemented<br>• monitoring protocol to be used to assess restoration efforts against the objectives and success criteria<br>• adaptive management strategies to address situations where success criteria are not met<br>• priorities for restoration | 5. Same as Alternative B, but BLM will develop the land restoration plan within five years. | 5. Restore areas on a case-by-case basis. |
| 6. No existing decisions specifically address this action. | 6. Emphasize passive restoration by natural processes to return sites to their desired resource conditions and hydrological functions; use active reclamation practices to stabilize and reclaim sites that are likely to be successfully reclaimed using active management methods due to their ecological characteristics, and that are<br>• severely damaged, rapidly deteriorating, or rapidly expanding<br>• placing adjacent resources at risk<br>• prone to invasion by nonnative species<br>• heavily disturbed, such as mining sites<br>• capable of improving habitat for special status species<br>• a management priority and | 6. Same as Alternative B. | 6. Same as Alternative B. |

| | | | |
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| | require accelerated restoration to meet a selected management objective, such as obliterating a road to effectively implement a route closure or restoring an important habitat function<br>• identified as having high visual resource values that are being affected<br>• located in priority vegetative habitats | | |
| 7. No existing decisions specifically address this action. | 7. Use a variety of vegetation reclamation methods, as appropriate, to restore and promote a natural range of native plant associations. Methods may include mechanical, chemical, and biological treatments. | 7. Same as Alternative B. | 7. Same as Alternative B. |
| 8. No existing decisions specifically address this action. | 8. Use native plants for all restoration projects. | 8. Use native plants as the first priority for all restoration projects. Non-intrusive, non-native plants may be used in limited, emergency situations where they may be necessary to protect the resources or when taking no action would further degrade the resources. Allow use to the extent that it complies with the vegetation objectives and other management goals and objectives. In these situations, use of short-lived species in combination with native species would be preferred to facilitate the establishment of native species. | 8. Same as Alternative C. |
| **Implementation-Level Decisions** | | | |
| 1. Fencing is evaluated and installed on a case-by-case basis. | 1. Fence along designated routes, as necessary, to prevent damage to sensitive and unique vegetation and minimize the spread of invasive species and noxious weeds. Fencing would be designed and installed consistent with the procedures and configurations described in BLM Manual H-1741, Fencing. | 1. Same as Alternative B. | 1. Same as Alternative B. |

| | | | |
|---|---|---|---|
| 2. No implementation decisions specifically address this action. | 2. Monitor invasive species and noxious weed treatment areas for at least three years to:<br>• evaluate population trends and establish a baseline for evaluating the results of management actions.<br>• identify resurgence of treated species.<br>• evaluate the effectiveness of control treatments.<br>• determine if re-treatment is necessary. | 2. Same as Alternative B. | 2. Same as Alternative B. |
| 3. No implementation decisions specifically address this action. | 3. Avoid projects or activities that could disturb priority species or habitats. Require mitigation when avoidance is not possible. | 3. Same as Alternative B. | 3. Same as Alternative B. |

## Table 2-5. Resource Management Alternatives for WILDLIFE AND WILDLIFE HABITAT

| Desired Outcomes: Management Goals and Objectives | |
|---|---|
| **NO ACTION** | **ACTION ALTERNATIVES** |
| **Goal:**<br>No LUP-level goals for wildlife and wildlife habitat are presented in the existing land use plan. | **Goal 1:** Establish ecological conditions within the IFNM that can support the wildlife populations and achieve Arizona Game and Fish Department wildlife management goals.<br>**Goal 2:** Conserve, enhance, and, where appropriate, restore native wildlife and wildlife habitats.<br>**Goal 3:** Maintain or enhance wildlife corridors between blocks of habitat. |
| **Objective:**<br>No LUP-level objectives for wildlife and wildlife habitat are presented in the existing land use plan. | **Objective 1:** Identify, minimize, and mitigate wildlife habitat degradation, loss, and fragmentation.<br>**Objective 2:** Manage and/or conserve areas identified as important for the viability of the bighorn sheep populations, including, but not limited to lambing areas and movement corridors.<br>**Objective 3:** Manage for wildlife water availability to sustain optimal wildlife population sizes as determined by AGFD. Evaluate and minimize impacts, where necessary, of current and potential waters on all wildlife species.<br>**Objective 4:** Protect blocks of wildlife habitat and movement corridors, especially for priority species, and prevent fragmentation by human-related land disturbance or other activities.<br>**Objective 5:** Manage access and transportation, and implement use restrictions to protect wildlife habitat values.<br>**Objective 6:** Manage activities and uses to protect the following priority species: bighorn sheep, mule deer, javelina, burrowing owls, migratory birds, and special status species (special status species as of the date of this document are listed in Chapter 3). |

| Decisions for Management Actions, Allowable Uses, and Use Allocations | | | |
|---|---|---|---|
| **Alternative A (No Action)** | **Action Alternative B** | **Action Alternative C** (Preferred Alternative) | **Action Alternative D** |
| 1. No existing decisions specifically address this action. | 1. Priority habitats for wildlife are bighorn sheep habitat (as allocated for the Wildlife Habitat Management Area [WHA] below), xeroriparian habitat, and desert tortoise habitat categories I and II (desert tortoise are discussed further in Table 2-6, Special Status Species). | 1. Same as Alternative B. | 1. Same as Alternative B. |
| 2. Silver Bell Desert Bighorn Sheep Management Area includes 56,800 acres (of Federal, State Trust, and private land, of which approximately 41,470 acres are BLM managed surface estate within the IFNM), including areas outside the IFNM boundary (refer to Map 2-1; areas | 2. Discontinue the 56,800-acre Silver Bell Desert Bighorn Sheep Management Area. Instead, approximately 29,820 acres are allocated for the Desert Bighorn Sheep WHA (as shown on Map 2-2) to protect habitat, lambing areas, and movement corridors. | 2. Same as Alternative B. | 2. Same as Alternative B. |

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| outside the IFNM boundary are not shown). | | | |
| 3. For the Silver Bell Desert Bighorn Sheep Management Area: develop an activity plan; prohibit surface occupancy for oil/gas development on 800 acres of Ragged Top; limit motorized vehicles to existing roads and trails, except close 800 acres on Ragged Top; acquire land. | 3. For the Desert Bighorn Sheep WHA: In coordination with AGFD, implement closures to human entry from January 1 through April 30, as needed, based on information and monitoring data gathered on lambing areas within the WHA, as identified by available information and monitoring data. Lambing areas are closed to sheep and goats year-round. (NOTE: Adaptive management techniques would be used as lambing areas change over time). | 3. Same as Alternative B. | 3. Same as Alternative B. |
| 4. No existing decisions specifically address this action. | 4. Evaluate and implement, as appropriate, proposals to enhance wildlife populations in coordination with AGFD through reintroductions, transplants, and supplemental stockings, consistent with BLM policy. | 4. Same as Alternative B. | 4. Same as Alternative B. |
| 5. No existing decisions specifically address this action. | 5. Dogs are prohibited on public land within the monument. | 5. Dogs must be leashed when on public land within the monument, except when being used for hunting or when being used for livestock operations. | 5. Same as Alternative C. |
| **Implementation-Level Decisions** | | | |
| 1. Modify existing waters (within the Cocoraque and Agua Dulce Ranches) as necessary to make the sources safer for use by wildlife.<br>• escape ramps would be placed in troughs to prevent animal drowning<br>• floating platforms would be placed in open top storage tanks to prevent bird drowning. | 1. Evaluate and implement, as appropriate, proposals for wildlife waters including selecting sites and installing new waters; modifying, replacing, and/or repairing existing waters; and removing nonfunctioning waters. Coordinate with AGFD for this action. Any new or modified waters would be designed consistent with current standards for wildlife and public safety. | 1. Same as Alternative B. | 1. Same as Alternative B. |

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|---|---|---|---|
| 2. No implementation decisions specifically address this action. | 2. Remove fences, roads, and facilities that are no longer necessary for transportation, wildlife management, monument administration, or other purposes in their present locations. | 2. Same as Alternative B. | 2. Same as Alternative B. |
| 3. If necessary, the BLM would modify those portions of existing fence lines found to be restricting deer or desert bighorn sheep travel. Fence lines creating hazards to wildlife because of maintenance needs would be repaired by the operator (within the Cocoraque and Agua Dulce Ranches). | 3. Construct or modify fences as necessary to maintain safe, unrestricted travel by wildlife. Fencing would be designed and installed consistent with the procedures and configurations described in BLM Manual H-1741, Fencing. | 3. Same as Alternative B. | 3. Same as Alternative B. |
| 4. No implementation decisions specifically address this action. | 4. Avoid projects or activities that could disturb priority species or habitats. Require mitigation when avoidance is not possible. | 4. Same as Alternative B. | 4. Same as Alternative B. |

# Wildlife Habitat Management Alternative A

**Ironwood Forest National Monument**
**Draft RMP/EIS**

## Legend

- Desert Bighorn Sheep Wildlife Habitat Management Area

**Reference Information**

**Surface Management**

- Bureau of Land Management
- National Park Service
- Bureau of Reclamation
- American Indian Reservation
- Military Reservations
- State Trust Lands
- State, County, City; Wildlife, Park and Outdoor Recreation Areas
- Private
- Pima County

Note:
Land use allocations, designations, and management prescriptions apply only to public lands administered by the BLM. If non-Federal lands are acquired, they would be managed according to the allocations depicted on the map.

Data Source:
Habitat Information: BLM Tucson Field Office 2003
Base Information: BLM Tucson Field Office 2003
Quadrangle Image: U.S. Geological Survey 1977, Tucson

**General Reference**

- County Boundaries
- Central Arizona Project (CAP) Canal
- River
- Interstate 10
- Main public access routes to monument. County administered roads connecting monument travel route system to public highways.

**Planning Area**

- Ironwood Forest National Monument

Universal Tranverse Mercator
Zone 12, Units Meters
Clark 1866 Spheroid
NAD27 Datum
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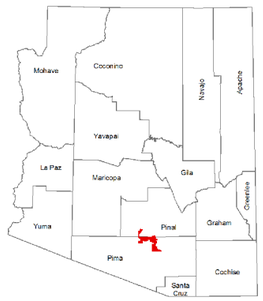
0 1 2 4 Miles
0 2 4 8 Kilometers

Location in Arizona

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Map 2-1

# Wildlife Habitat Management Alternatives B-D

**Ironwood Forest National Monument**
**Draft RMP/EIS**

## Legend

Desert Bighorn Sheep Wildlife Habitat Management Area

**Reference Information**

**Surface Management**

- Bureau of Land Management
- National Park Service
- Bureau of Reclamation
- American Indian Reservation
- Military Reservations
- State Trust Lands
- State, County, City; Wildlife, Park and Outdoor Recreation Areas
- Private
- Pima County

Note:
Land use allocations, designations, and management prescriptions apply only to public lands administered by the BLM. If non-Federal lands are acquired, they would be managed according to the allocations depicted on the map.

Data Source:
Habitat Alternative: BLM 2005
Base Information: BLM 2003
Quadrangle Image: U.S. Geological Survey 1977 Tucson

**General Reference**

- County Boundaries
- Central Arizona Project (CAP) Canal
- River
- Interstate 10
- Main public access routes to monument. County administered roads connecting monument travel route system to public highways.

**Planning Area**

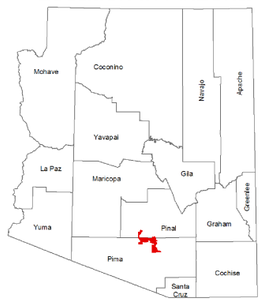
- Ironwood Forest National Monument

Universal Tranverse Mercator
Zone 12, Units Meters
Clark 1866 Spheroid
NAD27 Datum

No warranty is made by the Bureau of Land Management (BLM) for the use of this map for purposes not intended by BLM, or to the accuracy, reliability, or completeness of the information shown. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification.

0 1 2 4 Miles
0 2 4 8 Kilometers

Location in Arizona

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Map 2-2

## Table 2-6. Resource Management Alternatives for SPECIAL STATUS SPECIES

| Desired Outcomes: Management Goals and Objectives | | | |
|---|---|---|---|
| **NO ACTION** | **ACTION ALTERNATIVES** | | |
| **Goal:**<br>No LUP-level goals for special status species are presented in the existing land use plan. | **Goal 1:** Conserve special status species (including Federally listed species, Arizona's Wildlife of Special Concern, Priority Vulnerable Species in Pima County, BLM Sensitive Species, Arizona Department of Agriculture); where necessary, enhance or restore their habitats. | | |
| **Objective:**<br>Conservation of Federal threatened or endangered, proposed, candidate, and other special status species is promoted by the maintenance or restoration of their habitats. | **Objective 1:** Manage land uses to achieve desired conditions within the monument to provide adequate habitat for special status species.<br>**Objective 2:** Prevent the avoidable loss of habitat for special status species. | | |
| **Decisions for Management Actions, Allowable Uses, and Use Allocations** | | | |
| **Alternative A (No Action)** | **Action Alternative B** | **Action Alternative C** (Preferred Alternative) | **Action Alternative D** |
| 1. No existing decisions specifically address this action. | 1. Priority special status species habitats include: (1) 2,240 acres of Nichol Turk's head cactus habitat; (2) 58,810 acres of desert tortoise habitat categories I and II; and (3) lesser long-nosed bat foraging habitat (the IFNM in its entirety). | 1. Same as Alternative B. | 1. Same as Alternative B. |
| 2. Manage approximately 3,342 acres as the Waterman Mountains Area of Critical Environmental Concern (ACEC) for the Nichol Turk's head cactus (Map 2-3).<br>NOTE: This includes both Federal and non-Federal land; approximately 2,240 acres are administered by BLM. | 2. Manage approximately 2,240 acres of Nichol Turk's head cactus habitat on BLM-administered public land as the Waterman Mountains Vegetation Habitat Management Area (VHA) for the protection of this species (Map 2-4). | 2. Same as Alternative B. | 2. Same as Alternative B (except refer to Map 2-5). |

| | | | |
|---|---|---|---|
| 3. Within the Waterman Mountains ACEC:<br>• Prohibit land use authorizations except along existing roads.<br>• Acquire approximately 1,140 acres (of non-Federal land).<br>• Continue implementing 1986 HMP. | 3. Within Waterman Mountains VHA:<br>• Prohibit land use authorizations except along routes designated as motorized.<br>• Acquire non-Federal land, which upon acquisition would be managed as part of the VHA.<br>• Revise and implement the 1986 HMP.<br>• Prohibit camping (on BLM-administered land) in the VHA. | 3. Same as Alternative B, except:<br>• Allow camping within the VHA. (Refer to Table 2-14, Recreation for more information regarding camping.) | 3. Same as Alternative C. |
| 4. No existing decisions specifically address this action. | 4. Approximately 6,780 acres are allocated as the Ragged Top VHA as shown on Map 2-4. | 4. Same as Alternative B. | 4. Allocate 6,500 acres as the Ragged Top VHA as shown on Map 2-5. |
| 5. No existing decisions specifically address this action. | 5. Within Ragged Top VHA:<br>• Acquire non-Federal land, which upon acquisition would be managed as part of the VHA.<br>• Prohibit camping (on BLM-administered land) in the VHA. | 5. Same as Alternative B, except:<br>• Allow camping within the VHA. (Refer to Table 2-14, Recreation for more information regarding camping.) | 5. Same as Alternative C. |
| **Implementation-Level Decisions** | | | |
| 1. No implementation decisions specifically address this action. | 1. Provide for a monitoring program for special status species through partnerships that would include completing baseline survey and inventory, data review and evaluation, threat analysis and response, and monitoring. Where monitoring identifies threats to these populations, take actions (based on the best available data and science) to protect the special status species and their habitats. | 1. Same as Alternative B. | 1. Same as Alternative B. |
| 2. No implementation decisions specifically address this action. However, as a matter of policy, BLM would follow the efforts described in Alternative B. | 2. Implement the applicable conservation measures found in the Lesser Long-nosed Bat Recovery Plan (USFWS 1994), including measures to protect columnar cacti and agaves. Refer to Appendix E. | 2. Same as Alternative B. | 2. Same as Alternative B. |

| | | | |
|---|---|---|---|
| 3. No implementation decisions specifically address this action. However, as a matter of policy, BLM would follow the efforts described in Alternative B. | 3. Implement measures to conserve desert tortoise habitat, as prescribed in Desert Tortoise Habitat Management on the Public Lands: A Rangewide Plan (USDI, BLM 1988). Refer to Appendix E. | 3. Same as Alternative B. | 3. Same as Alternative B. |
| 4. Minimize livestock impacts on listed or candidate plants by providing water sources away from existing populations. Move or replace livestock waters that are found to be causing habitat deterioration near rare plants. | 4. No relocation or additional livestock water sources would be provided (BLM would not invest in range improvements because grazing leases would begin to expire in 2009). | 4. Same as Alternative A. | 4. Same as Alternative A. |
| 5. Implement the Nichol Turk's head cactus recovery plan to increase soil cover, reduce sediment yield, improve ecological site condition to good, and promote the recovery of the endangered plant. | 5. Implement the Nichol Turk's head cactus recovery plan to increase soil cover, reduce sediment yield, and improve ecological site conditions. | 5. Same as Alternative B. | 5. Same as Alternative B. |
| 6. No implementation decisions specifically address this action. | 6. Avoid projects or activities that could disturb priority species or habitats. Require mitigation when avoidance is not possible. | 6. Same as Alternative B. | 6. Same as Alternative B. |
| 7. Implement conservation measures (refer to Appendix E) during fire suppression operations to reduce the effects of fire management actions on threatened and endangered species. | 7. Same as Alternative A. | 7. Same as Alternative A. | 7. Same as Alternative A. |

# Special Status Species Management Alternative A

**Ironwood Forest National Monument**
**Draft RMP/EIS**

## Legend

Waterman Mountains Area of Critical Environmental Concern (ACEC)

**Reference Information**

**Surface Management**

- Bureau of Land Management
- National Park Service
- Bureau of Reclamation
- American Indian Reservation
- Military Reservations
- State Trust Lands
- State, County, City; Wildlife, Park and Outdoor Recreation Areas
- Private
- Pima County

Note:
Land use allocations, designations, and management prescriptions apply only to public lands administered by the BLM. If non-Federal lands are acquired, they would be managed according to the allocations depicted on the map.

Data Source:
ACEC: BLM 2005
Base Information: BLM 2003
Quadrangle Image: U.S. Geological Survey 1977 Tucson

**General Reference**

- County Boundaries
- Central Arizona Project (CAP) Canal
- River
- Interstate 10
- Main public access routes to monument. County administered roads connecting monument travel route system to public highways.

**Planning Area**

- Ironwood Forest National Monument

Universal Tranverse Mercator
Zone 12, Units Meters
Clark 1866 Spheroid
NAD27 Datum

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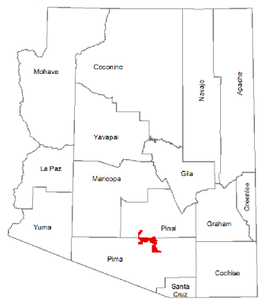
0 1 2 4 Miles
0 2 4 8 Kilometers

Location in Arizona

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Map 2-3

# Special Status Species Management Alternative B-C

**Ironwood Forest National Monument**
**Draft RMP/EIS**

## Legend

Vegetation Habitat Management Area (VHA)

**Reference Information**

**Surface Management**

- Bureau of Land Management
- National Park Service
- Bureau of Reclamation
- American Indian Reservation
- Military Reservations
- State Trust Lands
- State, County, City; Wildlife, Park and Outdoor Recreation Areas
- Private
- Pima County

Note:
Land use allocations, designations, and management prescriptions apply only to public lands administered by the BLM. If non-Federal lands are acquired, they would be managed according to the allocations depicted on the map.

Data Source:
VHMA Alternatives: BLM 2005
Base Information: BLM 2003
Quadrangle Image: US Geological Survey 1977 Tucson

**General Reference**

- County Boundaries
- Central Arizona Project (CAP) Canal
- River
- Interstate 10
- Main public access routes to monument. County administered roads connecting monument travel route system to public highways.

**Planning Area**

- Ironwood Forest National Monument

Universal Tranverse Mercator
Zone 12, Units Meters
Clark 1866 Spheroid
NAD27 Datum

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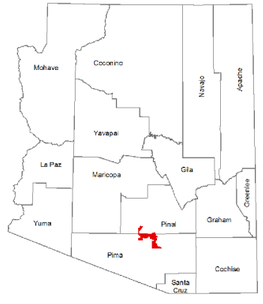
0 1 2 4 Miles
0 2 4 8 Kilometers

Location in Arizona

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Map 2-4

# Special Status Species Management Alternative D

**Ironwood Forest National Monument**
**Draft RMP/EIS**

## Legend

Vegetation Habitat Management Area (VHA)

**Reference Information**

**Surface Management**

- Bureau of Land Management
- National Park Service
- Bureau of Reclamation
- American Indian Reservation
- Military Reservations
- State Trust Lands
- State, County, City; Wildlife, Park and Outdoor Recreation Areas
- Private
- Pima County

Note:
Land use allocations, designations, and management prescriptions apply only to public lands administered by the BLM. If non-Federal lands are acquired, they would be managed according to the allocations depicted on the map.

Data Source:
VHMA Alternatives: BLM 2005
Base Information: BLM 2003
Quadrangle Image: US Geological Survey 1977 Tucson

**General Reference**

- County Boundaries
- Central Arizona Project (CAP) Canal
- River
- Interstate 10
- Main public access routes to monument. County administered roads connecting monument travel route system to public highways.

**Planning Area**

- Ironwood Forest National Monument

Universal Tranverse Mercator
Zone 12, Units Meters
Clark 1866 Spheroid
NAD27 Datum

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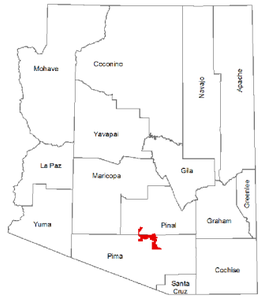
0 1 2 4 Miles
0 2 4 8 Kilometers

Location in Arizona

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Map 2-5

## Table 2-7. Resource Management Alternatives for FIRE ECOLOGY AND MANAGEMENT

<table>
<tr><th colspan="4">Desired Outcomes: Management Goals and Objectives</th></tr>
<tr><td colspan="2">NO ACTION</td><td colspan="2">ACTION ALTERNATIVES</td></tr>
<tr><td colspan="2"><u>Goal 1:</u> Fuels in the wildland-urban interface are maintained at levels to provide for public and firefighter safety.<br><br><u>Goal 2:</u> Each vegetation community is maintained within its natural range of variation in plant composition, structure, and function, and fuel loads are maintained below levels that are considered to be hazardous.</td><td colspan="2"><u>Goal 1:</u> Maintain fuels in the wildland-urban interface at levels to provide for public and firefighter safety.<br><u>Goal 2:</u> Maintain each vegetation community within its natural range of variation in plant composition, structure, and function, and maintain fuel loads below levels that are considered to be hazardous.</td></tr>
<tr><td colspan="2"><u>Objective</u>:<br>No LUP-level objectives for fire management are presented in the existing land use plan.</td><td colspan="2"><u>Objective 1:</u> All fuels treatment actions will prioritize public and firefighter safety.<br><u>Objective 2:</u> Maintain characteristics of Fire Regime Condition Class 1 (vegetation composition, structure, and fuels are similar to those of the historical regime and do not pre-dispose the system to risk of loss of key ecosystem components; wildland fires are characteristic of the historical fire regime behavior, severity, and patterns; disturbance agents, native species habitats, and hydrologic functions are within the historical range of variability; smoke production potential is low in volume).<br><u>Objective 3:</u> Suppress wildfire in the shortest practical time using minimum impact suppression tactics, while minimizing suppression costs.</td></tr>
<tr><th colspan="4">Decisions for Management Actions, Allowable Uses, and Use Allocations</th></tr>
<tr><th>Alternative A (No Action)</th><th>Action Alternative B</th><th>Action Alternative C<br>(Preferred Alternative)</th><th>Action Alternative D</th></tr>
<tr><td>1. IFNM is allocated to Non-Wildland Fire Use (areas not suitable for wildland fire use for resource benefit). This allocation requires mitigation and suppression to prevent direct threats to life or property. It includes areas where fire never played a large role, historically, in the development and maintenance of the ecosystem, and some areas where fire return intervals were very long. It also includes areas (including some wildland urban interface [WUI]</td><td>1. Same as Alternative A.</td><td>1. Same as Alternative A.</td><td>1. Same as Alternative A.</td></tr>
</table>

| | | | |
|---|---|---|---|
| areas) where an unplanned ignition could have negative effects to the ecosystem unless some form of mitigation takes place. | | | |
| 2. Maintain full suppression in all areas in accordance with applicable conservation measures (refer to Appendix E). | 2. Same as Alternative A. | 2. Same as Alternative A. | 2. Same as Alternative A. |
| 3. Implement programs to reduce unwanted ignitions, and emphasize prevention, detection, and rapid suppression response techniques. | 3. Same as Alternative A. | 3. Same as Alternative A. | 3. Same as Alternative A. |
| 4. Where fuel loading is high, use biological, mechanical or chemical treatments to maintain non-hazardous levels of fuels, reduce the hazardous effects of unplanned wildland fires, and meet resource objectives. Use of prescribed fire is prohibited. | 4. Same as Alternative A. | 4. Same as Alternative A. | 4. Same as Alternative A. |
| 5. No existing decisions specifically address this action. | 5. A Resource Advisor would be present on all fires within the IFNM. | 5. Same as Alternative B. | 5. Same as Alternative B. |

## Table 2-8. Resource Management Alternatives for CULTURAL RESOURCES

| Desired Outcomes: Management Goals and Objectives | |
|---|---|
| **NO ACTION** | **ACTION ALTERNATIVES** |
| **Goal**<br>No LUP-level goals for cultural resources are presented in the existing land use plan. | **Goal 1:** Identify, preserve, and protect significant cultural resources and ensure that they are available for appropriate uses by present and future generations.<br>**Goal 2:** Seek to reduce imminent threats and resolve potential conflicts from natural or human-caused deterioration, or potential conflicts with other resource uses by ensuring that all authorizations for land use and resource use will comply with the National Historic Preservation Act.<br>**Goal 3:** Recognize the potential public and scientific uses of the cultural resources on the public lands, and manage those resources so that their values are not diminished, but rather are maintained and enhanced.<br>**Goal 4:** Contribute to land use planning and multiple use management of the public lands in ways that make optimal use of cultural resource information, and that safeguard opportunities for allocated uses of cultural resources. |
| **Objective:**<br>The objective of cultural resources management in the RMP area is to protect the information potential or the public use values of properties or to manage them, where applicable, for conservation. | **Objective 1**: Allocate cultural resources to one of five use categories: (1) scientific use, (2) conservation for future use, (3) traditional use, (4) public use, (5) experimental use, or classify as discharged from management, according to the BLM Cultural Resource Manual 8110.<br>**Objective 2:** Protect and preserve in place the variety of cultural resources on public lands in their historic and prehistoric context on the landscape.<br>**Objective 3:** Develop and implement cultural resource management strategies for sites allocated to uses that warrant focused management, such as public use.<br>**Objective 4:** Develop strategies to define limits of acceptable change, monitor changes, and implement adaptive management to address unacceptable changes to selected cultural resources, emphasizing areas accessible by roads and trails.<br>**Objective 5:** Provide opportunities for research related to cultural resources on the monument.<br>**Objective 6:** Provide educational opportunities to enhance public understanding and appreciation of cultural resources on the monument, focusing on themes such as (1) prehistoric adaptation to the Sonoran Desert, (2) historic mining, (3) historic ranching, and (4) historic transportation.<br>**Objective 7:** Use the time and talents of volunteers to enhance selected elements of the cultural resource program. |

| Decisions for Management Actions, Allowable Uses, and Use Allocations | | | |
|---|---|---|---|
| **Alternative A (No Action)** | **Action Alternative B** | **Action Alternative C** (Preferred Alternative) | **Action Alternative D** |
| 1. No existing decisions specifically address this action. | 1. Sites would be allocated and re-allocated according to the BLM Cultural Resource Manual 8100 using the criteria pertinent to the specified use listed below and in response to changing resource conditions, public use, research opportunities, and other reasons. | 1. Same as Alternative B. | 1. Same as Alternative B. |

| *Scientific Use* | *Scientific Use* | *Scientific Use* | *Scientific Use* |
|---|---|---|---|
| 2. No existing decisions specifically address this action. | 2. Sites that are most important for the scientific or historical information they contain are allocated to scientific use. Sites are allocated to this category based on the following criteria:<br>• significance and uniqueness of site<br>• potential to contribute toward scientific understanding<br>• capability of currently available scientific methods to achieve research goals<br>• appropriate research proposal that will further scientific understanding or resource management<br>• existing threats to site, including vandalism, erosion, or other types of disturbance.<br>The following general sites classes may be allocated to scientific use.<br>Classes of prehistoric sites:<br>• village sites, camp sites, agricultural sites, rock shelters or cave sites<br>• lithic scatters, artifact scatters<br>• groundstone manufacturing sites<br>• rock features and alignments<br>• food and other resource processing sites, roasting pits<br>• hunting blinds and ambush sites<br>• trail sites<br>• tinaja and spring sites<br>• petroglyph sites, pictograph sites<br>• intaglio sites<br>Classes of historic sites:<br>• ranches, homesteads, and associated features and components | 2. Same as Alternative B, in addition the Santa Ana de Cuiquiburitac site (640 acres) is allocated to scientific use. | 2. Same as Alternative C. |

| | | | |
|---|---|---|---|
| | • livestock raising related sites, agricultural features<br>• mines and prospecting sites<br>• settlements and camps<br>• roads, trails, and driveways, railroads and associated features, stage stops and stations<br>• public works sites, military camps and sites<br>• rock features and walls<br>• facilities used in commerce<br>• wells and water developments, water control features<br>• artifact scatters<br>• historic aboriginal sites<br>• historic rock art<br>• trash dumps | | |
| 3. No existing decisions specifically address this action. | 3. Allow scientific and historical studies, which do not involve any ground-disturbing activities, by permitted qualified researchers at selected sites allocated to scientific use. Assign the highest priority for study to sites that are threatened with damage from human activities or natural processes, areas of scientific interest, sites eligible for the National Register of Historic Places, and areas where research may inform management actions or otherwise benefit IFNM management and resources. Use historic contexts and research designs to provide guidance for scientific studies. | 3. Allow scientific and historical studies, including excavation if warranted, by permitted qualified researchers at selected sites allocated to scientific use. Assign the highest priority for study to sites that are threatened with damage from human activities or natural processes, areas of scientific interest, sites eligible for the National Register of Historic Places, and areas where research may inform management actions or otherwise benefit IFNM management and resources. Use historic contexts and research designs to provide guidance for scientific studies. | 3. Same as Alternative C. |
| ***Public Use*** | ***Public Use*** | ***Public Use*** | ***Public Use*** |
| 4. No existing decisions specifically address this action. | 4. Sites managed for public use would be protected and developed as interpretive exhibits in place, or for related educational and recreational uses. No sites are allocated for public use at this time. | 4. Sites managed for public use would be protected and developed as interpretive exhibits in place, or for related educational and recreational uses. Sites allocated to public use include:<br>a. Cocoraque Butte (butte area only) | 4. Same as Alternative C. |

| | | | |
|---|---|---|---|
| | | b. Segments of the Historic Sasco Railroad located on public land<br>c. Historic sites associated with Silverbell Mine<br>d. Historic ranching sites<br>e. Certain agricultural use areas within the existing Avra Valley<br><br>Other sites may be allocated to public use based on the following criteria:<br>• the ability of the site to support public use while protecting monument objects<br>• presence of aboveground features, such as structures or rock art, landscape characteristics, or other features that are of interest to the public and are amenable to interpretive development<br>• the condition of the site and the feasibility of treating or stabilizing selected areas to withstand visitation<br>• accessibility to travel routes;<br>• visitor safety<br>• compatibility of other land uses and site values, such as traditional use by Native Americans<br>• feasibility of regular inspections by BLM staff and volunteers<br>• partnership opportunities for interpretive and educational projects<br>• unique site(s) and/or interpretive opportunity not available in the surrounding area | |

| | | | |
|---|---|---|---|
| 5. No existing decisions specifically address this action. | 5. No group tours of cultural sites would be allowed because no sites would be allocated to public use. | 5. Restrict visitor access, group tours, and group size as needed to prevent any damage from visitor use. Require commercial tour operators to receive Arizona Site Steward training and provide appropriate educational information on archaeological site etiquette and resource conservation to their customers if cultural sites are included on tours. Require tour operators to report vandalism or damage to sites. | 5. Same as Alternative C. |
| ***Traditional Use*** | ***Traditional Use*** | ***Traditional Use*** | ***Traditional Use*** |
| 6. No existing decisions specifically address this action. | 6. Allocate sites to traditional use that are important in maintaining the identity, heritage or well being of American Indian tribes or other cultural groups. Sites allocated for traditional use are managed in ways that recognize the importance ascribed to them and seek to accommodate their continuing traditional use. | 6. Same as Alternative B. | 6. Same as Alternative B. |
| 7. No existing decisions specifically address this action. | 7. Allocate sites to traditional use based on consultation with affiliated Indian tribes and consideration of other public uses. | 7. Same as Alternative B. | 7. Same as Alternative B. |
| 8. No existing decisions specifically address this action. | 8. Continue to consult with American Indian tribes to identify places of traditional importance and associated access needs. Develop measures for managing and protecting places that might be identified by tribes during the life of the plan. Honor tribal requests to protect the confidentiality of sensitive information, to the extent permitted by law. | 8. Same as Alternative B. | 8. Same as Alternative B. |

| ***Conservation for Future Use*** | ***Conservation for Future Use*** | ***Conservation for Future Use*** | ***Conservation for Future Use*** |
|---|---|---|---|
| 9. No existing decisions specifically address this action. | 9. Allocate sites to the conservation for future use category that are of singular historic importance, architectural interest or cultural importance. Their unusual significance makes them unsuitable for scientific or historical study that would result in their physical alteration. Allocate the Santa Ana de Cuiquiburitac site (640 acres) to Conservation for Future Use. | 9. Allocate sites to the conservation for future use category that are of singular historic importance, architectural interest or cultural importance. Their unusual significance makes them unsuitable for scientific or historical study that would result in their physical alteration. No sites are allocated for conservation for future use at this time. | 9. Same as Alternative C. |
| 10. No existing decisions specifically address this action. | 10. Sites would be conserved for the future until specified provisions were met such as the discovery of new information about the site, the development of new scientific techniques capable of fully realizing the research potential of the site, or damage to the site's integrity from vandalism or natural processes. | 10. Same as Alternative B. | 10. Same as Alternative B. |
| ***Experimental Use*** | ***Experimental Use*** | ***Experimental Use*** | ***Experimental Use*** |
| 11. No existing decisions specifically address this action. | 11. Sites best suited for controlled experimental studies that would improve management of other sites would be allocated to the experimental use category. | 11. Same as Alternative B. | 11. Same as Alternative B. |
| 12. No existing decisions specifically address this action. | 12. Sites in this category would be considered for studies such as testing and measuring the rate of natural or human-caused deterioration, testing the effectiveness of certain protection measures, and testing the effects of fire. Studies would develop new research or interpretation methods or would generate similar kinds of practical management information. Experimental study would not be applied to cultural properties with strong research potential, traditional cultural importance, or good public use potential if it would significantly | 12. Same as Alternative B. | 12. Same as Alternative B. |

| | | | |
|---|---|---|---|
| | diminish those values. Justifications would be made in terms of weighing the benefits of specific information to be gained versus the loss of cultural attributes or data that may occur during the experiment or study. | | |
| ***Cultural Resource Management Areas*** | ***Cultural Resource Management Areas*** | ***Cultural Resource Management Areas*** | ***Cultural Resource Management Areas*** |
| 13. Designate the 2,720-acre Avra Valley as a Cultural Resource Management Area. | 13. Discontinue the designation of the Avra Valley as a Cultural Resource Management Area. | 13. Same as Alternative B. | 13. Same as Alternative B. |

## Table 2-9. Resource Management Alternatives for PALEONTOLOGICAL RESOURCES

| Desired Outcomes: Management Goals and Objectives | | | |
|---|---|---|---|
| **NO ACTION**<br><br>**Goal**<br>No LUP-level goals for paleontology are presented in the existing land use plan. | **ACTION ALTERNATIVES**<br><br>**Goal 1:** Protect paleontological resources. | | |
| **Objective**:<br>No LUP-level objectives for paleontology are presented in the existing land use plan. | **Objective 1**: Manage paleontological resources for their scientific, educational and recreational values. | | |
| **Decisions for Management Actions, Allowable Uses, and Use Allocations** | | | |
| **Alternative A (No Action)** | **Action Alternative B** | **Action Alternative C**<br>(Preferred Alternative) | **Action Alternative D** |
| 1. The collection of any objects, including… paleontological resources… should not be permitted, except where intended for legitimate scientific uses for which documentation is provided to the satisfaction of the responsible management official. | 1. Same as Alternative A. | 1. Same as Alternative A. | 1. Same as Alternative A. |
| 2. No existing decisions specifically address this action. | 2. Require field surveys for paleontological resources prior to any ground-disturbing activities on IFNM lands and mitigate according to BLM guidelines. | 2. Same as Alternative B. | 2. Same as Alternative B. |

## Table 2-10. Resource Management Alternatives for SCENIC AND VISUAL RESOURCES

| Desired Outcomes: Management Goals and Objectives | |
|---|---|
| **NO ACTION** | **ACTION ALTERNATIVES** |
| **Goal:**<br>No LUP-level goals for scenic and visual resources are presented in the existing land use plan. | **Goal 1:** Preserve the monument's natural scenic and visual values, and where appropriate, rehabilitate disturbed areas that impact important views. |
| **Objective**: No LUP-level objectives for scenic and visual resources are presented in the existing land use plan. | **Objective 1:** Maintain or enhance opportunities to view those landscapes of the monument that may be valued for scenic, cultural, biological, recreation, or other reasons. Preserve the visual quality of those landscapes visible from important viewing areas or key observation points, which may include:<br>• specific scenic road corridors<br>• recreational sites and areas (perhaps as characterized by Recreational Management Zones [RMZs])<br>• designated motorized and non-motorized trails<br>• cultural and historic areas<br>• residences in and near the monument<br>• other sites/areas with identified place-based values<br>**Objective 2:** Prioritize disturbed areas for rehabilitation based on the following criteria:<br>• Amount of visual contrast with the surrounding area<br>• Distance the area is visible<br>• Proximity to high recreation and/or visitor use areas or scenic routes and overlooks<br>• High scenic quality<br>**Objective 3:** Apply best management practices and visual design guidelines to minimize visual contrast of proposed projects to achieve Visual Resource Management (VRM) objectives to the greatest extent possible.<br>**Objective 4:** Manage the transportation system to provide a variety of sightseeing opportunities. |

| Decisions for Management Actions, Allowable Uses, and Use Allocations | | | |
|---|---|---|---|
| **Alternative A (No Action)** | **Action Alternative B** | **Action Alternative C** (Preferred Alternative) | **Action Alternative D** |
| ***VRM Classes*** | ***VRM Classes*** | ***VRM Classes*** | ***VRM Classes*** |
| 1. Manage all public land as VRM Class III areas (Map 2-6). | 1. Consistent with visual resources values and other resources and resource use allocations, designate IFNM lands to VRM classes as follows:<br><br>The following approximate acreages apply to Alternative B:<br>Class I: 36,990 acres<br>Class II: 88,120 acres<br>Class III: 3,290 acres<br><br>The VRM Classes for this alternative are shown on Map 2-7. | 1. Consistent with visual resources values and other resources and resource use allocations, designate IFNM lands to VRM classes as follows:<br><br>The following approximate acreages apply to Alternative C:<br>Class II: 124,900 acres<br>Class III: 3,420 acres<br>Class IV: 80 acres<br><br>The VRM Classes for this alternative are shown on Map 2-8. | 1. Consistent with visual resources values and other resources and resource use allocations, designate IFNM lands to VRM classes as follows:<br><br>The following approximate acreages apply to Alternative D:<br>Class II: 122,580 acres<br>Class III: 4,220 acres<br>Class IV: 1,600 acres<br><br>The VRM Classes for this alternative are shown on Map 2-9. |
| **Implementation-Level Decisions** | | | |
| 1. No implementation decisions specifically address this action. | 1. Rehabilitate existing disturbed areas, as feasible, that attract attention to achieve visual contrast level consistent with designated VRM class. | 1. Same as Alternative B. | 1. Same as Alternative B. |
| 2. No implementation decisions specifically address this action. | 2. Manage activities that result in fugitive-dust (e.g., road system) to protect visual quality in the monument (see also alternatives for air quality and transportation). | 2. Same as Alternative B. | 2. Same as Alternative B. |

# Visual Resources Management Aternative A

**Ironwood Forest National Monument**
**Draft RMP/EIS**

## Legend

**Visual Resource Management Class**

- Class III

Note:
Land use allocations, designations, and management prescriptions apply only to public lands administered by the BLM. If non-Federal lands are acquired, they would be managed according to the allocations depicted on the map.

Data Source:
VRM Information: URS 2006
Base Information: BLM 2003
Quadrangle Image: U.S. Geological Survey 1977 Tucson

**General Reference**

- County Boundaries
- Central Arizona Project (CAP) Canal
- River
- Interstate 10
- Main public access routes to monument. County administered roads connecting monument travel route system to public highways.

**Planning Area**

- Ironwood Forest National Monument

Universal Tranverse Mercator
Zone 12, Units Meters
Clark 1866 Spheroid
NAD27 Datum

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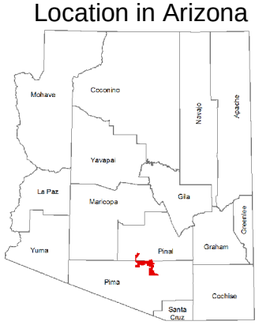
0 1 2 4 Miles
0 2 4 8 Kilometers

Location in Arizona

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Map 2-6

# Visual Resources Management Alternative B

**Ironwood Forest National Monument**
**Draft RMP/EIS**

## Legend

**Visual Resource Management Class**

- Class I
- Class II
- Class III

Note:
Land use allocations, designations, and management prescriptions apply only to public lands administered by the BLM. If non-Federal lands are acquired, they would be managed according to the allocations depicted on the map.

Data Source:
VRM Alternative: URS 2006
Base Information: BLM 2003
Quadrangle Image: U.S. Geological Survey 1977 Tucson

**General Reference**

- County Boundaries
- Central Arizona Project (CAP) Canal
- River
- Interstate 10
- Main public access routes to monument. County administered roads connecting monument travel route system to public highways.

**Planning Area**

- Ironwood Forest National Monument

Universal Tranverse Mercator
Zone 12, Units Meters
Clark 1866 Spheroid
NAD27 Datum

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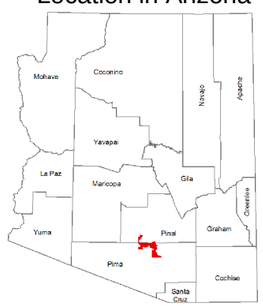
0 1 2 4 Miles
0 2 4 8 Kilometers

Location in Arizona

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Map 2-7

# Visual Resources Management Alternative C

**Ironwood Forest National Monument**
**Draft RMP/EIS**

## Legend

**Visual Resource Management Class**

- Class II
- Class III
- Class IV

Note:
Land use allocations, designations, and management prescriptions apply only to public lands administered by the BLM. If non-Federal lands are acquired, they would be managed according to the allocations depicted on the map.

Data Source:
VRM Alternative: URS 2006
Base Information: BLM 2003
Quadrangle Image: U.S. Geological Survey 1977 Tucson

**General Reference**

- County Boundaries
- Central Arizona Project (CAP) Canal
- River
- Interstate 10
- Main public access routes to monument. County administered roads connecting monument travel route system to public highways.

**Planning Area**

- Ironwood Forest National Monument

Universal Tranverse Mercator
Zone 12, Units Meters
Clark 1866 Spheroid
NAD27 Datum

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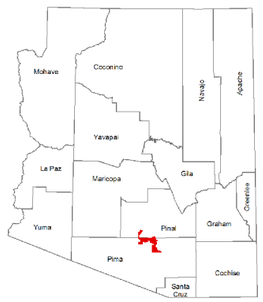
0 1 2 4 Miles
0 2 4 8 Kilometers

Location in Arizona

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Map 2-8

# Visual Resources Management Alternative D

**Ironwood Forest National Monument**
**Draft RMP/EIS**

## Legend

**Visual Resource Management Class**

- Class II
- Class III
- Class IV

Note:
Land use allocations, designations, and management prescriptions apply only to public lands administered by the BLM. If non-Federal lands are acquired, they would be managed according to the allocations depicted on the map.

Data Source:
VRM Alternative: URS 2006
Base Information: BLM 2003
Quadrangle Image: U.S. Geological Survey 1977 Tucson

**General Reference**

- County Boundaries
- CAP Canal
- River
- Interstate 10
- Main public access routes to monument. County administered roads connecting monument travel route system to public highways.

**Planning Area**

- Ironwood Forest National Monument

Universal Tranverse Mercator
Zone 12, Units Meters
Clark 1866 Spheroid
NAD27 Datum

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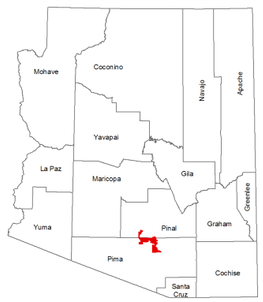
0 1 2 4 Miles
0 2 4 8 Kilometers

Location in Arizona

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## Table 2-11. Resource Management Alternatives for LANDS MANAGED TO MAINTAIN WILDERNESS CHARACTERISTICS

| Desired Outcomes: Management Goals and Objectives | | | |
|---|---|---|---|
| **NO ACTION** | **ACTION ALTERNATIVES** | | |
| **Goal**:<br>No LUP-level goals for areas with wilderness characteristics are presented in the existing land use plan. | **Goal 1**: Maintain wilderness characteristics (naturalness, and outstanding opportunities for solitude and primitive and unconfined recreation) within identified areas.<br>**Goal 2:** Allow land uses and authorizations compatible with maintaining wilderness characteristics and consistent with resource management decisions. | | |
| **Objective**: No LUP-level objectives for areas with wilderness characteristics are presented in the existing land use plan. | **Objective 1:** Manage areas with wilderness characteristics to maintain the following:<br>***Naturalness:*** Lands and resources exhibit a high degree of naturalness when affected by the forces of nature and where the imprint of human activity is substantially unnoticeable. Naturalness attributes may include the presence or absence of roads and trails, fences and other improvements; the nature and extent of landscape modification; the presence of native vegetation communities; and the connectivity of habitats. Wildlife populations and habitats are recognized as important aspects of the naturalness and will be managed actively.<br>***Solitude:*** Visitors may have outstanding opportunities for solitude when the sights, sounds, and evidence of other people are rare or infrequent, where visitors can be isolated, alone or secluded from others.<br>***Primitive and Unconfined Recreation:*** Visitors may have outstanding opportunities for primitive and unconfined types of recreation where the use of the area is through non-motorized, non-mechanical means off designated routes and as specifically excepted, and where no or minimal developed recreation facilities are encountered. | | |
| **Decisions for Management Actions, Allowable Uses, and Use Allocations** | | | |
| **Alternative A (No Action)** | **Action Alternative B** | **Action Alternative C** (Preferred Alternative) | **Action Alternative D** |
| 1. No existing decisions specifically address this action. | 1. Manage 36,990 acres of IFNM to maintain wilderness characteristics, as shown on Map 2-10. | 1. Manage 9,510 acres of IFNM to maintain wilderness characteristics, as shown on Map 2-11. | 1. No areas would be managed to maintain wilderness characteristics. |
| 2. No existing decisions specifically address this action. | 2. Visual changes from allowable uses and management activities to the characteristic landscape on lands managed to maintain wilderness characteristics (36,990 acres, as shown on Map 2-7) must be very low and preserve existing character consistent with VRM Class I objectives. | 2. Visual changes from allowable uses and management activities to the characteristic landscape on lands managed to maintain wilderness characteristics (9,510 acres, as shown on Map 2-8) must be low and retain existing character consistent with VRM Class II objectives. | 2. No management actions apply under this alternative. |

| | | | |
|---|---|---|---|
| 3. No existing decisions specifically address this action. | 3. Recreation setting conditions (particularly solitude, remoteness, facilities, encounters among visitors, evidence of use, and accessibility) in areas managed to maintain wilderness characteristics would be in accordance with the Primitive RMZ objectives (as defined in Table 2-14). | 3. Same as Alternative B. | 3. No management actions apply under this alternative. |

# Lands Managed to Maintain Wilderness Characteristics Alternative B

**Ironwood Forest National Monument**
**Draft RMP/EIS**

## Legend

- Lands Managed to Maintain Wilderness Characteristics

**Reference Information**

**Surface Management**

- Bureau of Land Management
- National Park Service
- Bureau of Reclamation
- American Indian Reservation
- Military Reservations
- State Trust Lands
- State, County, City; Wildlife, Park and Outdoor Recreation Areas
- Private
- Pima County
- Existing Mining Claim (Areas would be removed from management to maintain wilderness characteristics upon validity of the claim.)

Note:
Land use allocations, designations, and management prescriptions apply only to public lands administered by the BLM. If non-Federal lands are acquired, they would be managed according to the allocations depicted on the map.

Data Source:
Wilderness Characteristics Alternative: BLM 2005
Mining Claims: BLM 2003
Base Information: BLM 2003
Quadrangle Image: U.S. Geological Survey 1977 Tucson

**General Reference**

- County Boundaries
- CAP Canal
- River
- Interstate 10
- Main public access routes to monument. County administered roads connecting monument travel route system to public highways.

**Planning Area**

- Ironwood Forest National Monument

Universal Tranverse Mercator
Zone 12, Units Meters
Clark 1866 Spheroid
NAD27 Datum

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0 1 2 4 Miles
0 2 4 8 Kilometers

Location in Arizona

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Map 2-10

# Lands Managed to Maintain Wilderness Characteristics Alternative C

**Ironwood Forest National Monument**
**Draft RMP/EIS**

## Legend

- Lands Managed to Maintain Wilderness Characteristics

**Reference Information**

**Surface Management**

- Bureau of Land Management
- National Park Service
- Bureau of Reclamation
- American Indian Reservation
- Military Reservations
- State Trust Lands
- State, County, City; Wildlife, Park and Outdoor Recreation Areas
- Private
- Pima County
- Existing Mining Claim (Areas would be removed from management to maintain wilderness characteristics upon validity of the claim.)

Note:
Land use allocations, designations, and management prescriptions apply only to public lands administered by the BLM. If non-Federal lands are acquired, they would be managed according to the allocations depicted on the map.

Data Source:
Wilderness Characteristics Alternative: BLM 2005
Mining Claims: BLM 2003
Base Information: BLM 2003
Quadrangle Image: U.S. Geological Survey 1977 Tucson

**General Reference**

- County Boundaries
- CAP Canal
- River
- Interstate 10
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**Planning Area**

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0 1 2 4 Miles

0 2 4 8 Kilometers

Location in Arizona

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Map 2-11

## Table 2-12. Resource Management Alternatives for ENERGY AND MINERAL RESOURCES

| Desired Outcomes: Management Goals and Objectives | | | |
|---|---|---|---|
| **NO ACTION** | **ACTION ALTERNATIVES** | | |
| **Goal**:<br>No LUP-level goals for energy and minerals resources are presented in the existing land use plan. | **Goal 1:** Manage mining on the monument where valid existing rights occur. | | |
| **Objective**:<br>No LUP-level objectives for energy and minerals resources are presented in the existing land use plan. | **Objective 1:** Prevent unnecessary and undue degradation from mining activity on grandfathered mining claims that have established valid existing rights.<br>**Objective 2:** Assess abandoned mines for the presence of physical and chemical hazards, and wildlife habitat and mitigate hazards as necessary. | | |
| | | | |
| **Decisions for Management Actions, Allowable Uses, and Use Allocations** | | | |
| **Alternative A (No Action)** | **Action Alternative B** | **Action Alternative C** (Preferred Alternative) | **Action Alternative D** |
| 1. Mining activities and mineral extraction for energy production within the IFNM would continue to be administered on a case-by-case basis for valid mining claims.<br>(New mining claims, mineral leases and sales are prohibited in the IFNM; refer to Appendix A). | 1. Same as Alternative A. | 1. Same as Alternative A. | 1. Same as Alternative A. |
| **Implementation-Level Decisions** | | | |
| 1. No implementation decisions specifically address this action. | 1. Survey abandoned mines within the monument for the presence of physical and chemical hazards, and wildlife habitat. | 1. Same as Alternative B. | 1. Same as Alternative B. |
| 2. No implementation decisions specifically address this action. | 2. Reclaim abandoned mines having the greatest and immediate risk to human health or convert to another use protective of other resources. | 2. Same as Alternative B. | 2. Same as Alternative B. |

## Table 2-13. Resource Management Alternatives for LIVESTOCK GRAZING

| Desired Outcomes: Management Goals and Objectives | |
|---|---|
| **NO ACTION** | **ACTION ALTERNATIVES** |
| **Goal**:<br>Provide forage on a sustained yield basis for livestock consistent with meeting Arizona Standards for Rangeland Health. Healthy, sustainable rangeland ecosystems would be maintained or improved to meet Land Health Standards and produce a wide range of public values such as wildlife habitat, livestock forage, recreation opportunities, clean water, and functional watersheds. | **Goal 1:** Manage and monitor livestock grazing, in areas open for this use, consistent with the Arizona Standards for Rangeland Health and Guidelines for Grazing Administration (see Section 2.3.2 of this Chapter), and with protection of monument objects.<br>**Goal 2:** Manage grazing and range resources toward best possible ecological conditions for the local area given past uses and current potential.<br>**Goal 3:** Acknowledge the cultural, historical and economic values of ranching through interpretive efforts. |
| **Objective**:<br>Livestock use and associated management practices would be conducted in a manner consistent with multiple use needs and objectives to ensure that the health of rangeland resources is preserved or improved so that they are productive for all rangeland values. Where needed, public rangeland ecosystems would be improved to meet objectives. | **Objective 1:** Manage grazing and range resources to meet all natural resource objectives.<br>**Objective 2:** Implement measures to improve conditions, as needed, to progress toward the best possible ecological conditions. |

| Decisions for Management Actions, Allowable Uses, and Use Allocations | | | |
|---|---|---|---|
| **Alternative A (No Action)** | **Action Alternative B** | **Action Alternative C** (Preferred Alternative) | **Action Alternative D** |
| 1. All public lands within 11 allotments (approximately 128,400 acres) are available for livestock grazing. | 1. All public lands within 11 allotments (only the portion within the IFNM, which includes approximately 128,400 acres) are unavailable for grazing to maximize the preservation of monument objects. Allotments would be unavailable for grazing only upon expiration of existing leases. | 1. All public lands within 11 allotments (approximately 128,400 acres) are available for grazing. | 1. Same as Alternative C. |

| | | | |
|---|---|---|---|
| 2. Classify nine of 11 allotments as perennial/ephemeral and classify 2 as ephemeral (refer to Appendix F for classification criteria). | 2. No management actions apply under this element for Alternative B. | 2. Classify all 11 allotments as perennial (refer to Appendix F for classification criteria). | 2. Same as Alternative C (refer to Appendix F for classification criteria). |
| 3. Following cancellation of a grazing lease, reallocate forage available for livestock use on a sustained yield basis within the associated allotment to a new grazing use applicant. | 3. No management actions apply under this element for Alternative B. | 3. Following cancellation or voluntary relinquishment of a grazing lease, BLM would determine if conditions within the associated allotment(s) are satisfactory based on applicable management objectives. If BLM determines that livestock grazing is preventing or hindering progress towards the achievement of applicable management objectives, BLM may decide to discontinue livestock grazing use on the allotment(s) if this action would help promote attainment of these objectives. Even if BLM initially decides to discontinue livestock use on some or all of an allotment, it may later decide to resume livestock use if it determines, based on its subsequent evaluation of ecological conditions and other pertinent factors, that it is appropriate to do so. | 3. Same as Alternative C. |
| 4. Allow only those new range improvements for livestock in (Desert Tortoise) Category I and II Habitat Areas that would not create conflicts with tortoise populations. Mitigation for such conflicts is permissible to make the net effect of the improvements positive or neutral to desert tortoise populations. Conflicting existing improvements should be eliminated as opportunities arise. | 4. No new range improvements would be authorized. | 4. Same as Alternative A, with the following addition:<br>Where range improvements are necessary and/or permitted, access and activities would be located and implemented to minimize additional disturbance to resources. | 4. Same as Alternative C. |

| Implementation-Level Decisions | | | |
|---|---|---|---|
| 1. Provide additional (stock) water sources in the Twin Tanks and Cocoraque Pastures. Construct all additional waters to accommodate deer, javelina, and quail. | 1. No implementation decisions apply under this element for Alternative B. | 1. Provide additional (stock) water sources in the Twin Tanks and Cocoraque Pastures. All stock waters would be constructed to accommodate all wildlife species that might benefit from them. Current stock waters would be evaluated, and modified as necessary, to provide the maximum benefit and minimum adverse impact on wildlife. | 1. Same as Alternative C. |
| 2. No implementation decisions specifically address this action. | 2. No implementation decisions apply under this element for Alternative B. | 2. Increase the number and variety of wildlife and livestock exclosures to represent various ecosystems, and monitor these regularly. Exclosures would meet standard design configurations from manual H-1741-1. | 2. Same as Alternative C. |
| 3. No implementation decisions specifically address this action. | 3. No implementation decisions apply under this element for Alternative B. | 3. Maintain yearlong water sources in all pastures for livestock, but ensure safe availability of water to wildlife. Minimize livestock impacts on priority plant species and habitats by providing water sources away from existing populations. Move or replace livestock waters that are found to be causing habitat deterioration near rare plants. | 3. Same as Alternative C. |
| 4. No implementation decisions specifically address this action. | 4. No implementation decisions apply under this element for Alternative B. | 4. Use of motorized vehicles by authorized users (livestock grazing, wildlife management activities, rights-of-way and special use permits) is subject to the OHV use and travel route designations, unless specifically authorized on a case-by-case basis. Administrative access to fence lines, corrals, wells, and water infrastructure for inspection and maintenance would be granted, as necessary. See Table 2-16 Travel Management for more information. | 4. Same as Alternative C. |

## Table 2-14. Resource Management Alternatives for RECREATION

| Desired Outcomes: Management Goals and Objectives | |
|---|---|
| **NO ACTION** | **ACTION ALTERNATIVES** |
| **Goal**:<br>No LUP-level goals for recreation are presented in the existing land use plans; however, recreation resources would be managed under an extensive recreation management area (ERMA) strategy, without specific objectives for recreation use, access to recreation opportunities, quality of experience, or quality of setting. Recreation use would be subject to regulations dictated primarily by resource protection objectives for the various monument values (watershed, cultural, VHA, VMA). | **Goal 1:** Manage monument lands to produce a variety of quality recreation experiences in largely natural settings, while protecting natural and cultural resources, and promoting safety and harmony among users.<br>**Goal 2:** Manage recreation resources and visitor services to facilitate production and protection of recreation opportunities, activities, experiences and benefits that are presently derived from the monument, and that are important to individuals and the communities affected.<br>**Goal 3:** Make visitor information available to the public to aid in visitor use, and foster compliance with use restrictions, management objectives, and appreciation for resources.<br>**Goal 4:** Coordinate visitor information, signing, and management with the Arizona State Lands Department, AGFD, counties, private land owners, and other interests to achieve desired recreation outcomes. |
| **Objectives**:<br>No LUP-level objectives for recreation are presented in the existing land use plan. | **Objective 1:** When recreation use conflicts arise, promote communication, collaboration, and coordination among users to address them.<br>**Objective 2:** Use Recreation Management Zones (RMZs) targeting specific recreation opportunities and outcomes to provide roaded natural, semi-primitive motorized, and semi-primitive non-motorized settings, and specialized areas as detailed below. Allocate zones, which target specific recreational opportunities, with different objectives for targeted recreation outcomes, setting conditions, and administration. The targeted opportunities represent the range of opportunities currently available.<br>**Objective 3:** Manage the IFNM to primarily target the undeveloped recreation-tourism market. This market demands a variety of distinctive kinds of dispersed recreation opportunities produced by settings in open spaces with an undeveloped character, with a range of accessibility and requiring varying amounts of self-reliance on the part of visitors. |

| | Recreation Management Zone Objectives |
|---|---|
| No decisions from existing land use plan apply. | **Roaded Natural RMZ Objectives:**<br>*Recreation Niche:*<br>Scenic Sonoran Desert touring on improved roads for viewing the natural landscape, with wayside stops for interpretation of the monument's natural and cultural history, and access to dispersed recreation opportunities.<br>*Recreation Management Objective:*<br>This zone provides opportunities for visitors to engage in scenic road tours in a variety of modes of travel, and in interpretive programs available, with at least 75 percent of visitors realizing the targeted outcomes and/or benefits.<br>*Primary Activities*:<br>Driving passenger car and a variety of other motorized recreational vehicles for viewing scenery and points of interest. Stopping at wayside interpretive sites and overlooks to view scenery or wildlife. Driving to and staging for access to more remote and primitive settings.<br>*Experiences:*<br>Enjoying the natural Sonoran desert landscape and climate with family or friends; learning about the monument's natural and cultural history; taking low risks.<br>*Benefits:*<br>Enhanced sensitivity, awareness and appreciation of the monument's natural and cultural resources. High sense of personal responsibility for protecting monument objects.<br>***Recreation Setting Character required to produce recreation management outcomes:***<br>*Remoteness:*<br>Areas are readily accessible with low sense of remoteness due to their location along collector or local improved and maintained roads that are accessible by passenger and recreational vehicles.<br>*Naturalness:*<br>Largely natural with a few developments in the foreground view, as needed for allowable IFNM land uses (range improvements, recreation sites, parking areas, signs, etc.)<br>*Facilities:*<br>Stabilized, improved and maintained roads and trails, parking turnouts, traffic control, interpretive signs/exhibits, trailheads to side trails. Minimal improvements provided for visitor convenience, and public health and safety.<br>*Contacts:*<br>Daily average no more than 50 parties passing along the road, and no more than 25 other parties at activity areas.<br>*Group size:*<br>Parties of 50 persons or more with special permit only, 100 persons maximum.<br>*Evidence of use:*<br>Maintained roads, parking turnouts, trailheads or staging areas, signs (portal, directional, informational, other), fence crossings without gates, stabilized or improved activity areas, intersections with side roads, or more primitive roads. |

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| | *Accessibility:*<br>Motorized vehicles and non-motorized vehicles licensed and insured to operate on a public road under Arizona law (ARS Title 28). Design vehicle is passenger car and recreational vehicle. Recreation sites and/or activity areas barrier free for persons with mobility impairments.<br>*Management Controls:*<br>Vehicle use and recreation activity areas limited to designated sites. Rules of conduct for developed sites implemented. Regulatory signs, other visitor control devices installed.<br>*Visitor Services:*<br>Regular visitor contact patrols by official personnel, with frequency depending on time of year. Regular law enforcement patrols. Regular clean-ups and trash collection. Self service on-site visitor information at recreation activity areas, special purpose sites, and access points to more remote settings. |
| No decisions from existing land use plan apply. | **Semi-Primitive Motorized RMZ Objectives:**<br>*Recreation Niche:*<br>Scenic Sonoran Desert touring on semi-primitive routes for viewing the natural and cultural landscape by a variety of off-highway vehicles, and access to dispersed recreation opportunities and more remote settings.<br>*Recreation Management Objective:*<br>This zone provides opportunities for visitors to engage in semi-primitive road touring on off-highway motorized vehicles (4WD, ATV, and trail motorcycle, or any other), with at least 75 percent of sampled visitors realizing the targeted outcomes and/or benefits.<br>*Primary Activities:*<br>Driving off-highway vehicles (4WD, ATVs, and trail motorcycles). Vehicle based semi-primitive camping and/or picnicking, hunting, viewing scenery and wildlife, access to more remote settings.<br>*Experiences:*<br>Enjoying self-directed desert adventure, exploring, taking moderate risks.<br>*Benefits:*<br>Self-reliance for survival and comfort. Improved or practicing outdoor recreation ethics and skills. Enhanced sensitivity, awareness, and appreciation of the monument's natural and cultural resources. Greater sense of personal responsibility for protecting monument objects.<br>***Recreation Setting Character Required to produce recreation management outcomes:***<br>*Remoteness:*<br>Areas where physical access may require special equipment providing for a moderate sense of remoteness. Areas are located along resource access roads accessible to off-highway vehicles (high clearance, 4WD, ATV, trail-bike) and at least ½ mile away from maintained collector roads and/or county roads.<br>*Naturalness*:<br>Natural landscape with some modifications, consistent with VRM objectives.<br>*Facilities:*<br>Stabilized, minimally maintained single lane roads, trails. Rustic parking turnouts, traffic control, signs and trailheads. No visitor conveniences at recreation areas. Minimal public health and safety hazard mitigation. |

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| | *Contacts:*<br>Daily average, no more than 15 other parties passing along the road, and no more than 10 other parties at activity areas.<br>*Group size:*<br>Parties of 50 persons or more with special permit only, 100 persons maximum.<br>*Evidence of use:*<br>Single lane, semi-primitive roads, rustic parking turnouts, well worn and lightly worn and activity areas, signs.<br>*Accessibility:*<br>Motorized vehicles and non-motorized vehicles limited to designated routes. Typical design vehicle is full size high clearance utility vehicle, with trailer combination vehicles for special purposes. Some recreation sites and/or activity areas barrier free for persons with mobility impairments.<br>*Management Controls:*<br>Regulatory signs and other visitor control devices installed. Regular law enforcement patrols.<br>*Visitor Services:*<br>Periodic patrols by BLM visitor services personnel, with frequency depending on time of year, on at least a bi-weekly basis during high use season. On-site visitor information at recreation activity areas, access points and special purpose sites, and access points to more remote settings. |
| No decisions from existing land use plan apply. | **Semi-Primitive Non-Motorized RMZ Objectives:**<br>*Recreation Niche*:<br>Scenic Sonoran Desert touring for viewing the natural and cultural landscape by a variety of non-motorized travel.<br>*Recreation Management Objective*:<br>This zone provides opportunities for visitors to engage in non-motorized touring (hiking, equestrian, mountain bike), with at least 75 percent of sampled visitors realizing the targeted outcomes and/or benefits.<br>*Primary Activities*:<br>Hiking, horseback riding, mountain biking, riding livestock pulled wagons to view scenery, access semi-primitive camping and picnicking, hunting, viewing landscape or wildlife, access more remote settings.<br>*Experiences:*<br>Enjoying self-directed desert adventure, exploring, taking moderately high risks.<br>*Benefits:*<br>Self-reliance for survival and comfort. Improved or practicing outdoor recreation ethics and skills. Enhanced sensitivity, awareness, and appreciation of the monument's natural and cultural resources. Greater sense of personal responsibility for protecting monument objects.<br>***Recreation Setting Character required to produce recreation management outcomes:***<br>*Remoteness:*<br>Areas located along routes limited to non-motorized travel that are at least ½ mile away from resource access roads. |

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| | *Naturalness*:<br>Natural landscape with some modifications, consistent with VRM objectives.<br>*Facilities:*<br>Stabilized designated trails. Rustic parking turnouts, traffic control, signs and trailheads. No visitor conveniences at recreation activity areas. Minimal public health and safety hazard mitigation.<br>*Contacts:*<br>Daily average, no more than 15 other parties encountered along travel routes, and no more than 10 other parties at activity areas.<br>*Group size:*<br>Parties of 25 persons or more with special permit only, 50 persons maximum.<br>*Evidence of use:*<br>Single-track trails, converted use roadways, unimproved activity areas, minimal signs.<br>*Accessibility:*<br>Only by non-motorized travel, including non-motorized mechanized vehicles, on single track trails or converted single lane roadways. Typical design vehicles are equestrian and mountain bike, with full size utility vehicle for special administrative purposes. Some routes and recreation sites and/or activity areas with some barriers for persons with mobility impairments, requiring assistance, special equipment or exceptional ability.<br>*Management Controls:*<br>No restrictions on hiking and equestrian use, or dispersed camping and picnicking and other dispersed recreation activities, except as needed to mitigate potential impacts to fragile, sensitive resources. Mechanized vehicles (including mountain bikes) restricted to routes designated for that purpose. Regulatory signs and other visitor control devices installed at access points. Minimal law enforcement presence; regular patrols at access points.<br>*Visitor Services:*<br>Periodic patrols by BLM visitor services personnel with frequency depending on time of year; monthly basis or as needed for follow-up. On-site visitor information at access points and special purpose sites along travel route. |
| No decisions from existing land use plan apply. | **Ragged Top Wildlife Viewing RMZ Objectives:**<br>*Recreation Niche*:<br>Viewing and learning about a variety of desert wildlife in their natural habitat, in the most diverse and rugged Sonoran Desert mountain setting found in the IFNM.<br>*Recreation Management Objective:*<br>This zone provides opportunities for visitors to engage in wildlife viewing and nature study in a naturally appearing landscape with at least 75 percent of sampled visitors realizing the targeted outcomes and/or benefits.<br>*Primary Activities:*<br>Hiking, horseback riding, roadside or trailside stopping to view wildlife and the natural landscape, rough trekking and mountain climbing.<br>*Experiences:*<br>Learning about the Sonoran Desert ecology and wildlife. Enjoying the natural desert landscape. Enjoying self-directed desert adventure, exploring, taking moderately high risks. |

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| | *Benefits:*<br>Enhanced awareness and appreciation of the monument's wildlife and natural habitat resources. Increased self-reliance for survival and comfort. Greater sense of personal responsibility for protecting monument objects. Improved or practicing outdoor recreation ethics and skills.<br>***Recreation Setting Character required to produce recreation management outcomes:***<br>*Remoteness:*<br>Areas where access is by way of walking or riding along trails, and by driving vehicle only along perimeter of area.<br>*Naturalness*:<br>Natural landscape with few modifications, consistent with VRM objectives.<br>*Facilities:*<br>No facilities within the area's interior, except gates at fences and interpretive signs. Rustic parking turnouts, trailheads, traffic control, interpretive signs, informational and other signs on the area's perimeter access points, or along the trails.<br>*Contacts:*<br>Daily average, no more than 15 other parties encountered along travel routes, and no more than 10 other parties at activity areas.<br>*Group size:*<br>Parties of 25 persons or more with special permit only, 50 persons maximum.<br>*Evidence of use:*<br>Paths and unimproved single-track trails, converted use roadways, parking turnouts and signs.<br>*Accessibility:*<br>Foot, horse and mountain bike travel on designated trails. Passenger car access to area's perimeter. Interior not accessible due to natural barriers for persons with mobility impairments. Perimeter accessible to persons with mobility impairments.<br>*Management Controls:*<br>Seasonal restrictions on hiking, equestrian use camping, and picnicking may apply as needed to mitigate potential impacts to fragile, sensitive resources. Regulatory signs and other visitor control devices installed at access points. Infrequent law enforcement presence; regular patrols at access points.<br>*Visitor Services:*<br>Regular patrols by BLM visitor services personnel with frequency depending on time of year. Weekly presence during high use season. On-site visitor information and interpretive sites at access points and special sites along travel routes. | |
| No decisions from existing land use plan apply. | **Primitive RMZ Objectives:**<br>*Recreation Niche:*<br>Hiking and riding excursions into the most remote, rugged and naturally appearing Sonoran Desert landscape found in the monument. | No decisions apply under Alternative D. |

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| | *Recreation Management Objective:*<br>This zone provides opportunities for visitors to engage in primitive recreation activities with a sense of remoteness and solitude, in a naturally appearing landscape with at least 75 percent of sampled visitors realizing the targeted outcomes and/or benefits.<br>*Primary Activities:*<br>Hiking, horseback riding, trailside semi-primitive camping and/or picnicking, hunting, viewing scenery and wildlife.<br>*Experiences:*<br>Enjoying self-directed desert adventure, exploring, opportunities for taking high risks.<br>*Benefits:*<br>Self-reliance for survival and comfort. Improved or practicing outdoor recreation ethics and skills. Enhanced sensitivity, awareness, and appreciation of the monument's natural and cultural resources. Greater sense of personal responsibility for protecting monument objects.<br>***Recreation Setting Character required to produce recreation management outcomes:***<br>*Remoteness:*<br>Areas where access is by way of walking, horseback riding, and cross-country or non-motorized trail travel. Areas are located at least ½ mile away from local and resource access roads.<br>*Naturalness*:<br>Natural landscape with few modifications, consistent with VRM objectives.<br>*Facilities:*<br>No facilities within the area's interior, except gates on fences. Rustic parking turnouts, traffic control, signs and trailheads on boundary along perimeter.<br>*Contacts:*<br>Daily average, no more than 1 other party encountered along travel routes, and no more than 1 other parties at activity areas.<br>*Group size:*<br>Parties of 10 persons or more with special permit only, 25 persons maximum.<br>*Evidence of use:*<br>Paths and unimproved single-track trails, converted use roadways. | |

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| | *Accessibility:*<br>Foot and horse cross country travel, no non-motorized mechanized vehicles. Not accessible due to natural barriers for persons with mobility impairments without extraordinary measures or risks.<br>*Management Controls:*<br>Seasonal restrictions on hiking, equestrian use dispersed camping and picnicking and other dispersed recreation activities may apply, as needed to mitigate potential impacts to fragile, sensitive resources. Regulatory signs and other visitor control devices installed at access points. Minimal law enforcement presence; regular law enforcement presence at access points.<br>*Visitor Services:*<br>Periodic patrols by BLM visitor services personnel with frequency depending on time of year. Presence limited to case-by-case condition surveys or follow up activities. On-site visitor information at access points and special purpose sites along travel route. | | |
| **Decisions for Management Actions, Allowable Uses, and Use Allocations** | | | |
| **Alternative A (No Action)** | **Action Alternative B** | **Action Alternative C** (Preferred Alternative) | **Action Alternative D** |
| 1. No existing decisions specifically address this action. | 1. Allocate the entire IFNM (approximately 128,400 acres) as a Special Recreation Management Area (SRMA). The SRMA is managed with a strategy targeting the undeveloped recreation-tourism market. This market demands a variety of distinctive kinds of dispersed recreation opportunities produced by settings in open spaces with an undeveloped character, and a high degree of self-reliance. As non-Federal land in-holdings are acquired, they would be added to this allocation. | 1. Same as Alternative B. | 1. Same as Alternative B. |
| ***Recreation Management Zones (RMZs)*** | ***Recreation Management Zones (RMZs)*** | ***Recreation Management Zones (RMZs)*** | ***Recreation Management Zones (RMZs)*** |
| 2. No existing decisions specifically address this action. | 2. Allocate monument land to RMZs as follows (acreages are approximate): | 2. Allocate monument land to RMZs as follows (acreages are approximate): | 2. Allocate monument land to RMZs as follows (acreages are approximate):<br>• roaded natural = 19,060 acres |

| | | | |
|---|---|---|---|
| | • roaded natural = 17,610 acres<br>• semi-primitive motorized = 14,540 acres<br>• semi-primitive non-motorized = 60,000 acres<br>• Ragged Top wildlife viewing = 6,780 acres<br>• primitive = 29,420 acres<br>The RMZs for this alternative are shown on Map 2-12. | • roaded natural = 18,380 acres<br>• semi-primitive motorized = 36,230 acres<br>• semi-primitive non-motorized = 57,450 acres<br>• Ragged Top wildlife viewing = 6,780 acres<br>• primitive 9,510 acres<br>The RMZs for this alternative are shown on Map 2-13. | • semi-primitive motorized = 59,020 acres<br>• semi-primitive non-motorized = 43,770 acres<br>• Ragged Top wildlife viewing = 6,500 acres<br>• primitive = 0 acres<br>The RMZs for this alternative are shown on Map 2-14. |
| ***Resources*** | ***Resources*** | ***Resources*** | ***Resources*** |
| 3. No existing decisions specifically address this action; however, recreation resources are under basic custodial management throughout the IFNM. Recreation uses, activities and settings may change over time as needed to achieve other resource management objectives. | 3. Recreation resource management actions are targeted to provide specific setting character, depending on RMZ. | 3. Same as Alternative B. | 3. Same as Alternative B. |
| ***Signing and Facilities*** | ***Signing and Facilities*** | ***Signing and Facilities*** | ***Signing and Facilities*** |
| 4. No existing decisions specifically address this action; however, BLM would provide on-site signing, where needed, for visitor information, regulatory, or interpretation; provide portal information facilities at monument access points (such as informational kiosks); and develop materials and designs to blend in with the natural landscape. | 4. For all RMZs, provide on-site signing, where needed, for visitor information, regulatory, or interpretation purposes in accordance with RMZ setting prescriptions; provide portal information facilities at monument access points (such as informational kiosks); maintain facilities to levels appropriate to the RMZ; and, develop materials and designs to blend in with the natural landscape. | 4. Same as Alternative B. | 4. Same as Alternative B. |
| ***Marketing*** | ***Marketing*** | ***Marketing*** | ***Marketing*** |
| 5. No existing decisions specifically address this action. | 5. For all RMZs, concentrate marketing strategies on delivering visitor information and other services once visitors arrive in the local area. Publicity is not attempting to position the monument as a major destination for a large volume of tourism or recreational use. Coordinate | 5. Same as Alternative B. | 5. Same as Alternative B. |

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| | marketing efforts among the various providers. | | |
| ***Interpretation/Education*** | ***Interpretation/Education*** | ***Interpretation/Education*** | ***Interpretation/Education*** |
| 6. No existing decisions specifically address this action. | 6. Provide interpretive exhibits, signs or programs on-site at suitable locations in all RMZs. On-site programs may include BLM sponsored field trips or events, commercial interpretive or educational field trips or events, etc. Participate in off site interpretive or educational events with monument related themes. | 6. Same as Alternative B. | 6. Same as Alternative B. |
| ***Recreation Monitoring*** | ***Recreation Monitoring*** | ***Recreation Monitoring*** | ***Recreation Monitoring*** |
| 7. No existing decisions specifically address this action. | 7. Conduct baseline and follow-up intensive surveys of recreation sites and activity areas. Conduct resource condition, recreation use, and visitor surveys to determine if recreation and RMZ objectives are being achieved, and setting prescriptions are being maintained. | 7. Same as Alternative B. | 7. Same as Alternative B. |
| ***Visitor Services*** | ***Visitor Services*** | ***Visitor Services*** | ***Visitor Services*** |
| 8. No existing decisions specifically address this action. | 8. The level of visitor services within the IFNM would vary by zone, with the greatest presence of BLM staff within the roaded natural RMZ; any visitor center facilities may be provided offsite in coordination with the local communities. | 8. Same as Alternative B. | 8. Same as Alternative B. |
| ***Camping*** | ***Camping*** | ***Camping*** | ***Camping*** |
| 9. No existing decisions specifically address this action; however, collection of dead and down firewood for use in campfires is allowed. | 9. Prohibit wood campfires; allow camp stoves and/or charcoal fires only. | 9. Allow wood campfires only when firewood is from a non-monument source. | 9. Allow campfires using dead, down, and detached wood. Collection of wood for campfires may be restricted if needed as determined through monitoring. |

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| 10. No existing decisions specifically address this action; however, dispersed, vehicle-based camping is allowed throughout the monument. (Per State law, camping within ¼ mile of a natural water hole containing water, or a manmade watering facility containing water, in such a place that wildlife or domestic stock would be denied access to the only reasonably available water, is prohibited.) | 10. Allow overnight vehicle-based camping (including RVs) at identified sites only. Specific sites identified as open and/or available for camping would be periodically reviewed and modified based on public demand and resource protection needs within the IFNM. Approximately 30 sites potentially would be identified, subject to additional site-specific analysis. | 10. Same as Alternative B, except approximately 100 sites potentially would be identified, subject to additional site-specific analysis. | 10. Same as Alternative B, except approximately 150 sites potentially would be identified, subject to additional site-specific analysis. |
| 11. Dispersed non-motorized camping is allowed throughout the monument, subject to existing access. | 11. Allow overnight, dispersed, non-motorized camping at identified campsites only, unless camping in an area is specifically prohibited for protection of resource values (e.g., signed sensitive closure areas, which could vary over time). | 11. Allow overnight, dispersed, non-motorized camping throughout the monument unless camping in an area is specifically prohibited for protection of resource values (e.g., signed sensitive closure areas, which could vary over time). | 11. Same as Alternative C. |
| 12. No existing decisions specifically address this action. | 12. Large group camping is allowed at identified group sites only. Special permit required for groups larger than prescribed by RMZ. Group size maximum varies depending on RMZ (see RMZ objectives above).<br><br>Group camping could only occur at two identified large campsites located at Manville Road (within the roaded natural RMZ) and Reservation Road (within the roaded natural RMZ) (Map 2-12). | 12. Same as Alternative B, with the following change:<br><br>Group camping could only occur at three identified large campsites located at Manville Road (within the roaded natural RMZ), Reservation Road (within the roaded natural RMZ), and near the West Silver Bell Mountains (within the semi-primitive motorized RMZ) (Map 2-13). | 12. Same as Alternative B, with the following change:<br><br>Group camping could only occur at four identified large campsites located at Manville Road (within the roaded natural RMZ), Reservation Road (within the roaded natural RMZ), near the West Silver Bell Mountains (within the semi-primitive motorized RMZ), and in the Sawtooth Mountains (within the semi-primitive motorized RMZ). (Map 2-14). |

| *Use and Discharge of Firearms/Target Shooting* | *Use and Discharge of Firearms/Target Shooting* | *Use and Discharge of Firearms/Target Shooting* | *Use and Discharge of Firearms/Target Shooting* |
|---|---|---|---|
| 13. Allow recreational shooting within the monument outside of developed areas in accordance with 43 CFR §8365.<br>(Dispersed recreational shooting is allowed throughout the monument, subject to resource protection regulations; BLM may close areas for public safety.) | 13. Prohibit the use and discharge of firearms within the IFNM, except for permitted or authorized hunting activities conducted in accordance with AGFD hunting regulations. | 13. Same as Alternative B. | 13. Allow recreational shooting within the monument outside of developed areas in accordance with 43 CFR §8365.<br>(Dispersed recreational shooting is allowed throughout the monument, subject to resource protection regulations; BLM may close areas for public safety.) Same as Alternative A. |
| ***Equestrian Use*** | ***Equestrian Use*** | ***Equestrian Use*** | ***Equestrian Use*** |
| 14. Accommodations or staging areas for equestrian use may be considered on a case-by-case basis. No specific staging area improvements identified. | 14. Within the roaded natural RMZ, six areas are identified for access and/or staging locations for equestrian uses (Map 2-12) along Manville Road, Avra Valley Road, Reservation Road, Silverbell Road, near the West Silver Bell Mountains, and Aries Drive to the power line. Exact location would be subject to additional site-specific planning and NEPA compliance.<br><br>Refer to Table 2-16 Travel Management for more information regarding equestrian use. | 14. Same as Alternative B (Map 2-13).<br><br>Refer to Table 2-16 Travel Management for more information regarding equestrian use. | 14. Same as Alternative B (Map 2-14).<br><br>Refer to Table 2-16 Travel Management for more information regarding equestrian use. |
| ***General Recreation*** | ***General Recreation*** | ***General Recreation*** | ***General Recreation*** |
| 15. Retain and acquire additional areas in the Sawtooth Mountains, outside the Silver Bell Resource Conservation Area (RCA), as a Cooperative Recreation Management Area (CRMA) with state or local agencies. Designate the Silver Bell Mountains RCA in part to provide extensive areas of public land for dispersed, unstructured recreation activities. | 15. Discontinue the CRMA and RCA allocations.<br><br>NOTE: BLM would seek cooperative management of the IFNM through administrative actions (refer to Appendix D). | 15. Same as Alternative B. | 15. Same as Alternative B. |

# Recreation Management Zones Alternative B

**Ironwood Forest National Monument**
**Draft RMP/EIS**

## Legend

**Recreation Management Zone (RMZ)**
- Roaded Natural (RN)
- Semi-Primitive Motorized (SPM)
- Semi-Primitive Non-Motorized (SPNM)
- Ragged Top Watchable Wildlife
- Primitive

**Recreation Sites**
- Group Campsites on BLM Land
- Equine Staging Areas

**Route Designations**
- Motorized
- Non-Motorized
- Closed for Reclamation

**Reference Information**
- Agricultural
- Residential

Note:
Land use allocations, designations, and management prescriptions apply only to public lands administered by the BLM. If non-Federal lands are acquired, they would be managed according to the allocations depicted on the map.

Data Source:
RMZ Alternative: URS 2006
Transportation Alternatives: BLM 2006
Base Information: BLM 2003
Quadrangle Image: U.S. Geological Survey 1977 Tucson

**General Reference**
- County Boundaries
- Central Arizona Project (CAP) Canal
- River
- Interstate 10
- Main public access routes to monument. County administered roads connecting monument travel route system to public highways.

**Planning Area**
- Ironwood Forest National Monument

Universal Tranverse Mercator
Zone 12, Units Meters
Clark 1866 Spheroid
NAD27 Datum
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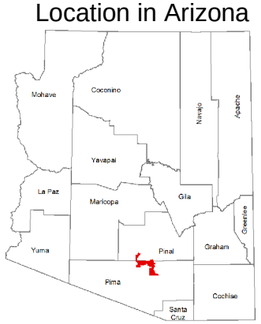
0 1 2 4 Miles
0 2 4 8 Kilometers

Location in Arizona

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Map 2-12

# Recreation Management Zones
# Alternative C

**Ironwood Forest National Monument**
**Draft RMP/EIS**

## Legend

**Recreation Management Zone (RMZ)**
- Roaded Natural (RN)
- Semi-Primitive Motorized (SPM)
- Semi-Primitive Non-Motorized (SPNM)
- Ragged Top Watchable Wildlife
- Primitive

**Recreation Sites**
- Group Campsites on BLM Land
- Equine Staging Areas

**Route Designations**
- Motorized
- Non-motorized
- Closed for Reclamation

**Reference Information**
- Agricultural
- Residential

Note:
Land use allocations, designations, and management prescriptions apply only to public lands administered by the BLM. If non-Federal lands are acquired, they would be managed according to the allocations depicted on the map.

Data Source:
RMZ Alternative: URS 2006
Transportation Alternatives: BLM 2006
Base Information: BLM 2003
Quadrangle Image: U.S. Geological Survey 1977 Tucson

**General Reference**
- County Boundaries
- Central Arizona Project (CAP) Canal
- River
- Interstate 10
- Main public access routes to monument. County administered roads connecting monument travel route system to public highways.

**Planning Area**
- Ironwood Forest National Monument

Universal Tranverse Mercator
Zone 12, Units Meters
Clark 1866 Spheroid
NAD27 Datum
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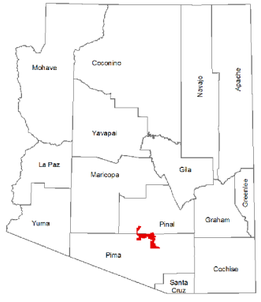
0 1 2 4 Miles
0 2 4 8 Kilometers

Location in Arizona

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Map 2-13

# Recreation Management Zones
# Alternative D

**Ironwood Forest National Monument**
**Draft RMP/EIS**

## Legend

**Recreation Management Zone (RMZ)**
- Roaded Natural (RN)
- Semi-Primitive Motorized (SPM)
- Semi-Primitive Non-Motorized (SPNM)
- Ragged Top Watchable Wildlife

**Recreation Sites**
- Group Campsites on BLM Land
- Equine Staging Areas

**Route Designations**
- Motorized
- Non-motorized
- Closed for Reclamation

**Reference Information**
- Agricultural
- Residential

Note:
Land use allocations, designations, and management prescriptions apply only to public lands administered by the BLM. If non-Federal lands are acquired, they would be managed according to the allocations depicted on the map.

Data Source:
RMZ Alternative: URS 2006
Transportation Alternatives: BLM 2006
Base Information: BLM 2003
Quadrangle Image: U.S. Geological Survey 1977 Tucson

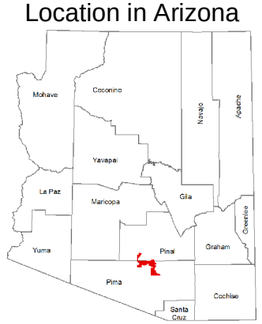
**General Reference**
- County Boundaries
- Central Arizona Project (CAP) Canal
- River
- Interstate 10
- Main public access routes to monument. County administered roads connecting monument travel route system to public highways.

**Planning Area**
- Ironwood Forest National Monument

Universal Tranverse Mercator
Zone 12, Units Meters
Clark 1866 Spheroid
NAD27 Datum
No warranty is made by the Bureau of Land Management (BLM) for the use of this map for purposes not intended by BLM, or to the accuracy, reliability, or completeness of the information shown. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification.

0 1 2 4 Miles
0 2 4 8 Kilometers

Location in Arizona

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Map 2-14

## Table 2-15. Resource Management Alternatives for LANDS AND REALTY

| Desired Outcomes: Management Goals and Objectives | |
|---|---|
| **NO ACTION** | **ACTION ALTERNATIVES** |
| **Goal**:<br>No LUP-level goals for lands and realty are presented in the existing land use plan. | **Goal 1:** Secure non-Federal land and interests in land to further the natural and cultural resource and public and administrative access goals for the monument.<br>**Goal 2:** Manage utility corridors and rights-of-way to avoid or minimize impacts on monument objects. |
| **Objective**:<br>No LUP-level objectives for lands and realty are presented in the existing land use plan. | **Objective 1:** Acquire lands and conservation easements from willing sellers.<br>**Objective 2:** Construction and maintenance activities for utilities will occur in locations that utilize established rights-of-way and corridors (if applicable) so that they do not conflict with the natural and cultural resource goals for the monument.<br>**Objective 3:** Develop standards (best management practices) for right-of-way construction and/or maintenance management (e.g., to control noxious weeds).<br>**Objective 4:** Manage the transportation system to accommodate access needs for authorized uses, and identify restrictions to prevent conflicts where needed.<br>**Objective 5:** Acquire conservation easements, as opportunities arise, that (1) contain ecologically or administratively important areas (e.g., riparian movement corridors); (2) expand undisturbed blocks of public land; or (3) protect existing blocks of habitat. |

| Decisions for Management Actions, Allowable Uses, and Use Allocations | | | |
|---|---|---|---|
| **Alternative A (No Action)** | **Action Alternative B** | **Action Alternative C** (Preferred Alternative) | **Action Alternative D** |
| ***Land Tenure*** | ***Land Tenure*** | ***Land Tenure*** | ***Land Tenure*** |
| 1. Retain public lands (surface and subsurface estate) in the Silverbell RCA. | 1. Retain all Federal land (surface and subsurface) except in special instances where land exchanges could be used to further the natural and cultural resource goals of the monument. | 1. Same as Alternative B. | 1. Same as Alternative B. |
| 2. Pursue acquisition of all State land in the Silverbell RCA primarily through exchange.<br>• Consider acquisition of private land in the Silverbell RCA on a case-by-case basis. | 2. Acquire non-Federal land or interests in land within the boundaries of the IFNM from willing sellers by purchase, exchange, or donation, as opportunities arise.<br>Where land cannot be acquired, secure conservation easements. | 2. Same as Alternative B. | 2. Same as Alternative B. |

| | | | |
|---|---|---|---|
| • Acquire 1,140 acres of State and private land in the Waterman Mountains ACEC.<br>• Retain 15,188 acres in the Sawtooth Mountains and acquire 640 acres of State land, outside the RCAs, as a CRMA with state or local agencies.<br>• Acquire up to 2,280 acres of private and State land in the Agua Blanco Ranch Multiple Resource Management Area.<br>• Acquire up to 13,227 acres of private and State land in the Cocoraque Butte-Waterman Mountains Multiple Resource Management Area.<br>• Acquire up to 7,630 acres of state and private land in the Silver Bell Desert Bighorn Sheep Management Area.<br>• Acquire three State sections [9, 15, and 16 in T.11S., R.7E.] in crucial bighorn sheep habitat in the West Silver Bell Mountains. | | | |
| 3. Acquire through exchange, non-Federal mineral estate underlying Federal surface holdings in the Silverbell RCA. | 3. Acquire through exchange, or other means, non-Federal mineral estate underlying Federal surface holdings throughout the monument. | 3. Same as Alternative B. | 3. Same as Alternative B. |
| 4. No existing decisions specifically address this action. | 4. Do not acquire surface estate unless mineral estate can be acquired concurrently (or is already Federally owned). | 4. Same as Alternative B. | 4. Do not consider acquisition of mineral estate as a factor in surface estate acquisitions. |
| 5. There is no existing decision for this action; however, there are two existing withdrawals for a total of approximately 300 acres for military uses. | 5. Military withdrawals exist on approximately 300 acres; if and when the land is returned to BLM the area would be managed consistent with the management of adjacent public land. | 5. Same as Alternative B. | 5. Same as Alternative B. |

| | | | |
|---|---|---|---|
| 6. There is no existing decision for this action; however, there is one existing recreation and public purposes (R&PP) lease for the Tucson Soaring Club/glider park. | 6. R&PP leases (existing at the time of monument designation) would be renewed at the discretion of BLM. (NOTE: No new R&PP leases would be granted within the monument per the Proclamation.) | 6. Same as Alternative B. | 6. Same as Alternative B. |
| ***Corridors and Rights-of-Way*** | ***Corridors and Rights-of-Way*** | ***Corridors and Rights-of-Way*** | ***Corridors and Rights-of-Way*** |
| 7. Utility corridors follow existing transmission line and pipeline facilities within the boundaries of the Silver Bell RCA; all corridors would be 1 mile in width (Map 2-15). | 7. No utility corridors would be designated as shown on Map 2-16. | 7. Designated corridors, shown on Map 2-17, would be as follows:<br>• Corridor 1: 200-feet wide, centered on the center line of the existing pipeline right-of-way; one additional major right-of-way may be granted, underground only; additional non-major rights-of-way may be granted<br>• Corridor 2: 300-feet wide, centered on the center line of the existing power line right-of-way; additional facilities above or below ground are allowed; additional non-major rights-of-way may be granted | 7. Designated corridors, shown on Map 2-18, would be as follows:<br>• Corridor 1: ¼-mile wide, centered on the center line of the existing pipeline right-of-way; additional major rights-of-way may be granted underground only; additional non-major rights-of-way may be granted<br>• Corridor 2: ¼-mile wide, centered on the center line of the existing power line right-of-way; additional major rights-of-way may be granted above or below ground; additional major right-of-way may be granted underground only; additional non-major rights-of-way may be granted<br>• Corridor 3 (two segments, one in the Sawtooth Mountains and one near the West Silver Bell Mountains): ¼-mile wide, centered on the center line of existing power line rights-of-way; additional major rights-of-way may be granted above or below ground; additional major right-of-way may be granted underground only; additional non-major rights-of-way may be granted |
| 8. Rights-of-way would be issued to promote the maximum use of existing right-of-way routes, including joint use whenever possible. | 8. No new rights-of-way would be authorized within the monument, except where required by law. | 8. All rights-of-way for access and utilities, including for inholdings, would be considered and issued on a case-by-case basis in accordance with the goals of the monument, including renewal of rights-of-way established prior to monument designation. | 8. Same as Alternative C. |

| *Avoidance and Exclusion Areas* | *Avoidance and Exclusion Areas* | *Avoidance and Exclusion Areas* | *Avoidance and Exclusion Areas* |
|---|---|---|---|
| 9. No existing decisions specifically address this action. | 9. The entire monument is an exclusion area; however, valid pre-existing authorizations (i.e., rights-of-way) would be recognized. | 9. The entire monument, with the exception of the designated corridors, is an avoidance area; however, valid pre-existing authorizations (i.e., rights-of-way) would be recognized. | 9. Same as Alternative C. |
| 10. Designate the 160 acre Pan Quemado communication site at T.13.S., R.9.E., sections 1, 2, 11, and 12, inside the Silver Bell RCA. | 10. The Pan Quemado communication site is located on 2 acres and includes one facility; the Confidence Peak communication site is located on 3 acres and includes one multi-user right-of-way with one facility. No additional facilities would be allowed. | 10. Same as Alternative B. | 10. The Pan Quemado communication site is located on 2 acres and includes one facility; the Confidence Peak communication site is located on 3 acres and could include up to two facilities. |
| **Implementation-Level Decisions** | | | |
| 1. Require the implementation of mitigation measures to ensure that maintenance of established rights-of-way does not conflict with the natural and cultural resource goals for the monument. | 1. As part of the land use authorization process, construction and maintenance activities would include protective measures to minimize the following:<br>• spread of noxious weeds<br>• soil erosion<br>• air quality degradation<br>• water quality degradation (e.g., limited disturbance in washes)<br>• vegetation disturbance and/or removal<br>• extensive or loud noise from heavy equipment<br>• impacts on wildlife (i.e., wildlife-friendly design)<br>• disturbance of cultural resources<br>• visual intrusions<br>A reclamation plan would be required on a site-specific basis. In addition, communication site plans would be updated as necessary. | 1. Same as Alternative B. | 1. Same as Alternative B. |

| | | | |
|---|---|---|---|
| 2. Land use authorizations for permits and easements would be considered on a case-by-case basis, and must be compatible with the natural and cultural resource goals for the monument. | 2. Same as Alternative A. | 2. Same as Alternative A. | 2. Same as Alternative A. |
| 3. On land retained or acquired, communication facility development would be limited to designated sites. | 3. Upon acquisition of land, designate that land as exclusion area for rights-of-way. | 3. Upon acquisition of land, designate that land as avoidance area for rights-of-way, unless that land is within designated corridors. | 3. Same as Alternative C. |

# Utility Corridors and Right-of-Way Authorizations Alternative A

**Ironwood Forest National Monument**
**Draft RMP/EIS**

## Legend

- Communication Site
- Utility Corridor
- Utility Corridor - Underground Only

**Reference Information**

**Surface Management**

- Bureau of Land Management
- National Park Service
- Bureau of Reclamation
- American Indian Reservation
- Military Reservations
- State Trust Lands
- State, County, City; Wildlife, Park and Outdoor Recreation Areas
- Private
- Pima County
- Existing Electrical Transmission Line
- Existing Natural Gas Pipeline

Note:
Land use allocations, designations, and management prescriptions apply only to public lands administered by the BLM. If non-Federal lands are acquired, they would be managed according to the allocations depicted on the map.

Data Source:
Utility and Corridor Information: BLM 2003
Base Information: BLM 2003
Quadrangle Image: U.S. Geological Survey 1977 Tucson

**General Reference**

- County Boundaries
- Central Arizona Project (CAP) Canal
- River
- Interstate 10
- Main public access routes to monument. County administered roads connecting monument travel route system to public highways.

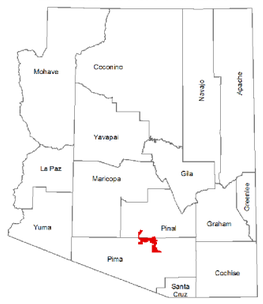
**Planning Area**

- Ironwood Forest National Monument

Universal Tranverse Mercator
Zone 12, Units Meters
Clark 1866 Spheroid
NAD27 Datum
No warranty is made by the Bureau of Land Management (BLM) for the use of this map for purposes not intended by BLM, or to the accuracy, reliability, or completeness of the information shown. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification.

0 1 2 4 Miles
0 2 4 8 Kilometers

Location in Arizona

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Map 2-15

# Utility Corridors and Right-of-Way Authorizations Alternative B

**Ironwood Forest National Monument**
**Draft RMP/EIS**

## Legend

- Communication Site

**Reference Information**
**Surface Management**

- Bureau of Land Management
- National Park Service
- Bureau of Reclamation
- American Indian Reservation
- Military Reservations
- State Trust Lands
- State, County, City; Wildlife, Park and Outdoor Recreation Areas
- Private
- Pima County
- Existing Electrical Transmission Line
- Existing Natural Gas Pipeline

Note:
Land use allocations, designations, and management prescriptions apply only to public lands administered by the BLM. If non-Federal lands are acquired, they would be managed according to the allocations depicted on the map.

Data Source:
Utility and Corridor Alternatives: BLM 2005
Base Information: BLM 2003
Quadrangle Image: U.S. Geological Survey 1977 Tucson

**General Reference**

- County Boundaries
- CAP Canal
- River
- Interstate 10
- Main public access routes to monument. County administered roads connecting monument travel route system to public highways.

**Planning Area**

- Ironwood Forest National Monument

Universal Tranverse Mercator
Zone 12, Units Meters
Clark 1866 Spheroid
NAD27 Datum

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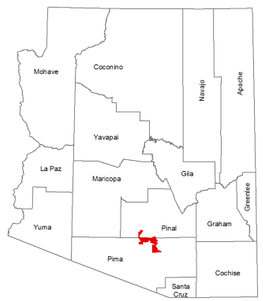
0 1 2 4 Miles
0 2 4 8 Kilometers

Location in Arizona

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Map 2-16

# Utility Corridors and Right-of-Way Authorizations Alternative C

**Ironwood Forest National Monument**
**Draft RMP/EIS**

## Legend

- Communication Site
- Utility Corridor
- Utility Corridor - Underground Only

**Reference Information**

**Surface Management**

- Bureau of Land Management
- National Park Service
- Bureau of Reclamation
- American Indian Reservation
- Military Reservations
- State Trust Lands
- State, County, City; Wildlife, Park and Outdoor Recreation Areas
- Private
- Pima County
- Existing Electrical Transmission Line
- Existing Natural Gas Pipeline

Note:
Land use allocations, designations, and management prescriptions apply only to public lands administered by the BLM. If non-Federal lands are acquired, they would be managed according to the allocations depicted on the map.

Data Source:
Utility and Corridor Alternatives: BLM 2005
Base Information: BLM 2003
Quadrangle Image: U.S. Geological Survey 1977 Tucson

**General Reference**

- County Boundaries
- CAP Canal
- River
- Interstate 10
- Main public access routes to monument. County administered roads connecting monument travel route system to public highways.

**Planning Area**

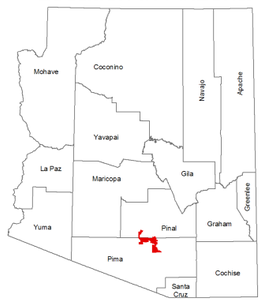
- Ironwood Forest National Monument

Universal Tranverse Mercator
Zone 12, Units Meters
Clark 1866 Spheroid
NAD27 Datum

No warranty is made by the Bureau of Land Management (BLM) for the use of this map for purposes not intended by BLM, or to the accuracy, reliability, or completeness of the information shown. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification.

0 1 2 4 Miles
0 2 4 8 Kilometers

Location in Arizona

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Map 2-17

# Utility Corridors and Right-of-Way Authorizations Alternative D

**Ironwood Forest National Monument**
**Draft RMP/EIS**

## Legend

- Communication Site
- Utility Corridor
- Utility Corridor - Underground Only

**Reference Information**

**Surface Management**

- Bureau of Land Management
- National Park Service
- Bureau of Reclamation
- American Indian Reservation
- Military Reservations
- State Trust Lands
- State, County, City; Wildlife, Park and Outdoor Recreation Areas
- Private
- Pima County
- Existing Electrical Transmission Line
- Existing Natural Gas Pipeline

Note:
Land use allocations, designations, and management prescriptions apply only to public lands administered by the BLM. If non-Federal lands are acquired, they would be managed according to the allocations depicted on the map.

Data Source:
Utility and Corridor Alternatives: BLM 2005
Base Information: BLM 2003
Quadrangle Image: U.S. Geological Survey 1977 Tucson

**General Reference**

- County Boundaries
- CAP Canal
- River
- Interstate 10
- Main public access routes to monument. County administered roads connecting monument travel route system to public highways.

**Planning Area**

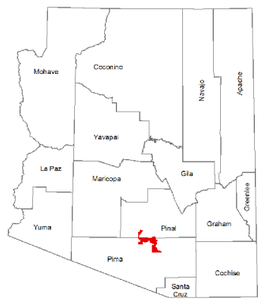
- Ironwood Forest National Monument

Universal Tranverse Mercator
Zone 12, Units Meters
Clark 1866 Spheroid
NAD27 Datum

No warranty is made by the Bureau of Land Management (BLM) for the use of this map for purposes not intended by BLM, or to the accuracy, reliability, or completeness of the information shown. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification.

0 1 2 4 Miles
0 2 4 8 Kilometers

Location in Arizona

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Map 2-18

## Table 2-16. Resource Management Alternatives for TRAVEL MANAGEMENT

| Desired Outcomes: Management Goals and Objectives | | | |
|---|---|---|---|
| **NO ACTION** | **ACTION ALTERNATIVES** | | |
| **Goal**:<br>No LUP-level goals for transportation and public access are presented in the existing land use plan. | **Goal 1:** Provide a comprehensive transportation system for the monument that is protective of monument objects.<br>**Goal 2:** Provide adequate, legal, and safe access for allowable public use and administrative purposes while protecting monument objects. | | |
| **Objective**:<br>No LUP-level objectives for transportation and public access are presented in the existing land use plan. | **Objective 1:** Improve on-the-ground travel management operations and maintenance programs to protect monument objects, and to manage visitor access, safety, and recreation opportunities and experiences.<br>**Objective 2:** Give priority to establishing, improving, or maintaining designated routes or access points to protect monument objects and accommodate allowable uses.<br>**Objective 3:** Secure legal and safe access, appropriate for achieving and maintaining monument management objectives, for both motorized and non-motorized entry into the monument. Provide and maintain connectivity of the IFNM transportation system with the surrounding public highway system (interstate, Federal, State and county roads). | | |
| **Decisions for Management Actions, Allowable Uses, and Use Allocations** | | | |
| **Alternative A (No Action)** | **Action Alternative B** | **Action Alternative C**<br>(Preferred Alternative) | **Action Alternative D** |
| ***OHV Area Designations*** | ***OHV Area Designations*** | ***OHV Area Designations*** | ***OHV Area Designations*** |
| 1. Monument lands are designated as open, limited, or closed in accordance with definitions and criteria in 43 CFR 8340. Limit vehicular travel on public land to existing roads and trails with the exception of areas that are specifically identified as closed or where travel would be limited to designated roads and trails.<br>Close the 20-acre Santa Ana de Cuiquiburitac Special Management Area and 800 acres surrounding Ragged Top to motorized vehicles.<br>Limit motorized vehicles to existing roads and trails: within (a) 39,170 acres of Federal land within the Silver Bell Bighorn Sheep Management Area; (b) 2,720-acre Avra Valley Cultural Resource Management Area; | 1. Monument lands are designated as open, limited, or closed in accordance with definitions and criteria in 43 CFR 8340. Area designations to manage motorized vehicle use would be as follows:<br>**Open:** 0 acres.<br>**Limited to designated routes:** 90,360 acres.<br>**Closed:** 38,040 acres, including:<br>• 37,060 acres to protect wilderness characteristics and wildlife habitat<br>• 340 acres to protect cultural resources at Cocoraque Butte<br>• 640 acres to protect other cultural resources<br>These area designations are shown on Map 2-20. | 1. Monument lands are designated as open, limited, or closed in accordance with definitions and criteria in 43 CFR 8340. Area designations to manage motorized vehicle use would be as follows:<br>**Open:** 0 acres.<br>**Limited to designated routes:** 117,520 acres.<br>**Closed:** 10,880 acres, including:<br>• 9,900 acres to protect wildlife habitat<br>• 340 acres to protect cultural resources at Cocoraque Butte<br>• 640 acres to protect other cultural resources<br>These area designations are shown on Map 2-21. | 1. Monument lands are designated as open, limited, or closed in accordance with definitions and criteria in 43 CFR 8340. Area designations to manage motorized vehicle use would be as follows:<br>**Open:** 0 acres.<br>**Limited to designated routes:** 128,400 acres.<br>**Closed:** 0 acres.<br>These area designations are shown on Map 2-22.<br>As non-Federal lands are acquired, lands would be designated for OHV use consistent with the maps presented in the RMP. |

| | | | |
|---|---|---|---|
| (c) 14,419 acres of Federal land in Agua Blanco Ranch Multiple Resource Management Area; (c) and (e) within 34,749 acres of Federal land in Cocoraque Butte – Waterman Mountains Multiple Resource Management Area.<br>Limit motorized vehicles to allocated roads and trails within 1,960 acres of Federal land in the Waterman Mountains ACEC.<br>Area designations to manage motorized vehicle use are as follows (acreages are approximate):<br>**Open:** 0 acres<br>**Limited to existing routes:** 127,580 acres<br>**Closed:** 820 acres<br>These area designations are shown on Map 2-19. | As non-Federal lands are acquired, lands would be designated for OHV use consistent with the maps presented in the RMP. | As non-Federal lands are acquired, lands would be designated for OHV use consistent with the maps presented in the RMP. | |
| ***Public Access Locations*** | ***Public Access Locations*** | ***Public Access Locations*** | ***Public Access Locations*** |
| 2. No existing decisions specifically address this action. | 2. Public access to the IFNM is limited to the identified locations as shown on Map 2-20. | 2. Public access to the IFNM is limited to the identified locations as shown on Map 2-21. | 2. Public access to the IFNM is limited to the identified locations as shown on Map 2-22. |
| ***Development of New Routes*** | ***Development of New Routes*** | ***Development of New Routes*** | ***Development of New Routes*** |
| 3. No existing decisions specifically address this action. | 3. Develop new routes only when a new segment is needed to provide legal public access to monument lands or provide access to a non-Federal land inholding or other locations specified in a land use authorization or if needed for administrative use or to meet a specific management objective. Construction of new routes would be considered on a case-by-case basis. | 3. Same as Alternative B. | 3. Same as Alternative B. |

| ***Recreational Access*** | ***Recreational Access*** | ***Recreational Access*** | ***Recreational Access*** |
|---|---|---|---|
| 4. No existing decisions specifically address this action. | 4. Allow motorized, mechanized, and recreational livestock access into the IFNM from areas of urban interface via designated public or community access points only. Types of access (i.e., motorized or non-motorized) would depend on the Recreation Management Zone (RMZ). New access would be considered on a case-by-case basis. | 4. Same as Alternative B. | 4. Same as Alternative B. |
| ***Equestrian Use*** | ***Equestrian Use*** | ***Equestrian Use*** | ***Equestrian Use*** |
| 5. No existing decisions specifically address this action. | 5. Prohibit cross-country equestrian use and allow for equestrian uses on routes designated motorized or non-motorized. No new equestrian trails would be constructed. Equestrian uses may be restricted where BLM has determined through inventory and monitoring that such use is adversely impacting monument objects. Allow equestrian use to retrieve lawfully taken game in all areas of the IFNM. | 5. Allow equestrian uses on routes designated as motorized or non-motorized; cross-country equestrian travel is allowed in all areas of the monument open to public use. New trails for equestrian uses would be considered on a case-by-case basis. Equestrian uses may be restricted where BLM has determined through inventory and monitoring that such use is adversely impacting monument objects. | 5. Same as Alternative C. |
| ***Non-Motorized, Mechanized Use*** | ***Non-Motorized, Mechanized Use*** | ***Non-Motorized, Mechanized Use*** | ***Non-Motorized, Mechanized Use*** |
| 6. Use of non-motorized wheeled game carriers to retrieve lawfully taken game is allowed in all areas of the monument. | 6. Same as Alternative A. | 6. Same as Alternative A. | 6. Same as Alternative A. |

| Implementation-Level Decisions | | | |
|---|---|---|---|
| ***Motorized and Non-Motorized Use Route Designations*** | ***Motorized and Non-Motorized Use Route Designations*** | ***Motorized and Non-Motorized Use Route Designations*** | ***Motorized and Non-Motorized Use Route Designations*** |
| 1. Limit motorized vehicle use in the IFNM to existing roads and trails (Map 2-19). | 1. Travel route designations:<br>Designate 71 miles of existing travel routes for motorized access/use. Allow motorized use by all types of vehicles on these routes.<br><br>Designate 258 miles for non-motorized use. Allow non-motorized use and non-motorized mechanized use on these routes except in areas where restricted. Motorized use for administrative access is allowed on a case-by-case basis provided route is not subject to improvements.<br><br>18 miles of existing routes would be obliterated and/or revegetated.<br><br>Motorized use would be required to keep within the designated route with reasonable use of the shoulder and immediate roadside, allowing for vehicle passage, emergency stopping or parking, unless otherwise posted.<br><br>Travel on all designated routes is subject to route-specific designations for type of use, functional class, maintenance level and route standard (refer to Appendix G for more information).<br><br>Route designations are shown on Map 2-20.<br><br>NOTE: mileage shown above is for BLM land only. | 1. Travel route designations:<br>Designate 142 miles of existing travel routes for motorized access/use.<br><br>Designate 187 miles for non-motorized use. Allow non-motorized use and non-motorized mechanized use on these routes except in areas where restricted. Motorized use for administrative access is allowed on a case-by-case basis provided route is not subject to improvements.<br><br>18 miles of existing routes would be obliterated and/or revegetated.<br><br>Motorized use would be required to keep within the designated route with reasonable use of the shoulder and immediate roadside, allowing for vehicle passage, emergency stopping or parking, unless otherwise posted.<br><br>Travel on all designated routes is subject to route-specific designations for type of use, functional class, maintenance level and route standard (refer to Appendix G for more information).<br><br>Route designations are shown on Map 2-21.<br><br>NOTE: mileage shown above is for BLM land only. | 1. Travel route designations:<br>Designate 243 miles of existing travel routes for motorized access/use.<br><br>Designate 100 miles for non-motorized use. Allow non-motorized use and non-motorized mechanized use on these routes except in areas where restricted. Motorized use for administrative access is allowed on a case-by-case basis provided route is not subject to improvements.<br><br>4 miles of existing routes would be obliterated and/or revegetated.<br><br>Motorized use would be required to keep within the designated route with reasonable use of the shoulder and immediate roadside, allowing for vehicle passage, emergency stopping or parking, unless otherwise posted.<br><br>Travel on all designated routes is subject to route-specific designations for type of use, functional class, maintenance level and route standard (refer to Appendix G for more information).<br><br>Route designations are shown on Map 2-22.<br><br>NOTE: mileage shown above is for BLM land only. |

| *Travel Management System* | *Travel Management System* | *Travel Management System* | *Travel Management System* |
|---|---|---|---|
| 2. There is no implementation decision for a Travel Management Plan. | 2. Develop and implement a Travel Management Plan for the long-term monitoring, maintenance, and management of the designated access point and route system for both motorized and non-motorized uses of public lands. This plan would focus on adaptive management and define:<br>• Methods for monitoring the conditions and use of the access point and route system and emerging and long-term effects of this system on the public lands environment. Limits of acceptable change monitoring and adaptive management system to tie monitoring efforts and established regulatory policies and procedures together.<br>• Policies and procedures for regulating access point and route use including possible adjustments to route designations and methods for updating the transportation plan.<br>• Maintenance intensity each route.<br>• Conditions under which a new route would be created or an existing route re-routed, based on resource protection and/or access needs.<br>• Public information and/or education components including signage, mapping, and safety information. | 2. Same as Alternative B. | 2. Same as Alternative B. |
| 3. No implementation decisions specifically address this action. | 3. Provide and maintain monument access staging areas or facilities to accommodate multi-mode access to monument lands. | 3. Same as Alternative B. | 3. Same as Alternative B. |

| | | | |
|---|---|---|---|
| 4. No implementation decisions specifically address this action. | 4. Install appropriate measures or barriers to promote compliance with travel route use designations and restrictions. | 4. Same as Alternative B. | 4. Same as Alternative B. |
| 5. No implementation decisions specifically address this action. | 5. Provide signing along travel routes for directional, informational, regulatory purposes. | 5. Same as Alternative B. | 5. Same as Alternative B. |
| 6. No implementation decisions specifically address this action. | 6. Rehabilitate or restore identified routes using the most appropriate method based on ecological site conditions. | 6. Same as Alternative B. | 6. Same as Alternative B. |

# Travel Management Alternative A

## Ironwood Forest National Monument
## Draft RMP/EIS

## Legend

**Off-highway Vehicle Designations**

- Limited to Existing Roads and Trails
- Limited to Designated Roads and Trails
- Closed

**Reference Information**

**Surface Management**

- Bureau of Land Management
- National Park Service
- Bureau of Reclamation
- American Indian Reservation
- Military Reservations
- State Trust Lands
- State, County, City; Wildlife, Park and Outdoor Recreation Areas
- Private
- Pima County
- Roads, Trails, or Routes not on BLM-Administered Land

Note:
Land use allocations, designations, and management prescriptions apply only to public lands administered by the BLM. If non-Federal lands are acquired, they would be managed according to the allocations depicted on the map.

Data Source:
OHV Designations: BLM 2003
Route Inventory: Gimblett 2004
Base Information: BLM 2003
Quadrangle Image: U.S. Geological Survey 1977 Tucson

**General Reference**

- County Boundaries
- Central Arizona Project (CAP) Canal
- River
- Interstate 10
- Main public access routes to monument. County administered roads connecting monument travel route system to public highways.

**Planning Area**

- Ironwood Forest National Monument

Universal Tranverse Mercator
Zone 12, Units Meters
Clark 1866 Spheroid
NAD27 Datum
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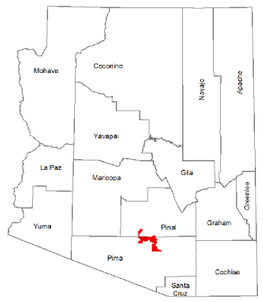
0 1 2 4 Miles
0 2 4 8 Kilometers

Location in Arizona

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Map 2-19

# Travel Management Alternative B

**Ironwood Forest National Monument**
**Draft RMP/EIS**

## Legend

**Off-highway Vehicle Designations**
- Limited to Designated Roads and Trails
- Closed

**Route Designations**
- Motorized
- Non-motorized
- Closed for Reclamation

**Reference Information**

**Access Points**
- Access through Public Land
- Access through Indian Land
- Access through State Trust Land
- Access through Private Land

**Surface Management**
- Bureau of Land Management
- National Park Service
- Bureau of Reclamation
- American Indian Reservation
- Military Reservations
- State Trust Lands
- State, County, City; Wildlife, Park and Outdoor Recreation Areas
- Private
- Pima County

Note:
Land use allocations, designations, and management prescriptions apply only to public lands administered by the BLM. If non-Federal lands are acquired, they would be managed according to the allocations depicted on the map.

Data Source:
OHV and Route Alternative Designations: BLM 2006
Base Information: BLM 2003
Quadrangle Image: U.S. Geological Survey 1977 Tucson

**General Reference**
- County Boundaries
- Central Arizona Project (CAP) Canal
- River
- Interstate 10
- Main public access routes to monument. County administered roads connecting monument travel route system to public highways.

**Planning Area**
- Ironwood Forest National Monument

Universal Tranverse Mercator
Zone 12, Units Meters
Clark 1866 Spheroid
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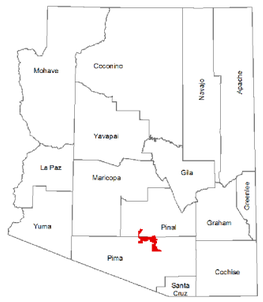
0 1 2 4 Miles
0 2 4 8 Kilometers

Location in Arizona

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Map 2-20

# Travel Management Alternative C

## Ironwood Forest National Monument Draft RMP/EIS

## Legend

### Off-highway Vehicle Designations

- Limited to Designated Roads and Trails
- Closed

### Route Designations

- Motorized
- Non-motorized
- Closed for Reclamation

### Reference Information

### Access Points

- Access through Public Land
- Access through Indian Land
- Access through State Trust Land
- Access through Private Land

### Surface Management

- Bureau of Land Management
- National Park Service
- Bureau of Reclamation
- American Indian Reservation
- Military Reservations
- State Trust Lands
- State, County, City; Wildlife, Park and Outdoor Recreation Areas
- Private
- Pima County

Note:
Land use allocations, designations, and management prescriptions apply only to public lands administered by the BLM. If non-Federal lands are acquired, they would be managed according to the allocations depicted on the map.

Data Source:
OHV and Route Alternative Designations: BLM 2006
Base Information: BLM 2003
Quadrangle Image: U.S. Geological Survey 1977 Tucson

### General Reference

- County Boundaries
- Central Arizona Project (CAP) Canal
- River
- Interstate 10
- Main public access routes to monument. County administered roads connecting monument travel route system to public highways.

### Planning Area

- Ironwood Forest National Monument

Universal Tranverse Mercator
Zone 12, Units Meters
Clark 1866 Spheroid
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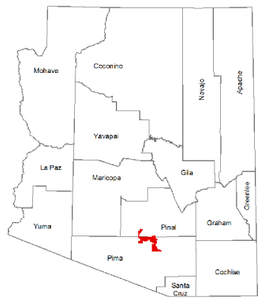
0 1 2 4 Miles
0 2 4 8 Kilometers

Location in Arizona

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Map 2-21

# Travel Management Alternative D

**Ironwood Forest National Monument**
**Draft RMP/EIS**

## Legend

**Off-highway Vehicle Designations**

- Limited to Designated Roads and Trails

**Route Designations**

- Motorized
- Non-motorized
- Reclamation

**Reference Information**
**Access Points**

- Access through Public Land
- Access through Indian Land
- Access through State Trust Land
- Access through Private Land

**Surface Management**

- Bureau of Land Management
- National Park Service
- Bureau of Reclamation
- American Indian Reservation
- Military Reservations
- State Trust Lands
- State, County, City; Wildlife, Park and Outdoor Recreation Areas
- Private
- Pima County

Note:
Land use allocations, designations, and management prescriptions apply only to public lands administered by the BLM. If non-Federal lands are acquired, they would be managed according to the allocations depicted on the map.

Data Source:
OHV and Route Alternative Designations: BLM 2006
Base Information: BLM 2003
Quadrangle Image: U.S. Geological Survey 1977 Tucson

**General Reference**

- County Boundaries
- Central Arizona Project (CAP) Canal
- River
- Interstate 10
- Main public access routes to monument. County administered roads connecting monument travel route system to public highways.

**Planning Area**

- Ironwood Forest National Monument

Universal Tranverse Mercator
Zone 12, Units Meters
Clark 1866 Spheroid
NAD27 Datum
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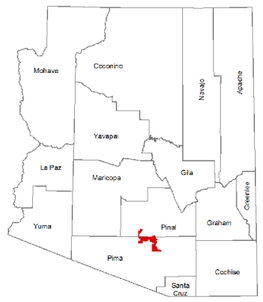
0 1 2 4 Miles
0 2 4 8 Kilometers

Location in Arizona

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Map 2-22

## Table 2-17. Resource Management Alternatives for SPECIAL DESIGNATIONS

| Desired Outcomes: Management Goals and Objectives | | | |
|---|---|---|---|
| **NO ACTION**<br><br>**Goal**:<br>No LUP-level goals for special area designations are presented in the existing land use plan. | **Goals COMMON TO ALL ACTION ALTERNATIVES**<br><br>**Goal 1:** Manage special designations, as applicable, to protect resources for which they are established. | | |
| **Objective**:<br>No LUP-level objectives for special area designations are presented in the existing land use plan. | **Objective 1:** No LUP-level objectives for special designations have been developed. | | |
| **Decisions for Management Actions, Allowable Uses, and Use Allocations** | | | |
| **Alternative A (No Action)** | **Action Alternative B** | **Action Alternative C**<br>(Preferred Alternative) | **Action Alternative D** |
| 1. Designate ACEC to Protect the habitat, provide optimum habitat for naturally occurring populations of Nichol Turk's head cactus on approximately 2,240 acres of BLM-administered public land, and assist in the recovery of this subspecies. (Refer to Appendix H for additional information.) | 1. Remove the ACEC designation. | 1. Same as Alternative B. | 1. Same as Alternative B. |

**Table 2-18: Summary Comparison of Impacts Table**

Table 2-18 provides a summary of the impacts on the human and natural environment in terms of environmental, social, and economic consequences that are projected to occur from implementing the proposed alternatives presented in Tables 2-1 through 2-17. These environmental consequences are described in detail in Chapter 4.

| Topic | Alternative A | Alternative B | Alternative C | Alternative D |
|---|---|---|---|---|
| **Air Quality** | Vehicle travel on existing routes in the 26,630 acres of $PM_{10}$ nonattainment area and recreation-al use could result in the release of particulate matter (dust) and emissions of other pollutants in localized areas from surface disturbance. Surface disturbance in the 8,240 acres of utility corridors, development of rights-of-ways, fuel treatments and livestock grazing could increase exposure of soils where vegetation is removed resulting in release of particulate matter in localized areas, generally through wind erosion. Closing 820 acres to motorized use and limiting vehicles to existing routes through-out the remainder of the IFNM would limit vehicle-generated emissions (including dust) to areas near existing routes. | Vehicle travel on designated routes in the 10,630 acres of the $PM_{10}$ nonattainment area that is managed as roaded natural or semi-primitive motorized could result in localized degradation of air quality from vehicle emissions, including fugitive dust.<br>Prohibiting surface disturbance on the 11,340 acres with fragile or sensitive soils, managing 38,040 acres closed to vehicle travel, and managing 29,420 acres a primitive RMZ could reduce wind erosion and decrease fugitive dust compared to Alternative A.<br>A lack of utility corridors and allocating the IFNM as an exclusion area for rights-of-ways would limit opportunities for surface-disturbing activities that could generate fugitive dust. This could decrease fugitive dust compared with Alternative A. | Vehicle travel in the 17,750 acres of the $PM_{10}$ nonattainment area managed as roaded natural or semi-primitive motorized could result in localized degradation of air quality from emissions, including fugitive dust.<br>Allowing surface disturbance but requiring mitigation on the 11,340 acres with fragile or sensitive soils, managing 10,880 acres closed to vehicle travel, and managing 9,510 acres a primitive RMZ could reduce wind erosion and decrease fugitive dust compared to Alternative A, but increase erosion and dust compared to Alternative B.<br>Managing 980 acres as utility corridors and allocating the IFNM as an avoidance area for rights-of-ways could limit surface disturbing activities throughout the IFNM, which would reduce wind erosion and decrease fugitive dust compared to Alternative A, but increase emissions compared to Alternative B. | Vehicle travel in the 21,560 acres of the $PM_{10}$ nonattainment area managed as roaded natural or semi-primitive motorized could result in localized degradation of air quality from emissions, including fugitive dust.<br>Allowing surface disturbance but requiring mitigation on the 11,340 acres with fragile or sensitive soils, and managing 10,880 acres closed to vehicle travel, could reduce wind erosion and decrease fugitive dust compared to Alternative A, but increase erosion and dust compared to Alternative B.<br>Managing 2,660 acres as utility corridors and allocating the IFNM as an avoidance area for rights-of-ways could reduce surface disturbing activities. This could reduce wind erosion and decrease fugitive dust compared to Alternative A, but increase emissions compared to Alternative B or C. |

**Table 2-18: Summary Comparison of Impacts Table (cont.)**

| Topic | Alternative A | Alternative B | Alternative C | Alternative D |
|---|---|---|---|---|
| **Geology and Caves** | Designating 128,400 acres of the IFNM to meet VRM Class III objectives and allocating 8,240 acres of utility corridors could result in surface-disturbing activities that would generate localized erosion. This could result in the loss of geologic resources or values in localized areas. Closing 820 acres to vehicle travel would eliminate the potential for vehicle travel to cause erosion or disturbance to geologic resources in localized areas. | Designating 125,110 acres of the IFNM to meet VRM Class I or Class II objectives, minimizing the loss of vegetation, and adopting mitigation plans that minimize erosion could limit surface-disturbing activities and localized erosion. This could help protect geologic resources or values. Closing 30,040 acres to vehicle travel and managing 36,990 acres to maintain wilderness characteristics also could reduce surface disturbance and protect geologic resources and values to a greater extent than Alternative A. | Designating 124,900 acres of the IFNM to meet VRM Class II objectives, minimizing the loss of vegetation, and adopting mitigation plans that minimize erosion could limit surface-disturbing activities and localized erosion. This could help protect geologic resources or values. Closing 10,880 acres to vehicle travel and managing 9,510 acres to maintain wilderness characteristics also could reduce surface disturbance and maintain geologic resources and values to a greater extent than Alternative A, but to a lesser extent than Alternative B.<br>Allocating 980 acres as utility corridors could result in surface disturbance, localized erosion, and the loss of geologic resources and values. | Designating 122,580 acres of the IFNM to meet VRM Class II objectives, minimizing the loss of vegetation, and adopting mitigation plans that minimize erosion could limit surface-disturbing activities and localized erosion. This could help protect geologic resources or values. Managing vehicle travel on 128,400 acres as limited to designated routes also could reduce surface disturbance and maintain geologic resources and values to a greater extent than Alternative A, but to a lesser extent than Alternatives B or C.<br>Allocating 2,660 acres as utility corridors could result in surface disturbance, localized erosion, and the loss of geologic resources and values. |
| **Soil and Water Resources** | Designating 128,400 acres of the IFNM to meet VRM Class III objectives and allocating 8,240 acres as utility corridors could result in surface-disturbing activities causing the loss of soil resources or degradation of water quality.<br>Closing 820 acres to vehicle travel and limiting vehicle travel to exiting routes in the remainder of the IFNM could reduce surface disturbance and erosion in localized areas.<br>Allocating 8,230 acres for utility corridors could result in surface disturbance and erosion in localized areas causing a loss of soil resources or degradation of water quality in localized areas. | Designating 125,110 acres of the IFNM to meet VRM Class I or Class II objectives, minimizing the loss of vegetation, adopting mitigation plans that minimize erosion, and managing 36,990 acres to maintain wilderness characteristics could reduce surface-disturbing activities throughout a majority of the IFNM, which would protect soil and water resources more than Alternative A.<br>Closing 30,040 acres to vehicle travel and limiting vehicle travel to designated routes in the remainder of the IFNM could limit surface disturbance and erosion in localized areas. | Designating 124,900 acres of the IFNM to meet VRM Class II objectives, minimizing the loss of vegetation, adopting mitigation plans that minimize erosion, and managing 9,510 acres to maintain wilderness characteristics could reduce surface-disturbing activities throughout a majority of the IFNM, which would protect soil and water resources more than Alternative A, but less than Alternative B.<br>Closing 10,880 acres to vehicle travel and limiting vehicle travel to existing routes in the remainder of the IFNM could limit surface disturbance and erosion in localized areas. | Designating 122,580 acres of the IFNM to meet VRM Class II objectives, minimizing the loss of vegetation, and adopting mitigation plans that minimize erosion could reduce surface-disturbing activities, which would protect soil and water resources more than Alternative A, but less than Alternatives B or C.<br>Allocating 2,660 acres as utility corridors could result in surface disturbance and localized erosion causing the loss of soil resources or degradation of water quality in localized areas. |

**Table 2-18: Summary Comparison of Impacts Table (cont.)**

| Topic | Alternative A | Alternative B | Alternative C | Alternative D |
|---|---|---|---|---|
| **Soil and Water Resources (cont.)** | | | Allocating 980 acres as utility corridors could result in surface disturbance and erosion in localized areas causing the loss of soil resources or degradation of water quality in localized areas. | |
| **Vegetation** | Designating 128,400 acres of the IFNM to meet VRM Class III objectives and allocating 8,240 acres as utility corridors could result in surface-disturbing activities, including vegetation removal. This could alter vegetation community structure and/or diversity and provide opportunities for noxious weed and invasive species establishment.<br>Closing 820 acres to vehicle travel and limiting vehicles to existing routes in the remainder of the IFNM could reduce disturbance to vegetation.<br>Managing 3,340 acres, including 2,240 acres of Nichol Turk's head cactus could help retain existing vegetation resources by restricting surface disturbing activities. | Designating 125,110 acres of the IFNM to meet VRM Class I or Class II objectives, minimizing the loss of vegetation, adopting mitigation plans that minimize erosion, and managing 36,990 acres to maintain wilderness characteristics could reduce surface-disturbing activities compared to Alternative A. This could help protect vegetation and reduce opportunities for noxious weed and invasive species establishment compared to Alternative A.<br>Closing 30,040 acres to vehicle travel and limiting vehicles to designated routes in the remainder of the IFNM could reduce surface disturbance and protect vegetation resource conditions.<br>Managing 9,020 acres on the Waterman and Ragged Top VHAs could help maintain existing vegetation resources by restricting surface disturbing activities. | Designating 124,900 acres of the IFNM to meet VRM Class II objectives, minimizing the loss of vegetation, adopting mitigation plans that minimize erosion, and managing 9,540 acres to maintain wilderness characteristics could reduce surface-disturbing activities compared to Alternative A, but to a lesser extent than Alternative B. This could help protect vegetation and reduce opportunities for noxious weed and invasive species establishment compared to Alternative A, but less than Alternative B.<br>Closing 10,880 acres to vehicle travel and limiting vehicles to designated routes in the remainder of the IFNM could reduce surface disturbance, including vegetation trampling or removal, in localized areas.<br>Allocating 980 acres as utility corridors could result in disturbance to vegetation in localized areas.<br>Managing 9,020 acres as the Waterman and Ragged Top VHAs could retain existing vegetation resources. However, allowing camping in these areas could result in localized surface disturbance. | Designating 122,580 acres the IFNM as to meet VRM Class II objectives, minimizing the loss of vegetation, and adopting mitigation plans that minimize erosion could reduce surface-disturbing activities and localized erosion. This could help protect vegetation and reduce opportunities for noxious weed and invasive species establishment compared to Alternative A, but less than Alternatives B or C.<br>Managing 2,660 acres as utility corridors could result in disturbance to vegetation in localized areas.<br>Managing 5,740 acres as the Waterman and Ragged Top VHAs could retain existing vegetation resources by restricting surface disturbing activities. However, this would be 280 acres less than Alternatives B and C. |

**Table 2-18: Summary Comparison of Impacts Table (cont.)**

| Topic | Alternative A | Alternative B | Alternative C | Alternative D |
|---|---|---|---|---|
| **Wildlife and Wildlife Habitat** | Designating 128,400 acres of the IFNM to meet VRM Class III objectives and allocating 8,240 acres as utility corridors would provide opportunities for surface-disturbing activities, including vegetation removal. This could reduce the quantity and/or quality of wildlife habitat from present conditions in localized areas.<br>Closing 820 acres to vehicle travel and limiting vehicles to existing routes in the remainder of the IFNM could limit surface disturbance and maintain existing wildlife habitat conditions in these areas. In addition, managing 41,470 acres as the Desert Bighorn Sheep Management Area would limit or prohibit surface disturbance, and maintain or continue to improve wildlife habitat conditions.<br>Allocating 8,240 acres for utility corridors could increase surface disturbance and localized erosion, which could degrade the quantity and/or quality of wildlife habitat. | Designating 125,110 acres of the IFNM to meet VRM Class I or Class II objectives, minimizing the loss of vegetation, adopting mitigation plans that minimize erosion, and managing 36,990 acres to maintain wilderness characteristics could reduce surface-disturbing activities compared to Alternative A. This could help maintain wildlife habitat and reduce disruptions to wildlife populations.<br>Closing 30,040 acres to vehicle travel and limiting vehicles to designated routes in the remainder of the IFNM could reduce surface disturbance resulting in greater protection of existing wildlife habitat conditions compared to Alternative A. In addition, allocating 29,820 acres as the Desert Bighorn Sheep WHA and 2,240 acres as the Waterman Mountains VHA would limit or prohibit surface disturbance, and maintain or improve wildlife habitat conditions in this area. | Designating 124,900 acres the IFNM to meet VRM Class II objectives, minimizing the loss of vegetation, adopting mitigation plans that minimize erosion, and managing 9,540 acres to maintain wilderness characteristics could reduce surface disturbing activities compared to Alternative A, but less than Alternative B. This could help maintain wildlife habitat.<br>Closing 10,880 acres to vehicle travel and limiting vehicles to designated routes in the remainder of the IFNM could reduce surface disturbance resulting in greater protection of existing wildlife habitat conditions and reduce disruption to wildlife populations compared to Alternatives A or B.<br>Allocating 980 acres as utility corridors could result in surface disturbance and localized erosion, which could degrade the quantity and/or quality of wildlife habitat. In addition, allocating 29,820 acres as the Desert Bighorn Sheep WHA and 2,240 acres as the Waterman Mountains VHA would limit or prohibit surface disturbance, and maintain or improve wildlife habitat conditions in this area. | Designating 122,580 acres the IFNM to meet VRM Class II objectives, minimizing the loss of vegetation, adopting mitigation plans that minimize erosion could reduce surface disturbing activities compared to Alternative A, but less than Alternatives B or C. This could help maintain wildlife habitat and reduce disruption to wildlife populations.<br>Allocating 2,660 acres as a utility corridor could result in surface disturbance and localized erosion, which could degrade the quantity and/or quality of wildlife habitat. . In addition, allocating 29,820 acres as the Desert Bighorn Sheep WHA and 2,340 acres as a VHA would limit or prohibit surface disturbance, and maintain or improve wildlife habitat conditions in this area. |
| **Special Status Species** | Designating 128,400 acres of the IFNM to meet VRM Class III objectives and allocating 8,240 acres as utility corridors would provide opportunities for surface-disturbing activities and vegetation removal. This | Designating 125,110 acres of the IFNM to meet VRM Class I or Class II objectives, minimizing the loss of vegetation, adopting mitigation plans that minimize erosion, and managing 36,990 acres | Designating 124,900 acres the IFNM as to meet VRM Class II objectives, minimizing the loss of vegetation, adopting mitigation plans that minimize erosion, and managing 9,510 acres to maintain | Designating 122,580 acres the IFNM to meet VRM Class II objectives, minimizing the loss of vegetation, and adopting mitigation plans that minimize erosion could reduce surface-disturbing activities |

**Table 2-18: Summary Comparison of Impacts Table (cont.)**

| Topic | Alternative A | Alternative B | Alternative C | Alternative D |
|---|---|---|---|---|
| **Special Status Species (cont.)** | could reduce the quantity and or quality of special status species habitat, depending on the area of disturbance.<br>Closing 820 acres to vehicle travel and limiting vehicles to existing routes in the remainder of the IFNM could limit surface disturbance and protect existing special status species habitat conditions. Managing 2,240 acres of public land as the Waterman Mountains ACEC would help protect special status species habitat. | to maintain wilderness characteristics could reduce surface-disturbing activities. This could help protect special status species habitat and reduce disruptions to special status species habitat and populations compared to Alternative A.<br>Closing 30,040 acres to vehicle travel and limiting vehicles to designated routes in the remainder of the IFNM could reduce surface disturbance and protect special status species habitat to a greater extent than Alternative A. In addition, managing approximately 2,240 acres of Nichol Turk's head cactus habitat as a VHA in the Waterman Mountains and 6,780 acres as a VHA at Ragged Top also could help protect special status species habitat. | wilderness characteristics could reduce surface-disturbing activities. This could help protect special status species habitat and reduce disruption to special status species populations.<br>Closing 10,880 acres to vehicle travel and limiting vehicles to designated routes in the remainder of the IFNM could reduce surface disturbance and protect special status species habitat to a greater extent than Alternative A, but less than Alternative B.<br>Allocating 980 acres as utility corridors could result in surface disturbance and localized erosion. This could reduce the quantity and/or quality of special status species habitat. | and localized erosion. This could help protect special status species habitat and reduce disruption to special status species populations.<br>Managing 2,660 acres as utility corridors could result in surface disturbance and localized erosion. This could reduce the quantity and or quality of special status species habitat. |
| **Fire Ecology** | Managing 41,470 acres as the Silver Bell Desert Bighorn Sheep Management Area and improving ecological site conditions in the Cocoraque Butte–Waterman Mountains Multiple Resource Management Area would limit surface disturbance and reduce opportunities for the establishment of noxious weeds and invasive species in these areas. These decisions would indirectly help retain FRCC I and maintain the current fire regime.<br>The potential for ignitions that originate from motorized vehicles would be reduced on approximately 820 acres that are closed to motorized vehicles. | Managing 2,240 acres as the Waterman Mountains VHA and 29,820 acres as the Desert Bighorn Sheep WHA along with an integrated noxious weed management approach throughout the IFNM, would reduce opportunities for the establishment of noxious weeds and invasive species. These decisions would indirectly help maintain current FRCC I ratings in site-specific areas. The potential for ignitions that originate from motorized vehicles would be reduced on approximately 38,040 acres that would be closed to motorized vehicles. | Managing 2,240 acres as the Waterman Mountains VHA and 29,820 acres as the Desert Bighorn Sheep WHA along with an integrated noxious weed management approach throughout the IFNM, would reduce opportunities for the establishment of noxious weeds and invasive species. These decisions would indirectly help maintain current FRCC I ratings in site-specific areas. The potential for ignitions that originate from motorized vehicles would be reduced on approximately 10,880 acres that would be closed to motorized vehicles. | Managing 2,240 acres as the Waterman Mountains VHA and 29,820 acres as the Desert Bighorn Sheep WHA along with an integrated noxious weed management approach throughout the IFNM, would reduce opportunities for the establishment of noxious weeds and invasive species. These decisions would indirectly help maintain current FRCC I ratings in site-specific areas<br>Managing 43,770 acres as semi-primitive non-motorized could increase the response time to wildfire ignitions in those areas. In addition, managing 11 allotments as perennial livestock grazing could |

**Table 2-18: Summary Comparison of Impacts Table (cont.)**

| Topic | Alternative A | Alternative B | Alternative C | Alternative D |
|---|---|---|---|---|
| **Fire Ecology (cont.)** | | Managing 36,990 acres for wilderness characteristics could preclude some types of fire suppression and fuels treatment activities. Managing 60,000 acres as semi-primitive non-motorized could increase the response time to wildfire ignitions in those areas. In addition, making 11 allotments unavailable for livestock grazing after existing grazing leases expire could increase the amount of fine fuels available for ignition. | Managing 9,510 acres for wilderness characteristics could preclude some types of fire suppression and fuels treatment activities. Managing 57,450 acres as semi-primitive non-motorized could increase the response time to wildfire ignitions in those areas. In addition, managing 11 allotments as perennial livestock grazing could decrease the amount of fine fuels available for ignition. | decrease the amount of fine fuels available for ignition. |
| **Cultural Resources** | Closing 820 acres to motorized vehicles and allocating the 2,720-acre Avra Valley Cultural Resource Management Area would help protect cultural resources by reducing surface disturbance in these areas. Maintaining the Waterman Mountains ACEC also provides some coincidental protection of cultural resources on approximately 2,240 acres of public lands.<br>Surface disturbing activities within 8,240 acres managed as utility corridors, from right-of-way construction and use, and resulting from livestock grazing could disturb cultural resources; however, mitigation would be required for impacts to cultural resources.<br>Dispersed recreation and OHV use also would have the potential to disturb cultural resources. | Closing 38,040 acres to motorized vehicles and managing 36,990 acres for wilderness characteristics would help protect cultural resources by reducing surface disturbance in these areas.<br>No sites would be allocated to public use, limiting opportunities for public interpretation. For sites allocated to scientific use, ground-disturbing activities for research would not be permitted, potentially limiting the understanding of the resource.<br>Managing the IFNM as an exclusion area with no utility corridors designated, and limiting the opportunities for authorization of new rights-of-way, could coincidentally protect cultural resources by reducing surface disturbance compared to Alternative A.<br>Managing 60,000 acres for semi-primitive non-motorized recreation could reduce surface disturbance and subsequent impacts on cultural resources in these areas. | Closing 10,880 acres to motorized vehicles and managing 9,510 acres for wilderness characteristics would help protect cultural resources by reducing surface disturbance in these areas.<br>Ground-disturbing activities would be allowed for research at sites allocated to scientific use, by promoting long-term preservation of the informational values to these sites and increase understanding of the cultural history.<br>Managing the IFNM as an avoidance area, but allocating 980 acres as utility corridors could cause surface disturbance and the loss of cultural resources in localized areas to a lesser extent than Alternative A, but to a greater extent than Alternative B.<br>Managing 57,450 acres for semi-primitive non-motorized recreation could reduce surface disturbance and subsequent impacts on cultural resources in these areas. | Managing the IFNM as an avoidance area with 2,660 acres allocated as utility corridors could cause surface disturbance and the loss of cultural resources. Ground-disturbing activities (i.e., excavation) would be allowed for research at sites allocated to scientific use, which would promote long-term preservation of the informational values to these sites and increase understanding of the regional cultural history.<br>Managing 43,770 acres for semi-primitive non-motorized recreation could reduce surface disturbance and subsequent impacts on cultural resources in these areas.<br>Ground-disturbing activities (i.e., excavation) would be allowed for research at sites allocated to scientific use, which would promote long-term preservation of the informational values to these sites and increase understanding of the regional cultural history. |

**Table 2-18: Summary Comparison of Impacts Table (cont.)**

| Topic | Alternative A | Alternative B | Alternative C | Alternative D |
|---|---|---|---|---|
| **Paleontological Resources** | Closing 820 acres to motorized vehicles and allocating 2,720-acre Avra Valley Cultural Resource Management Area would help protect paleontological resources by limiting surface disturbance in these areas.<br>Designating the Waterman Mountains ACEC also provides some coincidental protection of paleontological resources on approximately 2,240 acres of public lands. Surface disturbing activities within 8,240 acres of utility corridors, from right-of-way construction and use, and resulting from livestock grazing could disturb paleontological resources; however, mitigation would be required for impacts.<br>Dispersed recreation and OHV use would have the potential to disturb paleontological resources. | Closing 38,040 acres to motorized vehicles and managing 36,990 acres for wilderness characteristics would help protect paleontological resources by reducing surface disturbance in these areas.<br>Managing the IFNM as an exclusion area with no utility corridors, and limiting the opportunities for authorization of new rights-of-way, could coincidentally protect paleontological resources by reducing surface disturbance.<br>Managing 60,000 acres for semi-primitive non-motorized recreation could reduce surface disturbance and impact to paleontological resources in these areas. | Closing 10,880 acres to motorized vehicles and managing 9,510 acres for wilderness characteristics would help protect paleontological resources by reducing surface disturbance in these areas.<br>Managing the IFNM as an avoidance area, but allocating 980 acres as utility corridors could cause surface disturbance and the loss of paleontological resources in localized areas.<br>Managing 57,450 acres for semi-primitive non-motorized recreation could reduce surface disturbance and impact to paleontological resources. | Managing the IFNM as an avoidance area, but allocating 2,660 acres as utility corridors could cause surface disturbance and the loss of paleontological resources in localized areas.<br>Managing 43,770 acres for semi-primitive non-motorized recreation could reduce surface disturbance and impact to paleontological resources. |
| **Visual Resources** | VRM Class III designation on 128,400 acres would partially retain visual characteristics of the landscape, allowing a moderate level of change to the characteristic landscape. Mile-wide corridors for utility rights-of-way have highest potential for visual impacts by increasing contrasts. Prohibiting land use authorizations (except along existing roads) within the Waterman Mountains ACEC would limit the potential for new structures and activities that could introduce contrasting elements into the surrounding landscape on approximately 2,240 acres of public land. | VRM Class I designation would preserve the character of the landscape on about 36,990 acres of the most scenic, natural appearing, and visually sensitive parts of the public lands in the IFNM.<br>VRM Class II designation would retain the existing character of the landscape approximately 88,120 acres of the public lands in the IFNM.<br>Visual contrasts generated from recreational activities would be most noticeable in approximately 17,610 of the public lands in the IFNM in the roaded natural zone.<br>Managing the IFNM as a right-of-way exclusion area would help retain visual and scenic resources. | VRM Class II designation would retain the existing character of the landscape approximately 124,900 acres of the public lands in the IFNM.<br>Visual contrasts generated from recreational activities would be most noticeable in approximately 18,380 acres of the public lands in the IFNM in the roaded natural zone.<br>Managing the IFNM as a right-of-way avoidance area would help retain visual and scenic resources. | VRM Class II designation would retain the existing character of the landscape approximately 122,580 acres of the public lands in the IFNM.<br>Visual contrasts generated from recreational activities would be most noticeable in approximately 19,060 acres of the public lands in the IFNM in the roaded natural zone.<br>Managing the IFNM as a right-of-way avoidance area would help retain visual and scenic resources. |

**Table 2-18: Summary Comparison of Impacts Table (cont.)**

| Topic | Alternative A | Alternative B | Alternative C | Alternative D |
|---|---|---|---|---|
| **Wilderness Characteristics** | Designating 128,400 acres as VRM Class III would provide for limited protection of wilderness characteristics. Limiting motorized traffic to existing routes and closing 820 acres to OHV use could provide some coincidental protection of areas with wilderness characteristics.<br>Allowing rights-of-way within areas with wilderness characteristics would diminish naturalness in localized areas, as well as opportunities for solitude during construction and maintenance of the facility.<br>Allowing dispersed non-motorized camping throughout the IFNM would promote retention of wilderness characteristics by providing opportunities for primitive and unconfined recreation. | Designating 125,110 acres as VRM Class I or Class II would help retain areas with wilderness characteristics. Limiting motorized traffic to designated routes and closing 38,040 acres to OHV use could provide some coincidental protection of areas with wilderness characteristics to a greater extent than Alternative A.<br>Managing the IFNM as an exclusion area for rights-of-way would retain naturalness, as well as opportunities for solitude.<br>Managing 29,420 acres for primitive recreation and 60,000 acres for semi-primitive non-motorized recreation use would promote retention of wilderness characteristics by providing opportunities for primitive and unconfined recreation. | Designating 124,900 acres as a VRM Class II area would help retain areas with wilderness characteristics. Limiting motorized traffic to designated routes and closing 10,880 acres to OHV use could provide some coincidental protection of areas with wilderness characteristics to a greater extent than Alternative A, but less than Alternative B.<br>Managing the IFNM as an avoidance area for rights-of-way could help retain naturalness, as well as opportunities for solitude.<br>Managing 9,510 acres for primitive recreation and 57,450 acres for semi-primitive non-motorized recreation use would promote retention of wilderness characteristics by providing opportunities for primitive and unconfined recreation. | Designating 122,580 acres as a VRM Class II area would help retain areas with wilderness characteristics. Limiting motorized traffic to designated routes could provide some coincidental protection of areas with wilderness characteristics to a greater extent than Alternative A, but less than Alternatives B or C.<br>Managing 47,770 acres for semi-primitive non-motorized recreation use would promote retention of wilderness characteristics by providing opportunities for primitive and unconfined recreation. |
| **Livestock Grazing** | Designating 128,400 acres as VRM Class III and continuing custodial management of recreation could allow for surface-disturbing activities that reduce forage in site-specific areas. In addition, managing 8,240 acres in nine allotments as utility corridors could result in surface disturbance from construction and development of rights-of-way within the corridors.<br>Closing 820 acres to motorized use and managing approximately 2,240 acres of public land as the Waterman Mountains ACEC could reduce surface-disturbing activities and maintain forage for livestock grazing in these areas. | Making the IFNM unavailable to livestock grazing after leases expire would reduce the number of livestock operators in the IFNM. Designating 3,290 acres as VRM Class III and managing 17,610 acres for roaded natural recreation could allow for surface-disturbing activities that reduce forage in site-specific areas.<br>Closing 36,990 acres to motorized use and managing the IFNM as exclusion area for rights-of-way activities could reduce surface-disturbing activities and maintain forage for livestock grazing to a greater extent than Alternative A. | Designating 3,420 acres as VRM Class III and 80 acres as VRM Class IV, and managing 18,380 acres for roaded natural recreation could allow for surface-disturbing activities that reduce forage in site-specific areas.<br>Closing 10,880 acres to motorized use and managing the IFNM as an avoidance area for rights-of-way activities could reduce surface disturbing activities and maintain forage for livestock grazing to a greater extent than Alternative A, but less than Alternative B.<br>Managing 2,240 acres as a VHA and 29,820 acres as a WHA could | Designating 4,220 acres as VRM Class III and 1,600 acres as VRM Class IV, and managing 19,060 acres for roaded natural recreation could allow for surface-disturbing activities that reduce forage in site-specific areas.<br>Managing the IFNM as an avoidance area for rights-of-way activities could reduce surface-disturbing activities and maintain forage for livestock grazing to a greater extent than Alternative A, but less than Alternatives B or C.<br>Managing 2,240 acres as a VHA and 29,820 acres as a WHA could |

**Table 2-18: Summary Comparison of Impacts Table (cont.)**

| Topic | Alternative A | Alternative B | Alternative C | Alternative D |
|---|---|---|---|---|
| **Grazing (cont.)** | | Managing 2,240 acres as a VHA and 29,820 acres as a WHA could reduce surface disturbance and help retain forage for livestock grazing. | reduce surface disturbance and help retain forage for livestock grazing. | reduce surface disturbance and help retain forage for livestock grazing. |
| **Recreation** | Custodial recreation management could increase the number of vehicle-based campsites in areas near existing routes, providing opportunities for vehicle-based camping. However, this dispersed use could result in increased surface disturbance in localized areas, degrading the natural landscape and diminishing recreational settings over time.<br>Managing 127,580 acres as limited to designated or existing routes would continue to provided opportunities for motorized recreation. As motorized uses would be limited to designated or existing routes, the potential for conflicts between motorized-vehicle users and other IFNM visitors would be limited.<br>Closing 820 acres to OHV use would help maintain the existing recreational settings by preserving natural landscapes; this also would increase semi-primitive recreational opportunities.<br>Designating 128,400 acres as VRM Class III and continuing the designation of utility corridors on 8,240 acres would allow for activities, including surface disturbance, which could reduce naturalness and degrade recreational settings. | Managing 90,360 acres as limited to designated routes would maintain opportunities for motorized recreation.<br>Closing 38,040 acres to OHV use and managing 60,000 acres for semi-primitive non-motorized recreation would help maintain the existing recreational settings by preserving natural landscapes; this also would increase semi-primitive recreational opportunities compared to Alternative A.<br>Designating 3,290 acres as VRM Class III would allow surface disturbance, reducing naturalness and degrading some primitive recreational settings in localized areas. | Managing 117,530 acres of the IFNM as limited to designated routes would maintain opportunities for motorized recreation.<br>Closing 10,880 acres to OHV use and managing 57,450 acres for semi-primitive non-motorized recreation would help maintain the existing recreational settings by preserving natural landscapes; this also would increase semi-primitive recreational opportunities compared to Alternative A, but less than Alternative B.<br>Designating 3,420 acres as VRM Class III would allow surface disturbance, reducing naturalness and degrading some primitive recreational settings in localized areas. | Managing the IFNM as limited to designated routes would maintain opportunities for motorized recreation.<br>Managing 47,770 acres for semi-primitive non-motorized recreation would help maintain the existing recreational settings by preserving natural landscapes; this also would increase semi-primitive recreational opportunities to a greater extent than Alternative A, but less than Alternatives B or C.<br>Designating 4,220 acres as VRM Class III and 1,600 acres as VRM Class IV would allow surface disturbance, reducing naturalness and degrading recreational settings in localized areas. |
| **Lands and Realty** | Land tenure adjustments would focus on acquisition of non-Federal land in the Waterman Mountains, Sawtooth Mountains, Agua Blanca Ranch area, | Land tenure adjustments would focus on acquisition of non-Federal land throughout the IFNM, on an opportunistic basis, rather than | Land tenure adjustments would focus on acquisition of non-Federal land throughout the IFNM, on an opportunistic basis, | Land tenure adjustments would focus on acquisition of non-Federal land throughout the monument, on an opportunistic basis, rather than |

**Table 2-18: Summary Comparison of Impacts Table (cont.)**

| Topic | Alternative A | Alternative B | Alternative C | Alternative D |
|---|---|---|---|---|
| **Lands and Realty (cont.)** | Cocoraque Butte area, Silver Bell Mountains, and three sections of land in the West Silver Bell Mountains. Acquisitions would be driven by opportunities or land availability in these geographic areas.<br>Closing 820 acres to could effectively restrict land use authorizations in these areas as a result of access limitations that would be enforced as part of the OHV closure. | within specific areas. This would provide greater flexibility for BLM in prioritizing land for acquisition and would account for changing conditions in and around the IFNM. Allocating approximately 128,400 acres as an exclusion area (without any designated utility corridors), would result in the consideration of land use authorizations such as rights-of-way only when required by law.<br>Closing 38,040 acres to OHV travel could effectively restrict land use authorizations in these areas as a result of access limitations that would be enforced as part of the OHV closure. | rather than within specific areas. This would provide greater flexibility for BLM in prioritizing land for acquisition and would account for changing conditions in and around the IFNM.<br>Allocating the IFNM as an avoidance area (except 980 acres within identified utility corridors) would limit opportunities for rights-of-way to situations where no viable alternatives exist to avoiding placement of facilities within the IFNM. Corridors on 980 acres would provide limited opportunities for major utilities.<br>Closing 10,880 acres to OHV travel could effectively restrict land use authorizations in these areas as a result of access limitations that would be enforced as part of the OHV closure. | within specific areas. This would provide greater flexibility for BLM in prioritizing land for acquisition and would account for ongoing changing conditions in and around the monument.<br>Allocating the IFNM as an avoidance area (except areas within identified utility corridors) would limit opportunities for rights-of-way to situations where no viable alternatives exist to avoiding placement of facilities within the IFNM. Corridors on 2,660 acres would provide limited opportunities for major utilities. |
| **Travel Management** | Closing 820 acres to OHV travel and limiting motorized vehicle travel to existing or designated routes on the remaining approximately 127,580 acres would provide an extensive travel network (347 miles) throughout the IFNM, with very few areas where motorized travel would be prohibited. | Closing 38,040 acres to OHV travel and limiting motorized vehicle travel to designated routes on the remaining approximately 90,360 acres would provide a 71-mile travel network throughout the IFNM (plus County-administered routes and routes on State Trust land). | Closing 10,880 acres to OHV travel and limiting motorized vehicle travel to designated routes on the remaining approximately 117,530 acres would provide a 142-mile travel network throughout the IFNM (plus County-administered routes and routes on State Trust land). | Limiting motorized vehicle travel to designated routes would provide a 242-mile travel network throughout the IFNM (plus County-administered routes and routes on State Trust land). |
| **Special Designations** | The Waterman Mountains ACEC (approximately 2,240 acres of public land) would continue to be designated for the protection of the Nichol Turk's head cactus. | The 2,240 acres of public land in the Waterman Mountains ACEC designation would not continue because the IFNM designation and management proposed for the IFNM would provide protection of the special status species for which the ACEC was established. | The 2,240 acres of public land in the Waterman Mountains ACEC designation would not continue because the IFNM designation and management proposed for the IFNM would provide protection of the special status species for which the ACEC was established. | The 2,240 acres of public land in the Waterman Mountains ACEC designation would not continue because the IFNM designation and management proposed for the IFNM would provide protection of the special status species for which the ACEC was established. |

**Table 2-18: Summary Comparison of Impacts Table (cont.)**

| Topic | Alternative A | Alternative B | Alternative C | Alternative D |
|---|---|---|---|---|
| **Public Safety** | Allowing vehicle travel on existing or designated routes within 127,580 acres (820 acres would be closed to vehicle travel) would present risks to public safety in the form of vehicle-based accidents.<br>Allowing recreational shooting could present risks of exposure to hazardous materials and injuries in areas of intense recreational use. | Allowing vehicle travel on designated routes within 90,360 acres (38,040 acres would be closed to vehicle travel) would present risks to public safety in the form of vehicle-based accidents.<br>Prohibiting recreational shooting except for permitted hunting would limit risks of exposure to hazardous materials and minimize risks to public safety from shooting activities. | Allowing vehicle travel on existing or designated routes within 117,520 acres (10,880 acres would be closed to vehicle travel) would present risks to public safety in the form of vehicle-based accidents.<br>Prohibiting recreational shooting except for permitted hunting would limit risks of exposure to hazardous materials and minimize risks to public safety from shooting activities. | Allowing vehicle travel on existing or designated routes within 128,400 acres would present risks to public safety in the form of vehicle-based accidents.<br>Allowing recreational shooting could present risks of exposure to hazardous materials and injuries in areas of intense recreational use. |
| **Social and Economic Conditions** | Grazing would continue to generate economic gains from livestock operations, depending on stocking rates, which could vary. Social values of ranching would continue within the IFNM.<br>Continued custodial management of recreation would result in minor economic impacts (generally from fees for permits); socially, conflicts if use increases among users would continue, and possibly escalate over time.<br>Land use authorizations, such as rights-of-way, would generate economic activity; development within existing or new rights-of-way could influence other development and infrastructure. | After grazing leases expire, there would be a loss of economic activity associated with livestock grazing, as well as a loss of the social value of ranching, within in the IFNM.<br>Managing 36,990 acres to maintain wilderness characteristics would recognize the social values of these areas; however, opportunities for uses that could generate economic returns could be limited in these areas, but, nonmarket values could increase.<br>Management of recreation would limit social experiences because of the prohibition on having dogs in the IFNM, limiting camping (both vehicle-based and non-vehicle-based) to identified sites, and limiting group camping to two sites. This would represent a loss of these experiences compared to Alternative A, but may result in fewer user conflicts. Closing VHAs to camping and closing the bighorn sheep lambing areas seasonally | Grazing would continue to generate economic gains from livestock operations, depending on stocking rates, which could vary. Social values of ranching would continue.<br>Managing 9,510 acres to maintain wilderness characteristics would recognize the social values of these areas; however, opportunities for uses that could generate economic returns could be limited in these areas, but, nonmarket values could increase.<br>Management of recreation would provide for increased social experiences compared to Alternative B, because dogs (on leashes) and non-vehicle-based camping would be allowed in the IFNM, and group camping could occur at three sites. Closing the bighorn sheep lambing areas seasonally could limit valued social experiences (e.g., wildlife viewing) in those areas. | Grazing would continue to generate economic gains from livestock operations, depending on stocking rates, which could vary. Social values of ranching would continue.<br>Management of recreation would provide for increased social experiences compared to Alternative B, because dogs would be allowed in the IFNM (on leashes), non-vehicle-based camping would be allowed throughout the IFNM, and group camping could occur at four sites. Closing the bighorn sheep lambing areas seasonal could limit valued social experiences (e.g., wildlife viewing) in those areas.<br>Allocating the IFNM as an avoidance area for rights-of-way, except on 2,660 acres of identified utility corridors would limit, but not preclude, opportunities for such facilities, and the associated economic impacts. |

**Table 2-18: Summary Comparison of Impacts Table (cont.)**

| Topic | Alternative A | Alternative B | Alternative C | Alternative D |
|---|---|---|---|---|
| | | could | | |
| **Social and Economic Conditions (cont.)** | | limit valued social experiences (e.g., wildlife viewing) in those areas.<br>Allocating 128,400 acres as exclusion area for rights-of-way and not establishing any corridors for major utilities would preclude opportunities for such facilities, and the associated economic impacts. | Allocating the IFNM as an avoidance area for rights-of-way, except on 980 acres of identified utility corridors would limit, but not preclude, opportunities for such facilities, and the associated economic impacts. | |

# CHAPTER 3.0 AFFECTED ENVIRONMENT

This chapter provides an overview of the existing environment within the planning area. The level of detail has been limited to that which is necessary to support, clarify, and provide context for (1) the issues listed in Chapter 1, (2) the goals and objectives and the alternatives presented in Chapter 2, and (3) the impact analysis provided in Chapter 4.

BLM uses the best available data when preparing a resource management plan (RMP). The data for this Draft RMP/Environmental Impact Statement (EIS) were provided by several sources: the Tucson Field Office of Bureau of Land Management (BLM); Federal, State, county, and local agencies, including the U.S. Geological Survey (USGS), U.S. Fish and Wildlife Service (USFWS), Arizona Game and Fish Department (AGFD), other State agencies, and counties; and other public and private sources. The data include published and unpublished reports, maps, and data in digital format. Geographic information system (GIS) technology was used extensively to capture, manage, analyze, and display the geographic data for this Draft RMP/EIS. Acreages used for analysis purposes reflect the best available GIS data maintained by the BLM.

In accordance with the National Environmental Policy Act of 1969 (NEPA) regulations codified in Title 40, Code of Federal Regulations, Section 1502.15 (40 CFR 1502.15), this chapter discusses the existing condition of the human and natural environment that potentially could be affected, beneficially or adversely, by the management strategies presented in the alternatives. Many, though not all, of the sections within this chapter correlate with programs for which BLM intends to make management decisions through the planning process. The following aspects of the existing environment were considered:

***Resources***

Air quality

Geology and cave resources

Soil and water resources

Biological resources (including vegetation, non-native vegetation, wildlife and wildlife habitats, and special status species)

Fire ecology and management

Cultural resources

Paleontological resources

Visual resources

Wilderness characteristics

***Resource Uses***

Energy and minerals

Livestock grazing

Recreation

Lands and realty

Travel management

***Special Designations***

Areas of critical environmental concern (ACECs)

***Tribal Interests***

***Social and Economic Conditions***

Economic value

Social and demographic conditions

***Public Safety***

Active and abandoned mines and prospects

Unexploded ordinances

Wildcat dumping

## 3.1 RESOURCE CONDITIONS

### 3.1.1 Air Quality

For most of the planning area and locations in the surrounding region (the air quality study area), relatively complete information resources are available, in the form of air quality monitoring data, air permit data, and regional emission inventories. The existing conditions in air quality within the Ironwood Forest National Monument (IFNM or monument) are characterized based on the following quantifiable indicators:

- Monitored ambient concentrations of the criteria air pollutants as defined by the National Ambient Air Quality Standards (NAAQS) identified in the Clean Air Act and regulated by the U.S. Environmental Protection Agency (EPA)
- Observed levels of visibility, as a measure of air quality, which is monitored in most Class I areas (i.e., areas meeting criteria for relatively pristine air quality designated as Class I areas under the Federal Clean Air Act).
- Visibility data from monitoring stations operated by the Cooperative Institute for Research in the Atmosphere
- Data from remote automatic weather stations (RAWS) that indicate prevailing wind patterns

The discussion below also identifies emission sources in the study area with potential to impact air quality within the IFNM.

#### 3.1.1.1 NAAQS – Attainment, Nonattainment, and Unclassified Areas

The 1990 Federal Clean Air Act requires that air quality throughout the United States meet certain standards with respect to criteria air pollutants in order to protect public health and the environment. In compliance with that act, the EPA has set levels for six criteria air pollutants: sulfur dioxide ($SO_2$), particulate matter equal to or less than 2.5 microns in diameter and equal to or less than 10 microns in diameter ($PM_{2.5}$ and $PM_{10}$), carbon monoxide (CO), nitrogen dioxide ($NO_2$), lead (Pb), and ozone ($O_3$). For each of these pollutants, there is a primary standard (set to protect public health) and a secondary standard (set to protect the environment). (The NAAQS standards, are presented in Table 3-1.) Geographic areas are designated as “attainment,” “nonattainment,” or “unclassified” with respect to each criteria pollutant. Areas where concentrations of criteria pollutants exceed the NAAQS are designated as nonattainment. An unclassified designation indicates that the status of attainment has not been verified

through data collection. As a result of exceedances in the standards for $PM_{10}$, the Rillito nonattainment area has been designated within Pima County; this nonattainment area for $PM_{10}$ partially overlaps the IFNM (Map 3-1: Nonattainment Areas).

**Table 3-1: National Ambient Air Quality Standards**

| Pollutant | Averaging Period | NAAQS | |
|---|---|---|---|
| | | ***Primary*** | ***Secondary*** |
| Sulfur Dioxide ($SO_2$) | 3-hour | — | 0.5 ppm |
| | 24-hour | 0.14 ppm | — |
| | Annual | 0.03 ppm | — |
| Particulate Matter less than or equal to 10 microns in diameter ($PM_{10}$) | 24-hour | 150 µg/$m^3$ | 150 µg/$m^3$ |
| | Annual | 50 µg/$m^3$ | 50 µg/$m^3$ |
| Particulate matter less than or equal to 2.5 Microns in Diameter ($PM_{2.5}$) | 24-hour | 65 µg/$m^3$ | 65 µg/$m^3$ |
| | Annual | 15 µg/$m^3$ | 15 µg/$m^3$ |
| Carbon Monoxide (CO) | 1-hour | 35 ppm | — |
| | 8-hour | 9 ppm | — |
| Nitrogen Dioxide ($NO_2$) | Annual | 0.053 ppm | 0.053 ppm |
| Lead (Pb) | Quarterly | 1.5 µg/$m^3$ | 1.5 µg/$m^3$ |
| Ozone ($O_3$) | 1-hour | 0.12 ppm | 0.12 ppm |
| | 8-hour | 0.08 ppm | 0.08 ppm |

SOURCES: U.S. Environmental Protection Agency 2003a, 2003b, 2003c, 2003d, 2003e, 2003f, 2003g, 2003h, 2003i
NOTES: ppm = parts per million
µg/$m^3$ = micrograms per cubic meter
NAAQS = National Ambient Air Quality Standards

### 3.1.1.2 Visibility in Class I Areas

Under the Federal Clean Air Act, areas meeting criteria for relatively pristine air quality may be designated as Class I areas. The Clean Air Act defines Class I areas as certain wilderness areas greater than 5,000 acres, national memorial parks greater than 5,000 acres, national parks greater than 6,000 acres, and international parks that were in existence on or before August 7, 1977. The planning area does not include any Class I areas. However, there is one Class I area located just east of the planning area, the Saguaro National Park (West Unit) Class I Area.

### 3.1.1.3 Visibility in the Region, as Indicated by IMPROVE Data

The Cooperative Institute for Research in the Atmosphere operates a network of monitoring stations and publishes Integrated Monitoring of Protected Visual Environments (IMPROVE) data to identify and evaluate patterns and trends in regional visibility. Data show that visible haze patterns measured in the Sonoran Desert are representative of arid sites in the Southwest, such as the IFNM. The monitoring results revealed the following (IMPROVE 2000):

- Fine and coarse particulate concentrations were the largest contributors to poor visibility in the spring, and lowest in the winter.
- Contributions to visibility degradation consisting of sulfates, organics, and soil in the fine particulate mass measurements were highest in the summer, and lowest in the winter.

- The haziest days in the Sonoran Desert occur in the summer and the best visibility occurs in the winter.

There are no air quality monitors located within the IFNM, but there are numerous monitors located in several areas surrounding the IFNM for different criteria pollutants that are representative of conditions in the vicinity. The ambient air pollutant concentration data from 2001 for areas surrounding the planning area, as reported in Arizona Department of Environmental Quality's (ADEQ's) Fiscal Year (FY) 2002 Air Quality Report (ADEQ 2002), are summarized in Table 3-2.

#### 3.1.1.4 Meteorological Conditions—Wind Patterns

The meteorological conditions of the planning area are typical of the Sonoran Desert areas of central Arizona with a dry, desert climate. The highest average humidity occurs during the winter months, and also are slightly higher during July and August, which are the months during which the monsoon season normally occurs (Western Regional Climate Center [WRCC] 2003a, 2003b) Similarly, the greatest average wet bulb temperatures, which represent the lowest temperature that can be obtained when evaporating water into air, occur during the months of July and August, which also correlates with the normal monsoon season (WRCC 2003c).

Data from three remote automatic weather stations (RAWS) monitors near the IFNM that best represent the prevalent wind patterns within the IFNM from areas such as the metropolitan Phoenix area, the metropolitan Tucson area, and the Mexican border (WRCC 2003d) were evaluated, with the following conclusions:

***Haley Hills RAWS Monitor:*** Based on wind patterns reported at the Haley Hills RAWS monitor, winds from the north/east directions (which occur approximately 30 percent of the year) may convey pollutants from Interstate 10 and isolated stationary sources toward the IFNM. In contrast, there are no substantive pollutant sources located west/southwest of the monitor (where wind blows from approximately 19 percent of the year).

***Saguaro RAWS Monitor:*** To the extent that the observed wind patterns at the Saguaro RAWS monitor may represent conditions on the east side of the IFNM, there would be relatively little transport of pollutants from industrial and mobile sources in the developed areas in Tucson, and generally only during periods when there are northeasterly winds. (There is a slight prevalence of winds from the north/east and south/west quadrants).

***Selles RAWS Monitor:*** The wind pattern observed at the Selles RAWS monitor (which is relatively dominant from the northeast sector about one-third of the time) would tend to transport pollutants to the planning area from the relatively less developed areas and major highways located southwest of the IFNM.

#### 3.1.1.5 Emission Sources

There are no stationary industrial emission sources located within the planning area, but there are several near the planning area that are among the larger sources in Arizona.

**Major and Minor Sources.** There are no major sources in the planning area. However, a number of major sources encompassing many industrial categories—such as gas- and coal-fired power plants, natural gas pipeline compressor stations, landfills, and a portland cement plant—are located in the vicinity of the planning area. Minor sources located in developed areas outside the planning area include rock and construction-product industries (e.g., portable crushing and screening plants), hot-mix asphalt plants, and

# Nonattainment Areas

**Ironwood Forest National Monument**
**Draft RMP/EIS**

## Legend

Rillito Particulate Matter ($PM_{10}$) Nonattainment Area

**Surface Management**

- Bureau of Land Management
- National Park Service
- Bureau of Reclamation
- American Indian Reservation
- Military Reservations
- State Trust Lands
- State, County, City; Wildlife, Park and Outdoor Recreation Areas
- Private
- Pima County

Data Source:
Non-Attainment Area Information: ADEQ 2003b
Base Information: BLM 2003
Quadrangle Image: US Geological Survey 1977 Tucson

**General Reference**

- County Boundaries
- CAP Canal
- River
- Interstate 10
- Main public access routes to monument. County administered roads connecting monument travel route system to public highways.

**Planning Area**

- Ironwood Forest National Monument

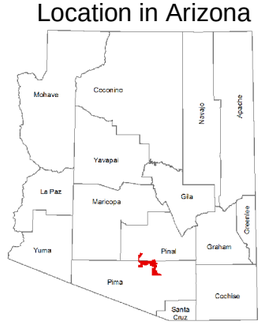
Universal Tranverse Mercator
Zone 12, Units Meters
Clark 1866 Spheroid
NAD27 Datum

No warranty is made by the Bureau of Land Management (BLM) for the use of this map for purposes not intended by BLM, or to the accuracy, reliability, or completeness of the information shown. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification.

0 1 2 4 Miles

0 2 4 8 Kilometers

Location in Arizona




P:\BLM\Ironwood\GIS\Plots\RMP_EIS\Chapter_3\NonAttainmentMap.pdf

Map 3-1

**Table 3-2: 2001 Air Quality Monitor Data from Monitors near the Planning Area**

| Identifier | CO (ppm) | | $NO_2$ (ppm) | | | $SO_2$ (µg/m$^3$) | | | $O_3$ (ppm) | | $PM_{10}$ (µg/m$^3$) | | $PM_{2.5}$ (µg/m$^3$) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *1-Hour Average* | *8-Hour Average* | *1-Hour Average* | *24-Hour Average* | *Annual Average* | *3-Hour Average* | *24-Hour Average* | *Annual Average* | *1-Hour Average* | *8-Hour Average* | *24-Hour Average* | *Annual Average* | *24-Hour Average* | *Annual Average* |
| IW1 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 89/77 | 33.6/26.0 | N/A | N/A |
| IW2 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 113/134 | 24.7/31.0 | N/A | N/A |
| IW3 | 5.8 | 3.0 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| IW4 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 120 | 26.0 | N/A | N/A |
| IW5 | 3.9 | 2.8 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| IW6 | 2.9 | 1.7 | 0.060 | 0.031 | 0.015 | N/A | N/A | N/A | 0.084 | 0.071 | N/A | N/A | 17.5 | 6.8 |
| IW7 | 3.7 | 1.9 | 0.058 | 0.031 | 0.017 | 16 | 8 | 3 | 0.089 | 0.075 | 115 | 22.8 | N/A | N/A |
| IW8 | 5.6 | 2.7 | N/A | N/A | N/A | N/A | N/A | N/A | 0.083 | 0.071 | N/A | N/A | N/A | N/A |
| IW9 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 111 | 29.0 | 20.9 | 7.6 |
| IW10 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 125 | 33.0 | N/A | N/A |
| IW11 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 131 | 26.0 | N/A | N/A |
| IW12 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 0.078 | 0.069 | 81 | 17.0 | N/A | N/A |
| IW13 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 122 | 25.1 | N/A | N/A |
| IW14 | 1.5 | 0.7 | N/A | N/A | N/A | N/A | N/A | N/A | 0.085 | 0.078 | N/A | N/A | N/A | N/A |
| IW15 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 104 | 29.2 | 18.1 | 7.7 |
| IW16 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 146 | 47.2 | N/A | N/A |
| IW17 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 73 | 32.0 | N/A | N/A |
| IW18 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 142 | 35.1 | N/A | N/A |
| IW19 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 103 | 26.7 | N/A | N/A |
| IW20 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 134 | 41.9 | N/A | N/A |

SOURCE: Arizona Department of Environmental Quality 2002

NOTES: N/A = Not Applicable

For CO, the following monitor is a seasonal monitor that is operational from January 1 to April 1 and September 1 to December 31: IW5.

For $PM_{10}$, the IW1 monitor shows data recorded at the monitor operated by the ADEQ followed by the data recorded at the monitor operated by Arizona Portland Cement Company.

For $PM_{10}$, the IW2 monitor shows data recorded at the monitor operated by the ADEQ followed by the data recorded at the monitor operated by the Pima County Department of Environmental Quality.

For $PM_{2.5}$, the following monitors collected data every third day: IW6 and IW10; and the following monitor collect data every sixth day: IW16 .

For $PM_{2.5}$, the IW6 monitor's data did not satisfy the U.S. Environmental Protection Agency's summary criteria, usually meaning less than 75 percent valid data recovery was available in one or more calendar quarters.

Units: µg/m$^3$ = micrograms per cubic meter; ppm = parts per million.

Pollutants: CO = carbon monoxide; $NO_2$ = nitrogen dioxide; $O_3$ = ozone; $SO_2$ = sulfur dioxide; $PM_{10}$ = particulate matter less than 10 microns in diameter; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter.

Monitors: IW1 = Rillito; IW2 = South Tucson; IW3 = Tucson-Alvernon; IW4 = Tucson-Broadway and Swan; IW5 = Tucson-Cherry; IW6 = Tucson-Children's Park; IW7 = Tucson-Craycroft; IW8 = Tucson-Downtown; IW9 = Tucson-Orange Grove; IW10 = Tucson-Prince Road; IW11 = Tucson-Santa Clara; IW12 = Tucson-Tangerine; IW13 = Tucson-University of Arizona Central; IW14 = Casa Grande-Airport; IW15 = Casa Grande-Downtown; IW16 = Casa Grande-Eleven Mile Corner; IW17 = Coolidge-Maintenance Yard; IW18=Eloy-City Complex; IW19 = Pinal Air Park; IW20 = Stanfield.

concrete batch plants. Stationary minor sources include manufacturing facilities, paint shops, and dry cleaners. Other minor sources located near the planning area include cattle feedlot operations, cotton gins, and miscellaneous manufacturing facilities.

Within the planning area, on-road vehicles represent the largest single air-pollutant-source category. Emissions from vehicles consist of $NO_2$, CO, and $PM_{10}$, which may warrant consideration in any assessment of ambient air quality. Since there are no major traffic routes located within the planning area, consideration of mobile source emissions in the vicinity of the planning area is limited to the Interstate 10 corridor and the public access routes that run throughout the IFNM. Vehicles traveling on unpaved roads are the largest sources of $PM_{10}$ emissions within the planning area. Current fugitive-dust control measures, such as posted speed limits, reduce the amount of $PM_{10}$ emissions generated.

**Nonpermitted Sources.** There are many small stationary emission sources that are not required to have an operating permit. These sources do not produce levels of air pollution that would substantially affect regional air quality. Agricultural operations are widespread throughout the study area, outside the IFNM, and represent a category of emission sources that are exempt from permitting and that likely affect local and regional air quality.

### 3.1.2 Geology and Cave Resources

Within the IFNM, there are many geological resources of interest for scientific study, preservation, scenic observation, recreational enjoyment, and/or economic development. The discussion of geological resources in Section 3.1.2.1 is focused on those with scientific, historical, or scenic value. Caves are discussed in Section 3.1.2.2. Geological resources that may have potential uses or economic value for development are discussed in Section 3.2.1, Energy and Minerals. Paleontological resources are discussed in Section 3.1.9.

#### 3.1.2.1 Geology

The Arizona Geological Survey (Richard et al. 2000) has prepared a geologic map of Arizona, which includes the surface geologic resources of the IFNM. Scarborough (2002) prepared a report on the geologic aspects of the IFNM and compiled a detailed geologic map of the western portion of the monument that provides more geologic detail in select areas west of the Silver Bell Mountains.

The IFNM is located within the Basin and Range physiographic province, which is characterized by long, narrow, block-faulted mountain ranges oriented northwest-southeast that are separated by broad, relatively flat valleys containing several thousand feet of alluvial sediments.

The jagged mountaintops and steep cliffs, such as Ragged Top and Wildcat Peak, are composed of resistant Cretaceous to Tertiary volcanic plugs or necks, while the Samaniego Hills and Sawtooth Mountains consist of thick sequences of volcanic flows and sediments. The Silver Bell Mountains are formed from Laramide-age granitic and volcanic rocks that host a major porphyry copper deposit.

Scarborough (2002) identified three unusual geologic features of scientific interest in the IFNM:

- Rarely preserved relict bar and swale structures characteristic of alluvial fan deposition
- Relict sand dune fields
- A large expanse of desert varnish on several styles of desert pavement

#### 3.1.2.2 Caves

There are memorandums of understanding (MOUs) between the National Speleological Society and the BLM (dated June 11, 1984) for caves throughout the United States. The MOUs will help carry out the responsibilities under the 1988 Federal Cave Resources Protection Act to preserve our Nation's significant caves, and to improve cooperation between cavers, cave researchers, and the Federal Government. Some of these MOUs may be applicable to any caves that may exist in the planning area.

No caves have been reported in the IFNM, but several have been noted in other portions of southern and eastern Arizona. There are two caves, Silver Bell and Rattlesnake, in the Waterman Peak area adjacent to the IFNM (Mount 2003; USDI, BLM 2003b).

Additional caves may occur within the Paleozoic sedimentary deposits or within some volcanic rocks in the IFNM. There may be other caves in the area that remain undiscovered or undisclosed. The scientific, educational, and recreational value of potential caves is expected to be quite variable and would need to be assessed individually.

### 3.1.3 Soil and Water Resources

#### 3.1.3.1 Soil Resources

Soils in the planning area are primarily the product of the climate, the underlying bedrock lithology, and the landscape. They are the subject of three Natural Resource Conservation Service (NRCS) Soil Surveys: Pinal County – Western Part (NRCS 1991); Pima County – Eastern Part (NRCS 2003); Tohono O'odham Nation – Parts of Maricopa, Pima, and Pinal Counties (NRCS 1999).

The soils of this region support some of the designated uses of public lands such as recreation, wildlife management, livestock grazing, and mining. The soil associations mapped by NRCS for the region are closely correlated to the various landforms of the planning area. Soils in the planning area are defined as sensitive and/or fragile if they are rated highly or severely erodible by wind or water (Map 3-2: Sensitive and Fragile Soils). Sensitive and/or fragile soils do not include biological soil crusts or desert varnish and pavement areas, as these soil features have not been comprehensively inventoried, nor mapped, within the IFNM. Problems with sensitive and fragile soils are compounded when they are close to surface water channels and sources. When eroded sediments flow directly into arroyos and stream channels, subsequent increases in sediment can be dramatic. These eroded soils can be deposited on the surface of active alluvial fans by mudflow, debris flow, and normal stream channel processes within the IFNM (Scarborourgh 2002). This is a concern because increases in sediment can make water unsuitable for beneficial uses, such as irrigation or livestock and wildlife watering.

More than half of the planning area is composed of fan terraces. The soils in fan terraces are used primarily for rangeland; fan terrace landforms are relatively smooth alluvial fans that have been incised by drainages. Basin floors primarily form the perimeter of the planning area and areas between mountain ranges in the planning area, such as Avra Valley. Basin soils are very deep and well drained, with a moderately fine texture, formed in unconsolidated material or granite. Piedmont soils are prevalent in the rolling hills and mountains of the planning area, covering approximately one third of the planning area in Pima County. These soils are shallow and well drained, and often contain gravel.

Prime farmland is a distinction made by the U.S. Department of Agriculture as necessary for the preservation of the Nation's domestic food and other supplies, specifically the capacity to preserve high yields of food, seed, forage, fiber, and oilseed, with minimal agricultural amendment of the soil, adequate water, and a sufficient growing season. The planning area does not contain soils that qualify as prime farmland soils.

Biological soil crusts can be composed of cyanobacteria, green algae, lichens, mosses, microfungi, and other bacteria (Belnap et al. 2001). Biological soil crusts lie dormant most of the time but are physiologically "awakened" with rainfall, and these organisms typically remain active for only a day or two before the soil surface again dries. The properties of biological soil crusts make soils less susceptible to erosion; however, they are easily damaged and slow to recover (Phillips and Comus 2000). Functionally, biological soil crusts tend to fix nitrogen and contribute to the sparse nutrients available to desert plants. Biological soil crust occurrence in the planning area was noted in a geological survey performed for the BLM (Scarborough 2003). Biological soil crusts require considerable time to revegetate when disturbed—up to 56 years according to one study (Kade and Warren 2002). Damage caused by less- frequent and less-intensive disturbance may be more easily corrected. Vehicle tires are particularly destructive to biological soil crusts (Belnap et al. 2001; Kade and Warren 2002).

Desert pavement is a flat surface covered with a more or less complete layer of pebbles, gravel, or rocks that are varnished by a slow accumulation of black films and clear protein-rich coatings where exposed to air. Small patches of weakly varnished youthful desert pavement occur in the IFNM, but display very little true varnish effects. Varnished pavements occur in two areas: (1) on the bajada on the south side of the West Silver Bell Mountains and (2) on the west side of the Sawtooth Mountains, where the most extensive and interesting varnished pavements occur. The latter site has been disrupted by road and tower construction for the dual powerlines that cross Aguirre Valley (Scarborough 2003).

### 3.1.3.2 Water Resources

#### *3.1.3.2.1 Groundwater*

In the arid Southwest, most rural communities and individual residents rely entirely upon groundwater for domestic and other noncommercial water uses. The Groundwater Management Act of 1980 gives the State of Arizona authority to regulate the beneficial use of groundwater, as administered by the Arizona Department of Water Resources (ADWR). Under the Groundwater Management Act, specific groundwater management regions, or Active Management Areas (AMAs), were delineated, in which groundwater usage was to be managed such as to attain or preserve a "safe yield" of groundwater withdrawal. Safe yield is defined by the annual amount of water discharged, balanced by the amount of natural and engineered recharge to the AMA aquifer system. Two of these AMAs, the Pinal AMA and the Tucson AMA, are within the boundaries of the IFNM.

Groundwater within and around the planning area serves a variety of beneficial uses, including a number of other public land resources (Table 3-3). However, exclusive of irrigation, Pinal County is still primarily supplied by wells (78 percent). Irrigation in Pinal County consumes the highest percentage of groundwater (89 percent), even though surface water use is higher. About a quarter of the groundwater use in Pima County goes to irrigation; over half of the groundwater use in Pima County goes to domestic/municipal uses.

The abundance of soil moisture and shallow groundwater presence vary greatly from location to location. However, both of these water sources are essential to rangeland and ecological health. Therefore, the best assessment of the current conditions of soils moisture in the IFNM is through the existing allotment assessments. These allotment assessments are discussed in Section 3.2.2, Livestock Grazing.

In the Pinal AMA, ADWR recognizes five groundwater subbasins (ADWR 1999a). Groundwater-level lowering has caused subsidence, earth fissuring, and ground collapse in the region. The primary areas of subsidence in central Arizona include the Harquahala Plain, Luke Air Force Base area, the Stanfield area (11.8 feet in 1977), Eloy, Queen Creek/Apache Junction, and Picacho (Carpenter 1999). Subsidence in

# Sensitive and Fragile Soils

**Ironwood Forest National Monument**
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## Legend

### Soils

- Soils Highly Prone to Wind Erosion and Fugitive Dust When Disturbed
  (Ground disturbing activities may be prohibited or restricted, or special measures may be required to prevent or minimize the generation of fugitive dust.)

### Surface Management

- Bureau of Land Management
- National Park Service
- Bureau of Reclamation
- American Indian Reservation
- Military Reservations
- State Trust Lands
- State, County, City; Wildlife, Park and Outdoor Recreation Areas
- Private
- Pima County

Data Source:
Soils: Natural Resources Conservation Service - BLM Tucson Field Office 2006
Base Information: BLM 2003
Quadrangle Image: US Geological Survey 1977 Tucson

### General Reference

- County Boundaries
- CAP Canal
- River
- Interstate 10
- Main public access routes to monument. County administered roads connecting monument travel route system to public highways.

### Planning Area

- Ironwood Forest National Monument

Universal Tranverse Mercator
Zone 12, Units Meters
Clark 1866 Spheroid
NAD27 Datum

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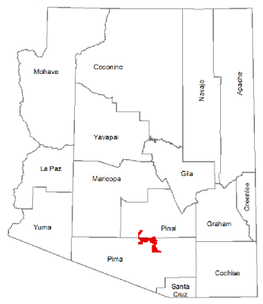
0 1 2 4 Miles

0 2 4 8 Kilometers

Location in Arizona

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Map 3-2

## Table 3-3: Water Use in Pima and Pinal Counties

| Water Resource Use<br>Units are million gallons/day unless otherwise indicated | Counties | | Subbasins | | |
|---|---|---|---|---|---|
| | Pima | Pinal | Lower Santa Cruz | Brawley Wash | Aguirre Valley |
| **Public Supply** | | | | | |
| Total population, in thousands | 752.43 | 131.21 | 51.40 | 29.95 | 0.98 |
| Population served by groundwater, in thousands | 726.08 | 101.71 | 44.81 | 19.61 | 0 |
| Population served by surface water, in thousands | 0 | 1.95 | 0 | 0 | 0 |
| Per-capita withdrawal, in gallons per day | 142.08 | 147.50 | 147.96 | 113.72 | 0 |
| **Commercial Water Use** | | | | | |
| Total withdrawals, groundwater | 9.28 | 3.20 | 3.95 | 0 | 0 |
| **Domestic Water Use** | | | | | |
| Per-capita use, self-supplied, in gallons per day | 110.82 | 140.47 | 139.61 | 110.25 | 112.24 |
| Per-capita use, public-supplied, in gallons per day | 82.77 | 82.19 | 65.61 | 68.84 | 0 |
| **Industrial Water Use** | | | | | |
| Total withdrawals plus deliveries | 20.29 | 1.18 | 4.88 | 7.12 | 0 |
| Reclaimed wastewater | 1.57 | 0 | 0 | 0 | 0 |
| **Thermoelectric Power Water Use (Fossil Fuel)** | | | | | |
| Total withdrawals, groundwater | 1.17 | 0.31 | 0.31 | 0 | 0 |
| Power generation, gigawatt hours | 564.44 | 98.91 | 98.91 | 0 | 0 |
| Number of facilities | 3 | 1 | 1.00 | 0 | 0 |
| **Thermoelectric Power Water Use (Nuclear)** | | | | | |
| Power generation, gigawatt hours | 0 | 0 | 0 | 0 | 0 |
| Reclaimed wastewater | 0 | 0 | 0 | 0 | 0 |
| Number of facilities | 0 | 0 | 0 | 0 | 0 |
| **Mining Water Use** | | | | | |
| Total withdrawals, groundwater | 35.39 | 21.87 | 1.03 | 0.19 | 0 |
| Total withdrawals, surface water | 1.11 | 0.17 | 0.00 | 0 | 0 |
| **Livestock Water Use (Total)** | | | | | |
| Total withdrawals, groundwater | 0.88 | 11.53 | 0.11 | 2.77 | 0.09 |
| Total withdrawals, surface water | 0.03 | 0.01 | 0 | 0 | 0 |
| **Irrigation Water Use** | | | | | |
| Total withdrawals, groundwater | 58.28 | 443.40 | 160.28 | 13.39 | 0 |
| Total withdrawals, surface water | 35.25 | 761.87 | 329.14 | 0 | 0 |
| Consumptive use, total | 60.83 | 605.05 | 252.68 | 8.62 | 0 |
| Conveyance loss | 13.15 | 180.77 | 73.41 | 2 | 0 |
| Acres irrigated, total, in thousands | 29.33 | 255.24 | 106.49 | 4.27 | 0 |
| Reclaimed wastewater | 7.41 | 2.86 | 3.77 | 0 | 0 |
| **Hydroelectric Power Water Use** | | | | | |
| Instream water use | 0 | 0 | 0.00 | 0 | 0 |
| Power generation, total, gigawatt hours | 0 | 0 | 0.00 | 0 | 0 |
| Number of facilities, total | 0 | 0 | 0.00 | 0 | 0 |
| **Wastewater Treatment** | | | | | |
| Returns by public wastewater facilities | 51.71 | 4.62 | 2.76 | 0.8 | 0 |
| Reclaimed wastewater released by publicly owned treatment works | 9.99 | 2.92 | 2.16 | 0 | 0 |
| Number of wastewater facilities, total | 26 | 68 | 22.00 | 2 | 0 |
| **Totals** | | | | | |
| Total withdrawals, groundwater | 227.37 | 499.84 | 178.08 | 26.76 | 0.20 |
| Total withdrawals, surface water | 36.39 | 762.33 | 329.14 | 0 | 0 |
| Reclaimed wastewater | 8.98 | 2.86 | 3.77 | 0 | 0 |
| Conveyance losses | 13.15 | 180.77 | 73.41 | 2 | 0 |

SOURCE: Solley et al. 1998

Avra Valley also has been postulated (ADWR 1999b). Based on existing pumpage rates, USGS projects that subsidence in affected areas of central Arizona could reach 2 to 14 feet by 2025.

Issues related to the quality of shallow groundwater in areas throughout the planning area are primarily related to the infiltration of agricultural wastewater. The combination of irrigation seepage and dissolution and the high evaporation rates of central Arizona tend to concentrate salts in groundwater. Although not regulated, high total dissolved solids can make water unsuitable for certain uses. Nitrates from agricultural operations also might be migrating with groundwater.

The Tucson AMA report lists exceedence of the groundwater standard for nitrate from wells "northwest of Marana," which would be down slope of the IFNM. Groundwater beneath the north end of Brawley Wash also is cited in the same report as high in nitrate and total dissolved solids (salt) concentration. The perched water bodies are the most likely source of agriculturally derived pollutants.

ASARCO Silver Bell Mining LLC operates three open-pit mines adjacent to and down gradient from the IFNM. The company has applied for an ADEQ Aquifer Protection Permit that requires the determination of baseline water quality for the aquifers most likely to be affected by the mine. Since the mine is hydrogeologically down gradient, there is little likelihood of any impact on the eastern and southern parts of the IFNM.

There are no wells located within the IFNM that are routinely monitored by either ADEQ or the USGS. Two wells near the east boundary that appear in the Environmental Protection Agency's STORET database were last sampled in January of 1998. Nitrate ranged from 3.5 to 9.6 milligrams per liter, below the Arizona Aquifer Water Quality Standard of 10 milligrams per liter, indicating there were no groundwater quality problems related to nitrate in the IFNM at that time.

#### *3.1.3.2.2 Surface Water*

Although perennial surface water is uncommon in central Arizona, ephemeral, intermittent, and effluent-dependent (including irrigation return flow) streams and standing water are common and essential components of surface water in desert washes. Desert washes primarily function as areas of overland flow collection and recharge for the surrounding watershed (Osterkamp 1994). Ephemeral pools, either in-channel or in the uplands (i.e., tinajas), are essential as both watering sites for wildlife and stock, and to support amphibians and aquatic invertebrates. There are parts of four USGS subbasins in the planning area (Map 3-3: Surface Water Basin). Surface water flows within the IFNM are entirely ephemeral.

### 3.1.4 Vegetation

Classification of the biological communities of the IFNM follows the Brown, Lowe, and Pace system (1979). Community descriptions are based on Brown (1994) and Dimmitt and Van Devender (2003).

#### 3.1.4.1 Upland Plant Communities

#### *3.1.4.1.1 Sonoran Desertscrub*

Shreve (1951) recognized two subdivisions of Sonoran desertscrub vegetation: the Arizona Upland and Lower Colorado River Valley. Transitional plant communities found in the planning area possess characteristics of both subdivisions. The subdivisions and their minor communities are discussed below and shown on Map 3-4: Vegetation.

***Arizona Upland Subdivision***: This subdivision, which occupies about one-half of the IFNM, is characterized by saguaros and legume trees growing on slopes and bajadas. Plants dominating the

# Surface Water Basins

**Ironwood Forest National Monument**
**Draft RMP/EIS**

## Legend

Wash

**Hydrographic Unit Codes**

- Lower Santa Cruz (USGS Cataloging Unit: 15050303)
- Brawley Wash (USGS Cataloging Unit: 15050304)
- Aguirre Valley (USGS Cataloging Unit: 15050305)
- Santa Rosa Wash (USGS Cataloging Unit: 15050306)

Data Source:
Hydrology: BLM 2003
Base Information: BLM 2003
Quadrangle Image: US Geological Survey 1977 Tucson

**General Reference**

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- River
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**Planning Area**

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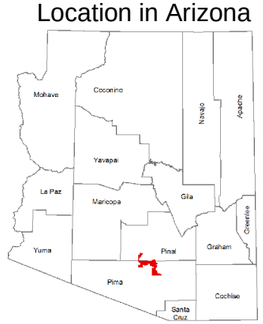
0 1 2 4 Miles
0 2 4 8 Kilometers

Location in Arizona

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Map 3-3

# Vegetation

**Ironwood Forest National Monument**
**Draft RMP/EIS**

## Legend

### Upland Plant Communities

**Sonoran Desertscrub**

Arizona Upland Subdivision

- Paloverde - Cacti-Mixed Scrub
- Jojoba Chaparral

Lower Colorado River Valley Subdivision

- Cresotebush - White Bursage

### Wetland Plant Communities

- Xeroriparian

### Other Classifications

- Sensitive and Unique Vegetation Communities
- Agricultural Land

Data Source:
Vegetation: Brown and Lowe 1980
Sensitive Vegetation: ASDM 2003
Agricultural Land: AZGAP 1996
Xeroriparian Inventory: Harris 2000 *
*Inventory for Pima County Only.
Base Information: BLM 2003
Quadrangle Image: US Geological Survey 1977 Tucson

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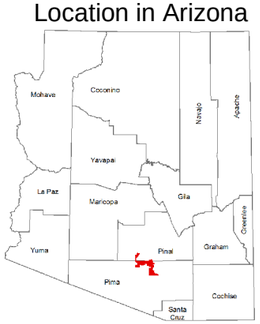
0 1 2 4 Miles

0 2 4 8 Kilometers

Location in Arizona

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Map 3-4

landscape are primarily a combination of paloverde and saguaro or paloverde and mixed cacti. There are two minor plant communities within this subdivision.

- *Paloverde-Cacti – Mixed Scrub*. This community is dominated by foothill paloverde (*Cercidium microphyllum*) with scattered cacti, mostly saguaro, and contains other associated species such as mesquite and ironwood. It occurs as patches of dense vegetation, with a well-developed canopy layer interspersed with open areas, and is suitable habitat for a wide variety of wildlife, especially birds.
- *Jojoba Chaparral*. This minor community is found only near the summit of Silver Bell Peak in the IFNM. The dominant plant, jojoba (*Simmondsia chinensis*), forms continuous stands that have the same form and structure as chaparral.

***Lower Colorado River Valley Subdivision***: This subdivision occupies about one-half of the IFNM. It is composed mostly of creosotebush and bursage, and is found in broad valleys between mountain ranges. Slopes are covered with low, open vegetation, with the lower bajadas and valley floors supporting scattered saguaros and ironwoods. This subdivision has one minor plant community:

- *Creosotebush–White Bursage*. This community consists of medium to low, open vegetation cover dominated by creosotebush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*). Scattered triangle-leaf bursage (*Ambrosia deltoidea*), ocotillo (*Fouquieria splendens*), and prickly pear (*Opuntia* spp.) are also present.

#### *3.1.4.1.2 Riparian and Xeroriparian Plant Communities*

The riparian and xeroriparian plant communities identified in the planning area are shown on Map 3-4. The term "xeroriparian" (dry wash) is used to describe this plant community within the IFNM because both riparian scrublands and riparian woodlands lack surface water most of the year. Washes have surface water only immediately following winter and summer rains, when runoff carries seeds and nutrients into the washes, resulting in increased soil moisture and greater densities of plant and animal life than adjacent lands. All washes are important as wildlife movement corridors and provide more habitat components for nesting, foraging, cover, and food than adjacent uplands. Vegetation in the xeroriparian areas is composed of a combination of low mesquite and catclaw. Some washes have mesquites; others are dominated by either blue paloverde or ironwood, or a combination of both.

### 3.1.4.2 Priority Plant Communities

Priority plant communities, identified and described by Dimmitt and Van Devender (2003), occur on approximately 39,647 acres within the planning area. These communities were found to be sensitive because of their rarity, ecological diversity, or vulnerability to disturbance by human trampling, fire, or invasion by exotic plants. These communities, identified on Map 3-4 as Sensitive and Unique Vegetation Communities, include the following:

- *Dense Patches*. These areas support above-average densities of saguaro and ironwood trees, species that contribute to the uniqueness of the community as well as being important to the overall health of the ecosystems of which they are a part.
- *Large Ironwoods.* The largest individuals of this species occur in lower elevation valley drainages. They are also found in braided washes and non-channelized, sheet-flooded areas.

- *Jojoba Chaparral*. This community, described previously, is a rare occurrence in the planning area. It is undetermined whether this community is a true chaparral or an unusual association of the Arizona Upland Subdivision.
- *Xeroriparian.* Xeroriparian plant communities are dense ribbons of vegetation in washes supported by seasonal surface water. The dominant tree is typically mesquite, but paloverde or ironwood may also dominate, or a mixture of all three species may be present equally.
- *Cactus Dunes.* This unique community is located southwest of the Sawtooth Mountains where flat, loose, pinkish sand is densely vegetated with several cactus species and scattered foothill paloverde trees.
- *Curlymesquite Grassland.* This community, consisting of a large, nearly pure stand of curlymesquite grass, is found in the Roskruge Mountains. Most lower elevation desert grasslands have been converted into desertscrub communities that include saguaros, foothill paloverde trees, and triangle-leaf bursage.
- *Cholla Forests.* These dense stands of cholla occur in several areas of the IFNM, with the largest such area in the Pan Quemado Mountains. An intermittent band of chainfruit cholla nearly encircles these mountains.
- *Creosote Rings.* Rings of creosotebush are found near the north end of the Silver Bell Mountains. Individual plants exhibit clone-like growth through new growth from the old base of old stems that then spread outward in the shape of a circular or elliptical ring. Generally, radiocarbon dating of old individuals is possible, and many have been dated as old as several thousand years (Robichaux 1999).
- *Ragged Top.* A total of 401 plant species have been found on Ragged Top, which is approximately 72 percent of the total flora found in the IFNM. The high diversity, structure, and composition of plants in this area support both a high abundance and high diversity of wildlife. Though not a vegetation community, Ragged Top is a sensitive and unique area.

#### 3.1.4.3 Agricultural Lands

In addition to the native vegetative communities, approximately 1,200 acres of agricultural fields have been identified in the western portion of the planning area, located on both State Trust and private lands. These fields, which currently are being farmed, have few characteristics of natural plant communities, except for incidental plants growing along the perimeter and along irrigation canals. Mostly non-native and other weedy species initially invade abandoned fields. Eventually a few native species from adjacent lands may become established. Agricultural lands are shown on Map 3-4.

#### 3.1.4.4 Non-native Vegetation

Approximately 54 non-native plant species occur in IFNM. These plants have special adaptations that allow them to quickly invade and out-compete many native species. Species that pose the greatest threats include buffelgrass (*Pennisetum ciliare*), Sahara mustard (*Brassica tournefortii*), and Bermuda grass (*Cynodon dactylon*).

### 3.1.5 Wildlife and Wildlife Habitat

The fauna of the IFNM include a diversity of game and nongame wildlife species, as well as migratory birds, typically found in the Sonoran Desert. Several species are restricted to certain locales within the biotic subdivisions; others occur widely in suitable habitats of both subdivisions described in Section

3.1.4. An example is the desert tortoise, which occurs in suitable habitat of both the Arizona Upland and Lower Colorado River Valley subdivisions. It is estimated that more than 674 animal species, including 64 mammal species and over 70 bird species, occur in the Silver Bell Mountains alone (Averill-Murray and Averill-Murray 2002). These species are typical of Sonoran desertscrub habitats in southern Arizona.

#### 3.1.5.1 Game Species

Big game species known to occur in the planning area include desert bighorn sheep, mule deer, and javelina. Small game species that occur in the planning area include desert cottontails, jackrabbits, and quail.

The desert bighorn sheep prefer the rocky, mountainous habitats in the IFNM, primarily the Silver Bell Mountains. Sheep typically use the highest ridges of the mountains as a lookout. Desert bighorn sheep diet consists of shrubs, forbs, cacti and grasses. Globemallow, desert agaves, range ratany, buck wheatbrush, foothill palo verde, prickly pear, desert ironwood, and elephant tree also are consumed by desert bighorn sheep (Tarango et. al. 2002). Lambing areas are primarily selected to provide safety from predators as well as to provide distance from human disturbances. Individuals from the Silver Bell herd have been documented crossing valley floors from one mountain to another inside the IFNM. Several ewes were observed during the non-breeding season, browsing along the lower bajada of the Silver Bell Mountains (Jansen 2004).

According to 2004 data provided by AGFD, sheep lambing and female concentration areas are regarded as potential birthing sites depending on individual female preference, and are not considered discrete units. Travel corridors are used infrequently, and at times, a preference is shown by animals that make repeated and habitual movements from one mountain range to another (Jansen 2004).

BLM has a rangewide plan for managing desert bighorn sheep habitat on public land. Based on viability estimates, BLM has classified bighorn sheep habitat into three categories:

> ***Category 1***: Habitats where existing viable populations occur
>
> ***Category 2***: Habitats where remnant herds occur and are capable of supporting more than 80 individuals
>
> ***Category 3***: Unoccupied habitat that is capable of supporting more than 80 individuals.

The goal of BLM's rangewide plan for managing desert bighorn sheep is to maintain and/or enhance habitat for bighorn sheep in Category 1 areas, enhance habitat in Category 2 areas, and maintain and enhance habitat to allow reintroduction and reestablishment of viable populations in Category 3 areas (USDI, BLM 1988). The IFNM includes habitat within each of the three categories.

Mule deer are primarily browsers, with a majority of their diet composed of forbs (herbaceous plants excluding grasses) and browse (e.g., woody plants like shrubs). Across the xeric habitat of the IFNM where mule deer are found, which occurs throughout the IFNM, they rely on three key habitat components: cover, water, and available food year-round. Ideal habitat for mule deer includes components that are interspersed in such a way that they provide adequate nutrition and cover to reproduce successfully (Hoffmeister 1986).

Javelina are commonly found in the desertscrub, especially in thickets near or along streambeds or washes and along bajadas adjacent to rocky hillsides. These are used for cover and retreat from potential predators and human disturbances. Javelina travel in herds and typically utilize the washes to move from one location to another on a daily basis. Thick stands of cacti provide both food and moisture. Plants

commonly found in javelina habitat include prickly pear, paloverde, mesquite, jojoba, catclaw, and ocotillo. In creosote-bursage-paloverde–mixed cacti communities, prickly pear made up 95 percent of their diet (Hoffmeister 1986).

Typically, small game species prefer habitats that provide thick, brushy vegetation mixed with grasses, forbs, and browse. Populations of small game species that occur on the IFNM include Gambel's quail (*Callipepla gambelii*), desert cottontail (*Sylvilagus audubonii*), eastern cottontail (*Sylvilagus floridanus*), white-winged dove (*Zenaida asiatica*), mourning dove (*Zenaida macroura*), blacktail jackrabbit (*Lepus californicus*), and antelope jackrabbit (*Lepus alleni*).

### 3.1.5.2 Non-game Species

Vegetation provides foraging, roosting, and nesting habitat for a vast array of non-game species including songbirds and raptors found in the IFNM. There is a strong correlation between bird species diversity and abundance, and density and structure of vegetation. In general, increased complexity of the ecosystem increases bird abundance and diversity. Migration and breeding periods change the abundance and types of birds that occupy the IFNM at any given time. Due to lack of permanent surface water, aquatic birds are not often found except as incidental occurrences. However, at least 70 upland bird species are known to occur in the Silver Bell Mountains alone. The most frequently observed resident bird species have been cactus wren (*Campylorhynchus brunneicapillus*), gilded flicker (*Colaptes chrysoides*), Gila woodpecker (*Melanerpes uropygialis*), curve-billed thrasher (*Toxostoma curvirostre*), and black-throated sparrow (*Amphispiza bilineata*). Most resident bird species found on the IFNM prefer habitat with relatively dense grass cover and washes thick with grass and shrubby vegetation (Averill-Murray and Averill-Murray 2002).

One amphibian and 29 reptiles were observed in the IFNM during the 2002 desert tortoise survey (Averill-Murray and Averill-Murray 2002). The most frequently observed reptiles were western whiptail lizard (*Cnemidophorus tigris*), common side-blotched lizard (*Uta stansburiana*), and zebra-tailed lizard (*Callisaurus draconoides*). Several possible eastern fence lizards (*Sceloporus undulatus*) were observed in the desert flats in the southern portion of the IFNM. The Colorado River toad (*Bufo alvarius*) was an incidental occurrence found along the roadside.

In 2003, a total of 29 different species of reptiles and amphibians were observed in the IFNM (Rosen 2003). Rosen states in his report that the best populations of true desert reptiles occur in the Sawtooth Mountains region, and on valley floors. They include the desert iguana (*Dipsoosaurus dorsalis*), long-tailed brush lizard (*Urosaurus graciosus*), four species of desert horned lizards (*Phrynosoma* spp.) and spiny lizards (*Sceloporus* spp.), western shovel-nosed snake (*Chionactis occipitalis*), spotted leaf-nosed snake (*Phyllorhynchus decurtatus*- not confirmed), speckled rattlesnake (*Crotalus mitchellii*- not observed during survey), and chuckwalla (*Sauromalus obesus*). The lesser earless lizard (*Holbrookia maculata*) and the Sonoran spotted whiptail (*Cnemidophorus* [=*Aspidoscelis*] Sonoras) were found only in desert grassland habitats in the Roskruge Mountains area. In this desert grassland community, the plant composition is a blend of dry tropic scrub plants, typical Sonoran Desert plants, and perennial grasses. The only amphibian documented in the IFNM was the Colorado River toad (*Bufo alvarius*), which was found along the eastern bajada of the Roskruge Mountains and in Aguirre Valley (Rosen 2003).

### 3.1.5.3 Migratory Birds

Various species of migratory birds summer, winter, and/or migrate through the IFNM. The habitat diversity provided by the broad expanses of Sonoran Desertscrub vegetation zones (including paloverde-cacti-mixed scrub, jojoba chaparral, creosote-white bursage, and xeroriparian communities) support numerous species of migratory birds. The most characteristic species include turkey vulture (*Cathartes*

*aura*), northern harrier (*Circus cyaneus*), Cooper's hawk (*Accipiter cooperii*), white-winged dove (*Zenaida asiatica*), elf owl (*Micrathene whitneyi*), lesser nighthawk (*Chordeiles acutipennis*), black-chinned hummingbird (*Archilochus alexandri*), ash-throated flycatcher (*Myiarchus cinerascens*), purple martin (*Progne subis*), Bell's vireo (*Vireo atricapillus*), Lucy's warbler (*Vermivora luciae*), and sage sparrow (*Amphispiza belli*). Species such as killdeer (*Charadrius vociferous*), great blue heron (*Ardea herodias*), mallard (*Anas platyrhynchos*), and black-necked stilt (*Himantopus mexicanus*) may be found where suitable habitat exists.

#### 3.1.5.4 Habitat Connectivity and Fragmentation

Land use patterns on the IFNM influence wildlife habitat connectivity. Factors contributing to fragmentation of wildlife habitats within the IFNM include roads, residential development, mines, undocumented immigrant (UDI) traffic, and off-road driving. As a result of fragmentation, habitats which were once continuous become divided into smaller isolated patches of habitat.

The primary function of wildlife corridors is to connect fragmented habitat areas, which moderates some of the ecological effects of habitat fragmentation. All washes in the IFNM serve as corridors for wildlife. These corridors facilitate dispersal of individuals between patches of remaining habitat, allowing for both long-term genetic interchange and individuals to re-colonize habitat patches from which populations have been locally extirpated. Wildlife corridors could connect habitats between the Silver Bell Mountains, West Silver Bell Mountains, and Sawtooth Mountains.

### 3.1.6 Special Status Species

Special status species include the following: (1) species currently listed or considered for listing as threatened or endangered by USFWS; (2) species listed as sensitive by BLM; (3) species listed as Wildlife of Special Concern in Arizona by AGFD; (4) Priority Vulnerable Species in Pima County; and (5) plants that have special protection under the Arizona Native Plant Law. Federally listed and proposed species and their designated or proposed critical habitats receive protection under the Endangered Species Act of 1973, as amended. The BLM Sensitive Species are those species that may or may not have Federal status (under the Endangered Species Act), but are designated by the BLM State Director for special management consideration. Pima County's list of Priority Vulnerable Species are species that have been included in the biological evaluation for the Sonoran Desert Conservation Plan. The Wildlife of Special Concern in Arizona are those species whose occurrence in Arizona is or may be in jeopardy, or those species with known or perceived threats or population declines, as described by the AGFD. The AGFD list is intended to guide management decisions that involve these species.

As identified by BLM, USFWS, AGFD, and Pima County's Sonoran Desert Conservation Plan, 122 special status species occur in Pima and Pinal Counties. Of this total, two species with Federal status have the potential of occurring in the planning area: lesser long-nosed bat and Nichol Turk's head cactus. Of those special status species that are not federally listed, 36 with potential of occurring in the planning area have been identified, and are included below in Table 3-4.

**Table 3-4: Special Status Species that Occur or Have the Potential of Occurring in the IFNM**

| Name of Species | Status | Habitat Requirements |
|---|---|---|
| ***Amphibians*** | | |
| Lowland leopard frog<br>*Rana yavapaiensis* | SC, WSCA | Desert, grasslands, permanent pools of foothill streams, rivers, and permanent stock tanks. |
| ***Birds*** | | |
| Abert's towhee<br>*Pipilo aberti* | SC, PV | Sonoran riparian deciduous woodland and riparian scrubland with a dense understory of shrubs. |

| Name of Species | Status | Habitat Requirements |
|---|---|---|
| American peregrine falcon<br>*Falco peregrinus anatum* | SC, S, WSCA | Found in Arizona wherever sufficient prey is found near cliffs. Optimum peregrine habitat is generally considered to be steep, sheer cliffs overlooking woodlands, riparian areas or other habitats supporting avian prey species in abundance. As Arizona's population grows, peregrines seem to be breeding in less optimal habitat; either small broken cliffs in ponderosa pine forest or large, sheer cliffs in very xeric areas. The presence of an open expanse is critical |
| Bell's vireo<br>*Vireo belli* | SC, PV | Dense, low, shrubby vegetation in riparian areas. Typically found in dense shrubland or woodland along lowland stream courses with willows, mesquites, and seep willows. |
| Cactus ferruginous pygmy-owl<br>*Glaucidium brasilianum cactorum* | S, WSCA | Streamside cottonwoods and willows and adjacent mesquite bosques, usually with saguaros on nearby slopes. Less often found along dry washes with large mesquite, paloverde, ironwood, and saguaro. |
| Crested caracara<br>*Caracara cheriway* | WSCA | Open country, including pastureland, cultivated areas, and semidesert, in both arid and moist habitats but more commonly in the former. Habitat characterized by low-profile ground vegetation and scattered tall vegetation suitable for nesting. Scattered trees, poles, and fences with unimpeded view favored as perches, particularly near nest sites. In Arizona, inhabits paloverde-saguaro desert. They can frequently be found near stock tanks and *charcos* (puddles or natural pools*)*, especially during the hot, dry summer. Perhaps they are attracted by the numerous dead livestock found around the only water available for miles. |
| Mississippi kite<br>*Ictinia mississippiensis* | WSCA | Tall forest, open woodland, prairie, semiarid rangeland, shelterbelts, wooded areas bordering lakes and streams in more open regions, scrubby oaks and mesquite, and lowland/floodplain forests. Requires open areas near nesting sites for foraging. Breeding habitat in Arizona consists of riparian deciduous forests that border desertscrub upland habitats. Man-made habitat in central Arizona consists of pecan orchards. |
| Rufous-winged sparrow<br>*Aimophila carpalis* | PV | Flat or gently hilly desertscrub. Grasses like tobosa grass are essential components. Territories typically include some riparian and xeroriparian habitat, farmland, and deep soil sites (mesquites with clumps of sacaton grass). |
| Swainson's hawk<br>*Buteo swainsoni* | SC, PV | Open grasslands and desertscrub that sustains a grassland component. |
| Tropical kingbird<br>*Tyrannus melancholicus* | WSCA | Areas with scattered trees, savanna, open woodland, forest edge, plantations, residential areas and agricultural lands. Occurs in lowlands near water in Arizona, often nests in cottonwoods. |
| Western burrowing owl<br>*Athene cunicularia hypugaea* | SC, S, PV | Grasslands, pastures, desertscrub, and edges of agricultural fields and vacant lots. |
| ***Invertebrates*** | | |
| Talus snails<br>*Sonorella baboquivariensis berryi* | PV | Isolated, undisturbed areas of rocks, generally, or exclusively, limestone, mostly, but not exclusively, on north-facing or north-trending slopes, usually near hilltops or in rocky canyons. Located in Roskruge Mountains area. |
| ***Mammals*** | | |
| Big free-tailed bat<br>*Nyctinomops macrotis* | SC, S | Desertscrub, ponderosa pine, and piñon-juniper. Prefers to roost in rugged, rocky areas in desertscrub with vegetation components consisting of saguaro, creostebush, and mesquite. |

| Name of Species | Status | Habitat Requirements |
|---|---|---|
| California leaf-nosed bat<br>*Macrotus californicus* | SC, S, WSCA | Typically found in several habitats of desertscrub. Roosts in mines and caves. Feeds on insects. This species neither hibernates nor migrates, spending winters in warm, humid caves or mine tunnels. |
| Cave myotis<br>*Myotis velifer* | SC, S | Mine shafts, tunnels, caves, and under bridges in desert areas of creosotebush, paloverde, brittlebush, and cactus. More commonly found in xeric areas, never more than a few miles/kilometers away from a water source. Forages low over vegetation in pursuit of moths and other insects. |
| Greater western mastiff<br>*Eumops perotis californicus* | SC | Resident in Arizona year-round; it lives in manmade and natural crevices, typically in desertscrub. Feeds on insects. Long forage periods of up to 6.5 hours each night. |
| Lesser long-nosed bat<br>*Leptonycteris curasoae yerbabuenae* | LE, S, WSCA | Mainly grasslands and shrublands, chaparral, and lower-elevation oak woodland and associated habitats. In Arizona, are found mostly in areas with flowering saguaros and organ pipe cactus at elevations below about 3,500 feet. |
| Merriam's pocket mouse<br>*Peromyscus merriami* | PV | Sometimes called "mesquite mouse," this species is found almost entirely in mesquite forests or bosques in Pima, Pinal, and Santa Cruz Counties. It is rarely seen in dry brushland. |
| Mexican long-tongued bat<br>*Choeronycteris mexicana* | SC, S, WSCA | Mainly in oak-pine communities but also found in saguaro-paloverde associations in desertscrub. Caves and abandoned mine shafts are typical roosts. Feeds on nectar and pollen, but occasionally insects. |
| Pale Townsend's big-eared bat<br>*Plecotus townsendii pallescens* | SC | Typically roosts in caves, mines, and abandoned buildings through a range of elevations and vegetation communities. Found in the Arizona Upland and Lower Colorado River Valley subdivisions of Sonoran desertscrub. Feeds primarily on moths, but will also take insects off of vegetation while in flight. |
| Pocketed free-tailed bat<br>*Nyctinomops femorosaccus* | S | Roosts in caves, buildings, and crevices along rocky cliffs in semiarid desert lands. Feeds mostly on moths and other insects. |
| Western red bat<br>*Lasiurus blossevillii* | WSCA | Broadleaf riparian deciduous forests and woodlands. Occasionally roosts in saguaro boots and other cavities, but more commonly in dense clumps of foliage in riparian or wooded areas. Feeds mainly on flying insects. |
| Western small-footed myotis<br>*Myotis ciliolabrum* | SC, S | Oaks, chaparral, and riparian areas, but not in desertscrub in the southwestern part of the state. Hibernates in caves and old mines; summers in crevices, cracks, holes, under rocks, and in buildings. Feeds on insects. |
| Western yellow bat<br>*Lasiurus xanthinus* | WSCA | Not clearly understood; may be associated with Washington fan palm trees, other palms or other leafy vegetation such as sycamores, hackberries and cottonwoods which provide roost sites. Individuals have been found roosting about 15 feet above the ground in a hackberry (*Celtis reticulata*) and sycamores (*Platanus wrightii*). |
| Yuma myotis<br>*Myotis yumanensis* | SC | In summer, found near water, where it forages for insects. Prefers to roost in old buildings and abandoned cliff swallow nests. Rarely roosts in caves or mines. |
| ***Plants*** | | |
| Aravaipa wood fern<br>*Thelypteris puberula* var. *sonorensis* | S | Moist soil in the shade of boulders in mesic canyons. Also found on riverbanks, seepage areas, and meadow habitats at elevations ranging from 2,200 to 4,500 feet. Substrates are exclusively granitic. Easily disturbed and can be affected by during collection for landscape use or by livestock grazing. |

| Name of Species | Status | Habitat Requirements |
|---|---|---|
| Arizona giant sedge<br>*Carex spissa* var. *ultra* | S | Saturated soil near or in perennial seeps, streams, and springs at elevations between 2,500 and 6,000 feet. |
| Arizona Sonoran rosewood<br>*Vauquelinia californica* ssp. *sonorensis* | S | Known from southwestern Arizona in the Ajo, Diablo, Mesquite, and Santa Rosa mountains of Pima County, and Sand Tank Mountains of Maricopa County. Desertscrub and desert grassland, in woodland or forest at base of cliffs, along canyon bottoms and on moderate to steep slopes from 2,328 – 3,720 feet. |
| Bartram stonecrop<br>*Graptopetalum bartramii* | S | Known from Santa Cruz County: Patagonia, Santa Rita and Tumacacori Mountains; Pima County: Baboquivari, Dragoon, Mule and Rincon Mountains; Cochise County: Chiricahua Mountains. Occurs in cracks in rocky outcrops in shrub live oak-grassland communities along meandering arroyos on sides of rugged canyons from 3,650 - 6,700 feet. Usually found in heavy litter cover and shade where moisture drips from rocks, often with Madrean evergreen woodland. |
| California barrel cactus<br>*Ferocactus cylindraceus var. cylindraceus* | SR | Found on gravelly or rocky hillsides, canyon walls, alluvial fans, and wash margins in the Mohave and Sonoran deserts, on igneous and limestone substrates. |
| Common fishhook cactus<br>*Mammillaria tetrancistra* | SR | Known from Mojave and Sonoran Deserts, alluvium and outcrops, valley floors, hills, mountainsides. |
| Candy barrel cactus<br>*Ferocactus wislizeni* | SR | Barrel cactus is primarily found in desert grassland and desert shrub habitats in the Sonoran and Chihuahuan deserts. It also extends into communities at higher elevations in interior chaparral and is found in the Madrean evergreen woodland in encinal woodlands with a mixture of evergreen oaks (*Quercus* spp.) and junipers (*Juniperus* spp.) |
| Dollarjoint pricklypear<br>*Opuntia chlorotica* | SR | Desert grasslands, woodlands, chaparral, desert flats, rocky ledges, hills, canyons. |
| Emory's barrel cactus<br>*Ferocactus emoryi* | SR | Known from hillsides, wash margins, alluvial fans, mesas, or flats, gravelly rocky or sandy soils, rocky slopes and adjacent bajadas, Sonoran desert scrub, igneous substrates |
| Engelmann's hedgehog cactus<br>*Echinocereus engelmannii* | SR | Known from the Sonoran and Mojave deserts, chaparral, piñon-juniper woodlands. |
| Engelmann's pricklypear<br>*Opuntia engelmannii* var. *engelmannii* | SR | Found on deserts, grasslands, woodlands, plains, sandy soils to rocky hillsides, lower to midslopes of mountains. |
| False grama<br>*Cathestecum erectum* | S | Dry, rocky hills and plains, in tropical and subtropical communities. Populations associated with saguaro, goldenhills, and desert hibiscus. Ragged Top Mountain is the only location for this plant in Arizona. |
| Gentry indigo bush<br>*Dalea tentaculoides* | SC, S, HS | Along canyon bottoms on primary terraces subject to occasional flooding. Possibly on rocky slopes at elevations between 3,600 and 4,000 feet. |
| Graham nipple cactus<br>*Mammillaria grahamii* | SR | Chihuahuan and Sonoran desert scrub, grasslands, interior chaparral, oak woodlands, alluvial slopes, hills, canyons, silty, sandy, gravelly, or rocky soils of igneous or calcareous origin |
| Lemmon cloak fern<br>*Notholaena lemmonii* | SC | Limestone cliff crevices, slopes, and cliffs of igneous rocks usually on granitic or volcanic substrates at elevations ranging from 2,840 to 6,000 feet. Associated species include desert grasslands and oak woodland species. Fairly restricted to Tucson Basin area, Santa Cruz River. |

| Name of Species | Status | Habitat Requirements |
|---|---|---|
| Magenta-flower hedgehog cactus *Echinocerus fasciculatus*. | SR | Three varieties of this species occur in Pima County: one occurs in sand, gravel, and rocks of hillsides and washes in the desert; one occurs mostly in desert grassland; the third overlaps desert and grassland. Elevations range from 2,000 to 6,000 feet collectively. *E.f.* var. *fasciculatus* and *E.f.* var. *boyce-thompsonii* have the potential of occurring in the IFNM. |
| Needle-spined pineapple cactus *Echinomastus erectocentrus* var. *erectocentrus* | SC, SR | Alluvial fans usually associated with limestone in upper desert grasslands at elevations ranging from 3,000 to 4,300 feet. |
| Nichol hedgehog cactus *Echinocereus nicholii* | SR | Known from Arizona Upland Subdivision of Sonoran Desert, exposed slopes, bajadas, hills, mountains, desert scrub, igneous and sedimentary substrates |
| Nichol Turk's head cactus *Echinocactus horizonthalonius* var. *nicholii* | LE, HS | Desertscrub on limestone outcropping and limestone-derived soils in incline terraces, saddles, and alluvial fans at elevations from 2,400 to 4,100 feet. The range of the Nichol Turk's head cactus is restricted to the Vekol and Waterman Mountains in Arizona. |
| Nighblooming cereus *Peniocereus greggii* | SR | Desert flats and washes, often in the shade of desert shrubs like creosote. |
| Organ pipe cactus *Stenocereus thurberi* | SR | Widespread in Sonoran Desert, adjacent thorn forests mostly on hills and bajadas |
| Pima Indian mallow *Abutilon parishii* | SC, SR | Steep, rocky slopes and canyon bottoms in desertscrub and semidesert grassland at elevations between 2,477 and 4,856 feet. Found in the Silver Bell and Roskruge Mountains |
| Pima pineapple cactus *Coryphantha scheeri* var. *robustispina* | LE | Along ridges in semidesert grasslands and alluvial fans in the Arizona Upland subdivision of Sonoran desertscrub at elevations ranging from 2,300 to 5,000 feet. Occurs on flat ridgetops with little slope and in soils that are mostly rocky loams. |
| Purple pricklypear *Opuntia macrocentra* | SR | Desert uplands, grasslands, oak woodlands, sandy desert flats, rocky hills and valleys. |
| Saguaro *Cereus giganteus* | HS, SR | Saguaro cactus are known from rocky or gravelly soils located throughout the foothills, and canyons. The saguaro is generally located on the south-facing slopes where it is protected from the winter cold. Crested saguaro are listed Highly Safeguarded under the Arizona Native Plant Law. |
| Thornber fishhook cactus *Mammillaria thornberi* | SR | Known from Sonoran desert, grasslands, bajadas, valleys, washes, and alluvial fans. |
| Tulip pricklypear *Opuntia phaeacantha* | SR | Deserts, chaparral, surrounding mountains, plains, sandy to rocky soils. |
| Tumamoc globeberry *Tumamoca macdougalii* | S, SR | This species occurs in xeric situations, in the shade of a variety of nurse plants along gullies and sandy washes of hills and valleys in Sonoran desertscrub and Sinaloan thornscrub communities. |
| ***Reptiles*** | | |
| Chuckwalla *Sauromalus ater* | S | Known from Western half of the state. An interior population is found south of the Gila and Salt Rivers including the Gila, Maricopa, Santan, and South Mountains, and the Tule Desert. Predominantly found near cliffs, boulders or rocky slopes, where they use rocks as basking sites and rock crevices for shelter from sea level to 6,000 feet. They can be found in rocky desert, lava flows, hillsides and outcrops. Creosote bush occurs throughout most of range. |

| Name of Species | Status | Habitat Requirements |
|---|---|---|
| Desert tortoise (Sonoran population) *Gopherus agassizii* | SC, S, WSCA | Paloverde–saguaro cactus communities in the Arizona Upland and Lower Colorado River Valley subdivisions of Sonoran desertscrub. Requires firm, but not hard, ground for construction of burrows or uses shelters among rocks and exposed, eroded caliche layers in walls of washes. Also requires adequate ground moisture for survival of eggs and young; and herbs, grass, cacti, and other plants for food. Frequents washes and rocky slopes. Populations of tortoises are documented within the IFNM. |
| Giant spotted whiptail *Cnemidophorus burti stictogrammus* | S, PV | Grassy portions of riparian areas, mountain canyons, arroyos, and mesas in arid and semiarid regions. Prefers dense, shrubby vegetation, often among rocks near permanent and intermittent streams. Feeds on insects and spiders. |
| Ground snake *Sonora semiannulata* | PV | Mostly near mountains with higher slopes and areas with poorly drained soils. Vegetation may be sparse or dense, from creosotebush to mesquite thickets. On the Tohono O'odham Reservation, the snake has been found in tobosa grass communities over silty, loamy clay soils. Diet includes eggs, adult vertebrates, and arthropods. |
| Mexican rosy boa *Charina trivirgata trivirgata* | SC, S | Rocky shrublands and desert. Attracted to water sources, but is not dependent on permanent water. Has been observed on blacktop roads in rocky canyons or along rocky buttes or lower mountain slopes. Diet includes small mammals, reptiles, amphibians, and birds. |
| Red-backed whiptail *Cnemidophorus burti xanthonotus* | SC, S | Portions of western Pima County from juniper-oak woodland down to desert edge, among dense shrubby vegetation near or on banks of semiarid permanent springs and arroyos, and in canyons. In Pima County, habitat also includes rocky slopes from 2,000 to 4,000 feet. Occasionally seen in semidesert grassland. Feeds on insects and spiders. |
| Texas horned lizard *Phrynosoma cornutum* | SC, S | In Arizona, Chihuahuan Desert and desert-grassland; sandy to gravelly flat ground with or without rocky cover, usually with scattered desert and grassland shrubs or on mesquite dominated flats. Often found in habitat with the round-tailed horned lizard (*Phrynosoma modestum*). |
| Tucson shovel-nosed snake *Chionactis occipitalis klauberi* | PV | Open sandy sites, flat and sparsely vegetated areas of xeroriparian communities of the Arizona Upland and Lower Colorado River Valley subdivisions of Sonoran desertscrub. Common associated vegetation includes creosotebush, desert grasses, forbs, cacti, and mesquite. It is absent or infrequent in rocky desert terrain. |

SOURCES: The federally listed species list was obtained from the U.S. Fish and Wildlife Service, Arizona Ecological Service Field Office Website. Priority Vulnerable Species were obtained from the Pima County Sonoran Desert Conservation Plan. All other sensitive species lists were obtained from AGFD's Heritage Data Management System website and response to the AGFD coordination letter.

STATUS DEFINITIONS: LE= Federally listed as Endangered; LT= Federally listed as Threatened; PE= Federally proposed as Endangered; C= Federal Candidate; SC= Federal Species of Concern; S= BLM Sensitive; WSCA= Wildlife of Special Concern in Arizona (AGFD 1996); PV= Priority Vulnerable Species, Pima County's Sonoran Desert Conservation Plan; SR= Salvage Restricted under Arizona Native Plant Law; HS= Highly Safeguarded under Arizona Native Plant Law.

The following are special status species known to occur in the IFNM and are most pertinent to the goals and objectives and alternatives under consideration in this Draft RMP/EIS. They include two Federal endangered species (Nichol Turk's head cactus and lesser long-nosed bat), two wildlife species of concern in Arizona (Sonoran desert tortoise (Sonoran population) and cactus ferruginous pygmy owl),

and one species considered as priority vulnerable under Pima County's Sonoran Desert Conservation Plan (Tucson shovel-nosed snake).

### 3.1.6.1 Federally Listed Species

#### *3.1.6.1.1 Nichol Turk's Head Cactus (Echinocactus horizonthalonius var. nicholii).*

The Nichol Turk's head cactus has been listed as endangered by the USFWS since 1979. It currently occupies two areas in south-central Arizona: the Waterman Mountains in the IFNM and the Vekol Mountains in southwestern Pinal County.

In the IFNM, it occurs in limestone-derived alluvium between 2,000 and 3,600 feet in elevation. The IFNM contains approximately 5,000 acres of suitable habitat (USDI, BLM 1986a). The cactus is patchily distributed within the IFNM; occurrence ranges from rare to locally abundant, with three major concentrations documented within the Waterman Mountains ACEC (Dimmit and Van Devender 2003). The Waterman Mountains ACEC contains approximately 1,900 acres of suitable habitat for the Nichol Turk's head cactus. A recovery plan for the plant, completed in 1986, identified the following threats: (1) mining, (2) off-highway vehicle (OHV) use, (3) collecting, and (4) other factors, such as damage from bullets when it is used for target shooting. The Nichol Turk's Head Cactus Habitat Management Plan, which was completed in 1986, identified the following management objectives: (1) protect the habitat, (2) provide optimum habitat for naturally occurring populations, and (3) assist in the recovery of the plant (USDI, BLM 1986a).

#### *3.1.6.1.2 Lesser Long-nosed Bat (Leptonycteris curasoae yerbabuenae).*

The lesser long-nosed bat was listed as endangered by the USFWS in 1988. It is a migratory species that migrates into northern Sonora, Mexico, and southern Arizona each spring to establish maternity roosts, or colonies, where female bats congregate and give birth to their young. While in southern Arizona, the bats occupy desertscrub, semidesert grassland, and oak woodlands, where they forage in areas of saguaro, ocotillo, paloverde, prickly pear, and (later in the summer) among agaves at elevations between 3,500 and 5,500 feet. The bat is capable of flying distances of 30 miles (48 kilometers) or more one way during a single night's foraging excursion. They roost in caves, mines, and occasionally in old buildings. Known maternity roost sites occur at four locations along the United States/Mexico border. In the planning area, occasional sightings have been reported, but no maternity roosts have been documented. The closest maternity roost site to the IFNM is at Old Mammon Mine, located approximately 10 miles (16 kilometers) southwest of the Sawtooth Mountains. Based on a report by the Arizona Sonoran Desert Museum, "historically, 10,000 bats were known to occupy this roost" (ASDM 2003). Estimated exit counts from 1991 to 2000 have varied from 3,600 to 6,000 bats.

Recent surveys have determined that nectar bats utilize the IFNM as night roosts and foraging areas (Averill-Murray and Averill-Murray 2002; Krebbs and Petryszyn 2003). Between December 2001 and May 2003, studies were conducted by Arizona Sonoran Desert Museum and the University of Arizona to determine presence of foraging and roosting bats inside the IFNM (Krebbs and Petryszyn 2003). Results showed that a night roost for nectar bats was located in the Waterman Mountains, and a nectar bat was heard and observed for two evenings in the Ragged Top area. According to the report, there could be more nectar bats utilizing the area, and the IFNM may be an important stopover area for migrating bats (Krebbs and Petryszyn 2003).

Disturbance of roost sites is often deleterious to lesser long-nosed bats. Lesser long-nosed bats often abandon roosts sites with minimal levels of human disturbance. The use of only a small number of communal roosts by lesser long-nosed bats makes them particularly vulnerable to adverse effects from

disturbance. Additionally, lesser long-nosed bats are thought to be negatively affected by excess harvest of agaves and the conversion of habitat for agricultural uses, livestock grazing, wood-cutting, and other development uses. Excessive browsing on the flower stalks of agaves by wildlife and livestock has also been suggested as possibly decreasing foraging opportunities and thus contributing to declines among these bats.

### 3.1.6.2 Other Special Status Species

#### *3.1.6.2.1 Desert Tortoise – Sonoran Population (Gopherus agassizii)*

The Sonoran desert tortoise is listed by BLM as a sensitive species and by AGFD as a wildlife species of concern in Arizona. It is found south and east of the Colorado River, from locations near Pearce Ferry in Mojave County, to the south beyond the international border, and at many scattered locations in between. The tortoise occurs primarily on rocky slopes and bajadas of Sonoran desertscrub consisting of paloverde–mixed cacti associations at elevations up to approximately 5,400 feet. Mostly herbivorous, they consume grasses, cacti, composite flowers, forbs, succulents, and parts of trees and shrubs. They eat many of the same plants as cattle, burros, deer, and bighorn sheep, wherein there is some potential for competition if food sources are limited. Native plants tend to provide better nutrition for tortoise than exotics. Tortoises and their primary habitat (paloverde-mixed cacti of the Arizona Upland Subdivision of the Sonoran Desert) are not fire-adapted. Important habitat components include suitable shelter sites, suitable forage plants, and unfragmented habitat (AGFD 2001). BLM has categorized habitat in the IFNM for the Sonoran desert tortoise as shown on Map 3-5: Sonoran Desert Tortoise Habitat, based on the criteria listed in Table 3-5 below.

**Table 3-5: Sonoran Desert Tortoise Habitat Within the IFNM**

| | Category 1 | Category 2 | Category 3 |
|---|---|---|---|
| Criterion 1: Importance of the habitat to maintaining viable populations | Habitat areas essential to maintenance of large, viable populations | Habitat area may be essential to maintenance of viable populations | Habitat area not essential to maintenance or viable populations |
| Criterion 2: Resolvability of management conflicts | Conflicts resolvable | Most conflicts resolvable | Most conflicts not resolvable |
| Criterion 3: Perceived desert tortoise density | Medium to high density or low density contiguous with medium or high density | Medium to high density or low density contiguous with medium or high density | Low to medium density not contiguous with medium or high density |
| Criterion 4: Population status | Increasing, stable, or decreasing populations | Stable or decreasing populations | Stable or decreasing populations |
| Acres[1] | 14,540 | 30,890 | 35,350 |

SOURCES: BLM 2003b; Averill-Murray and Averill-Murray 2002.
NOTE: [1] Acres based on BLM surface managed lands.

Sonoran desert tortoises are particularly vulnerable to human activities because of the limited nature of their population numbers and habitats. Expansion of urban areas and encroachment of recreation, roads, grazing, mining, and fire have adversely impacted some areas (USDI, BLM 1988). Tortoises tend to get run over by vehicles, picked up, illegally collected, shot, and vandalized. They can move long distances (>3 miles) and they need homes which are boulders, and proliferation of routes can fragment their habitat and increase mortality, collection and vandalism. Loss of reproductive-aged adults is the most serious threat to their populations. Tortoise populations tend not to bounce back from mortality events as they have a low reproductive potential. Subsidized predators such as unleashed or feral dogs can be serious impacts locally.

# Sonoran Desert Tortoise Habitat

**Ironwood Forest National Monument**
**Draft RMP/EIS**

## Legend

**Habitat Category**

- Category 1
- Category 2
- Category 3

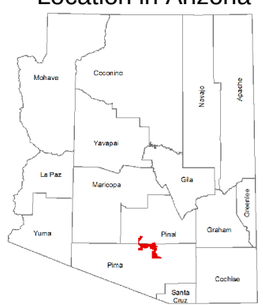
Universal Tranverse Mercator
Zone 12, Units Meters
Clark 1866 Spheroid
NAD27 Datum

No warranty is made by the Bureau of Land Management (BLM) for the use of this map for purposes not intended by BLM, or to the accuracy, reliability, or completeness of the information shown. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification.

0 1 2 4 Miles

0 2 4 8 Kilometers

Location in Arizona




P:\BLM\Ironwood\GIS\Plots\RMP_EIS\Chapter_3\Tortoise.pdf

Data Source:
Habitat Information: BLM 2003
Base Information: BLM 2003
Quadrangle Image: US Geological Survey 1977 Tucson

**General Reference**

- County Boundaries
- Central Arizona Project (CAP) Canal
- River
- Interstate
- Main public access routes to monument. County administered roads connecting monument travel route system to public highways.

**Planning Area**

- Ironwood Forest National Monument

Map 3-5

Currently, desert tortoises are found in eight mountain ranges within the IFNM: West Silver Bell Mountains, Sawtooth Mountains, Silver Bell Mountains (including Ragged Top), Samaniego Hills, Waterman Mountains, Pan Quemado, Roskruge Mountains, and near Malpais Hill (Averill-Murray and Averill-Murray 2002). According to AGFD, tortoise density has been the highest in the West Silver Bell Mountains, Ragged Top (Silver Bell Mountains), and the Sawtooth Mountains. These mountains may have more emigration and immigration. In addition, low-density areas (Samaniego Hills, Waterman Mountains, Roskruge Mountains, and Pan Quemado) may be more dependent on immigration for long-term stability (Averill-Murray 2004; Averill-Murray and Averill-Murray 2002).

#### *3.1.6.2.2 Cactus Ferruginous Pygmy-Owl (Glaucidium brasilianum cactorum)*

The cactus ferruginous pygmy-owl is listed by BLM as a sensitive species and by AGFD as a wildlife species of concern in Arizona. The historic range of the cactus ferruginous pygmy-owl in Arizona extends north from the U.S-Mexico border to New River, to the Gila Box (East) and to the Cabeza Prieta Mountains (West). The current documented distribution of pygmy-owls is limited to Pima and Pinal counties. Within its range in Arizona, the cactus ferruginous pygmy-owl currently occupies riparian woodlands, mesquite bosques, Sonoran desertscrub, semidesert grasslands, and Sonoran savanna grassland communities below 4,000 feet (USFWS 2003). Their diet includes other birds, lizards, insects, and small mammals. In desertscrub communities, plant diversity, composition, and structure play a critical role in providing the most suitable habitat components for the owl. In addition, habitat connectivity between currently occupied areas in northwest Tucson and the Tohono O'odham Nation is important. Typically, riparian corridors are used for movement, protection, cover, and foraging.

The cactus ferruginous pygmy-owl is threatened by present and potential future destruction and modification of its habitat throughout a significant portion of its range in Arizona. The destruction of riparian woodlands played a role in the decline of pygmy-owls in Arizona. Current threats to the cactus ferruginous pygmy-owl in Arizona include the loss and fragmentation of upland and xeroriparian vegetation from large scale and commercial developments. Wildland fires alter desert habitat, destroying saguaro, trees, and other important habitat components. Dispersing pygmy-owls may avoid non-vegetated areas such as golf courses, residential developments, and roads. Human-caused mortality has been documented. Such incidents include collisions with windows and fences, shootings, and predation by domestic cats. Human activities near nests at critical periods of the nesting cycle may cause pygmy-owls to abandon their nest sites. Outdoor recreational activities such as OHV and motor bike use, firearm target practicing, and jeep tours may disturb pygmy-owls.

#### *3.1.6.2.3 Tucson Shovel-nosed Snake (Chionactis occipitalis klauberi)*

The Tucson shovel-nosed snake is listed by Pima County as a priority vulnerable species. The Tucson shovel-nosed snake is distributed from west of Tucson northward along Avra Valley to Pinal County. Its current range in the IFNM is poorly known. However, the area between the West Silver Bell Mountains and the Santa Rosa Mountains may have supported this species. It is believed to be eliminated from Avra Valley due to habitat loss and most of its range now lies in southern Pinal County.

The primary habitat is sandy-silty flats on valley floors and, sand dunes below 2,200 feet. This species also will frequent washes and rocky hillsides where there are sand gullies or pockets of sand among the rocks. There may be limited vegetation, consisting mostly of creosote, desert grasses, cacti, mesquite and other shrubs. The diet consists of cockroaches, crickets, spiders, scorpions, centipedes, buried moth larvae and other insects.

The Tucson shovel-nosed snake exists only in lowland valley floors which are rapidly diminishing due to clearing for agriculture and development. Preservation of this habitat is the biggest factor in halting the decline of this subspecies. Off-road vehicle activities could adversely impact this species. Road building could destroy and fragment habitat, while increased traffic could increase road kills. The species is being considered for protection under the Sonoran Desert Conservation Plan, currently being developed by Pima County.

#### 3.1.6.3 Migratory Birds

Various species of migratory birds summer, winter, and/or migrate through the IFNM. The habitat diversity provided by the broad expanses of Sonoran Desertscrub vegetation zones (including paloverde-cacti-mixed scrub, jojoba chaparral, creosote-white bursage, and xeroriparian communities) support numerous species of migratory birds. The most characteristic species include turkey vulture (*Cathartes aura*), northern harrier (*Circus cyaneus*), Cooper's hawk (*Accipiter cooperii*), white-winged dove (*Zenaida asiatica*), elf owl (*Micrathene whitneyi*), lesser nighthawk (*Chordeiles acutipennis*), black-chinned hummingbird (*Archilochus alexandri*), ash-throated flycatcher (*Myiarchus cinerascens*), purple martin (*Progne subis*), Bell's vireo (*Vireo atricapillus*), Lucy's warbler (*Vermivora luciae*), and sage sparrow (*Amphispiza belli*). Species such as killdeer (*Charadrius vociferous*), great blue heron (*Ardea herodias*), mallard (*Anas platyrhynchos*), and black-necked stilt (*Himantopus mexicanus*) may be found where suitable habitat exists.

### 3.1.7 Fire Ecology and Management

The BLM categorizes historic/natural fire regimes current for fire conditions in Arizona based on the results of a nationwide coarse-scale assessment and mapping effort (Schmidt et al. 2002; USGS 1999). In Arizona, BLM lands fall into four of the five identified historic/natural fire regimes, ranging from Category I (0 to 35 year frequency and low severity) to Category IV (35 to 100+ year frequency, stand replacement severity). The IFNM is characterized as a Category III historic/natural fire regime (i.e., having a 35- to 100-year frequency with a mixed severity of fires).

The current condition classes include Class 1 (i.e., lands where vegetation species, composition, and structure are intact and functioning within historic range), Class 2 (i.e., lands where fire size, frequency, intensity, severity, and/or landscape pattern and vegetation have been moderately modified), and Class 3 (i.e., lands where fire size, frequency, intensity, severity, and/or landscape pattern and vegetation have been significantly altered from historical range). All of the lands within the IFNM Decision and planning areas are designated as current condition Class 1. The BLM's Arizona Statewide Land Use Plan Amendment for Fire, Fuels and Air Quality Management provides general direction for fire management to meet statewide goals (USDI, BLM 2003a). Fuels treatments would occur on a case-by-case basis, generally in areas where treatments would be necessary for removal of invasive or exotic species.

### 3.1.8 Cultural Resources

Research in the Tucson vicinity and southern Arizona has outlined the cultural history of the region (Reid and Whittlesey 1997). Human occupation of the area can be separated into six periods that represent changing adaptations and lifeways. These include the Paleoindian (circa 12,000–8000 B.C.), Archaic (circa 8000–1500 B.C.), Late Archaic/Early Agricultural (circa 1500 B.C.–A.D. 650), Formative (circa A.D. 650–1400), Ethnohistoric (aboriginal protohistoric and historic, circa A.D. 1400–1950), and Euro-American historic (circa A.D. 1500–1950) eras.

Paleoindian occupation began at least as early as 12,000 B.C. during the late Pleistocene era when expansive ice sheets were retreating from the North American continent. Paleoindians hunted species that

became extinct at the end of the Ice Age, such as mammoths. Although significant Paleoindian hunting sites have been found in southeastern Arizona, evidence of the Paleoindian era in the vicinity of the IFNM is limited to isolated spear points (Agenbroad 1967; Ayres 1970; Doelle 1985; Huckell 1984).

The subsequent Archaic era, beginning at approximately 8000 B.C., represents an adaptation based on hunting wild game and gathering indigenous plant foods within a climatic regime similar to modern conditions (Sayles 1983; Sayles and Antevs 1941).

Several Late Archaic/Early Agricultural era sites have been discovered along the course of the Santa Cruz River southeast of the IFNM (Gregory and Mabry 1998; Mabry et al. 1997). Late Archaic/Early Agricultural sites on the Santa Cruz River include some of the oldest canal systems and oldest pottery vessels found in southern Arizona (Gregory 1999; Heidke 1997; Heidke and Ferg 1998; Mabry 1999).

Sites of the Formative era dominate the regional archaeological record. These sites reflect an adaptation focused on farming villages, although wild game and indigenous plant foods continued to be exploited. Around A.D. 500, a culture known as the Hohokam began to flourish and occupied much of what is today southern and central Arizona for approximately a millennium. Marine shell jewelry, obsidian flaked stone artifacts, turquoise, copper bells, and macaws indicate the Hohokam traveled well beyond their core area of settlement or traded with groups in surrounding areas.

The current condition of cultural resources is characterized by discussing three indicators: (1) inventory and evaluation, (2) threats to the historical integrity of resources and responses to those threats, and (3) public and professional interpretation of cultural resources.

### 3.1.8.1 Extent of Inventory and Evaluation

Cultural resource survey is labor intensive and costly, and simple inventory and evaluation is a major challenge for managing cultural resources. Archaeological sites reflecting both prehistoric and historic-era occupation of the region are abundant, and the sites that have been recorded represent only a small percentage of the cultural resources within the IFNM. Twenty-one documented surveys have, in the aggregate, inventoried approximately 21,194 acres (33.1 square miles) for cultural resources within the IFNM (Table 3-6). (Approximately 30 additional cultural investigations have been conducted in the IFNM, but are not well documented.) The surveys encompass about 12 percent of the public land and about 9 percent of the nonpublic lands within the IFNM.

**Table 3-6: Summary of Cultural Resource Inventory Data**

| | State and Private Lands | Federal Public Lands (Surface Estate) | Planning Area (Entire IFNM) |
|---|---|---|---|
| Size (acres) | 60,221 | 128,398 | 188,619 |
| Size (square miles) | 94 | 201 | 295 |
| Surveyed for cultural resources (acres) | 5,622 | 15,572 | 21,194 |
| Surveyed for cultural resources (square miles) | 8.8 | 24.3 | 33.1 |
| Percentage surveyed | 9.3% | 12.1% | 11.2% |
| Recorded cultural resources | 64 | 279 | 343 |
| Density (sites/square mile) | 7 | 11 | 10 |
| Projected number of resources | 700 | 2,300 | 3,000 |

SOURCES: AZSITE 2003; Dart and Gibson 1988; Gibson 1987a, 1987b; Heilen 2004; U.S. Department of the Interior, Bureau of Land Management 2004a

NOTE: Numerous errors regarding site jurisdiction were noted in the AZSITE database. Jurisdiction was determined by overlaying a current geographic information system jurisdictional map onto the site locations. If any part of a site was on public land, it was treated as being within the decision area. BLM has no authority or responsibility to manage cultural resources on State Trust and private lands within IFNM.

The various surveys within the IFNM have recorded a total of 343 archaeological and historical sites. More than 80 percent of the recorded sites (279) are on BLM surface estate, and the other are on State Trust land (61) and private lands. The average density is about 11 sites per square mile on public land and about 7 sites per square mile on State and private land. The survey data suggest there could be approximately 3,000 sites within the IFNM (with about 2,300 on the BLM surface estate. The University of Arizona recently completed a more statistically rigorous sample survey that indicates that there could be about twice that many sites within the IFNM (Heilen and Reid 2006). The survey also recorded almost 3,400 isolated finds indicating that there could be on the order of 125,000 isolated artifacts and features within the IFNM.

About 89 percent of the 343 sites recorded within the IFNM reflect the aboriginal occupation of the region, and about 7 percent reflect historical Euro-American occupation. About 3 percent of the sites have both aboriginal and Euro-American components, and the cultural and temporal affiliations of the remaining sites are unknown.

The only possible evidence of Paleoindian occupation identified in the IFNM is a broken spear point found on sites with Archaic and Hohokam components. Five recorded sites have been identified as dating to the Archaic era and 19 other Archaic components have been recognized on other multicomponent sites.

Evidence of the Hohokam occupation of the region dominates the archaeological record of the IFNM; 201 of the recorded sties have been classified as Hohokam or probably Hohokam sites, and 34 other Hohokam components have been recorded at multicomponent sites. The cultural affiliations of 63 other recorded sites and 2 components at sites with historical Euro-American components have been classified as reflecting unidentified prehistoric occupation. Nine sites have been classified as reflecting protohistoric or historic period O'odham use of the IFNM, and 13 other O'odham components have been identified at multicomponent sites. Two components at sites with O'odham components have been tentatively identified as possibly reflecting affiliations with the Patayan culture, which was centered along the lower Colorado River west of the Hohokam territory, and a possible Apache component has been recorded on a Hohokam site.

About 25 to 30 of the sites recorded in the IFNM appear to represent Hohokam habitation sites, ranging from small farmsteads to large villages. Features noted at these sites include trash mounds, roasting pits, rock piles, rock alignments, and petroglyphs (rock art), along with numerous artifacts. A focus of Hohokam habitation that overlaps the northeastern corner of the IFNM has been designated as the Los Robles Archaeological District. About 130 archaeological sites have been recorded within the 20.7-square-mile district. Many of the sites within the district are on State Trust land, including the large villages known as Cerro Prieto and Pan Quemado. The Los Robles platform mound site at the core of the district also in on State Trust land north of the IFNM. Twenty-one of the significant sites within the Los Robles Archaeological District are located on BLM surface estate.

Another Hohokam habitation focus has been designated as the Cocoraque Butte Archaeological District. There are at least two Hohokam habitation sites and many petroglyphs in the district, which encompasses two large buttes, three smaller hills, and the surrounding flats on public and private land in the southeastern part of the IFNM.

Most of the other aboriginal sites appear to reflect seasonal habitation or camps, or temporary work locations where activities such as collection and processing of indigenous resources (such as cactus fruits) were pursued. These sites consist of scatters of artifacts such as broken pottery and pieces of flaked and ground stone. About one-third of the artifact scatters have archaeological features of various types, such as roasting pits, rock piles, rock alignments, clearings, check dams, petroglyphs, stone tool quarries, and bedrock grinding stones. About 45 of the recorded sites have petroglyphs.

A unique historic-period site is the Santa Ana de Cuiquiburitac Mission, which was the location of a *visita* (chapel served by a visiting priest) built in 1810-1811. The building is no longer extant, but artifacts and features are scattered across the site, which also has an O'odham component.

Twenty-four historic-period sites have been classified as having or probably having Euro-American affiliations. These sites include the Silverbell Cemetery and the alignment of an abandoned railroad that served the mining town of Silverbell, located in the Silver Bell Mountains just outside the IFNM. Other Euro-American sites include a gravesite, a camp, three mining prospects, a road segment, and trash scatters. Two minimally recorded sites have yielded no clues about their cultural affiliations.

To date, no specific places within the IFNM have been identified as having traditional cultural significance, but an inventory study has not been conducted. Tribes with traditional cultural affiliations with the region are known to have concerns about treatment of human remains, funerary objects, sacred objects, and objects of cultural patrimony that are sometimes present within archaeological sites. Members of the Tohono O'odham Nation, which borders the IFNM, also might consider some places within the IFNM that were used traditionally, such as stands of saguaro where fruit was collected, as having cultural significance (Nabhan 1987, 1982). Additional discussion of tribal interests is provided in Section 3.4.

Prior to the designation of the IFNM, which provides recognition and a measure of protection for all of the cultural resources within the IFNM, three historic properties had been recognized as having special significance by being listed in the National Register of Historic Places (Table 3-7). These include the Los Robles Archaeological District, Cocoraque Butte Archaeological District, and the Santa Ana de Cuiquiburitac Mission Site. In 1986, the Arizona State Legislature authorized development of a state park to preserve and publicly interpret the Los Robles Archaeological District, but development of the park was not pursued and it was declassified as a state park in 1988.

**Table 3-7: National Register Status of Cultural Resources Recorded within the IFNM**

| National Register Status | Total Sites | % | Owner | | | |
|---|---|---|---|---|---|---|
| | | | BLM | % | Private/ State | % |
| ***Properties listed*** | | | | | | |
| Los Robles Archaeological District | | | | | | |
| Sites within IFNM identified as contributing properties | 53 | 15% | 21 | 40% | 32 | 60% |
| Sites within IFNM identified as noncontributing properties | 4 | 1% | | 0% | 4 | 100% |
| Sites within IFNM not identified in nomination | 1 | <1% | | 0% | 1 | 100% |
| Subtotal of sites within Los Robles Archaeological District in IFNM[1] | 59 | 17% | 21 | 36% | 38 | 64% |
| Cocoraque Butte Archaeological District | 1 | <1% | 1 | 100% | | 0% |
| Santa Ana de Cuiquiburitac Mission Site | 1 | <1% | 1 | 100% | | 0% |
| ***Recommended eligible*** | 175 | 51% | 175 | 100% | | 0% |
| ***Recommended ineligible*** | 22 | 6% | 22 | 100% | | 0% |
| Unknown or unevaluated | 86 | 25% | 59 | 69% | 27 | 31% |
| Totals | 343 | 100% | 279 | 81% | 64 | 19% |

SOURCES: AZSITE 2003; Dart and Gibson 1988; Gibson 1987a, 1987b; Heilen 2004; U.S. Department of the Interior, Bureau of Land Management 2004a

NOTE: [1] The Los Robles Survey assigned a total of 158 sites numbers. Some of these were combined when site numbers were assigned in the Arizona State Museum survey system. A total of 119 sites with Arizona State Museum numbers are classified as contributing sites in the Los Robles District, and 10 as noncontributing sites. Approximately 45 percent of the sites within the listed district are within IFNM.

The recorders of 175 other sites have recommended that they be considered eligible for the National Register, and 22 sites have been evaluated as ineligible. The eligibility of the remaining sites within the IFNM has not been evaluated.

### 3.1.8.2 Extent of and Responses to Threats

Three factors threaten the integrity of cultural resources, including (1) disturbance or destruction by various types of development projects or land uses (including travel by undocumented immigrants and smugglers), (2) natural erosion, and (3) unauthorized excavating and artifact collecting by vandals or uninformed recreational users.

Review of potential impacts on cultural resources due to authorized uses of public land within what ins now the IFNM began in the 1970s in response to the passage of the National Historic Preservation Act. Prior to that time, the most substantial use of the area was related to livestock grazing and prospecting and the most substantial impacts on cultural resources probably were due to development of roads. Projects or land uses reviewed since the 1970s have included electrical transmission lines, microwave communication sites, roads, mineral exploration, range improvements (such as fences, cattle guards, waterlines, and reseeding projects), and an ultralight airfield. The only approved project that has resulted in an adverse effect on cultural resources in the vicinity of IFNM was a land exchange with ASARCO for expansion of the Silver Bell Mine. Three prehistoric and eight historical sites immediately adjacent to IFNM were studied before they were transferred from Federal ownership (Slawson and Ayres 1994, 1992).

There are only meager data regarding the extent to which erosion is threatening the historic integrity of cultural resources within the IFNM. Responses to the threats of erosion include stabilization and restoration.

Unauthorized collection of cultural materials by persons uninformed of cultural resource protection laws and intentional vandalism, such as target shooting and graffiti, are the most serious threats to cultural resources on public land within the IFNM. However, there is little quantitative data about the extent of the problem. Current responses to the threat of vandalism include site monitoring, reconnaissance, and law enforcement. BLM cooperates with the State Historic Preservation Office in supporting a statewide site-steward program. Volunteers regularly monitor selected sites and report vandalism or other damage to appropriate land managing agencies. This has been one of the most successful strategies for protecting cultural resources on public land. The Tucson Field Office currently is working with approximately six volunteer site stewards and a local landowner who monitor archaeological sites within the IFNM. Sites are monitored throughout the IFNM with a special focus on the Los Robles and Cocoraque Butte Archaeological Districts and Silverbell Cemetery. When vandal excavations and damaged or stolen cultural materials are noted, they are reported to BLM rangers for follow-up investigations.

Other protection measures include placing signs at sites to inform visitors of laws protecting cultural resources and penalties for unauthorized collection and excavation. The only signs, fences, and gates installed to protect cultural resources within the IFNM are in the vicinity of the Cocoraque Butte Archaeological District; but installation of signs to protect other sites is planned. Administrative measures such as road closures or special management designations also can be used to protect cultural resources. Roads have been closed at Cocoraque Butte, but these closures have been difficult to enforce.

### 3.1.8.3 Interpretation of Cultural Resources

The primary motivation for protecting and preserving cultural resources is to enhance public and professional interpretation and appreciation of our cultural heritage. Public interpretation within the

IFNM has been limited primarily to occasional guided tours of Hohokam petroglyph sites. Future opportunities for public interpretation include heritage publications, other media products, interpretive signs and kiosks, and visitor centers.

Professional interpretation of cultural resources within the IFNM has been more intensive. The IFNM has been used as an "outdoor laboratory" for training student and avocational archaeologists. University of Arizona faculty and students have conducted two major research investigations of archaeological resources within IFNM. One of these studies involved an extensive survey that documented the Hohokam Los Robles platform mound community and the Cerro Prieto trincheras site, and resulted in the listing of the Los Robles Archaeological District in the National Register (Downum 1993). The second study was a University of Arizona research project that surveyed 5,186 acres in sample parcels distributed throughout the IFNM in order to better understand the distribution of archaeological resources within the IFNM (Heilen 2005; Heilen and Reid 2006). The survey doubled the number of recorded sites within the IFNM. The third study involved an evaluation of the Santa Ana de Cuiquiburitac visita site (Reid and Heilen 2005).

### 3.1.9 Paleontological Resources

Paleontological resources constitute a fragile and nonrenewable scientific record of the history of life on earth. Once damaged, destroyed, or improperly collected, the scientific and educational values of these resources are reduced greatly or lost forever. In addition to their scientific, educational, and recreational values, paleontological resources can be used to understand interrelationships between the biological and geological components of ecosystems over long periods of time.

The fossils found on public lands are considered part of our national heritage and are therefore afforded protection. Vertebrate fossils or other noteworthy occurrences of invertebrate and plant fossils are considered significant by the BLM. Invertebrate and plant fossils are typically more abundant, and therefore, the BLM does not ordinarily consider them to be of significance.

Areas containing vertebrate fossils or noteworthy occurrences of invertebrate or plant fossils are managed under one of four management classes:

> ***Class 1 (low sensitivity)***: Igneous and metamorphic geologic units and sedimentary geologic units where vertebrate fossils or uncommon nonvertebrate fossils are unlikely to occur
>
> ***Class 2 (moderate sensitivity)***: Sedimentary geologic units that are known to contain or have unknown potential to contain fossils that vary in significance, abundance, and predictable occurrence
>
> ***Class 3 (moderate sensitivity)***: Areas where geologic units are known to contain fossils but have little or no risk of human-caused adverse impacts and/or low risk of natural degradation
>
> ***Class 4 (high sensitivity)***: Areas where geologic units regularly and predictably contain vertebrate fossils and/or uncommon nonvertebrate fossils, and are at risk of natural degradation and/or human-caused adverse impacts

The IFNM is mainly Class 1 and Class 2, though there are a few Class 3 areas. Acres within each management class are summarized in Table 3-8.

**Table 3-8: Classification of Lands within the IFNM for Fossil Sensitivity**

| Management Class | Approximate acres within the Planning Area | Approximate acres administered by BLM |
|---|---|---|
| Class 1 | 62,610 | 43,800 |
| Class 2 | 107,050 | 71,630 |
| Class 3 | 20,040 | 12,970 |

SOURCE: U.S. Department of the Interior, Bureau of Land Management 2005

Paleontological resources in southern Arizona are typically found in the Quaternary deposits. There are a few limited known occurrences of paleontological resources on the IFNM; however, no significant fossils are known to occur within the monument. Several neotoma (packrat) middens located in late Pleistocene and subrecent deposits have yielded various animal and plant species in the Wolcott Peak area of the IFNM (USDI, BLM 1980). Vertebrate fossils in southern Arizona include remnants of early horses, elephants, dogs, gomphotheres, camels, mammoths, llamas, birds, fish, beavers, rats, foxes, weasels, squirrels, lizards, snakes, chipmunks, mice, gophers, tortoises, bats, marmots, wolves, bears, badgers, skunks, ground sloths, woodchucks, cats, donkeys, rhinoceros, peccarys, deer, elk, and bison. These are typically found in the unconsolidated silt, sand, and gravel deposits of the Quaternary (Holocene and Pleistocene), as well as the Tertiary sedimentary units. Some of these have been discovered during major earth-moving activities, such as during highway and building construction projects. Others have been discovered as ongoing erosional processes expose fossil remnants (Ratkevich 1993; Scarborough 2003; USDI, BLM 1980). Some of the Jurassic-aged sedimentary units in southern Arizona have yielded fragments of dinosaur (believed to be tritylodontid) and crocodile (McCord and Tegowski 1996). Some Cretaceous-aged dinosaurs (stegosaurian or archosaurian) have been found in the Comobabi Mountains to the west of Tucson (McCord and Tegowski 1996). These older fossils are not abundant, but they may occur in some geologic units in the planning area. Mammal tracks have been reported in Tertiary volcanic sedimentary rocks in the Sawtooth Mountains (Scarborough 2002).

Various invertebrate fossils have been noted in southern Arizona and include corals, brachiopods, gastropods, foraminifera, holothurians, ostracods, bryozoans, crinoids, trilobites, cephalopods, pelecypods, echinoids, blastoids, and others.

The BLM has developed objectives for paleontological resources (BLM Manual 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 for these values and to mitigate adverse impacts on them.

### 3.1.10 Visual Resources

The IFNM is a landscape of contrasts. Its broad, flat valleys are interrupted by rugged, steep-sloped mountains, and punctuated by isolated hills. The gently sloping bajadas that soften the transitions between jagged mountain and valley floor are dissected by dry, desert washes that nevertheless support a variety of colors. A variation of green-hued vegetation is found in abundance, and the reds and yellows of native flowers appear in their seasons. The richness of the ecosystem is manifest in the sometimes dramatic, sometimes subtle variations in colors and textures that cover, yet fail to obscure, the striking landforms that hint at the geological processes that formed this southwestern region of the United States. The sculptural forms of Sonoran Desert cacti add an almost museum quality to some of the landscapes within the IFNM.

The topography of the IFNM is a visually exciting variation of line and form, much of it visible from areas of the Avra and Santa Cruz Valleys. The prominent landforms within the IFNM—including the Sawtooth, Waterman, Roskruge, Silver Bell, and West Silver Bell Mountains, Pan Quemado, the

Samaniego Hills, and the Avra and Aguirre Valleys—vary in elevation from 4,261 feet in the Silver Bell Mountains to 1,800 feet in the valleys. Small hills rising a few hundred feet pleasantly dot the bajadas and valleys, looking like scattered piles of mountain-building material left behind by an untidy artist. Ragged Top is the most prominent landmark, visible from many places in the IFNM. The medium to dark grays of the weathered, basalt-rock mountains and hills contrast with the underlying, lighter material exposed by erosion or excavations. Basalt desert pavement occasionally appears is patches on the light gray soils of the bajadas.

The textures and colors of vegetation in the IFNM contribute greatly to its scenic quality. Legumes (foothill paloverde, blue paloverde, and ironwood trees) and saguaros dominate the mountain ranges, and dense stands of ironwood trees populate the bajadas near the Ragged Top, Roskruge, Waterman, and Silver Bell Mountains. Exceptionally large ironwood trees are found in the bajadas north of the West Silver Bell Mountains and east of the Samaniego Hills. A rich understory layer of shrubs and cacti softens the landscape, occasionally joined by the many annuals that appear in abundance in wet years. High quality examples of large and dense dry-wash vegetation of both the Lower Colorado River Valley and Arizona Upland Subdivisions (described in Section 3.1.4, Vegetation) are found in bajadas and flats in Avra Valley, and in the lower elevations of Aguirre Valley. The light browns and neutral tones of the sand and cobble of the washes contrast with a density of greens along the corridors. Relatively vibrant wildflower displays occur seasonally throughout the IFNM, contrasting with the medium to dark browns of the mountains. Vegetation colors vary according to time of year and with rainfall amounts, and are characterized by light, muted green-yellow foliage, and the medium-to-dark grays and browns of branches when plants are out of leaf.

Much of the planning area has retained its scenic quality, even though numerous cultural modifications and changes to the landscape are evident within the IFNM. A cultural modification is any human-caused change to landform, water features, or vegetation, or the addition of a structure that is in visual contrast to the natural landscape (including contrast in form, line, color, or texture) (USDI, BLM 1984). Manmade features do not necessarily detract from a landscape's beauty; some may even complement the natural landscape and enhance its scenic value (USDI, BLM 1986b). Views of cultural modifications on lands adjacent to the planning area may or may not be considered interesting (i.e., views of aircraft within the airpark), depending on the viewer.

Existing landscape modifications on public land are mainly related to access roads, present mining and past minerals exploration, electric transmission lines and service (distribution) lines, buried pipelines, range improvements (fences, wells, water storage tanks and troughs, corrals, earthen dams, past vegetative treatments, salt licks, and livestock loafing areas), wildlife water developments, mountaintop communication sites, and OHV use tracks. Existing landscape modifications on lands adjacent to and within the planning area include residential development, agricultural fields, public utilities, and modifications related to mining operations. The Silver Bell and Happy Jack Mines in the mountains are the most noticeable landscape modifications within the IFNM. The strong color contrast of the cuts and fills can be seen from over 15 miles away.

The visual resources of the planning area were inventoried in 2004 and classified in accordance with procedures outlined in BLM Handbook 8410-1 (USDI, BLM 1986b) and Technical Note 407 (USDI, BLM 2001b), as part of the preparation of this Draft RMP/EIS. The inventory identified and quantified visual values. All lands in the planning area were assigned to one of four visual resource inventory classes (Map 3-6:  Visual Resource Inventory Classes). These classes did not establish management direction, but provided information regarding the on-the-ground conditions for visual resources. The objectives attached to each class are described below:

***Class I Objective:*** To preserve the existing character of the landscape. The level of change to the characteristic landscape should be very low and must not attract attention.

***Class II Objective*:** To retain the existing character of the landscape. The level of change to the characteristic landscape should be low.

***Class III Objective:*** To partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate.

***Class IV Objective:*** To provide for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high.

At present, the entire monument is managed as Class III under the existing land use plan.

### 3.1.11 Wilderness Characteristics

Areas with wilderness characteristics have a high degree of naturalness and offer outstanding opportunities for solitude and primitive, unconfined recreation. Naturalness is a characteristic of lands where the imprint of human activity is substantially unnoticeable. (Noticeable imprints of human activity typically include travel routes or trails, fences, and other landscape modifications.) Natural areas are characterized by the presence of native vegetation communities and the connectivity of habitats. Opportunities for solitude occur in areas where "the sights, sounds, and evidence of human activity are rare or infrequent and where visitors can be isolated, alone, or secluded from others." Landforms of rugged relief or vegetation that provide screening enable visitors to enjoy the solitude of an area without frequent contact with or evidence of others. Primitive and unconfined recreation includes non-motorized, nonmechanical forms of recreation, such as hiking or bird watching, in areas without or with minimal developed recreation facilities. The areas must be sufficiently large to allow these types of outdoor recreation, and have features or attractions that lend themselves to primitive and unconfined types of recreation uses (USDI, BLM 2003c).

The BLM received a wilderness proposal from the Arizona Wilderness Coalition in September 2002 that included four areas in the IFNM. The proposal recommended the Sawtooth Mountains, Ragged Top, West Silver Bell Mountains, and Silver Bell Mountains for consideration as wilderness study areas (WSAs). Current planning guidance for the IFNM provides for consideration of wilderness characteristics in the RMP planning process, but not for designation of new wilderness study areas.

BLM completed a wilderness characteristics assessment to determine if wilderness characteristics are present in the planning area, including the areas proposed for wilderness by the Arizona Wilderness Coalition. The assessment was done in accordance with BLM Washington Office Instruction Memorandum 2003-275, Change 1, Consideration of Wilderness Characteristics in Land Use Plans, issued on October 23, 2003. The assessment utilized data gathered for the Draft RMP/EIS in the visual, recreation, vegetation, ecological site, and wildlife habitat resource inventories.

Visual resource data identified existing landscape modifications, which helped identify areas where naturalness has been altered. Modifications identified include roads, vehicle trails, fences, range improvements, mineral exploration sites, wildlife waters, communication sites, vegetation treatments, and other modifications with visual impacts that affect the area's naturalness. The planning area's vegetation inventory and ecological site data were used to identify the native vegetation communities. Wildlife habitat data for desert bighorn sheep and Sonoran Desert tortoise were used to identify natural connections between different geographic areas.

# Visual Resource Inventory Classes

**Ironwood Forest National Monument**
**Draft RMP/EIS**

## Legend

### Visual Resource Inventory Class

- Inventory Class II areas are where changes in any of the basic elements (form, line, color, texture) caused by a surface-disturbing activity should not be evident in the characteristic landscape. Contrasts must not attract attention.
- Inventory Class III areas are where contrasts to the basic elements caused by a management activity may be evident, but should remain subordinate to the existing landscape.

Data Source:
VRI Information: URS 2005
Base Information: BLM 2003
Quadrangle Image: US Geological Survey 1977 Tucson

### General Reference

- County Boundaries
- Central Arizona Project (CAP) Canal
- River
- Interstate 10
- Main public access routes to monument. County administered roads connecting monument travel route system to public highways.

### Planning Area

- Ironwood Forest National Monument

Universal Tranverse Mercator
Zone 12, Units Meters
Clark 1866 Spheroid
NAD27 Datum

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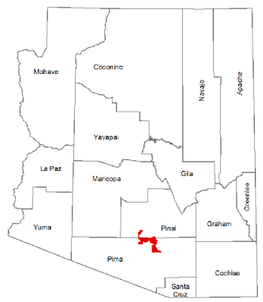
Location in Arizona

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Map 3-6

The landscape visibility analysis was used to identify areas that are hidden from view from places within and outside the planning area, screened mainly by topographic/landform features. These hidden or seldom seen areas provide opportunities for solitude and for getting away from the sights and sounds of other visitors and surrounding developments. The Recreation Opportunity Spectrum (ROS) data were used to identify areas that are relatively remote and enhance opportunities for solitude particularly in areas identified as semi-primitive non-motorized (refer to Section 3.2.3.2). The recreation use study conducted by the University of Arizona in 2004 and visitor use monitoring data were used to identify use volume and patterns, and estimate the frequency of visitor encounters.

The wilderness characteristics assessment confirmed the presence of wilderness characteristics in the areas proposed by the Arizona Wilderness Coalition, and in an additional area of the Roskruge Mountains. Based on this assessment, approximately 36,990 acres of BLM-administered land possess wilderness characteristics (refer to Map 2-10).

## 3.2 RESOURCE USE CONDITIONS

### 3.2.1 Energy and Minerals

#### 3.2.1.1 Renewable Energy Resources

##### *3.2.1.1.1 Solar Energy*

Solar energy is a renewable energy resource that has excellent potential for generating electricity in Pima and Pinal Counties. The region including the planning area has recently been identified as having a large total land area for high-potential concentrating solar power and/or photovoltaic sites (U.S. Department of Energy 2003). Installation of solar energy facilities on public land requires a right-of-way grant (rather than a lease).

Solar energy resources in the planning area are considered adequate for generating electricity using photovoltaic cells. Commercial solar generating stations have been constructed and operate in Arizona and other states, particularly in desert locations. Existing solar array technology can place approximately 125 to 150 kVts of photovoltaic cells per acre. Such an array will generate 250 to 300 megawatt-hours of electricity per year (Arizona Public Service 2002).

##### *3.2.1.1.2 Wind Energy*

Wind energy is a renewable energy resource with excellent potential for generating electricity. The National Renewable Energy Laboratory has mapped wind speed zones in the United States through development of a wind power classification system, based on annual average wind speeds. Class 1 areas have the lowest wind speed, Class 7 areas the highest. As in most of Arizona, the wind resources on the IFNM are limited. The planning area and vicinity is identified as a Class 1 wind power zone, which is generally not suitable for wind energy development (Duncan and Mancini 1991).

#### 3.2.1.2 Mineral Resources

BLM manages Federal mineral estate (leasable, locatable, and salable minerals) regardless of surface jurisdiction. Map 3-7: Federal Mineral Estate shows the Federal mineral estate (approximately 149,360 acres) within the planning area. Generally, the Federal mineral estate lies under areas already managed by BLM. However, there are areas within the IFNM where Federal minerals underlie State Trust land (approximately 14,680 acres) or private land (approximately 3,220 acres); this is considered split-estate, which is part of BLM's decision area. In areas of split-estate where BLM administers Federal mineral estate, management of the mineral development must be consistent with the surface management

agency's land use plan. All of the lands and interests in lands (e.g., minerals) within the IFNM boundaries have been withdrawn from location, entry, and patent under the mining laws, and from disposition under all laws relating to mineral and geothermal leasing (Office of the President 2000). Thus, no new mining claims or mineral development can occur on the Federal mineral estate within IFNM.

#### *3.2.1.2.1 Leasable Minerals*

Federal leasable minerals are fluid or solid minerals that can be developed after obtaining a lease from BLM. Leasable fluid minerals include oil, gas, geothermal resources, and $CO_2$. Leasable solid minerals include coal, potash, sulfur, and sodium. The only leasable minerals with potential for occurrence in the planning area are oil and gas, geothermal resources and sodium.

**Oil and Gas.** Oil and gas are fluid mineral resources that typically are discovered and exploited by drilling exploratory and development wells into oil- and/or gas-bearing sedimentary rocks.

No oil or gas has been discovered in the decision area. However, the potential for discovery is rated as moderate because it is located within the Bisbee Basin and a portion of the Tucson Basin (Rauzi 2001).

**Geothermal Resources**. Geothermal resources are nonrenewable energy resources. At great depths below the earth's surface, high temperatures exist everywhere, mainly due to energy released by the nuclear decay of radioactive elements. In some places, those high temperatures reach the surface and create abnormally high heat flow from the ground. These areas, known as geothermal anomalies, occur in areas of active or recent volcanism and in places where the earth's crust has been thinned by extensional stresses, such as the Basin and Range physiographic province, in which the planning area is located.

There are no official Known Geothermal Resource Areas in the planning area. However, Avra Valley, located in the eastern portion of the planning area, has been identified as having potential for the development of geothermal resources. There are no significant geothermal energy resources currently in use within the planning area. Potential uses include residential and commercial space heating, greenhousing, aquaculture, crop and food processing, and leaching of copper ore. However, geothermal resources in the planning area are not applicable for power generation because the temperatures are not high enough to produce steam.

**Sodium.** Sodium is a nonrenewable leasable solid mineral resource. Sodium typically occurs as salt (halite) in marine evaporite sediment sequences or continental closed basin evaporite sediment. One known salt deposit exists in the subsurface near the planning area: the Tertiary-age Picacho Basin, centered near the Town of Eloy in south-central Pinal County (Rauzi 2002). Potential subsurface salt deposits also may exist in the Red Rock Basin, centered approximately in the Town of Red Rock and extending north into Pinal County and south into Avra Valley.

#### *3.2.1.2.2 Locatable Minerals*

Locatable minerals include both metallic minerals (e.g., gold, silver, lead, uranium) and nonmetallic minerals (e.g., gemstones, kaolin, fluorspar, perlite).

**Metallic Minerals**. The planning area has five locales historically designated as mineral districts, including the Sawtooth mineral district in Pinal County, and the Magonigal, Silver Bell, Waterman, and Roskruge mineral districts in Pima County (Map 3-8: Mineral Districts, Mining Claims, and Salable Mineral Material Source Areas). All of the mineral districts, with the exception of the Silver Bell District, have been mined historically and are no longer active.

# Federal Mineral Estate

**Ironwood Forest National Monument**
**Draft RMP/EIS**

## Legend

### Surface Management

- Bureau of Land Management
- National Park Service
- Bureau of Reclamation
- American Indian Reservation
- Military Reservations
- State Trust Lands
- State, County, City; Wildlife, Park and Outdoor Recreation Areas
- Private
- Pima County

### Federal Mineral Estate

- Federal Minerals

### General Reference

- County Boundaries
- Central Arizona Project (CAP) Canal
- River
- Interstate 10
- Main public access routes to monument. County administered roads connecting monument travel route system to public highways.

### Planning Area

- Ironwood Forest National Monument

Data Source:
Federal Minerals: Premier Data Services, Inc. 2004
Base Information: BLM 2003
Quadrangle Image: US Geological Survey 1977 Tucson

Universal Tranverse Mercator
Zone 12, Units Meters
Clark 1866 Spheroid
NAD27 Datum

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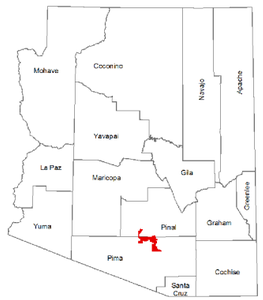
Location in Arizona

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Map 3-7

# Mineral Districts, Mining Claims, and Salable Mineral Material Source Areas

**Ironwood Forest National Monument**
**Draft RMP/EIS**

## Legend

### Mineral Districts

**Copper**

- 1a — Porphyry with or without Molybdenum, Manganese, Gold and Peripheral Lead-Zinc-Silver
- 4 — Lead-Zinc-Silver Veins and Replacements
- 5 — Silver with or without Lead and Zinc; Veins and Replacements

(4, 5: Distinction based on Silver/Silver, Lead, and Zinc Ratios)

- 5* — Significant Copper Production

**Manganese**

- 6a — Veins with or without Barium, Lead, Silver

### Mining Claims

- Jaba
- Sally Meeks
- Silverbell Mining Co.

Data Source:
Mineral Districts: BLM 2003; Modified URS 2004
Mineral Claims: BLM 2006
Base Information: BLM 2003
Quadrangle Image: US Geological Survey 1977 Tucson

### General Reference

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- Central Arizona Project (CAP) Canal
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### Planning Area

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Zone 12, Units Meters
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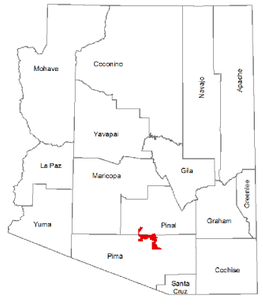
0 1 2 4 Miles
0 2 4 8 Kilometers

Location in Arizona

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Map 3-8

A total of 225 existing mining claims exist within the IFNM boundaries (USDI, BLM 2004b). The USGS Mineral Resource Data System lists 33 mine sites in the planning area (USGS 1999). Mine sites are mining claims that have been developed. There are no active metallic mineral mines in the decision area. The only active mine is the Silver Bell Mine, a copper mine.

**Nonmetallic Minerals**. Nonmetallic locatable minerals include barite, feldspar, gemstones, mica, perlite, silica (quartz), and industrial-grade limestone and clay. Nonmetallic locatable mineral locations and associated geologic deposits are reported by Phillips (1987). Barite has been found at two locations in the decision area, both in the Silver Bell Mountains. No production has occurred from either locality. Quartz, mica, and feldspar have been identified in pegmatites at the Tinker Bell and J & D Mines, both located within the decision area. One industrial-grade limestone property is located in the Waterman Mountains at the Happy Jack Mine. The mine is located within the decision area and has not been commercially developed. Currently there are no active nonmetallic mineral mines in the planning area.

#### *3.2.1.2.3 Salable Minerals*

Salable minerals include materials used for building and construction, both commercially and privately. Sand, gravel, aggregate, lime (limestone), cinders, and building stone are salable minerals.

A search of Case Recordation files on the BLM Land and Mineral Records LR 2000 database identified four salable mineral pit permits in the decision area, only one of which was active. The Silver Bell Pit produced crushed granite and other decorative landscape rock. This pit lies off Silverbell Road, and inside, the decision area boundary. That pit is now closed and has been partially reclaimed; any additional reclamation would be completed by BLM.

### 3.2.2 Livestock Grazing

Livestock grazing on the IFNM is authorized at the levels presented in the Rangeland Program Summary (USDI, BLM 1987). Grazing leases are held for 11 allotments (Map 3-9: Grazing Allotments). Grazing use for each allotment is assigned in terms of Animal Unit Months (AUMs). An AUM is the amount of forage needed to sustain one cow, five sheep, or five goats, for a month. These allotments support 8,042 AUMs (670 cattle), of which an estimated 7,748 AUM (646 cattle), or 96 percent, are within the IFNM boundaries (Tersey 2004; USDI, BLM 2001a). All allotments within the IFNM are Section 15 leases, meaning they are located outside of an established grazing district and are administered in accordance with Section 15 of the Taylor Grazing Act of 1934.

As part of the land use planning and grazing management processes, BLM designates grazing allotments as ephemeral or perennial allotments, and by their management status. Table 3-9 presents the current designations and management status of the allotments in the IFNM. Three allotments are currently classified as *improve*, indicating that degradation or other disturbance has occurred, but that the degradation is reparable. However, the available allotment evaluations do not indicate other issues or concerns that needed to be addressed. Two of the allotments are classified as *maintain*, indicating that the areas should be managed to maintain a current satisfactory condition. The remaining allotments are classified as *custodial*. Allotments are classified as custodial when there is low potential biological response to a change in management, the allotment contains only a small amount of public lands or there is a lack of any identified resource conflicts. This classification indicates that minimal effort is needed to manage the grazing, or that an absence of effort will be equally effective in protecting the resources. In all cases, minimal effort is needed due to cooperative lessees or minimal resource issues. Two allotments are classified as *ephemeral*, indicating grazing is allowed only when special criteria are met and when forage is available in sufficient volume to support soil protection, browsing by wildlife, and wildlife or livestock grazing pressure. The remaining nine allotments are classified as *perennial/ephemeral*, indicating that a base level of grazing is allowed year-round. In a *perennial/ephemeral* allotment, the lessee could request authorization to graze additional AUMs if criteria are met and forage is available in sufficient volume to

support soil protection, browsing by wildlife, and wildlife or livestock grazing pressure (Appendix F). Table 3-10 presents information on the results of the most recent allotment evaluations for each allotment. All of the allotments have been evaluated against the Arizona Standards and Guidelines in the past few years, though some of the evaluation reports have not been completed to date.

**Table 3-9: Management Status of the Allotments within the IFNM**

| Name | No. | Selective Management Status[1] | Ephemeral or Perennial?[2] | Allotment acres (BLM)[3] | Active (Perennial) AUMs | 2004 Actual AUMs |
|---|---|---|---|---|---|---|
| Agua Blanca | 6183 | Improve | Perennial/Ephemeral | 14,419 | 1,356 | 1,352 |
| Agua Dulce | 6126 | Maintain | Perennial/Ephemeral | 16,144 | 814 | 318 |
| Blanco Wash | 6010 | Custodial | Perennial/Ephemeral | 2,278 | 195 | 195 |
| Claflin | 6029 | Maintain | Perennial/Ephemeral | 6,036 | 437 | 234 |
| Cocoraque | 6020 | Improve | Perennial/Ephemeral | 9,181 | 527 | 527 |
| Tejon Pass | 6077 | Custodial | Ephemeral | 11,591 | 0 | 0 |
| King | 6153 | Custodial | Perennial/Ephemeral | 12,737 | 1,452 | 240 |
| Morning Star | 6060 | Custodial | Ephemeral | 16,430 | 0 | 201 |
| Old Sasco | 6102 | Custodial | Perennial/Ephemeral | 4,471 | 384 | 0 |
| Sawtooth Mtns | 6068 | Custodial | Perennial/Ephemeral | 32,127 | 2,328 | 2,328 |
| Silver Bell | 6203 | Improve | Perennial/Ephemeral | 4,835 | 350 | 350 |
| **Totals** | | | | **130,449** | **7,843** | **7,749** |

SOURCES: Tersey 2004; U.S. Department of the Interior, Bureau of Land Management 2002a, 2001c, d, 2000a, b

NOTES:[1] Management Status

Custodial: Manage these allotments as custodial, while protecting existing resources.

Maintain: Manage to maintain the current SATISFACTORY condition of the resources in the allotment.

Improve: Manage to improve the current UNSATISFACTORY resources in the allotment.

[2] Grazing Authorization Status

Ephemeral: Grazing is allowed only when precipitation patterns generate seasonal production of forage available for livestock.

Perennial: Grazing is authorized year-long at the grazing preference level.

Perennial/Ephemeral: Grazing is authorized on ephemeral forage above the grazing preference when precipitation patterns generate seasonal production of additional forage available for livestock.

[3] Acreages

Acreages are approximate. The IFNM contains 128,398 acres of public (BLM-administered) land; the grazing allotments contain public land outside of the IFNM boundary.

**Table 3-10: Allotments Evaluated under Arizona Standards For Rangeland Health and Guidelines for Grazing Administration, Summary of Results**

| Allotment No. | Allotment Name | Total Acres | BLM Acres | Active AUMs | Evaluation Date | Condition of Range Improvements | Standards Met? | | | Grazing Management System |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 1 | 2 | 3 | |
| 6183 | Agua Blanca | 16,784 | 14,419 | 1,356 | 5/9/01 | Good | Y | N/A | Y | Deferred Rotation |
| 6153 | King | 26,801 | 12,737 | 1,452 | 3/29/99 | Fair to Good | Y | N/A | Y | Rest Rotation. |
| 6060 | Morning Star | 8,646 | 16,430 | 0 | 3/29/09 | Fair | Y | N/A | Y | Ephemeral. |
| 6102 | Old Sasco | 43,074 | 4,471 | 384 | 3/22/00 | Fair | Y | N/A | Y | Deferred Rotation. |
| 6068 | Sawtooth Mtns | 178,886 | 32,127 | 2,328 | 3/22/00 | Poor | Y | N/A | Y | Deferred Rotation. |
| 6203 | Silver Bell | 5,646 | 4,835 | 350 | 5/9/01 | Good | Y | N/A | Y | Deferred Rotation. |
| 6075 | El Tiro | 4,289 | 3,350 | 240 | 3/9/99 | Fair | Y | N/A | Y | Rest Rotation. |
| 6077 | Tejon Pass | 21,010 | 11,591 | 0 | 3/9/99 | Fair | Y | N/A | Y | Ephemeral. |
| 6029 | Claflin | 8,646 | 6,036 | 437 | 3/9/99 | Fair | Y | N/A | Y | Deferred Rotation. |
| 6126 | Agua Dulce | 18,021 | 16,144 | 814 | 2/7/03 | Fair | Y | N/A | Y | Rest Rotation. |
| 6010 | Blanco Wash | 10,020 | 2,278 | 195 | 2/14/03 | Good | Y | N/A | Y | Deferred Rotation. |
| 6020 | Cocoraque | 13,783 | 9,181 | 527 | 2/7/03 | Fair | Y | N/A | Y | Rest Rotation. |

SOURCES: Tersey 2004; U.S. Department of the Interior, Bureau of Land Management 2002a; 2001a ,b; 2000a, b

NOTES: Standard 1 – Upland Sites; Standard 2 – Riparian-Wetland Sites; Standard 3 – Desired Resource Condition; Allot. = allotment; Y = meets standard; N = does not meet standard; N/A = not applicable

# Grazing Allotments

**Ironwood Forest National Monument**
**Draft RMP/EIS**

## Legend

- Grazing Allotments
- Fence

**Surface Management**

- Bureau of Land Management
- National Park Service
- Bureau of Reclamation
- American Indian Reservation
- Military Reservations
- State Trust Lands
- State, County, City; Wildlife, Park and Outdoor Recreation Areas
- Private
- Pima County

Note:
Not all fences are shown. Only those encountered along travel routes presently used for administrative purposes by the public are represented.

Data Source:
Grazing Allotments: BLM 2006
Fence Line Information: BLM 2003
Base Information: BLM 2003
Quadrangle Image: US Geological Survey 1977 Tucson

**General Reference**

- County Boundaries
- Central Arizona Project (CAP) Canal
- River
- Interstate 10
- Main public access routes to monument. County administered roads connecting monument travel route system to public highways.

**Planning Area**

- Ironwood Forest National Monument

Universal Tranverse Mercator
Zone 12, Units Meters
Clark 1866 Spheroid
NAD27 Datum

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0 1 2 4 Miles

0 2 4 8 Kilometers

Location in Arizona

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Map 3-9

In all cases the allotment evaluations concluded that the standards were met and no substantial issues to be addressed were identified. In some cases, the range improvements on the allotments were identified as being in fair or poor condition.

### 3.2.3 Recreation

The IFNM is easily accessible from both Tucson and Marana, and provides outstanding recreational opportunities to the residents of those urban areas. Visitors are able to enjoy the scenic beauty of the IFNM through a variety of authorized recreational activities, including camping, hunting, target shooting, horseback riding, hiking, biking, and touring by vehicle. Universal access is provided in some areas of the IFNM that are open to mechanized vehicles. BLM issues special recreation permits on a case-by-case basis for certain activities as a means to manage visitor use, protect natural and cultural resources, provide for and manage commercial recreation, and accommodate a wider variety of recreation experiences.

BLM issues special recreation permits under the Special Recreation Permit program for commercial use, organized group activities, competitive uses, and special individual uses where a decision is made to establish a special area permit system. In accordance with 43 CFR 2390 and BLM Handbook H-2930-1, Recreation Permit Administration, special recreation permits are authorizations that allow for recreational uses of public land and related waters. Commercial special recreation permits also are issued as a mechanism to provide a fair return for the commercial recreational use of public lands. 43 CFR 2930 requires special recreation permits for commercial recreational operations, competitive events and activities, vending in conjunction with a recreation activity, organized group activities and events, and individual recreational use of special areas.

Currently, there are two commercial operations under special recreation permits within the IFNM – one for cattle drive/horseback riding activities and one for orienteering activities. Other special recreation permits have been issued on a case-by-case basis for activities such as OHV events, mountain biking events, and equestrian activities (USDI, BLM 2001a; Mendoza and Tersey 2004).

#### 3.2.3.1 Recreation Opportunity Spectrum Existing Conditions

BLM uses a planning tool known as the Recreation Opportunity Spectrum (ROS) that inventories, classifies, and maps public lands according to their suitability for various types of recreational activity. Inventory results are then used to develop management decisions. The system defines six classes of recreation opportunity ranging from natural, low-use areas to highly developed, intensive use areas: these include primitive, semi-primitive non-motorized, semi-primitive motorized, roaded natural, rural, and urban. The classes are defined by setting, the types of recreational activities appropriate to that setting, and the types of recreation experience the setting offers to visitors. The primary factor is the setting. A 2004 ROS inventory identified three classes of recreation opportunity on public land within the IFNM: semi-primitive non-motorized, semi-primitive motorized, and roaded natural, as defined below (URS Corporation 2004).

> ***Semi-primitive Non-motorized:*** The setting is predominantly a semi-remote natural landscape of moderate to large scale. The frequency of encounters with other users is low, and few management controls exist. Motorized-vehicle use is not allowed. Temporary primitive roads may be used for resource management on a limited basis, but use of such roads is restricted as incompatible with this recreational opportunity. The setting allows recreationists to experience solitude, isolation, challenge, and a high degree of interaction with nature through activities such as backpacking, camping, nature viewing, backcountry hunting, climbing, and hiking.

***Semi-primitive Motorized:*** This setting is a mostly natural landscape of moderate to large scale, within one-half mile of primitive roads and two-track vehicle trails. The setting offers a moderate degree of isolation from others; contact with others remains low to moderate and there are few management controls. The use of motorized recreational equipment is allowed. Recreationists can experience a high degree of interaction with the natural environment while enjoying activities such as hunting, climbing, vehicle trail riding, backcountry driving, mountain biking, and hiking.

***Roaded Natural:*** The setting is generally an area of natural appearance near improved and maintained roads. The frequency of encounters between parties of visitors is moderate to high. Some modifications are evident and management controls and developments are visible. Motorized as well as non-motorized vehicles are allowed. The recreation experience includes activities such as picnicking, rock collecting, wood gathering, auto touring, hang gliding, interpretive use, and vehicle camping.

Areas where these opportunities are available have been mapped and are shown on Map 3-10: Recreation Opportunity Spectrum. The acreage for each classification is listed in Table 3-11.

**Table 3-11: Existing ROS Inventory Acreage for Public Land Administered by BLM**

| ROS Category | Acres |
|---|---|
| Semi-primitive non-motorized | 31,450 |
| Semi-primitive motorized | 74,910 |
| Roaded natural | 18,910 |
| Other[1] | 3,130 |

SOURCE: URS Corporation 2004
NOTE: [1] Includes agricultural, residential, and industrial uses with limited public recreational opportunities.

### 3.2.3.2 Recreational Use

A recent University of Arizona study identified some of the preferred recreational activities within the IFNM. These include (in order of expressed preference) hiking/walking/running, sightseeing, wildlife viewing, camping, vehicle touring, picnicking, target shooting, hunting, and horseback riding. The study identified the Ragged Top Mountain area as the primary destination within the IFNM for wildlife viewing (Gimblett 2004).

The study also identified approximately 175 campsites on public land (exhibiting varying intensity of use) that have been established as a result of ongoing use (Gimblett 2004). In addition, dispersed camping is allowed throughout the IFNM as long as it does not occur within 0.25 mile from a designated wildlife water source, and does not cause or result in new damage to vegetation, soils, or other resources. To prevent damage to sensitive resources caused by continual use of any particular area, camping cannot occur for more than a period of 14 days within any period of 28 consecutive days.

BLM compiles visitor-use statistics in accordance with Instruction Memorandum No. 2003-245 in the Recreation Management Information System. However, the most recently compiled data on recreational uses within the IFNM is available through a study conducted by the University of Arizona. The study found that from November through April, approximately 12,000 to 15,000 visitors traveled through the IFNM (mostly on weekends). A majority of the visitation occurred at Ragged Top Mountain and the Waterman Mountains (Gimblett 2004).

# Recreation Opportunity Spectrum

**Ironwood Forest National Monument**
**Draft RMP/EIS**

## Legend

**Recreation Opportunity Spectrum**

- Roaded Natural (RN)
- Semi-Primitive Motorized (SPM)
- Semi-Primitive Non-Motorized (SPNM)

**Reference Information**

- Agricultural
- Residential
- Industrial

Data Source:
ROS: URS 2005
Base Information: BLM 2003
Quadrangle Image: US Geological Survey 1977 Tucson

**General Reference**

- County Boundaries
- CAP Canal
- River
- Interstate 10
- Main public access routes to monument. County administered roads connecting monument travel route system to public highways.

**Planning Area**

- Ironwood Forest National Monument

Universal Tranverse Mercator
Zone 12, Units Meters
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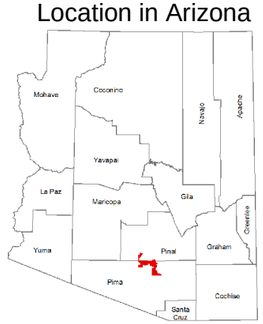
0 1 2 4 Miles

0 2 4 8 Kilometers

Location in Arizona

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Map 3-10

The University of Arizona study also included a survey of IFNM visitors, where many visitors identified enjoyment of nature, stress relief, and physical activity as reasons for visiting the monument. Visitors in the study also indicated that they come to the IFNM to find peace and quiet or experience the feeling of remoteness, and to feel a part of the natural environment. In order to gather data to assist in addressing a bighorn sheep-versus-dog management issue, visitors were asked if they brought dogs with them. Almost 19 percent reported bringing at least one dog with them. Most of the survey respondents were Arizona residents; only 9 of the 106 respondents reported that they were seasonal visitors to southern Arizona. More than 40 percent of the visitors to the IFNM use four-wheel-drive vehicles (Gimblett 2004).

### 3.2.4 Lands and Realty

#### 3.2.4.1 Land Tenure

BLM occasionally makes land tenure adjustments where public land is sold or exchanged, or nonpublic lands or interests are acquired. The BLM administers approximately 128,398 acres of public land (surface estate) in the IFNM. Management of minerals in subsurface estate is discussed in Section 3.2.1. BLM administers all of the Federal acreage with the exception of approximately 300 acres in the Waterman Mountains area, which were withdrawn by the Department of Defense in the 1960s (U.S Air Force 2004). Refer to Table 1-1 and Map 1-2 for additional information on surface management within the IFNM.

BLM adjustments to land tenure in the planning area occur or can occur under a variety of realty actions. Under the Proclamation, all land and interests in land (i.e., surface and subsurface estate) in the decision area will remain under BLM's administration (i.e., all will be retained) unless an exchange would further the protective purposes of the monument.

Acquisitions can occur through land exchanges, purchases, easements, and other land transfers.

#### 3.2.4.2 Recreation and Public Purposes Act Leases

There is one Recreation and Public Purposes (R&PP) Act lease within the boundaries of the IFNM. The R&PP Act lease is issued to and allows for the operation of the Tucson Soaring Club on 182 acres, and will expire in 2013 (Bernal 2006; USDI, BLM 2001a).

#### 3.2.4.3 Utility Corridors, Rights-of-Way, and Communication Sites

BLM manages existing corridors and the Pan Quemado and Confidence Peak communication sites in the IFNM to protect the objects of biological, scientific, and historical interest cited in the Proclamation. Title V of Federal Land Policy and Management Act (FLPMA) authorizes the Secretary of the Interior to issue right-of-way grants (i.e., authorizations to use specific pieces of public land for specific facilities for specific periods of time), over, upon, under, or through public lands (except land designated as wilderness). Section 503 of FLPMA (43 U.S.C. 1763) authorizes the formal designation of utility corridors, which are identified as the preferred routing for utilities. BLM has designated corridors to accommodate linear infrastructure/utilities (e.g., pipelines, roads, electrical transmission lines) that traverse the IFNM, as shown on Map 2-15: Utility Corridors and Right-of-way Authorizations – Alternative A. Three 1-mile-wide corridors cross the IFNM planning area.

The Proclamation allows existing rights-of-way to be maintained within the IFNM without being subject to the higher standard that may be applied to future right-of-way grants by virtue of the monument designation. At the time the Proclamation was signed, several rights-of-way for roads, pipelines, power lines, and communication facilities were in place. The type and number of rights-of-way within the IFNM are listed in Table 3-12.

**Table 3-12: Existing Rights-of-Way**

| Type | Number |
|---|---|
| Road | 10 |
| Electric | 8 |
| Gas Pipeline | 4 |
| Communication Site/Telephone | 4 |
| Irrigation | 1 |

### 3.2.5 Travel Management

This section addresses travel management, including access, within the IFNM for motorized and non-motorized surface travel and air transportation. The study area for this section extends beyond the planning area to include surface access routes that link the IFNM to major public roadways and to airspace considerations that originate outside of the planning area.

The existing road network is illustrated on Map 2-19: Travel Management–Alternative A. There are 39 existing access points into the IFNM, and 346 miles of existing routes. Some of the routes illustrated on this map did not exist at the time of the 1989 Phoenix RMP and therefore were not authorized as open under that RMP. However, they have been created since that time, and are currently in use and serving existing access needs. As a result, they were identified during the route inventory and included in the route baseline. For more information on the IFNM route inventory, refer to Appendix G.

The majority of roads within the IFNM are dirt roads. These are typically single-lane roads that are passable by two-wheel-drive, high-clearance vehicles, but not by passenger vehicles or larger vehicles, and that show no evidence of improvement or regular maintenance. Nine percent are light duty but maintained roadways; these travelways are improved and graded, and provide reliable access for school bus and passenger vehicles. Only six percent of the roads in the IFNM are primitive four-wheel-drive, where surface conditions require four-wheel-drive vehicles, due to roughness, grade, or drainage crossings or other obstructions (Gimblett 2004).

Main public access routes, including Sasco, Avra Valley, Silverbell, Manville, Mile Wide, El Tiro, and Pump Station Roads, link the IFNM to Interstate 10. These roads are administered by Pinal County or Pima County. Gimblett's University of Arizona study (2004) notes that the majority of the roads in the planning area are not maintained to any standard. Almost all routes inventoried were in some state of rehabilitation or primitive condition, with vegetation encroaching on the side clearances and established in the travelways.

There are many access points into the IFNM, but the most heavily used include Manville Road, the Tohono O'odham Nation border near the Waterman Mountains, and Avra Valley Road.

Civilian aviation occurs at El Tiro Gliderport, which is located within the planning area. This facility is along the eastern boundary of the IFNM and is accessed by El Tiro Road. The Tucson Soaring Club is a private group that uses this facility regularly and holds an R&PP Act lease. Soaring activities occur in sailplanes that are designed for sustained flight without the use of a motor, although launches are by motorized tow planes.

## 3.3 SPECIAL DESIGNATIONS

BLM special designations include ACECs, backcountry byways, national recreation areas, national trails, wild and scenic rivers, wilderness, and WSAs. The 3,100-acre Waterman Mountains ACEC is the only special designation within the IFNM. It was established in the 1989 Phoenix RMP primarily for the

protection of the Nichol Turk's head cactus, and is one of the most popular destinations within the IFNM. Access routes provide entry to approximately 28 campsites within the ACEC (Gimblett 2004). Within the ACEC there are range improvements (i.e., livestock stock waters) located along existing roads within the Agua Dulce allotment, grandfathered mining claims (though there is no current mineral development activity), and regular traffic from UDIs. The current condition of the Nichol Turk's head cactus populations in the IFNM is addressed in Section 3.1.5.4. The ACEC is shown on Map 2-3: Special Status Species Management – Alternative A.

## 3.4 TRIBAL INTERESTS

This section describes interests of federally recognized Indian tribes potentially affected by the management alternatives for the IFNM.

Tribal interests in the RMP/EIS process can range from broad-scale concerns about management of landscapes, ecosystems, and viewsheds, to concerns connected with discrete locations on public lands. This includes issues such as reasonable access to ceremonial places and the freedom to collect, possess, and use natural resources. Tribal interests may align with general public interests, but they may vary in sociocultural context. Tribal interests include "traditional cultural properties," as described in Section 3.1.8.

Tribal interests that have been identified in the IFNM Draft RMP/EIS process to date are as follows:

- The Tohono O'odham Nation has interest in areas of the IFNM with indigenous plant resources used by the Tohono O'odham in the past (Steere 2005).
- Tohono O'odham ranchers have interest in retaining occasional access to the IFNM from the Schuk Toak District to retrieve cattle that have strayed off the reservation (Steere 2005).
- The Tohono O'odham have interest in protecting archaeological sites that reflect Tohono O'odham occupation and use of the land within IFNM (Steere 2005).
- There was a Tohono O'odham settlement around the Santa Ana de Cuiquiburitac Mission site. Tribal members have retained historical knowledge about this village and expressed concerns about protecting that site (Steere 2005).
- There is interest in protecting sites related to Tohono O'odham mining activities within and near the IFNM (Steere 2005).
- There is interest in preservation of sites related to historic (Territorial period) ranching as it relates to Tohono O'odham history (Steere 2005).
- The Tohono O'odham Nation is interested in coordination of the management of archaeological sites that overlap the boundary of the IFNM and the Tohono O'odham Indian Reservation.
- The Tohono O'odham Nation is generally concerned about the impacts of encroaching development and has suggested that Pinal and Pima Counties establish a no-development buffer zone up to a mile wide around the IFNM. The Nation is upset by the destruction of the unauthorized land clearing that occurred in 2004 for a development on the northeastern edge of the IFNM in the Los Robles Archaeological District, which is listed in the National Register (Steere 2005).

In addition to these specific concerns, tribes with traditional cultural affiliations with the region are known to have concerns about treatment of human remains, funerary objects, sacred objects, and objects of cultural patrimony that are sometimes present within archaeological sites.

## 3.5 SOCIAL AND ECONOMIC CONDITIONS

The social and economic context in which planning decisions occur is characterized by the needs, demands, and values of the local, regional, and national publics as well as the economic opportunities, benefits, and constraints that are represented by the IFNM. The programs with the strongest correlation between BLM management and social and economic conditions are the programs for energy and minerals, grazing, recreation, and lands and realty. The social and economic context is characterized through indicators of economic health (such as the economic value of commodities, employment and income, and economic diversity and stability) as well as fiscal benefits earned for local jurisdictions and markets due to economic activity on the IFNM. BLM management decisions with regard to economic programs also may affect social conditions, lifestyle, and quality of life. Conversely, current and projected demographic changes may affect the management of the IFNM in terms of the scope and volume of demands for different uses, and the perceived value of opportunities provided by the monument.

The area of potential effects for socioeconomics is further defined by the relationships between the BLM management decisions under consideration in this RMP/EIS and current and trends in uses of the IFNM. For example, changes to energy and mineral, grazing, recreation, and lands and realty programs could affect economic activity and/or social effects resulting from alterations to the ways in which people live, work, play, relate to one another; or cultural norms, values, and beliefs relative to the IFNM. The baseline for these economic and social variables are characterized herein to the extent possible using available data; however, the relatively minor magnitude and scale of economic activity at the IFNM are such that they often are not evident in baseline social and economic data sets for the study area. Input received during public scoping (see Section 1.7) and ongoing public involvement for this RMP/EIS provide some degree of context on the social importance of certain issues.

The baseline is defined by direct, indirect, and (in some cases) secondary effects of social and economic activity with the area of potential effect. In brief, direct effects are those that relate to direct use of IFNM lands and/or resources (e.g., grazing operations); in terms of economics, direct are typically tied to a single economic sector (e.g., agriculture). Indirect effects relate to use of IFNM lands and/or resources (e.g., recreation) but are somewhat removed from that direct use (e.g., purchase of services and equipment); in terms of economics they are specific to single economic sector (e.g., tourism). Secondary effects are those that disperse into the larger social and economic environment and include multiple economic sectors (.e.g., professional services and utilities supporting mineral resource development).

The study area for social and economic conditions extends beyond the planning area to allow for evaluation of local factors in the immediate vicinity of the planning area and nearby communities. Data have been gathered for the following levels of analysis:

***United States**:* Provides a baseline for comparison to national trends

***State of Arizona**:* Provides a baseline for comparison to statewide trends

***Pinal and Pima Counties**:* Provides regional context of south-central Arizona

***City of Eloy, Town of Marana, and the unincorporated Avra Valley area***: Provides local context for the planning area and highlights the communities most likely to be affected by RMP decisions, due to their proximity

***Tohono O'odham Nation***: Provides information about tribal lands bordering the western and southern boundaries of the planning area

Overall, social and economic trends for the study area over the past 30 years indicate a shift among the dominant employment sectors and the major sources of personal income. As shown in Table 3-13 and Table 3-14, employment in Pima and Pinal Counties over the past 30 years has been characterized by a large increase in jobs in the services and professional sector. This trend is statewide; over the past 30 years, the Services and Professional sector has provided approximately 75 percent of new jobs in Arizona. Conversely, employment in the mining sector has declined in terms of both relative significance and total number of jobs. New job growth in the government sector has occurred over the thirty-year timeframe in both counties. The farm and agricultural services sector remained flat in Pima County but declined in Pinal County.

**Table 3-13: Pima County Employment by Industry: Changes from 1970 to 2000**

| | No. of Jobs in 1970 | Percent of Total | No. of Jobs in 2000 | Percent of Total | New Employment[1] | Percent of Jobs Gained[2] |
|---|---|---|---|---|---|---|
| **Total Employment** | **144,273** | **-** | **444,118** | **-** | **299,845** | **-** |
| Wage and salary employment | 126,320 | 87.6 | 363,641 | 81.9 | 237,321 | 79.1 |
| Proprietors' employment | 17,953 | 12.4 | 80,477 | 18.1 | 62,524 | 20.9 |
| **Farm and agricultural services** | **2,054** | **1.4** | **5,983** | **1.3** | **3,929** | **1.3** |
| Farm | 1,087 | 0.8 | 955 | 0.2 | -132 | N/A |
| Agricultural Services | 967 | 0.7 | 5,028 | 1.1 | 4,061 | 1.3 |
| **Mining** | **6,972** | **4.8** | **2,410** | **0.5** | **-4,562** | **N/A** |
| **Manufacturing (including forest products)** | **9,295** | **6.4** | **35,144** | **7.9** | **25,849** | **8.5** |
| **Services and professional** | **78,120** | **54.1** | **297,840** | **67.1** | **219,720** | **72.1** |
| Transportation | 5,872 | 4.1 | 14,504 | 3.3 | 8,632 | 2.8 |
| Wholesale trade | 3,514 | 2.4 | 12,581 | 2.8 | 9,067 | 3.0 |
| Retail trade | 25,342 | 17.6 | 73,947 | 16.7 | 48,605 | 16.0 |
| Finance, insurance, and real estate | 10,947 | 7.6 | 37,386 | 8.4 | 26,439 | 8.7 |
| Services (health, legal, business, others) | 32,445 | 22.5 | 159,422 | 35.9 | 126,977 | 41.7 |
| **Construction** | **11,064** | **7.7** | **28,081** | **6.3** | **17,017** | **5.6** |
| **Government** | **36,768** | **25.5** | **74,660** | **16.8** | **37,892** | **12.4** |

SOURCE: Bureau of Economic Analysis 2000
NOTES: [1] New employment includes new jobs minus job losses.
[2] The percentage of new employment for each sector is the proportion of new jobs added. Numbers may not add up due to rounding.

**Table 3-14: Pinal County Employment by Industry: Changes from 1970 to 2000**

| | No. of Jobs in 1970 | Percent of Total | No. of Jobs in 2000 | Percent of Total | New Employment[1] | Percent of Jobs Gained[2] |
|---|---|---|---|---|---|---|
| **Total employment** | **25,980** | **-** | **51,293** | **-** | **25,313** | **-** |
| Wage and salary Employment | 23,040 | 88.7 | 42,890 | 83.6 | 19,850 | 78.4 |
| Proprietors' employment | 2,940 | 11.3 | 8,403 | 16.4 | 5,463 | 21.66 |
| **Farm and agricultural services** | **3,978** | **15.3** | **3,451** | **6.7** | **-527** | **N/A** |
| Farm | 3,426 | 13.2 | 2,391 | 4.7 | -1,035 | N/A |
| Agricultural Services | 552 | 2.1 | 1,060 | 2.1 | 508 | 1.6 |
| **Mining** | **6,086** | **23.4** | **1,423** | **2.8** | **-4,663** | **N/A** |
| **Manufacturing (including forest products)** | **1,482** | **5.7** | **3,476** | **6.8** | **1,994** | **6.4** |
| **Services and Professional** | **7,411** | **28.5** | **26,621** | **51.9** | **19,210** | **61.8** |
| Transportation | 585 | 2.3 | 1,206 | 2.4 | 621 | 2.0 |
| Wholesale trade | 213 | 0.8 | 1,343 | 2.6 | 1,130 | 3.6 |
| Retail trade | 3,075 | 11.8 | 7,905 | 15.4 | 4,830 | 15.5 |
| Finance, insurance and real estate | 678 | 2.6 | 2,535 | 4.9 | 1,857 | 6.0 |
| Services (health, legal, business, others) | 2,860 | 11.0 | 13,632 | 26.6 | 10,772 | 34.7 |
| **Construction** | **2,117** | **8.1** | **2,046** | **4.0** | **-71** | **N/A** |
| **Government** | **4,906** | **18.9** | **14,276** | **27.8** | **9,370** | **30.1** |

SOURCE: Bureau of Economic Analysis 2000
NOTES: [1] New employment includes new jobs less job losses.
[2] The percentage of new employment for each sector is the proportion of new jobs added.
Numbers may not add up due to rounding.
N/A = Not available.

The employment figures in Table 3-13 and Table 3-14 generally correlate with income by industry figures for the labor categories. However, there are other sources of income from non-labor categories, including transfer payments (primarily related to retirement) and dividends, interest, and rent (money earned from investments). When evaluated in these terms, non-labor income is the fastest growing source of income in both counties, followed by the services and professional sector. The significant increase in non-labor income suggests that the area is attracting retirees.

### 3.5.1 Economic Value

Economic value associated with the IFNM is assessed differently for each resource and resource use managed by BLM (e.g., energy and minerals, grazing, recreation, and lands and realty). The direct market value of each activity in the planning area and determinants of this value, such as volume of the commodity or other factors, are estimated and placed in context of their larger market value.

#### 3.5.1.1 Energy and Minerals – Current Conditions

Energy and minerals programs may include those that regulate locatable, leasable, and salable minerals, as well as permitting activity for renewable energy infrastructure. In accordance with the Proclamation, the IFNM is withdrawn from location, entry, and patent under the mining laws, and from disposition under all laws relating to mineral and geothermal leasing. There are 225 mining claims within the planning area that predate the establishment of the IFNM. However, there is no active metallic or nonmetallic mineral mining activity within the planning area.

ASARCO's Silver Bell Mine is located immediately outside the planning area boundary. Copper is the primary commodity produced at the mine, but lead, zinc, and other metallic minerals are also present in the mine. Table 3-15 provides copper production and the associated value for 2001.

**Table 3-15: Copper Production and Value (2001)**

| | Copper Production (tons) | Value | % of Total Value in Arizona |
|---|---|---|---|
| Planning Area | 0 | 0 | 0 |
| Silver Bell Mine (Asarco) | 20,950 | $32,263,000 | 2.2 |
| State of Arizona | 965,000 | $1,470,000,000 | 100 |

SOURCE: Phillips et al. 2002

There is currently no development of salable minerals, such as decorative rock, in the planning area, but four non-active salable mineral pit permits were identified. One of these pits, located near Silverbell Road and operated by the Jenott Mining Company, was active from 1996 through 2000. Approximately 47,820 tons of decorative rock was produced from this pit, which is now closed and has been partially reclaimed; any additional reclamation would be completed by BLM.

No leasing and development activity for fluid minerals or permitting activity for energy resources, such as solar and wind energy infrastructure, has occurred within the planning area.

#### 3.5.1.2 Livestock and Grazing

Statistics available from 2002 indicate that agricultural products generate more than $2.3 billion in Arizona. Pinal County provided approximately 17.7 percent of this total, and Pima County just 2.9 percent of State sales (U.S. Department of Agriculture [USDA] 2004c). In 2002, the market value of cattle and calves accounted for over $403 million of this revenue statewide, or about 16.9 percent. Pinal County accounted for almost 50 percent of the total State market value of cattle and calves, or about $142.7 million. Figures for the market value of cattle and calves in Pima County were not available for 2002, but in 1997 Pima County accounted for only two percent of the State total, or just over $7 million (USDA 2004b).

Grazing on the IFNM is authorized at the levels presented in the Range Program Summary (USDI, BLM 1987). The grazing allotments in the vicinity of the planning area are able to support 8,042 AUMs (670 cattle), of which an estimated 7,748 AUMs (646 cattle), or 96 percent, are within the IFNM boundaries (USDI, BLM 2001a). Grazing permits and leases issued by BLM represent an important proportion of permits in Pinal and Pima Counties (Table 3-16). A majority of the permits are issued by the Arizona State Land Department. Of the current holders of grazing leases within the IFNM, only two also use allotments outside of the monument. The remaining permittees are wholly reliant on IFNM allotments.

Grazing fees per allotment are determined by AUM. In 2004, the grazing fee was $1.42 per AUM. Between 2001 and 2003, the fee was $1.35 per AUM. Table 3-17 provides the total grazing fees received from allotments on IFNM for the years 2001 through 2004.

**Table 3-16: Farms with Grazing Leases or Permits**

| | Pinal County | Pima County | Arizona |
|---|---|---|---|
| Number of farms with cattle and calves | 179 | 166 | 2,881 |
| Number of farms with grazing leases or permits | 63 | 91 | 1,372 |
| Source of leases or permits | | | |
| Forest Service | 18 | 23 | 466 |
| Taylor Grazing (BLM) | 28 | 38 | 533 |
| American Indian lands | 2 | 2 | 195 |
| Other[1] | 44 | 58 | 643 |

SOURCE: U.S. Department of Agriculture 1997

NOTE: [1] Many of the farms or ranches in Pinal and Pima Counties have been issued permits or leases from both the ASLD and BLM, which accounts for the number of permits not adding up to the number of farms.

**Table 3-17: Grazing Fees Received from Allotment**

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| Total AUMs | 3,222 | 5,493 | 5,921 | 5,944 |
| Grazing fees received | $4,349.70 | $7,415.55 | $7,993.35 | $8,440.48 |

SOURCE: Calculated from U.S. Department of the Interior, Bureau of Land Management 2001a

#### *3.5.1.2.1 Social Value of Ranching*

Ranching conveys value to local communities through the conservation of open spaces and the connection to historic ranching in Arizona or a "western" quality of life. Pima County's Sonoran Desert Conservation Plan highlights the protection of ranchlands to preserve western heritage and cultural resources, maintain a traditional industry, diversify the economy, and preserve unfragmented open space (Mayro 1999).

### 3.5.1.3 Recreation

Current visitation in the IFNM is estimated to be between 12,000 and 15,000 annually. Visitors typically come to the IFNM alone or with one other person, and most daytime visits occur on the weekends. Visitation peaks during the more temperate fall, winter, and spring seasons (Gimblett 2004). As noted in Section 3.2.3, recreation opportunities available on the IFNM (such as hiking, nature viewing, recreational driving, hunting, and target shooting) are available elsewhere in the region, but there are place connections to the IFNM.

#### *3.5.1.3.1 Regional and Statewide Tourism*

Tourism is an important part of the Arizona economy. Pollack (2002) estimates the overall economic impact of the 29.5 million domestic and international overnight visitors and the 19.3 million day-trip visitors to Arizona in 2000 to be nearly $30 billion. In addition, the fiscal impact (revenues from local, county, and State government taxes) totaled $1.3 billion. Tourist spending is considered "new" dollars injected into the economy each year because non-local dollars are used in spending on hotels, restaurants, retail shops, car rental agencies, and similar outlets. According to the Arizona Office of Tourism, tourism expenditures in 2000 were $15.8 billion for domestic, international, and day-trip travelers (Pollack 2002).

The south-central/east Arizona area, defined in the Statewide Economic Study to include the planning area, Tucson, and the southeastern corner of the State, receives 4.3 million visitors annually. It is estimated that more than 67 percent are from out of state. Generally, a large portion of tourism in rural

communities originates in the Phoenix and Tucson metropolitan areas (Arizona Department of Commerce [ADOC] 2003).

#### *3.5.1.3.2 Economic Impacts of Recreation*

Several studies have reported the economic impact of recreational activity in the planning area. Expenditures associated with visitation may include lodging and food purchase, equipment purchase, and travel costs. Secondary impacts of visitation have the potential to be more significant than commercial impacts due to the high percentage of hikers and other primitive- or low-equipment–recreation users that do not require the commercial permitted services.

The National Survey of Hunting, Fishing, and Wildlife-Associated Recreation reported that in 2001, wildlife recreationists spent $108 billion on trips, equipment, and other items. In Arizona, 1.7 million resident and nonresident 16-year-old-and-older participants spent in excess of $1.6 billion for fishing, hunting, or watchable wildlife forms of recreation. Of that total, trip-related expenditures were $512.0 million and equipment purchases totaled $1.0 billion. The remaining $67.0 million was spent on licenses, contributions, land ownership and leasing, and other items and services (USFWS 2001).

A study conducted for AGFD found the total economic effect (including secondary effects) from 2001 watchable wildlife activities in Arizona to be $1.5 billion ($1.1 billion by residents and $434.7 million by nonresidents) (Southwick Associates 2003). (Watchable wildlife recreation is defined in the study as observing, photographing, and/or feeding fish and/or other wildlife.) Arizona resident expenditures for watchable wildlife recreation in 2001 totaled $594.5 million and nonresident expenditures totaled $226.2 million. In addition to this statewide data, this study provided county-based estimates of the economic impact of watchable wildlife recreation in 2001. Table 3-18 includes the county-level data applicable to the planning area.

**Table 3-18: Economic Effects from All Watchable Wildlife Recreation in Arizona, by County, in 2001 (Participants 16 Years Old and Older)**

| | County Residents | Residents from Other Counties | Visitors from Other States | TOTAL[1] |
|---|---|---|---|---|
| **Pinal County** | | | | |
| Retail sales | $20,687,736 | $12,133,344 | $18,075,961 | **$50,897,041** |
| Total multiplier effect | $38,535,190 | $22,694,280 | $34,735,654 | **$95,965,124** |
| Salaries and wages | $10,838,913 | $6,407,698 | $9,368,291 | **$26,614,902** |
| Full- and part-time jobs | 353 | 210 | 385 | **949** |
| State sales and fuel tax revenues | $1,177,490 | $683,445 | $1,050,972 | **$2,911,907** |
| State income tax revenues | $282,476 | $166,580 | $216,275 | **$665,331** |
| Federal income tax revenues | $1,982,471 | $1,168,656 | $1,487,257 | **$4,638,383** |
| **Pima County** | | | | |
| Retail sales | $85,322,023 | $36,240,245 | $51,982,423 | **$173,544,691** |
| Total multiplier effect | $158,809,428 | $67,834,927 | $99,891,973 | **$326,536,328** |
| Salaries and wages | $44,645,190 | $19,140,009 | $26,941,109 | **$90,726,309** |
| Full- and part-time jobs | 1,454 | 635 | 1,107 | **3,196** |
| State sales and fuel tax revenues | $4,856,514 | $2,029,235 | $3,022,361 | **$9,908,109** |
| State income tax revenues | $1,150,771 | $495,093 | $621,958 | **$2,267,822** |
| Federal income tax revenues | $8,072,475 | $3,470,619 | $4,277,017 | **$15,820,112** |

SOURCE: Southwick Associates 2003
NOTE: [1] Some totals may vary due to rounding.

In addition to watchable wildlife recreation, additional economic impact is generated by fishing and hunting has been evaluated in another 2003 study prepared for AGFD. This study found that fishing and hunting created a statewide impact of $1.34 billion, including secondary impacts. The breakdown of these

impacts is shown in Table 3-19 for Arizona and Pinal and Pima Counties. A subset of these data focusing on hunting trip expenditures (food, gasoline, lodging, etc.) is most relevant to economic activity that may occur as a result of hunting in the IFNM as a share of the county-wide activity. In Pima County, where hunting trip expenses totaled $9.4 million, an equal distribution of $3.6 million was attributed to Pima County residents and residents of other Arizona counties, and the remaining $2.3 million were from out of state. The $4.5 million in hunting trip expenditures in Pinal County was mostly spent by Arizonans traveling from another county ($3 million), followed by out of state hunters ($0.8 million), and then Pinal County residents ($0.7 million) (AGFD 2003).

**Table 3-19: 2001 Economic Impacts of Hunting and Fishing (in $ millions)**

| | Fishing and Hunting Expenditures | Total Multiplier Effect | Full- and Part-Time Jobs | Salaries and Wages | State Tax Revenues |
|---|---|---|---|---|---|
| Pima County | $84.5 | $105.0 | 1,187 | $18.3 | $5.4 |
| Pinal County | $20.0 | $22.9 | 296 | $3.8 | $0.9 |
| **Total for Arizona** | **$958.5** | **$1,340.0** | **17,190** | **$314.0** | **$58.2** |

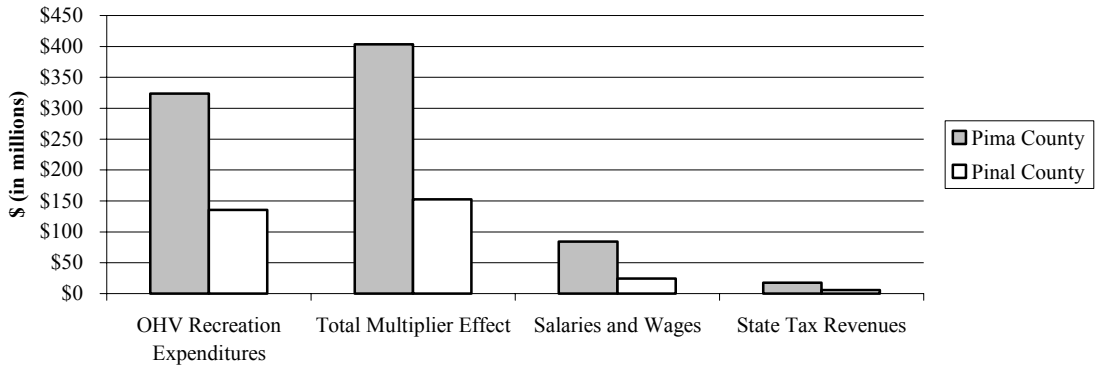
SOURCE: Arizona Game and Fish Department 2003

AGFD and Arizona State Parks (2003) estimated that OHV recreational activity in Arizona generated nearly $3 billion in retail sales during 2002. When secondary impacts are considered, the statewide economic impact is estimated at $4.25 billion, which is a much larger economic impact than reported for watchable wildlife recreation and hunting/fishing. Table 3-20 provides a breakdown of the estimated economic impacts.

BLM estimates that expenditures by hunters on BLM land in Arizona in FY 2002 totaled $41.8 million, expenditures by anglers totaled $16.2 million, and wildlife viewing and related expenditures totaled $145.1 million. These estimates were developed using the 1996 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation, and weighing the statewide estimates by the GIS-calculated proportion of BLM-managed lands in Arizona (USDI, BLM 2002b).

**Table 3-20: 2002 Economic Impact of OHV Recreation Activity (in $ millions)**

| | OHV Recreation Expenditures | Total Multiplier Effect | Full- and Part-Time Jobs | Salaries and Wages | State Tax Revenues |
|---|---|---|---|---|---|
| Pima County | **$323.6** | **$403.5** | **3,307** | **$84.3** | **$17.7** |
| Pinal County | **$135.3** | **$152.7** | **1,099** | **$24.2** | **$5.9** |
| Total for Arizona | **$3,055.7** | **$4,252.0** | **36,951** | **$1,088.0** | **$187.0** |




SOURCE: Arizona Game and Fish Department and Arizona State Parks 2003

#### *3.5.1.3.3 Special Recreation Permit Program*

The Special Recreation Permit program issues permits for commercial uses and services, organized group activities, competitive uses, and special individual uses where a decision is made to establish a special area permit system. Currently, commercial activities in the IFNM are not substantial. The IFNM supports two existing temporary use Special Recreation Permits for commercial recreational use or group activities; more information is provided on the specifics of these businesses in Section3.2.3.

### 3.5.1.4 Lands and Realty

Within the IFNM, there are various authorized realty actions for leases, permits and rights-of-way, and one 20-year R&PP Act lease for a soaring club that was approved in 1993.

#### *3.5.1.4.1 Rights-of-Way*

Fees received by BLM for rights-of-way 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.

#### *3.5.1.4.2 Permits, Leases, and Easements*

Minimum impact permits authorized under 43 CFR 2920.2-2 (2920 permits) provide for the issuance of permits without publication of notice of a realty action, when it is determined that the proposed use is in conformance with applicable BLM plans, policies, local zoning, and other requirements and will not cause appreciable damage or disturbance to public land or its resources or improvements. The current management guidance indicates that all new applications or those for renewal of 2,920 permits will be reviewed on an individual basis. Film permits will be authorized when conducive for the values of the IFNM (USDI, BLM 2001a).

#### *3.5.1.4.3 Potential Economic Impact of Large-Scale Open Space*

Part of the economic value resulting from the presence and protection of a large open-space/recreation/natural area amenity such as the IFNM correlates to localized gains in property values and support of some resource-based industries such as ranching and tourism. Although these impacts are difficult to quantify, numerous studies have documented that open space can trigger local property value increases and other tangible economic benefits (Muro 2002). The open landscape, scenic vistas, and recreational opportunities represented by the IFNM may spur amenity benefits that boost economic development and quality of life gains for local communities.

### 3.5.1.5 Employment, Income, and Subsistence

This section characterizes each of the BLM programs in terms of direct and indirect employment and income. Some discussion of the diversity and stability of local economies is included where relevant to changes to BLM programs that might occur within the scope of this Draft RMP/EIS since these factors are tied to a community's capacity to respond to change. Measures of diversity and stability may include the diversity of and dependency of economic sectors, and the ability to respond to change (population density, local amenities, transferability of labor skills). Statistics are provided for the municipalities of Eloy (in Pinal County) and Marana (in Pima County); these are the closest incorporated communities to the IFNM. Figures also are provided for Pinal and Pima Counties, the Tohono O'odham Nation (as available), and the State of Arizona to allow comparison to larger regions.

The current economic base in Pima County includes the aerospace, optics, and other high-tech manufacturing industries, State and Federal Government, and the tourism and retirement industries. In Pinal County, agriculture, government, tourism, and retirement are considered the current economic base (ADOC 2003). General trends statewide and in Pinal and Pima Counties suggest an economic shift from resource extraction (e.g., mining, agriculture) toward the services and professional and the government sectors. In both counties, new job growth between 1970 and 1999 was dominated by jobs in the services and professional and the government sectors. In 1999, these two sectors accounted for approximately 77 percent of total employment in Pinal County, and 83 percent of total employment in Pima County. Between 1970 and 2000, job growth in both counties was slower than the State but faster than the Nation (Bureau of Economic Analysis 2000).

Employment by industry for counties and the State is provided in Table 3-21 and for Eloy and Marana in Table 3-22. A greater percentage of employment in Pinal County is in the farm and agricultural services sector and the mining sector, as compared with employment in Pima County or the State. The Town of Marana has a comparable ratio of employment in services and resource-extraction related industries to the State and Pima County figures. Important services employers in Marana include retail trade, educational services, and health care and social services. The City of Eloy is more dependent on farm and agricultural employment, and less reliant on services and professional sector employment. Within the services and professional sector, the largest employers in Eloy are retail, educational services, health care and social services, and accommodation and food services.

Table 3-23 provides information on per capita and median household income, unemployment, and poverty. Whereas per capita income is calculated by dividing aggregate income by the total number of individuals in each geographic area, the median household income identifies the income level of the household in the middle of the income distribution for each area. Unemployment in Pinal County has been consistently higher than the State level between 1970 and 2000. The poverty rate and unemployment are higher in Pinal County than in Pima County and the State as a whole. The Town of Marana has a significantly higher household income than the other areas, and a lower poverty rate. Eloy is associated with a much higher poverty rate—about double the Pinal County and State rates—and relatively lower income.

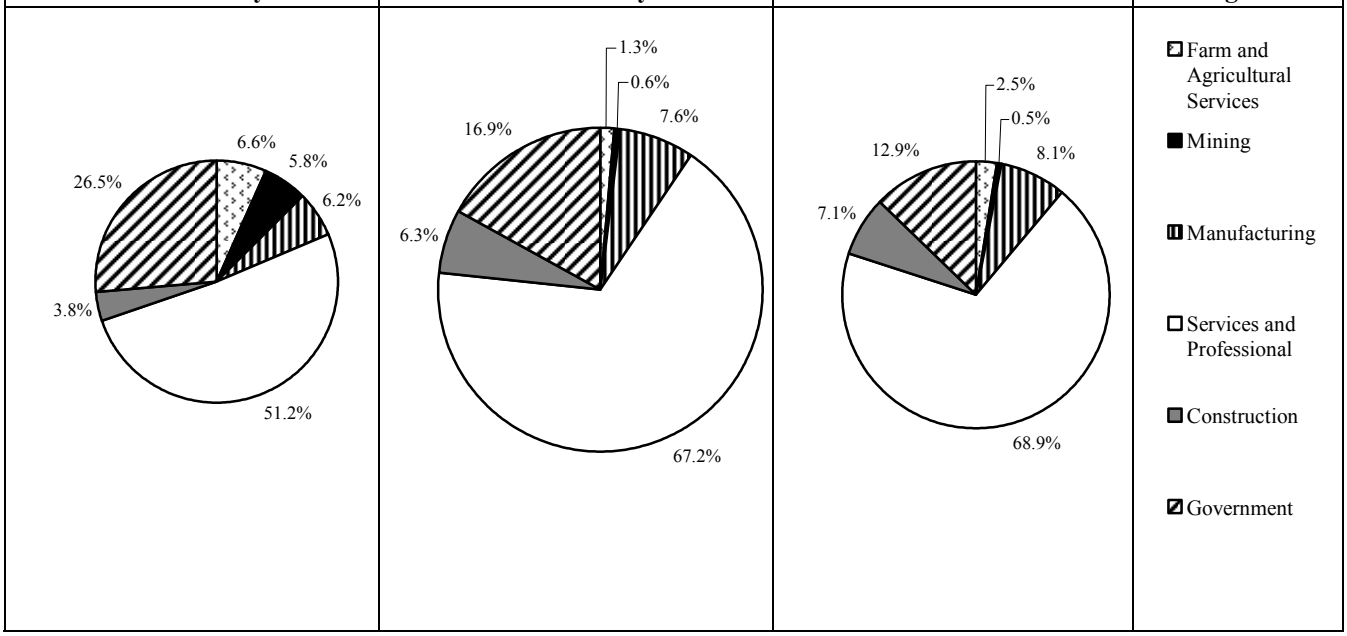
Per capita personal income in Pima County has been stable throughout the 1990s. In Pinal County, the per capita personal income averaged 79 percent of the rural U.S. per capita income and has been declining since 1993. The Statewide Economic Study concluded that possible reasons for this decline may include the larger than average proportion of retired residents and the shift of employment from higher-wage mining jobs to lower-paying jobs in services, trade, and government (ADOC 2003).

The median household income is more than twice the per capita personal income in Eloy, Marana, Pinal County, and the Tohono O'odham Nation. This is due to a number of factors including household size and sources of income. Average household size is notably larger in Eloy (3.6 persons) and the Tohono O'odham Nation (3.7 persons) as compared to the other geographic areas (2.5 persons in Pima County and 2.7 persons in Pinal County and Marana). The share of income from wages and salaries in Eloy (82 percent), Marana (78 percent), and the Tohono O'odham Nation (73 percent) is higher than Pima County (68 percent) and Pinal County (62 percent). Whereas 20 percent of Arizonan's personal income is from retirement, social security, or investments; these sources of income account for a lower portion of income in Marana (17 percent), the Tohono O'odham Nation (15 percent) and Eloy (10 percent) and a higher portion of income in Pinal County (29 percent) and Pima County (24 percent). In Eloy, 81 percent of individuals and 54 percent of households earned less than $30,000 in 1999. In Marana, 53 percent of individuals and 22 percent of households earned less than $30,000 the same year (U.S. Census Bureau 2000a).

**Table 3-21: Employment By Industry (1999), County and State Level**

| Industry | Pinal County | | Pima County | | Arizona | |
|---|---|---|---|---|---|---|
| | No. of Jobs | Percent of Total | No. of Jobs | Percent of Total | No. of Jobs | Percent of Total |
| **Farm and Agricultural Services** | **3,482** | **6.6** | **5,699** | **1.3** | **68,266** | **2.5** |
| Farm | 2,461 | 4.7 | 940 | 0.2 | 20,104 | 0.7 |
| Agricultural services | 1,021 | 1.9 | 4,759 | 1.1 | 48,122 | 1.8 |
| **Mining** | **3,040** | **5.8** | **2,423** | **0.6** | **14,314** | **0.5** |
| **Manufacturing** | **3,266** | **6.2** | **32,832** | **7.6** | **222,473** | **8.1** |
| **Services and Professional** | **26,965** | **51.2** | **288,689** | **67.2** | **1,882,405** | **68.9** |
| Transportation and public utilities | 1,236 | 2.3 | 14,427 | 3.4 | 119,674 | 4.4 |
| Wholesale trade | 1,383 | 2.6 | 12,225 | 2.8 | 120,510 | 4.4 |
| Retail trade | 8,340 | 15.8 | 71,612 | 16.7 | 471,176 | 17.2 |
| Finance, insurance, real estate | 2,409 | 4.6 | 35,627 | 8.3 | 273,404 | 10.0 |
| Services (health, legal, business, etc.) | 13,597 | 25.8 | 154,798 | 36.1 | 897,641 | 32.8 |
| **Construction** | **1,977** | **3.8** | **27,188** | **6.3** | **194,244** | **7.1** |
| **Government** | **13,955** | **26.5** | **72,501** | **16.9** | **351,426** | **12.6** |
| **Total Employment** | **52,685** | **100** | **429,332** | **100** | **2,733,088** | **100** |

Graphical Representation




SOURCE: Bureau of Economic Analysis 2000
NOTE: Numbers may not add up due to rounding.

The figures available for the Tohono O'odham Indian Reservation indicate a relatively low median household income, high unemployment, and high poverty rate (see Table 3-23). The largest employment sector on the Tohono O'odham Indian Reservation is government, while cattle-raising and related activities is second. Agriculture, retail-tourism, and utilities sectors are expected to grow as the tribe implements development plans (ADOC 2003).

**Table 3-22: Employment By Industry (1999), Municipality Level**

| | City of Eloy Pinal County | | Town of Marana Pima County | |
|---|---|---|---|---|
| **Industry** | **No. of Jobs** | **Percent of Total** | **No. of Jobs** | **Percent of Total** |
| **Agriculture, Forestry, Fishing and Hunting** | **289** | **9.7** | **81** | **1.3** |
| **Mining** | **27** | **0.9** | **79** | **1.3** |
| **Manufacturing** | **483** | **16.2** | **870** | **14.4** |
| **Services and Professional** | **1,493** | **50.2** | **4,064** | **67.3** |
| Transportation and utilities | 56 | 1.8 | 351 | 5.8 |
| Wholesale trade | 74 | 2.5 | 182 | 3.0 |
| Retail trade | 306 | 10.3 | 684 | 11.3 |
| Finance and insurance | 32 | 1.1 | 248 | 4.1 |
| Real estate and rental leasing | 28 | 0.9 | 78 | 1.3 |
| Professional, scientific, and technical | 15 | 0.5 | 290 | 4.8 |
| Information | 35 | 1.2 | 133 | 2.2 |
| Management of companies and enterprises | 0 | 0 | 8 | 0.1 |
| Administrative, support, and waste services | 48 | 1.6 | 183 | 3.0 |
| Educational services | 256 | 8.5 | 546 | 9.0 |
| Health care and social services | 253 | 8.5 | 656 | 10.8 |
| Arts, entertainment, recreation | 51 | 1.7 | 105 | 1.7 |
| Accommodation and food services | 263 | 8.8 | 366 | 6.1 |
| **Other Services** | **176** | **5.9** | **234** | **3.9** |
| **Construction** | **266** | **8.9** | **283** | **4.7** |
| **Public Administration [Government]** | **315** | **10.6** | **658** | **10.9** |
| **Total Employment** | **2,973** | **100** | **6,035** | **100** |

SOURCE: U.S. Census Bureau 2000a
NOTE: Numbers may not add up due to rounding.

**Table 3-23: General Income, Unemployment, and Poverty Characteristics**

| | City of Eloy | Town of Marana | Pinal County | Pima County | Tohono O'odham Indian Reservation | Arizona |
|---|---|---|---|---|---|---|
| **Income** | | | | | | |
| Per capita personal income | | | | | | |
| 1999 | $9,194 | $22,408 | $14,977 | $23,911 | 6,998 | $24,553 |
| 1989 | $5,836[1] | $8,940 | $9,228 | $13,177 | - | $13,461 |
| 1979 | - | $4,777 | $5,313 | $7,147 | - | $7,041 |
| Median household income (1999) | $26,518 | $52,870 | $35,856 | $36,758 | $19,970 | $40,558 |
| **Unemployment Rate** | | | | | | |
| 2000 | - | 4.6% | 8.1% | 5.3% | 24.0% | 5.6% |
| 1990 | - | 5.6% | 9.2% | 7.6% | 22.5% | 7.2% |
| 1980 | - | 6.6% | 7.7% | 6.5% | - | 6.2% |
| 1970 | - | - | 5.0% | 4.0% | - | 4.2% |
| **Poverty Rate** | | | | | | |
| Number of persons below poverty level | | | | | | |
| 1999 | 2,796 | 810 | 20,816 | 120,778 | 4,929 | 698,669 |
| 1989 | 2,631 | 388 | 26,152 | 111,880 | - | 564,362 |
| 1979 | - | 270 | 16,000 | 67,739 | - | 351,365 |
| Poverty rate among individuals (%) | | | | | | |
| 1999 | 31.9% | 6.2% | 16.9% | 14.7% | 46.4% | 13.9% |
| 1989 | 36.7% | 17.8% | 23.6% | 17.2% | 65.0% | 15.7% |
| 1979 | - | 16.1% | 18.2% | 13.0% | - | 13.2% |

SOURCES: Arizona Department of Commerce 2003; U.S. Census Bureau 2000a, 1999, 1990
NOTES: [1] Income statistic not adjusted for inflation.

The Silver Bell Mine, located immediately adjacent to the planning area boundary, is currently operating. In 2003, Silver Bell Mining LLC employed 122 persons, which is the peak employment on record for this mine (Mine Safety and Health Administration 2004). Mining provides approximately 106 jobs locally (i.e., in the City of Eloy and Town of Marana), or about one percent of employment in those municipalities. This is generally consistent with the State percentage of total employment in mining. Secondary effects of mining employment occur in proportion to the size of the labor force as incomes filter through the local economy. The presence of mining operations in the area also may result in indirect benefits due to dollars spent locally on businesses providing services to the sector, and tax payments to local governments.

Farm and agricultural services account for approximately 370 jobs locally, or about 10 percent of Eloy employment and 1 percent of Marana employment. Table 3-21 and Table 3-22 indicate that agricultural occupations provide a larger proportion of employment in Eloy and Pinal County than any other political jurisdiction. Personal income associated with agriculture in Pinal County in 1999 was $161.9 million, down 74.4 percent from 1991. Personal income in the agricultural sector in Pima County totaled $98.2 million in 1999, up 10 percent from 1990. For comparison, earnings in agriculture for the State of Arizona in 1999 totaled $1.5 billion (Bureau of Economic Analysis 1999). Although farming and agricultural services produce more jobs for the two counties, they generate less revenue than mining. This may be at least partly due to the occurrence of seasonal employment in the agricultural sector. As with all economic sectors, indirect and secondary economic growth occurs as a result of agricultural employment. With regard to agriculture, these secondary impacts may be present within the figures for retail and other categories.

Pollack (2002) estimated that the economic impact of domestic, international, and day-trip travelers to Arizona in 2000 supported more than 451,600 jobs, including direct, indirect, and secondary jobs associated with tourism. These jobs equate to 20 percent of total employment in the State. However, there are few jobs and wages directly supported by recreation in the IFNM. BLM's recreation program employs recreational planners, law enforcement personnel, park rangers, maintenance workers, and support personnel for recreation management in the decision area. Active commercial operations with BLM-issued special recreation use permits include cattle drives, horseback riding, and associated transportation to Cocoraque Ranch (two related permits). An orienteering club has another permit. One of the commercial operations is based on adjacent private property within IFNM (cattle drives and horseback riding to Cocoraque Ranch). The orienteering club is based in downtown Tucson. A four-wheel-drive sightseeing tour operation also was permitted in the area, but closed business due to depressed economic conditions prevailing in the area in 2001 through 2003.

#### 3.5.1.6 Public Finance and Government Services

##### *3.5.1.6.1 Regional Public Finance*

Pima County's annual revenues total about $835 million, and Pinal County's total about $169.5 million. In both counties, the largest sources of revenue are charges for services and property taxes. The greatest expenditures are for general government, public safety, and health care (Pima County 2002; Pinal County 2003).

##### *3.5.1.6.2 Payment in Lieu of Taxes Payments*

One source of government revenues is Payment in Lieu of Taxes (PILT), which are Federal payments to local governments that help offset losses in property taxes due to nontaxable Federal lands within their boundaries. The Payment in Lieu of Taxes Act of 1976, as amended (31 U.S.C. 6901-6907), defines lands that are eligible for PILT including lands administered by BLM, and Federal lands in the national forest

and national park systems. PILT payments are determined on a formula basis, with the number of Federal acres constituting the principal determining variable. The logic behind PILT is that Federal lands within county boundaries are excluded from a county's tax base, and the county should therefore be compensated for lost revenue opportunities. PILT payments are computed based on the number of acres of Federal entitlement land, as defined in 31 U.S.C. 6902, within each county. The number of qualified acres is multiplied by a dollar amount per acre set by law. Payments are subject to limitations based on population. Congress sets annual PILT program funding limitations that also may affect the amount of the payments under the program. Examples of how PILT payments have been used include the improvement of local school, water, and road systems. Payment eligibility is reserved for local governments that provide services such as those related to public safety, environment, housing, social services, and transportation, and that contain nontaxable Federal lands (USDI, BLM 2002c). The 2003 entitlement acreage by agency is shown for Pinal and Pima Counties and the State in Table 3-24.

**Table 3-24: BLM Portion of PILT by Share of Entitlement Acreage, 2003**

| Area | BLM | Forest Service | Bureau of Reclamation | National Park Service | Army Corps of Engineers | USFWS | Total | BLM (as percentage of total) |
|---|---|---|---|---|---|---|---|---|
| **By Share of Entitlement Acreage** | | | | | | | | |
| Pinal County | 273,373 | 223,155 | 21,312 | 473 | | 0 | 518,313 | 52.7 |
| Pima County | 308,268 | 389,871 | 5,845 | 410,778 | | 416,210 | 1,530,972 | 20.1 |
| **Arizona** | **12,017,556** | **11,253,268** | **198,373** | **2,650,649** | **6,83** | **1,541,774** | **27,668,453** | **43.4** |

SOURCE: U.S. Department of the Interior, Bureau of Land Management 2003e

In 2003, the total PILT payment in Arizona was $18,045,248 of which the BLM portion based on entitlement acreage was $7,831,638. The BLM portion of the total PILT payment for Pima County ($1,841,427) based on entitlement acreage was $370,127 and the BLM portion of the total PILT payment for Pinal County ($673,398) was $355,092. PILT payments in Pinal and Pima Counties increased steadily between 1999 and 2003. Over this time period, total PILT payments for all agencies in Pima County increased by $843,249, or approximately 84.5 percent. Total PILT payments for all agencies in Pinal County increased by $296,233, or approximately 78.5 percent. This compares with a statewide increase of $7.77 million, or approximately 75.6 percent.

In 2003, BLM-managed land accounted for 20.1 percent of all entitlement acreage in Pima County and 52.7 percent in Pinal County, as compared to the 43.4 percent of the BLM share statewide. BLM is the greater source of PILT payments in Pinal County, but the Forest Service, National Park Service, and the USFWS are a greater source of PILT payments in Pima County than BLM. These entitlement acreages have varied slightly over recent years, but the relative share of agency PILT payments has remained fairly constant.

Total county government revenue corresponding to the 2003 PILT payment data was $169.5 million for Pinal County and $835 million for Pima County (Pinal County 2003 and Pima County 2002). Therefore, the BLM portion of PILT payments in Pinal County, at $0.36 million, comprise -.21 percent of the total county revenues. Current PILT payments of $0.37 million in Pima County are about 0.04 percent of the total revenues for Pima County. Nationwide, BLM's PILT payments totaled $220 billion in 2003 (USDI, BLM 2003d, 2004d).

#### *3.5.1.6.3 BLM Budget*

Nationwide, actual treasury receipts generated by BLM in FY 2003 (excluding mining claim and helium collections) totaled $2.4 billion. These BLM-generated receipts are derived from activities and other revenue sources on public land, including mineral leasing, grazing, recreation, and rights-of-way across

public lands. Treasury receipts exclude offsetting collections such as mining claim maintenance fees and collections from the sale of helium (USDI, BLM 2004d). Nationwide, BLM has a workforce of some 10,000 full-time, permanent employees for the administration of 261 million surface acres and 700 million acres of subsurface mineral estate throughout the Nation (USDI, BLM 2004b). Budget for management of the IFNM is integrated with that of the BLM Tucson Field Office budget, which is a function of the overall USDI, legislative, and executive funding priorities.

### 3.5.2 Social and Demographic Conditions

#### 3.5.2.1 Selected Demographic Information – Current Conditions

Understanding basic population trends is fundamental to community planning. To demonstrate the characteristics for the study area population, selected demographic data from the U.S. Census 2000 have been compiled and the results are presented in Table 3-25. The data presented include information about population, gender, age, and race and ethnicity.

The 2000 Census population densities in the two counties vary significantly, from 92 persons per square mile in Pima County to 33.5 in Pinal County. Pima County's population density of 92 persons per square mile is twice the statewide average of 45 persons. The population density of the Tohono O'odham Nation (2 persons per square mile), Marana (187 persons per square mile), and Eloy (145 persons per square mile) are notably lower than the 2,500-person per square mile density of the City of Tucson (U.S. Census Bureau 2000a, 2000b). These numbers are indicative of the urbanization in the Tucson metropolitan area as compared to Pinal County's more rural environment.

Gender distribution in the counties is similar: all areas have a relatively equal gender distribution of roughly half male and half female. The median age in both counties is slightly higher than the State median, and Eloy is noticeably younger than all other jurisdictions. The median age among the Tohono O'odham is 26.2, with 41.1 percent of the population under 20 years of age (ADOC 2003).

The city of Eloy also is distinguishable in terms of racial characteristics; the city population has fewer Whites (52.7 percent versus 70.4 percent in Pinal County and 75.5 percent statewide) and more Blacks (5.3 percent versus 2.8 percent in the county and 3.1 percent statewide). In Pinal County, the percentages of Whites (70.4 percent), Blacks (2.8 percent), and Asians (0.6 percent) are lower than those occurring in Pima County. The percentage of American Indian/Alaska Natives in Pinal County, at 7.8 percent, is significantly higher than in other jurisdictions in the study area.

Hispanic or Latino origin statistics represent ethnicity (not race) and include all persons who identify themselves as of Hispanic or Latino origin or descent. Pima and Pinal Counties have approximately the same percentage of persons of Hispanic or Latino origin at 29.3 percent and 29.9 percent, respectively. These percentages are somewhat higher than those found across the State (25.3 percent). The City of Eloy has a higher proportion of Hispanic residents (74.4 percent versus 29.9 percent in the county and 25.3 percent statewide) than the county or the State.

**Table 3-25: Selected 2000 Census Demographic Information**

| | City of Eloy | | Town of Marana | | Tohono O'odham Nation | | Pinal County | | Pima County | | Arizona | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Population** | 10,375 | | 13,556 | | 10,787 | | 179,727 | | 843,746 | | 5,130,632 | |
| **Persons per Square Mile (excluding water)** | 145 | | 187 | | 2 | | 2 | | 91.8 | | 45.2 | |
| **Gender** | **Number** | **Percent** | **Number** | **Percent** | **Number** | **Percent** | **Number** | **Percent** | **Number** | **Percent** | **Number** | **Percent** |
| Male | 5,999 | 57.8 | 6,791 | 50.1 | 5,190 | 48.1 | 95,830 | 53.3 | 412,562 | 48.9 | 2,561,057 | 49.9 |
| Female | 4,376 | 42.2 | 6,765 | 49.9 | 5,597 | 51.9 | 83,897 | 46.7 | 431,184 | 51.1 | 2,569,575 | 50.1 |
| **Age** | | | | | | | | | | | | |
| Under 20 years | 3,845 | 37.1 | 3,895 | 28.7 | 4,433 | 41.1 | 49,742 | 27.6 | 235,880 | 28.0 | 1,518,188 | 29.7 |
| 20 to 64 years | 5,869 | 56.6 | 8,367 | 61.7 | 5,593 | 51.8 | 100,814 | 56.1 | 488,379 | 57.9 | 2,944,605 | 57.5 |
| Age 65 and older | 661 | 6.4 | 1,294 | 9.5 | 761 | 7.1 | 29,171 | 16.2 | 119,487 | 14.2 | 667,839 | 13.0 |
| Median age | 27.5 | N/A | 34.5 | N/A | 26.2 | N/A | 37.1 | N/A | 35.7 | N/A | 34.2 | N/A |
| **Race and Ethnicity** | | | | | | | | | | | | |
| White | 5,468 | 52.7 | 11,094 | 81.8 | 873 | 8.1 | 126,559 | 70.4 | 633,387 | 75.1 | 3,873,611 | 75.5 |
| Black or African American | 552 | 5.3 | 392 | 2.9 | 11 | 0.1 | 4,958 | 2.8 | 25,594 | 3.0 | 158,873 | 3.1 |
| American Indian/ Alaska Native | 465 | 4.5 | 286 | 2.1 | 9,718 | 90.1 | 14,034 | 7.8 | 27,178 | 3.2 | 255,879 | 5.0 |
| Asian | 124 | 1.2 | 334 | 2.5 | 17 | 0.2 | 1,086 | 0.6 | 17,213 | 2.0 | 92,236 | 1.8 |
| Native Hawaiian/ Other Pacific Islander | 11 | 0.1 | 20 | 0.1 | 10 | 0.1 | 146 | 0.1 | 1,088 | 0.1 | 6,733 | 0.1 |
| Some other race | 3,266 | 31.5 | 1,014 | 7.5 | 54 | 0.5 | 28,149 | 15.7 | | | 596,774 | 11.6 |
| Two or more races | 489 | 4.7 | 416 | 3.1 | 104 | 1.0 | 4,795 | 2.7 | | | 146,526 | 2.9 |
| Hispanic or Latino (any Race) | 7,717 | 74.4 | 2,663 | 19.6 | 760 | 7.1 | 53,671 | 29.9 | 247,578 | 29.3 | 1,295,617 | 25.3 |

SOURCES: U.S. Census Bureau 2000a, 2000b
NOTES: N/A = Not applicable.
Numbers may not add due to rounding.

#### *3.5.2.1.1 Environmental Justice*

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 its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations.

Minority and low-income persons are defined as follows:

- Minorities are persons of Hispanic or Latino origin of any race, Blacks, American Indian/Alaska Natives, and Asians or Pacific Islanders (without double-counting persons of Hispanic/Latino origin who also are contained in the racial groups).
- Low-income persons are those that live below the poverty level. The U.S. Census Bureau uses a set of income thresholds that vary by family size and composition to determine who is poor. Based on this, the poverty level for a family of four in 2002, having two children under the age of 18, was $18,244 (U.S. Census Bureau 2003b). The 2000 census data, however, are based on 1999 data where the poverty level for the same family was $16,895 (U.S. Census Bureau 2002). This is the standard that was used in the following analysis.

The presence of environmental justice populations has been evaluated for the communities closest to the IFNM that are most likely to be affected by management decisions made regarding these lands. Data for the county and State levels provide comparison populations to determine whether minority and/or low-income populations occur disproportionately within the overall population. Table 3-26 summarizes the minority and low-income groups identified in this analysis.

**Table 3-26: Minority and Low-Income Populations (1999)**

| Arizona (Comparison Population) | Minority Population = 36.2% | | | Low-income Population =13.9% | | |
|---|---|---|---|---|---|---|
| | | Minority Population | | | Low-income Population | |
| Geographic Area | Total Minority[1] | >50% | >36.2% | Poverty Rate[2] | Poverty Rate >50 % | Poverty Rate >13.9% |
| City of Eloy | 84 | Yes | Yes | 32 | No | Yes |
| Town of Marana | 28 | No | No | 6 | No | No |
| Pima County | 38.5 | No | Yes | 14.7 | No | Yes |
| Pinal County | 41.2 | No | Yes | 16.9 | No | Yes |
| Tohono O'odham Indian Reservation | 95.6 | Yes | Yes | 46.4 | No | Yes |
| Census Tract 44.09, Block Group 2 | 21.1 | No | No | 19.3 | No | Yes |

SOURCES: U.S. Census Bureau 2000a, b

NOTES: [1] The total minority population includes individuals of Hispanic/Latino origin, but those that are also Black/African Americans, American Indian/Alaska Natives, Asians, and Native Hawaiian/Other Pacific Islanders are not included in the total in order to avoid double counting.

[2] Poverty rate among individuals, based on poverty status in 1999.

#### *3.5.2.1.2 Housing*

Table 3-27 shows the housing characteristics in the State of Arizona, the two counties, and Eloy and Marana. Although Pinal County has experienced notable growth in housing units since 1990, the growth

in Marana has been exponential. Pinal County contains a relatively high percentage of housing units used for recreational, seasonal, or occasional use, and both Pinal County and the Town of Marana have high rental vacancy rates (U.S. Census Bureau 2000a).

**Table 3-27: Housing Characteristics**

| Housing Characteristics | City of Eloy | Town of Marana | Pinal County | Pima County | Arizona |
|---|---|---|---|---|---|
| Total housing units 1990 | N/A | 850 | 52,732 | 298,207 | 1,659,430 |
| Total housing units 2000 | 2,734 | 5,702 | 81,154 | 366,737 | 2,189,189 |
| Percent change 1990 to 2000 | N/A | 570.8% | 53.9% | 23.0% | 31.9% |
| Average household size of owner-occupied units | 3.6 | 2.7 | 2.63 | 2.62 | 2.71 |
| Average household size of renter-occupied units | 3.5 | 2.5 | 2.86 | 2.21 | 2.48 |
| Percent of housing units used for seasonal, recreational, or occasional use (2000) | N/A | 3.9% | 14.5% | 2.9% | 6.5% |
| Homeowner vacancy rate | 2.5% | 3.6% | 4.0% | 1.8% | 2.1% |
| Rental vacancy rate | 9.2% | 21.7% | 16.8% | 9.2% | 9.2% |

SOURCE: U.S. Census Bureau 2000a
NOTE: N/A= not available.

Rental affordability may be measured by median gross percent of household income; this percent totaled 27 percent in Eloy and 25 percent in Marana. The affordability of owner-occupied housing may be measured through a housing affordability index. In both Eloy and Marana, this index suggests that the median family can afford the median house. Overall, housing in the area around the IFNM generally is affordable for the population (U.S. Census Bureau 2000a).

#### *3.5.2.1.3 Migration and Residential Stability*

The foreign-born population represented 13 percent of the total population in Arizona in 2000. From 1995 to 2000, Arizona (at 74.3 percent) had the second highest rate of net domestic immigration, and nearly one-third of this immigration was from California (U.S. Census Bureau 2003c). In addition, the U.S. Immigration and Naturalization Service estimates that 283,000 residents, or 5.5 percent of Arizona's 2000 population, were unauthorized immigrants. By comparison, the estimated 7 million unauthorized immigrants living in the United States in 2000 constituted 2.5 percent of the total U.S. population of just over 281 million (U.S. Immigration and Naturalization Service 2003).

Generally, the longer people have lived in a community, the greater is their connection to community and social groups as well as the land (Harp et al. 2001). In 2000, 77.3 percent of the residents in Pima County lived in the same house or same county as they did 5 years prior, compared to 66.5 percent in Pinal County. The rate for Arizona (at 74.9 percent) was lower than Pima County, but higher than Pinal County. The rate of residents of Marana who in 2000 lived in the same house as they did five years prior is 24 percent; 33 percent lived in a different state in 1995. For Eloy, 44 percent were in the same house in 2000 as they were in 1995, and 14 percent lived in a different state (U.S. Census Bureau 2000a). The more dramatic figures for the municipalities probably reflect the growth of initially small communities.

#### *3.5.2.1.4 Educational Attainment*

Educational attainment levels in a community may affect per capita income and other economic indicators. Rates of attainment of a high school education or above in 2000 were higher in Pima County (83.4 percent) than in Pinal County (72.7 percent). In comparison, the statewide average was 81.0

percent. The percentages of the population with a high school degree in Marana and Eloy are 22 percent and 24 percent, respectively. Similarly, but more dramatically, in 2000 Pima County had the highest percentage of the population with 4 years of college or a bachelor's degree or above (at 26.7 percent). The average in Pinal County was far below (at 11.9 percent), and the statewide average was 23.5 percent. In Marana and Eloy, 29 percent and 4 percent, respectively, held a bachelor's degree (U.S. Census Bureau 2000a). [Note: educational attainment figures are a percentage taken from individuals older than 25 years of age.]

#### 3.5.2.2 Social Baseline and Sense of Place

The key social and cultural issues, interested parties, and potentially affected stakeholders related to this RMP/EIS are identified based on the scoping report (USDI, BLM 2004e) and continuing public and agency comment for this RMP/EIS effort. Others have been identified through the review and analysis of the proposed action and alternatives and social effects of land management decisions similar in scope.

With other land management issues throughout the U.S., the BLM has found that evaluation of sense of place issues provides a useful baseline for the social environment. Galliano and Loeffler (1999) define sense of place as a "link between social experiences and geographic areas." Understanding sense of place issues assists land managers in understanding resource and land use conflicts and how to approach them most effectively. Things that contribute to sense of place may include personal memory, community history, physical landscape appearance, and emotional attachment (Galliano and Loeffler 1999). Sense of place is subjective, and individual people may develop a sense of place based on perceptions about amenities (such as recreational opportunities), historic or symbolic activities and places, or landscapes and scenic vistas.

The social baseline is summarized in the discussion that follows according to the following issue categories: (1) landscape/scenic/aesthetic issues, (2) activities/resource and land use issues, and (3) cultural/symbolic issues.

##### *3.5.2.2.1 Landscape/Scenic/Aesthetic Issues*

Protection of the ecological landscape (e.g., wildlife and habitat) was identified as a priority by many individuals throughout scoping. Urban sprawl, visitor facilities, and OHV use were identified as threats to the scenic values of the IFNM. The potential for conflict with livestock grazing and recreational activities such as motorized vehicle use and recreational shooting, among other concerns, is raised when wildlife and habitat protection are perceived as a top priority for public lands. Ranching activities also are supported in the area as a means to preserve open space and the area's western heritage, and to promote stewardship. This opinion was noted in the scoping report and is also prominently considered in the Sonoran Desert Conservation Plan for Pima County. Ragged Top is noted as a specific place of value in scoping comments due to its visual impact and habitat, particularly for bighorn sheep and desert tortoise.

##### *3.5.2.2.2 Activities/Resource and Land Use Issues*

There is some commonality amongst those stakeholders that directly use the IFNM for mining and ranching activities, those that live in the residential areas within and near the IFNM boundaries, and those that recreate on IFNM lands. These issues include strong people-place connections tied to where they live, work, and recreate; concerns about safety related to recreational shooting; and "backyard access" to IFNM lands. Among ranchers, there is often strong sense of place associated with long-standing operations that are integrated into the social structure and the connection to the land associated with the livestock operations.

The social baseline for general public access for multi-purpose uses is mixed: there are those that value the protection of public access/use opportunities and continued opportunity for people-place connections and those that favor protection of resources over public access/use opportunities. Stakeholders range from those that live and work within or near the IFNM, those that visit and recreate at the IFNM often, to those that have never visited or recreated at the IFNM but value its existence and protection for future generations. These concerns are expressed in the particulars with regard to travel management and motorized access opportunities. A coalition of citizen groups submitted a proposal regarding which routes should be designated as open for public use and access.

A variety of recreation uses currently occur in the IFNM, sometimes resulting in conflict. Scoping comments highlighted potential compatibility issues between camping, recreational shooting, OHV use, mining (in and near the IFNM), and passive recreation such as hiking and wildlife viewing. The magnitude of sense of place issues with regard to changes in recreation access would be expected to correlate to areas that receive the highest visitor use in the IFNM, notably Ragged Top and the Waterman Mountains (Gimblett 2004).

With regard to use of IFNM lands for development of mineral and energy resources, there are those concerned about potential impacts to natural resources and those that support access and opportunities for mineral resource development within the IFNM and/or the surrounding area (e.g., Asarco Silver Bell Mine). No mining currently occurs within the IFNM, and mining jobs are decreasing relative to other local employment. However, links to the current and former participation of mining in local communities still exist.

With regard to lands and realty, there are those that value the pursuit of acquisition of State Trust Land and/or private lands within the IFNM boundaries. With regard to utilities and communication facilities, energy generating and transmission industries contingencies value access to the IFNM creates for energy distribution in southern Arizona. Others value limiting utility corridors to remote areas of the IFNM.

With regard to use of IFNM lands for grazing, there are stakeholders concerned about the impacts of grazing to the natural environment and there are stakeholders that use the land for active livestock grazing operations and value this continued use and associated people-place connections.

#### *3.5.2.2.3 Cultural/Symbolic Issues*

Various stakeholders hold social value for cultural resources within the IFNM and are concerned with the adequate protection of these resources. Tribes have a unique stakeholder status and social value for some of these resources, particularly the archaeological resources. Some stakeholder concerns regarding cultural resources are heightened with respect to cultural resources listed on the National Register. Within the IFNM, the Los Robles Archeological District and the Cocoraque Butte Archaeological District are listed on the National Register. The planning area also contains the remnants of the Mission Santa Ana de Cuiquiburitac site, which also has been listed on the National Register. Historical mining camps, ranch facilities, and other cultural resources that are eligible for listing on the National Register are present at the IFNM. As previously discussed, both ranching and mining are perceived by some scoping participants as an important part of the area's heritage and lifestyle.

Protection of ACECs, natural/cultural area allocations, and management of areas to maintain wilderness characteristics are issues that have both local and regional/natural interest among various individual stakeholder and stakeholder groups. In that regard, the Waterman Mountains ACEC designation and areas identified for management to maintain wilderness characteristics may have some social value symbolic importance in addition to the resource value protection associated with these designations. To a lesser extent, there may be some who value the existing allocations at the monument, particularly the Silver Bell

Desert Bighorn Sheep Management Area and Avra Valley Cultural Resource Management Area for protection of the resources for which they were designated. The Silver Bell RCA, Sawtooth Mountains CRMA, and Cocoraque Butte-Waterman Mountains Multiple Resource Management Area designations are more administrative-based than resource-protection based and the public has not expressed particular interest in the protection of these designations.

## 3.6 PUBLIC SAFETY

### 3.6.1 Active and Abandoned Mines and Prospects

Currently available data show 33 active or abandoned mine sites and 225 existing mining claims in the IFNM (USDI, BLM 2004b). Some visitors find abandoned mines and prospects attractive to explore and may be exposed to, and unaware of, the following hazards at these sites:

- Open and unstable shafts, adits, drifts, pits, tailings piles, wells, or other excavations
- Dilapidated and unstable buildings or other structures
- Collapsed buildings or other structures
- Mining implements or construction debris
- Hazardous or toxic materials

There are no data indicating the extent to which exploration of shafts, adits, drifts, tailings piles, or other excavations takes place within the IFNM. Reports of party sites next to deep shafts raise concern about safety issues. A 20-foot-deep, wide-mouthed shaft at the corner of the El Paso pipeline and Sasco Road (on State Trust Land) is the site of numerous reported events. The Sheriff's Department is responsible for enforcement measures with respect to these unauthorized activities (Adler 2004).

Potential hazards from dumping of hazardous material in old mine shafts also exists; however, no official incidents have been recorded by BLM to date (Auby 2004). Mine tailings located at both active and closed mine sites are potentially hazardous because chemicals in the tailing piles can potentially leach into soils and/or groundwater or become airborne hazardous wastes.

### 3.6.2 Unexploded Ordnance

The presence of known and potential unexploded ordnance (UXO) contamination exists in areas nearby the IFNM. In addition to being an explosive safety hazard, UXO is also a potential chemical hazard. Expended UXO, including both live and inert rounds, may contain chemical constituents with explosive, pyrotechnic, propellant, and incendiary components. In addition to the dangers of UXO, ordnance that detonated upon delivery may contain unburned residues of these chemical constituents and may have produced combustible by-products (U.S. Army Corps of Engineers 1995).

One such area where UXO exists is at the former Williams Field Bomb Target Range #13 located approximately 25 miles south of Casa Grande. The 638.2-acre site was established as a practice bombing range in support of Williams Field in Higley, Arizona in the early 1940s. Historical documents and evidence on the site indicate that M38A2 practice bombs were used during training. The M38A2 practice bomb consisted of a 100-pound, sand-filled bomb that contained a small amount of black powder known as a spotting charge. Generally, the black powder consists of approximately 74 percent potassium nitrate, 11 percent sulfur, and 15 percent charcoal. It is undetermined to what extent chemical by-products produced by the firing and/or detonation of munitions is present. A number of previous investigations have been conducted on the BMGR, and these studies suggest that, while possible, contamination from these by-products is unlikely (U.S. Air Force 1997, 1996; U.S. Army Corps of Engineers 1998).

In addition to the above documented site, the remote potential exists for munitions to be lost from aircraft flying over the IFNM en route to the Barry M. Goldwater Range to the west or the Western Army Air National Guard Aviation Training Site to the northeast. In those cases, however, loss of munitions would be documented and investigated, and recovery would be accomplished by the responsible military entity.

### 3.6.3 Wildcat Dumping

Wildcat dumping of hazardous and non-hazardous waste on public lands ranges in severity from episodes of dumping household trash and appliances, to the discarding of personal items by UDIs traveling through the area. BLM rangers frequently patrol the lands and identify areas where dumping has occurred. In many cases, the rangers or volunteers remove the debris.

Typical examples of wildcat dumping can be seen along Pump Station Road near the Silver Bell Mountains and in the area along El Tiro Road in the northeastern portion of the IFNM. There is illegal dumping within the IFNM from this area despite the fact that the Tangerine Municipal Solid Waste Landfill is located only a short distance away. Most dumping occurs close to roadways and includes household items and sometimes petroleum waste. Cleanup of petroleum and hazardous waste spills receives priority over cleanup of solid waste sites. Evidence identifying the perpetrators is rarely found (Auby 2004).

# CHAPTER 4.0 ENVIRONMENTAL CONSEQUENCES

## 4.1 INTRODUCTION

This chapter evaluates potential environmental impacts that could occur from implementing each of the resource management plan (RMP) alternatives described in Chapter 2 for the Ironwood Forest National Monument (IFNM or monument). An impact is defined as a modification of the existing environment that is brought about by an outside action. Potential impacts considered in this chapter include ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems) aesthetic, historical, cultural, economic, social, and health (40 Code of Federal Regulations §1508.8 [40 CFR §1508.8]) impacts.

This chapter is organized by resource topic and contains potential impacts that could or would result from allocations, allowable uses, and management actions under Alternatives A, B, C, and D. Topics are presented in the same order as in Chapter 3. Discussions of cumulative impacts, irreversible and irretrievable commitment of resources, unavoidable adverse impacts, and the relationship between local short-term and long-term uses conclude the chapter. The baseline data used for determining the potential impacts are the current resource conditions described in Chapter 3.

## 4.2 APPROACH TO THE ANALYSIS

This impact analysis identifies effects that enhance and improve a given resource from a management action and those that have the potential to deteriorate a resource. The evaluations highlight the actions that have direct, immediate, and more prominent effects. Impacts that result in indirect effects are described but may receive less attention in this analysis. If an activity or action is not addressed in a given section, no impacts are expected or the impact is expected to be negligible, based on existing knowledge.

The detailed impact analyses and conclusions are based on the Bureau of Land Management's (BLM's) knowledge of resources and the project area, reviews of existing literature, and information provided by experts in the BLM, other agencies, interest groups, and concerned citizens. Impacts on resources and resource uses are analyzed and discussed in detail commensurate with resources issues and concerns identified throughout the process. Geographic information system (GIS) analyses and data from field investigations were used to quantify effects where possible. However, in the absence of quantitative data, qualitative information and best professional judgment was used. Acreage calculations and other numbers used in this analysis are approximate and provided for comparison and analytic purposes; they do not reflect exact measures of on-the-ground situations. At times, impacts are described using ranges of potential impacts or in qualitative terms.

Many management actions presented in Chapter 2 would not result in direct, on-the-ground changes. However, the analysis considers impacts that could eventually result in on-the ground changes by planning for uses on BLM-administered surface estate and Federal mineral estate during the life of the plan. Impacts could occur from management of both BLM-managed surface estate and Federal mineral estate. BLM-administered Federal minerals occur beneath surface estate managed by BLM as well as beneath surface estate within State or private jurisdiction (known as split-estate lands). Some BLM management actions may affect only certain resources and alternatives.

Indian trust assets are lands, natural resources, money, or other tangible assets held by the Federal Government in trust or restricted against alienation for Indian tribes and individual Indians. The BLM has determined that the actions described in this land use plan will not affect Indian trust assets.

### 4.2.1 Impact Analysis Terminology

The following impact analysis identifies types of impacts—direct, indirect, and cumulative—as defined in Table 4-1, and uses the terms "increase" and "decrease" for comparison purposes. Direct and indirect impacts are discussed in Sections 4.3, 4.4, 4.5, and 4.6. Cumulative impacts and methodology used in the cumulative analysis are discussed in Section 4.7.

**Table 4-1: Types of Impacts**

| Type | Description |
|---|---|
| **Direct Impacts** | These are effects that are caused by the action and occur at the same time and place. Examples include elimination of original land use through erection of a structure. Direct impacts may cause indirect impacts, such as ground disturbance resulting in particulate matter emissions (dust). |
| **Indirect Impacts** | These are effects that are caused by the action but occur later in time or are farther removed in distance but are still reasonably foreseeable and related to the action by a chain of cause-and-effect. Indirect impacts may reach beyond the natural and physical environment (e.g., environmental impact) to include growth -inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems (BLM NEPA Handbook H-1790-1). |
| **Cumulative Impacts** | These are effects that result from the incremental impact of the action when it is added to other past, present, and reasonably foreseeable future actions, regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions that take place over time. |

The analysis considers the context, intensity, and duration of an impact. Context relates to environmental circumstances at the location of the impact and in the immediate vicinity, affected interests, and the locality. Intensity refers to the severity or extent of the impact or magnitude of change from existing conditions. Duration refers to the permanence or longevity of the impacts, which is depicted as short term or long term. Short term is defined as anticipated to begin and end within the first 5 years after the action is implemented. Long term is defined as lasting beyond 5 years.

For ease of reading, impacts presented are direct, broad (occurring within the planning area), and long term, unless otherwise noted as indirect, localized, or short-term/temporary. As impacts may be perceived as beneficial (positive) or adverse (negative) by different readers, these descriptors were not used in defining impacts.

### 4.2.2 Assumptions

Assumptions are made in the analysis regarding level of land use activity, resource condition, and resource response. Potential impacts and their significance are determined based on these assumptions. The following assumptions were used in the analysis; additional assumptions are presented under each resource or use topic.

- Management actions proposed in the alternatives apply to public lands only. However, cumulative impacts analyses consider potential actions by individuals or entities other than BLM.
- The alternatives would be implemented in accordance with laws, regulations, and standard management guidelines.

- BLM policies, including Standards of Rangeland Health and Guidelines for Livestock Grazing Management, would be applied as appropriate across all alternatives. Standards and Guidelines would assess rangeland health and provide strategies to achieve desired resource conditions and management objectives.
- Funding would be available to implement the alternatives, as described in Chapter 2.
- Restrictions or prohibitions on activities in specific areas would protect sensitive resources.
- Mitigation requirements would prevent or limit direct impacts associated with land use activities, or would result in reclamation of the land after the activity has been completed.
- The level of activity on BLM-administered land is expected to increase, based on historical trends, existing land use agreements such as leases or permits, and statements of interest in land use by individuals and industry organizations.

### 4.2.3 Availability of Data and Incomplete Information

Council on Environmental Quality (CEQ) regulations implementing National Environmental Policy Act (NEPA) require that agencies evaluating reasonably foreseeable significant adverse effects on the human environment in an environmental impact statement (EIS) identify incomplete or unavailable information, if that information is essential to a reasoned choice among alternatives (43 CFR 1502.22). As is typical in programmatic planning efforts, site-specific data are used to the extent possible but may not be entirely available. The best available information that is pertinent to management actions was used in developing this Draft RMP/EIS. Considerable effort has been taken to acquire and convert resource data into digital format for use in this Draft RMP/EIS—data was acquired from both BLM and from outside sources, such as the Arizona Game and Fish Department (AGFD). However, certain information was unavailable for use in developing this Draft RMP/EIS, usually because inventories have not been conducted or are incomplete. The following types of data are unavailable for the entire planning area:

- Field inventory of soils and water conditions
- Field inventory of wildlife and special status species occurrence and condition
- Native American traditional use areas
- Surveys for cultural or paleontological resources

For these resources, estimates were made regarding the number, type, and significance based on previous surveys and existing knowledge. Additionally, some impacts cannot be quantified given the proposed management actions. Where this gap occurs, impacts are projected in qualitative terms. In many situations, subsequent project-level analysis will provide the opportunity to collect and examine site-specific inventory data required to determine appropriate application of RMP-level guidance. In addition, ongoing inventory efforts by BLM and other agencies within the planning area continue to update and refine information that will be used to implement this plan.

## 4.3 RESOURCES

### 4.3.1 Impacts on Air Quality

The analysis of impacts on air quality included a qualitative comparison of the proposed management decisions based on air quality conditions as discussed in Chapter 3. Impacts are primarily described using qualitative terms since data regarding typical land usage for various activities occurring within the IFNM are not available (e.g., extent and nature of surface-disturbing activities, number of motorized vehicles used daily, number of miles driven by these vehicles, etc.). Without detailed information on emission sources it is not possible to quantitatively assess changes in air quality using dispersion models or similar

tools. The only assumption used in the air quality impact analysis is that population growth would continue, and that subsequent increased demand for uses would occur, as demonstrated by the trends for the State of Arizona over the past 10 years.

The method used in this air quality analysis identifies the pollutants associated with a planning decision, describes the relative magnitude of emissions changes, and indicates the extent of potential impacts. These impacts are assessed for the different alternatives to ensure compliance with Federal air quality standards. It is important to note that all alternatives recognize that BLM must continue to comply with applicable State and Federal air quality control regulations, as well as the identified air quality administrative actions.

#### 4.3.1.1 Impacts Common to All Alternatives

Management of fire ecology and energy and minerals could impact air quality. Carbon monoxide, volatile organic compounds, particulate matter, and nitrogen oxides could be released into the air from the smoke associated with wildfires. Depending on the size of the fire and meteorological conditions, emissions could reach far outside the burn area potentially impairing visibility in nearby Class I air quality areas. Maintaining full suppression in all areas, implementing programs to reduce unwanted ignitions, emphasizing prevention and detection, and using rapid suppression response techniques would minimize air pollutant emissions from fires; however, surface disturbance from suppression activities and fuels treatments could result in the release of particulate matter (dust).

Energy and mineral activities could degrade air quality in localized areas due to dust and engine emissions. Less than half of the current mining activities within the IFNM boundary (including non-Federal land) occur within the nonattainment area for particulate matter less than 10 microns in diameter ($PM_{10}$), where mining activities would be more tightly regulated. Permits could be required for any future mining activity, depending on the area affected and the type of equipment required. A permit would specify mitigation measures included in individual right-of-way grants for fugitive dust emissions.

Under all alternatives, impacts on air quality would not be anticipated as a result of management decisions for geology and caves, special status species, paleontological resources, scenic and visual resources, special designations, and lands managed to maintain wilderness characteristics.

#### 4.3.1.2 Alternative A (No Action)

Under Alternative A, management of travel, recreation, lands and realty, and vegetation could affect air quality. To a lesser extent, impacts also could occur from management of soil and water resources, wildlife and wildlife habitat, cultural resources, and livestock grazing. No impacts on air quality would be anticipated under Alternative A from decisions for air quality (as no management decisions exist).

Approximately 820 acres of the BLM surface lands would be closed to vehicular traffic under this alternative; motor vehicle use would be allowed on existing routes on the remaining 127,580 acres. Emissions of particulate matter, carbon monoxide, nitrogen dioxide, volatile organic compounds, and sulfur dioxide from the combustion of fuel would therefore occur throughout most of the IFNM. About 29,930 acres of the area where motorized vehicle use is allowed, but limited to existing routes, is within a $PM_{10}$ nonattainment area. Emission levels would vary by area according to traffic volume.

Continued custodial management of recreation would allow for dispersed uses throughout the IFNM, including vehicle-based camping (near existing routes) and dispersed camping, along with wood campfires, which would result in emissions of pollutants in localized areas.

Surface-disturbing activities related to management of lands and realty and vegetation have potential to impact air quality, depending on the magnitude of disturbance and type of activity. Under this alternative, there would, in general, be no restrictions on rights-of-way (i.e., no right-of-way exclusion or avoidance areas would be designated within the IFNM, and the major utility corridors would be maintained) except within the Waterman Mountains Area of Critical Environmental Concern (ACEC). Surface disturbance associated with right-of-way authorizations could result in increased emissions of particulate matter (dust), worsening air quality in localized areas. Mitigation measures included in individual right-of-way grants would minimize dust resulting from displaced soil. Management of vegetation according to the activity plan for the Cocoraque Butte–Waterman Mountains Multiple Resource Management Area would focus on increasing soil cover and reducing sediment yield, therefore reducing the potential for windblown dust.

Management to improve soil cover and productivity would result in an overall reduction in erosion, including erosion by wind, which contributes to the release of particulate matter into the air.

Management of wildlife, wildlife habitat, and cultural resources would regulate the use of motorized vehicles in localized areas, resulting in potential decreases in vehicle emissions. In the Silver Bell Desert Bighorn Sheep Management Area, vehicles would be restricted to existing roads; this could discourage proliferation of traffic and emissions in that area and perhaps in the IFNM as a whole (though traffic could shift to other areas). Closure of the 800-acre Ragged Top area and 20 acres within a Special Management Area (for cultural resources) also would have the potential to discourage proliferation of traffic and emissions.

Under Alternative A, livestock grazing would continue on all 11 grazing allotments (128,400 acres of public land). This could prevent revegetation of areas that are presently denuded of vegetation, therefore promoting wind erosion and particulate matter emissions in very localized areas.

Implementation-level decisions concerning livestock grazing and transportation could affect air quality. The provision of additional or modification of existing livestock water sources would disturb soil and vegetation in the immediate vicinity of the water development; the exposure of fine sediment and loss of vegetation around the livestock waters could create the conditions for wind-driven dust and degrade air quality in localized areas. Vehicle traffic would be allowed on approximately 347 miles of routes on public land throughout the monument (outside the 820 acres closed to vehicular traffic), which could result in the release of traffic-related emissions throughout the monument.

#### 4.3.1.3 Alternative B

Under Alternative B, management of travel, air quality, and recreation could affect air quality. To a lesser extent, impacts also could occur from management of soil and water resources, vegetation, wildlife and wildlife habitat, cultural resources, livestock grazing, and lands and realty.

Approximately 38,040 acres of the BLM surface lands would be closed to vehicular traffic: motor vehicle use would be allowed on designated routes (paved and unpaved) on the remaining 90,360 acres. With greater area closed to motor vehicle use, as compared with Alternative A, overall emissions within the IFNM likely would be reduced. (As with Alternative A, emission levels would vary by area according to traffic volume.) The $PM_{10}$ nonattainment area overlaps 23,650 acres where motorized vehicle use would be allowed on designated routes. Management of air quality to control emissions, such as applying gravel, would reduce dust in localized areas.

Management of recreation could affect air quality in the roaded natural and semi-primitive motorized recreation management zones (RMZs) (17,610 and 14,540 acres, respectively), as motorized recreational uses would be concentrated in those areas. Motor vehicle emissions would increase in these areas, with

potential effect on the $PM_{10}$ nonattainment area (which overlaps 10,630 acres of these RMZs). However, with fewer miles of routes open to motorized vehicles within the monument as a whole, overall emissions from such use would likely decrease, as compared with Alternative A. No wood campfires would be allowed, though use of camp stoves or charcoal fires would be permitted, which would result in emissions of pollutants in localized areas.

Management of soil and water resources, vegetation, wildlife and wildlife habitat, cultural resources, lands and realty, and livestock grazing would potentially reduce emissions through greater restrictions on activities, as compared with Alternative A. Surface-disturbing activities would be prohibited on 11,340 acres of sensitive and fragile soils within the $PM_{10}$ nonattainment area, with coincidental protection of air quality in that area. Management to improve soil cover and productivity would reduce erosion (including erosion by wind), reducing release of dust into the air. Restricting surface disturbance to prevent loss of vegetation in localized areas would provide coincidental protection of air quality in those areas, and development of a restoration plan for the IFNM would reduce the potential for windblown dust throughout the monument, given the strategies to identify and restore disturbed areas. Restricting cultural resource investigations to scientific and historical studies by permitted researchers at cultural resource sites would prevent ground disturbance and dust at those sites. The retirement of grazing leases, and subsequently making allotments unavailable to grazing, would allow revegetation of areas presently denuded of grasses; the recovered grasses would help prevent erosion and wind-blown dust in those areas. Dust from construction-related surface disturbance in rights-of-way also would be reduced under Alternative B, as the IFNM would be designated as a right-of-way exclusion area, and no utility corridors for major utilities would be established.

Desert bighorn sheep lambing areas would be closed to human entry for four months (from January 1 through April 30), reducing emissions from motorized vehicles in those areas during that time.

Air quality could be affected by a variety of implementation-level decisions under Alternative B. Implementation of erosion control measures would reduce exposure of fine sediment and loss of vegetation, reducing the potential for emissions of dust, and implementation of measures to reduce fugitive dust to protect scenic resources would protect air quality in those areas. Restrictions attached to land use authorizations that would minimize surface disturbance also would minimize the potential for dust emissions. Emissions from motor vehicles also would be reduced: only 71 miles of routes would be available for motorized vehicle travel, as compared with the 347 miles that would remain available under Alternative A.

#### 4.3.1.4 Alternative C

Under Alternative C, management of travel, air quality, and recreation could affect air quality. To a lesser extent, management of soil and water resources, vegetation, wildlife and wildlife habitat, cultural resources, livestock grazing, and lands and realty would potentially impact air quality.

Approximately 10,880 acres of the BLM surface lands would be closed to vehicular traffic; motor vehicle use would be allowed on designated routes on the remaining 117,520 acres. Emissions from motorized vehicle use on paved and unpaved routes would be similar to those under Alternatives A and B, but would be confined to fewer acres, compared with Alternative A, and could occur on more acres, compared with Alternative B (relative to the greater area and lesser area open to restricted vehicle use, respectively). About 29,930 acres where motorized vehicle use would be allowed on designated routes would overlap the $PM_{10}$ nonattainment area. Implementing management actions under the air quality program to control emissions would result in impacts similar to those under Alternative B.

Under this alternative, the roaded natural and semi-primitive motorized RMZs (18,380 and 36,230 acres, respectively) would total approximately 54,610 acres. Motor vehicle emissions could increase within

these areas, with potential effects on the $PM_{10}$ nonattainment area, as 17,750 acres (59 percent), of the nonattainment area in the IFNM occurs in these RMZs. Compared with Alternative A, overall emissions from motorized vehicle use on paved and unpaved routes would likely decrease; compared with Alternative B, overall emissions likely would increase (resulting primarily from the differing miles of routes open for motorized vehicle uses). Wood campfires would be allowed, which would result in emissions of pollutants in localized areas.

Surface-disturbing activities could impact air quality depending on the magnitude of disturbance and type of activity. Management of soil and water resources, vegetation, wildlife and wildlife habitat, cultural resources, lands and realty, and livestock grazing under Alternative C would restrict or allow surface-disturbing activities. Management of soil and water resources would have the same types of impacts as those under Alternative B, but surface disturbance would be allowed in areas of sensitive or fragile soils, resulting in the potential for some disturbance in those areas and consequent increases in emissions of particulates (dust) compared to Alternative B. Management of vegetation and wildlife and wildlife habitat would have the same types of impacts and potential for impacts as those that would occur under Alternative B.

Management of cultural resources under this alternative would allow excavation to support scientific and historical studies, if warranted—levels of related dust emissions would depend on the extent of mechanical excavation activities. Emissions could be minimized with appropriate mitigation (such as the use of water or dust palliatives during excavation); however, emissions would be greater than those that would occur under Alternative B.

Management of livestock grazing under this alternative would have the same effect on air quality as management under Alternative A.

Under this alternative, the IFNM would be allocated as a right-of-way avoidance area, and two utility corridors for major utilities would be established. This would heavily restrict the potential for development of facilities outside the corridors, reducing the incidence of construction-related dust throughout the monument. As a result, emissions of dust resulting from lands and realty decisions could be reduced compared with Alternative A, but would be greater than those under Alternative B.

Air quality could be affected by a variety of implementation-level decisions under Alternative C. Decisions regarding soil and water and visual resources are the same as those under Alternative B, and would have the same resulting impacts as described previously. Implementation decisions for and lands and realty would have the same effects on air quality as those under Alternative B, except acquired lands would become avoidance areas rather than exclusion areas for future rights-of-way, which would provide more potential for ground-disturbing activities and subsequent localized degradation of air quality. Provision of additional stock waters for livestock would have the same impacts as those under Alternative A; it could increase dust in localized areas because stock-water areas generally become denuded of vegetation, creating conditions for the generation of wind-driven dust. Motor-vehicle emissions associated with the use of existing roads along fence lines could increase in localized areas, depending on traffic volumes. Designating 142 miles of route for motorized vehicle travel versus the 347 miles that would remain open under Alternative A would reduce emissions from vehicle travel. However, compared with 71 miles under Alternative B, there would be about twice as many miles open for motorized vehicle travel, resulting in increased emissions from vehicle travel.

#### 4.3.1.5 Alternative D

Under Alternative D, management of travel, air quality, and recreation could affect air quality. To a lesser extent, management of soil and water resources, vegetation, wildlife and wildlife habitat, cultural resources, livestock grazing, and lands and realty would potentially impact air quality.

No BLM surface lands would be closed to vehicular traffic, and motor vehicle use would be limited to designated roads and trails on 128,400 acres. The use of motorized vehicles on paved and unpaved roads would result in emissions similar to those that would occur under Alternative A. Implementing management actions under air quality to control emissions would result in impacts similar to those that would occur under Alternative B.

Under this alternative, the roaded natural and semi-primitive motorized RMZs (19,060 and 59,020 acres, respectively) would total approximately 78,080 acres. Motor vehicle emissions could increase within these areas, with localized impacts on air quality and potential effects on the $PM_{10}$ nonattainment area (which would overlap 21,560 acres of these RMZs). Compared with Alternative A, overall emissions from motorized vehicle use on paved and unpaved routes would likely decrease; compared to Alternative B, overall emissions likely would be more (resulting primarily from the differing miles of routes open for motorized vehicle uses). Wood campfires would be allowed, which would result in emissions of pollutants in localized areas.

Management of soil and water resources, vegetation, wildlife and wildlife habitat, cultural resources, lands and realty, and livestock grazing, could affect air quality. Surface-disturbing activities could impact air quality depending on the magnitude and type of activities that occur. Management of soil and water resources would have the same effects on air quality as management under Alternative C. Management decisions regarding vegetation that would affect air quality would be similar to those under Alternative B, and would have the same impacts. The main difference would be that areas would be restored on a case-by-case basis, rather than from guidance developed in a restoration plan, which could result in reduced potential for windblown dust throughout the IFNM. Management of wildlife and wildlife habitat would have the same impact on air quality as management under Alternative B. Management of livestock grazing would have the same impacts on air quality as management under Alternative A. Management of cultural resources would have the same impacts on air quality as management under Alternative C.

Under this alternative, the IFNM would be designated as a right-of-way avoidance area, and three utility corridors would be established for future major utilities. This would reduce ground disturbance and dust related to construction of facilities in rights-of-way, and most of this type of activity would be confined to the corridors. Emissions resulting from lands and realty decisions could therefore be reduced compared with Alternative A, but would be greater than emissions expected under Alternatives B or C.

Air quality could be affected by a variety of implementation-level decisions under Alternative D, Decisions regarding soil and water, visual resources, and lands and realty would have the same impacts on air quality as those under Alternative C. Decisions regarding livestock would have the same impacts on air quality as those under Alternative C. Under this alternative, 243 miles of route would be designated for motorized vehicle travel versus the 347 miles that would remain open under Alternative A; this would reduce emissions from vehicle travel relative to Alternative A. However, compared with Alternatives B and C, there would be an increase of 171 miles and 100 miles, respectively, open for motorized vehicle travel, resulting in increased emissions from vehicle travel.

### 4.3.2 Impacts on Geological and Cave Resources

The analysis of potential effects on geological resources, including caves, from the decisions proposed under the alternatives focuses on those decisions that would maintain the integrity of geological resources–generally, these decisions would be established to protect other resources, such as scenic and visual resources, vegetation, or cultural resources.

The following assumptions were used when assessing the impacts on geological resources.

- During site-specific planning and authorization processes, the BLM would evaluate all proposed actions for site-specific effects on natural resources, including geological resources.
- No known caves are located on public lands within the IFNM. If and when such cave resources are discovered, the BLM will develop specific objectives and management actions for those resources.

The impact analyses and conclusions are based on the potential for ground-disturbing actions to occur in areas where geological resources have unique or unusual features of scenic value or interest, or that may display geologic characteristics of scientific or educational significance. The extent of ground-disturbing actions would vary for each alternative and depend on the acreage excluded from ground disturbance to protect or preserve other resources.

#### 4.3.2.1 Impacts Common to All Alternatives

Maintaining and improving soil cover and productivity through erosion preventative measures and land treatments would indirectly help retain and protect existing geological resources.

As all Federal lands are appropriated and withdrawn from mineral sale or leasing, geological resources would be protected because leasing, permitting or sale of public lands or minerals within the boundaries of the IFNM for exploration and development of mineral and energy resources is prohibited. Mineral resources potentially could be developed on grandfathered mining claims that have established valid existing rights, resulting in localized degradation of geological resources. Surface use restrictions could reduce the area of mineral development on mining claims on a case-by-case basis.

Collection of paleontological resources on a limited basis could generate very localized disturbance to geological resources, potentially diminishing their values in those areas.

Authorizing land use permits and easements on a case-by-case basis could result in surface disturbance in or near areas of unique or sensitive geological resources. Acquisition of non-Federal lands would result in the protection of geological resources in those areas.

No impacts would be anticipated from management decisions for air quality, wildlife and wildlife habitat, special status species, fire ecology and management, special designations, or livestock grazing.

#### 4.3.2.2 Alternative A (No Action)

Management decisions that potentially could affect geological resources include travel management, scenic and visual resources, areas managed to maintain wilderness characteristics, recreation, vegetation, and lands and realty. No impacts would be anticipated from management of geology and caves, cultural resources, or special designations.

Closing 820 acres to motorized vehicles and limiting motorized vehicle travel to existing routes throughout the IFNM would prevent surface disturbance from vehicle travel at Ragged Top (800 acres) and 20 acres managed as a Special Management Area, resulting in the protection of geological resources. Management of all public land in the IFNM as Visual Resource Management (VRM) Class III would allow for surface-disturbing activities in many areas of the monument, which could cause localized erosion and potentially diminish values of geological resources in those areas.

Allowing recreational shooting outside of developed areas in accordance with Federal regulations could result in localized disturbance of geological resources, potentially diminishing their values, particularly in areas where recreational shooting occurs against hillsides or mountains, as these features provide a natural backstop for safety. Developing an activity plan for the Cocoraque Butte-Waterman Mountains

Multiple Resource Management Area could protect geological resources in this area if surface-disturbing activities were restricted in this area.

Establishing 8,240 acres as utility corridors and the Pan Quemado communication site, could result in the degradation of geological resources in localized areas due to ground-disturbing activities.

The implementation decision providing for 347 miles of existing roads for motorized travel would provide access to various areas, where erosion from such motorized access could increase as recreation use increases. This could potentially diminish geological resource values in localized areas.

#### 4.3.2.3 Alternative B

Management decisions that potentially could affect geological resources include geology and caves, soil and water resources, vegetation, cultural resources, travel management, scenic and visual resources, areas managed to maintain wilderness characteristics, recreation, and lands and realty.

Identifying appropriate management actions, allowable uses, and allocations for discovered geological resources could increase protection and preservation of geological resources and prohibiting the collection of geologic resources would retain existing geological resources for public enjoyment.

Minimizing surface disturbance and adopting mitigation plans that minimize erosion would help retain existing geological resources. Prohibiting new surface disturbance and mitigating existing surface disturbance in areas with sensitive or fragile soils also would reduce erosion and help retain geologic resources. Minimizing surface disturbance that results in a loss of existing vegetation cover also could protect geological resources. However, the mechanical treatment of noxious weeds and invasive species could cause very localized disturbance to geological resources. Prohibiting surface disturbance for cultural resource studies would protect geological resource from degradation.

Managing all public lands consistent with the visual resource inventory classes could restrict surface disturbance in 95,110 acres (74 percent of public lands in the IFNM) managed as VRM Class I and II areas. Under Alternative B, managing areas to meet VRM Classes I and II objectives, would help preserve landscapes with unique geological resources.

Geological resource disturbance from recreational shooting within the IFNM would be reduced compared to Alternative A; shooting would only be allowed for permitted hunting activities.

Allocating the IFNM as a right-of-way exclusion area would result in less surface disturbance than under Alternative A, resulting in less potential for degradation of geological resources.

Closing 38,040 acres to motorized vehicles and limiting motorized vehicle travel to designated routes on 90,360 acres would prevent surface disturbance from vehicle travel, resulting in the protection of geological resources. However, limited erosion could occur in areas where motorized uses would be allowed, resulting in localized degradation of geological resources, though these impacts would be negligible. Development of new routes as needed to provide legal public access to non-Federal inholdings, or if needed for administrative access to IFNM lands could result in the degradation of geological resources in localized areas.

Management of 36,990 acres to maintain wilderness characteristics would preserve the existing character of the landscape in those areas, thus preserving geological resources.

Providing new access to geologic sites could cause minimal surface disturbance, which could affect geological resources. However, the action could be mitigated if restricted to peripheral areas.

Implementation-level decisions for rehabilitating existing disturbed areas for preservation of visual resources could assist in maintaining geological resources if rehabilitation efforts occur in areas of unique geology. In addition, the implementation-level decisions requiring construction and maintenance activities to include protective measures to minimize soil erosion could indirectly protect geologic resources that are located in those areas.

The implementation-level decision designating 71 miles of existing roads for motorized travel within the IFNM could reduce access compared with 347 miles under Alternative A. This could decrease the amount of erosion from motorized access and would decrease potential degradation on geological values compared with Alternative A.

#### 4.3.2.4 Alternative C

Management decisions that potentially could affect geological resources include geology and caves, soil and water resources, vegetation, cultural resources, travel management, scenic and visual resources, areas managed to maintain wilderness characteristics, recreation, and lands and realty. Impacts from vegetation management actions would be the same as Alternative B.

The collection and removal of geological resources for scientific research would be allowed, which could cause minimal surface disturbance to geological resources. Surface disturbance would be allocated (and not prohibited) from areas of sensitive or fragile soils, which could cause disturbance to geological resources in localized areas.

Scientific studies for cultural resources, including excavation if needed in those studies, would be allowed, which could cause minimal surface disturbance resulting in the potential degradation of geological resources in localized areas.

Managing 124,900 acres (97 percent of public lands in the IFNM) to meet VRM Class II objectives would protect geological resources from disturbance, similar to Alternative B. However, designated utility corridors would be VRM Classes III and IV, allowing for greater disturbance of geological resources within those corridors.

The IFNM would be designated a right-of-way avoidance area which would allow ground-disturbing activities that could result in the degradation of geological resources in localized areas, but to a lesser extent than under Alternative A, and a greater extent than Alternative B.

Closing 10,880 acres to motorized vehicle use, compared to 38,040 acres under Alternative B, would result in greater surface disturbance to geological resources from vehicle travel. Impacts from development of new routes would be similar to Alternative B.

Managing 9,540 acres to maintain wilderness characteristics would preserve the existing character of the landscape, thus preserving geological resources, to a greater extent than Alternative A, but to a lesser extent than Alternative B.

Implementation-level decisions for geological resources, scenic and visual resources, and lands and realty would result in the same impacts as those described under Alternative B.

The implementation-level decision designating 142 miles of existing roads for motorized travel would provide more access than 71 miles under Alternative B, which would increase the amount of erosion from motorized access and could increase the disturbance of geological values from Alternative B, but would be less than 347 miles under Alternative A.

#### 4.3.2.5 Alternative D

Management decisions that potentially could affect geological resources include geology and caves, soil and water resources, vegetation, cultural resources, travel management, scenic and visual resources, recreation, and lands and realty. Impacts from vegetation management actions would be the same as Alternative B.

Minimal disturbance of geological resources would be allowed during the collection and removal of geological resources for scientific or educational uses. Maintaining and improving soil cover and productivity by preventing erosion would indirectly help to retain existing geological resources, similar to Alternative A. Allowing ground-disturbing activities could result in disturbance to geological resources, similar to Alternative C.

Managing 122,580 acres (95 percent of public lands in the IFNM) to meet VRM Class II objectives would protect geological resources from disturbance, similar to Alternative C, though with slightly more potential for disturbance of geological resources as a result of slightly greater area designated to VRM Classes III and IV as a result of wider corridors for rights-of-way.

Recreational shooting would be allowed outside of developed areas in accordance with Federal regulations, which could result in localized disturbance of geological resources and the same impacts as those described under Alternative A.

Limiting motorized vehicle use to designated routes on 128,400 acres could cause greater surface disturbance from vehicle travel resulting in more disturbances to geological resources compared to Alternatives B and C. Development of new routes would result in the same impacts as those described under Alternative B.

The implementation-level decision designating 243 miles of existing roads for motorized travel would provide more access than Alternatives B and C, but to a lesser extent than 347 miles under Alternative A. Motorized use would cause erosion, which could increase the disturbance of geological values from 71 miles under Alternative B and 142 miles under Alternative C, but would be less than Alternative A.

Implementation-level decisions for geologic resources, scenic and visual resources, and lands and realty would result in the same impacts as those described under Alternative B.

### 4.3.3 Impacts on Soil and Water Resources

This section discusses potential impacts on soils from the proposed management decisions of other resources and resource uses. Soils, especially in fragile soil areas, are susceptible to impacts from compaction and surface disturbance, which can lead to accelerated erosion, soil loss, and reduced productivity. Management actions that involve ground-disturbing activities, reduction of vegetation cover, trampling, and use of vehicles and heavy machinery could result in soil compaction or surface disturbance. The discussion of impacts on water resources is limited to the effects of surface-disturbing activities on water quality and watershed health. Activities that disturb the land surface, decrease vegetation cover, increase erosion, or otherwise alter land surface cover potentially would affect water quality and watershed health.

The analysis was based on the following assumptions:

- Soil resources would be managed to meet Standard 1 of the Arizona Standards for Rangeland Health and Guidelines for Grazing Administration.
- Fragile soils would be managed to minimize erosion and maintain soil productivity.

- Substantial surface disturbance to soil, including compaction of soil or loss of vegetative cover, could increase water runoff and downstream sediment loads and lower soil productivity, thereby degrading water quality, altering channel structure, and affecting overall watershed health.
- The degree of impact attributed to any one disturbance or series of disturbances would be influenced by several factors, including location within the watershed, time and degree of disturbance, existing vegetation, and precipitation.
- An increase of pollutants in surface waters would affect other beneficial uses (e.g., stock-watering, irrigation, and/or drinking water supplies).
- Access roads would be properly designed.
- Surface disturbances would be restored or mitigated.

Impact analyses and conclusions are based on interdisciplinary team knowledge of resources in the IFNM, review of existing literature, and information provided by other agencies. Effects are quantified where possible. Spatial analyses were conducted using GIS data and analyses. Impacts are described using ranges of potential impacts or in qualitative terms, if appropriate.

#### 4.3.3.1 Impacts Common to All Alternatives

Management of soils, cultural resources, geology, fish and wildlife, special status species habitat, and special designations includes management decisions that restrict surface disturbance or protect other resources. Restricting surface disturbance helps retain existing soil and water resource conditions throughout the IFNM. Analyses of impacts on soil and water resources are based on achieving the resource objectives of managing surface land use and groundwater resources and maintenance of xeroriparian areas.

Management activities that disturb land surfaces, decrease vegetation cover, or otherwise alter land surface cover would potentially affect soil and water resources by altering erosion rates or water yield (quantity and timing). Increased erosion, compaction, displacement, and rutting of soils can affect soil productivity. Erosion affects soil productivity by carrying away soil particles and those nutrients normally tied to the soil, such as phosphorous. The ability of soil to recover productivity is affected by the removal of topsoil, since this layer has the most capacity to store nutrients readily available to nourish plants. In areas currently eroding, soil productivity would gradually increase when erosion is controlled. Erosion from disturbed sites could potentially reach streams with sediment affecting aquatic systems and water quality. The risk of water quality impacts decreases as the distance between a ground-disturbing activity and a stream or other water body increases.

Surface-disturbing activities would remove vegetative cover or physical and biological soil crusts, resulting in bare soil, potential compaction, mixing of soil horizons, increased susceptibility to water and wind erosion, loss of topsoil, decreased soil productivity, and site production. These impacts could increase the potential for accelerated erosion, runoff and off-site sedimentation, and a subsequent increase in the loss of soil resources and decrease in water quality. Accelerated soil erosion occurs when soil particles are detached and removed. Water erosion could occur during high intensity rainfall or runoff events. Soils are most susceptible to wind erosion when soil aggregates are broken up, dry conditions exist, and soils are bare.

Soil compaction occurs when soil particles are pressed together, which limits pore space for air and water, alters soil structure, and reduces infiltration/permeability rates and soil strength. Severity depends on soil type, soil moisture, vegetative cover, and the frequency and weight (lbs./sq. inch) of equipment passing over the soils. Soils are the most susceptible to compaction during moist conditions. Severe

compaction inhibits natural revegetation by reducing root penetration, restricting water and air movement, severely limiting the rate of water infiltration/permeability, increasing surface runoff, and slowing seed emergence.

Implementing mitigation measures on a project-specific basis to protect vegetation would reduce erosion, helping maintain soil and watershed conditions. Erosion preventative measures, land treatments, and incorporation of salinity control measures into erosion prevention strategies along with rehabilitation treatments would help maintain or improve soil and watershed conditions by reducing salinity and sedimentation. Managing upland and xeroriparian areas to meet Standard 1 of the Arizona Standards for Rangeland Health and Guidelines for Grazing Administration could increase the percentage of the cover of desired vegetation species, maintain or improve vegetation diversity and structure, and maintain or improve soil and watershed conditions by reducing erosion and sediment loads.

The presence and use of roads and trails could cause erosion from road surfaces and ditches, concentrate flows into channels, and transport and deliver sediment into stream channels. This could reduce soil stability and degrade overall watershed conditions. Actual erosion and sedimentation amounts would depend on road construction standards, frequency of maintenance, and the amount of use.

Areas where public recreation use would be concentrated, such as campgrounds, trails, and trailheads, would cause localized effects. In addition, areas where livestock or wildlife concentrate such as near water sources, would also compact soils in localized areas. These areas would experience the most soil compaction and loss or reduction of vegetation cover, as well as destruction of biological crusts and increased wind erosion.

Retaining all public lands and acquiring other lands could improve BLM's ability to manage soil and water resources. This could help maintain or improve soil and watershed conditions by reducing erosion and sediment loads.

Managing the IFNM for full fire suppression and implementing programs to reduce unwanted ignitions, could improve the ecological health of vegetative communities. This would help maintain or improve soil and watershed conditions by reducing the potential for erosion and increased sediment loads. However, ground equipment associated with suppression of wildfires, such as equipment used to create fire lines, could disturb and compact soils in localized areas. Fuel treatments to maintain non-hazardous fuel levels using manual, biological, mechanical, or chemical treatments would result in the short-term loss of vegetation depending on the treatment applied. The loss of vegetation could result in an increase in erosion and sediment load in very localized areas.

The withdrawal of the IFNM from all forms of mineral entry (per the Proclamation) could reduce effects to soil and water resources from mineral exploration and development. However, mining-related activities at claims on 4,590 acres (about 4 percent) of public lands in the IFNM) could increase effects in localized areas.

Under all alternatives, impacts on soil and water resources are not anticipated from management of air quality and paleontological resources. Under all alternatives, there would be no impacts on soil and water resources from implementation-level decisions concerning management of air quality, geology, cultural, paleontological resources, and recreation.

#### 4.3.3.2 Alternative A (No Action)

Under Alternative A, the following management actions would protect soil and water resources in the IFNM by restricting surface disturbance: managing 41,470 acres (32 percent of public lands in the IFNM) as a Silver Bell Desert Bighorn Sheep Management Area (including prohibition of surface occupancy on

800 acres), limiting motorized vehicles to existing roads and trails, and closing 820 acres to motorized vehicles. In addition, managing 2,240 acres (or 2 percent of public lands in the IFNM) as the Waterman Mountains ACEC to protect Nichol Turk's head cactus habitat also would reduce surface disturbance from human uses. Acquisition, through exchanges of non-Federal mineral estate underlying Federal surface holdings in the Silverbell Resource Conservation Area (RCA) would further reduce potential effects from mining activities as this area would then be withdrawn from mineral entry.

Managing 820 acres (1 percent of public lands in the IFNM) as closed to off-highway vehicle (OHV) use and 127,580 acres (99 percent of public lands in the IFNM) as limited to existing routes and closing the Special Management Area (20 acres) to motorized vehicles could reduce surface disturbance. In addition, prohibiting land use authorizations except along designated routes within the Waterman Mountains ACEC could reduce surface disturbance and retain existing vegetation resources in localized areas.

Managing 128,400 acres to meet VRM Class III objectives, including 8,240 acres (6 percent of public lands in the IFNM) for utility corridors could result in surface disturbance from human uses and removal of existing vegetation resources. Issuing rights-of-way to maximize use of existing routes could reduce the potential for surface disturbance in other areas of the IFNM. Managing 160 acres as the Pan Quemado communication site could result in surface disturbance and removal of vegetation resources as the communication site is developed. This could increase erosion and sediment loads in localized areas of watersheds.

Limiting motorized vehicle use to 347 miles of existing roads and trails could help retain existing vegetation cover and reduce surface disturbance; this could help maintain or improve soil and watershed conditions in the IFNM by reducing erosion and sediment loads. Management of livestock grazing to protect desert tortoise habitat also would provide incidental protection of soil and water resources by providing adequate native forage and cover throughout the year for desert tortoise in grazing allotments that include desert tortoise; this could increase vegetation species diversity, structure, and cover.

Establishing or modifying wildlife waters, relocating livestock water sources, and removing backdrops used for safety in recreational shooting areas could result in localized disturbance to soils and could result in increased potential for a short-term localized increase in erosion. Range improvements that improve or do not conflict with desert tortoise populations could increase vegetation diversity and vigor. However, provision of additional water sources and rangeland improvements could increase vegetation diversity and structure in localized areas. This could help maintain or improve soil and watershed conditions by reducing erosion and sediment loads.

The following implementation-level management actions could result in short-term localized surface disturbance: establishing or modifying existing fences to improve wildlife habitat and providing water sources away from existing rare plant populations or near rare plants. However, these actions would improve soil and watershed conditions in localized areas by reducing erosion and sedimentation.

An activity plan for the Cocoraque Butte–Waterman Mountains Multiple Resource Management Area could improve soil and watershed conditions by reducing erosion and sediment load as a result of outlining specific measures and a timeline for implementation. This could help maintain or improve soil and watershed conditions by reducing erosion and sediment loads. Implementing management actions for soil and water resources, special status species, livestock grazing, and travel management could decrease erosion by restricting surface disturbance to existing disturbed areas and improving vegetation resource conditions.

The implementation decision providing for 347 miles of existing roads for motorized travel would provide access to various areas, where erosion from such motorized access could increase as recreation use increases. This could potentially degrade soil and water resources in localized areas.

#### 4.3.3.3 Alternative B

Minimizing surface disturbance that results in the loss of vegetation cover, minimizing surface disturbance during the construction of facilities, and managing 63,180 acres (49 percent of the public lands in the IFNM) that contain sensitive or fragile soils as prohibited from ground-disturbing activities would preserve the soil and watershed conditions by reducing erosion and sediment load. Managing 125,110 acres (97 percent of public lands in the IFNM) as VRM Class I and VRM Class II could maintain existing vegetation diversity and structure by reducing effects from human uses. Managing 38,040 acres (30 percent of public lands in the IFNM) as closed to OHV use, managing 90,360 acres (70 percent of public lands in the IFNM) as limited to designated routes, and managing areas as priority wildlife habitats would help retain existing vegetation resources by reducing surface disturbance. Compared with Alternative A, increasing the areas where these restrictions to surface-disturbing activities apply would provide greater protection to soil and water resources.

Managing 60,000 acres (47 percent of public land in the IFNM) as semi-primitive non-motorized, managing 36,990 acres (29 percent of public land in the IFNM) as a primitive RMZ, including wilderness characteristics, and prohibiting the removal of living or dead native plant material could maintain existing vegetation diversity and structure by emphasizing natural landscapes. However, this could restrict the type or extent of restoration projects. This could help maintain or improve soil and watershed conditions by reducing erosion and sediment loads to a greater extent than Alternative A. Once grazing leases expire, making the IFNM unavailable to grazing could also improve soil and watershed conditions in very localized areas.

Prohibiting land use authorizations within 2,240 acres of the Nichol Turk's head cactus Vegetation Habitat Management Area (VHA) and 6,780 acres of the Ragged Top VHA except along designated routes could reduce the area where surface disturbance could occur and help retain existing vegetation. This could help maintain or improve soil and watershed conditions by reducing erosion and sediment loads. This would reduce surface disturbance on 5,680 additional acres compared to Alternative A.

Developing a land restoration plan and using active restoration would maintain or improve soil and watershed conditions by reducing erosion and sediment load. Using native plants for all restoration projects and a variety of reclamation methods that emphasize passive restoration to improve hydrologic function also would improve overall soil and watershed conditions. This would help maintain or improve soil and watershed conditions by reducing erosion and sediment loads to a greater extent than Alternative A.

Closing desert bighorn sheep lambing areas to human entry during a portion of the spring vegetative growing season could reduce surface disturbance in localized areas. In addition, special management, management decisions geologic resources also could reduce potential impacts on vegetation communities by restricting ground-disturbing or surface-disturbing activities. This could help maintain or improve soil and watershed conditions by reducing erosion and sediment loads to a greater extent than Alternative A.

Acquisition of lands to improve access for administrative purposes or where development/disturbance is foreseeable could improve BLM's ability to manage soil and water resources. This could help maintain or improve soil and watershed conditions by improving vegetation diversity and soil structure soil as compared with Alternative A. However, in areas where native plant species growth is slow, this could increase erosion and affect soil and watershed conditions.

The maintenance and protection of priority and special status species habitats and maintenance of existing surface water and groundwater resources would indirectly move vegetation communities toward desired conditions. This could improve soil and watershed conditions by reducing erosion and sediment loads. Allocating 29,820 acres as Desert Bighorn Sheep Wildlife Habitat Management Area (WHA) to protect

habitat would reduce the potential for surface disturbance and help retain existing vegetation resources. This could help maintain or improve soil and watershed conditions by reducing erosion and sediment loads to a greater extent than Alternative A.

Managing 3,290 acres (3 percent of public lands in the IFNM) to meet VRM Class III objectives could result in fewer restrictions on activities that lead to surface disturbance and removal of existing vegetation. This alternative decreases the areas where surface-disturbing activities from human uses would occur, as compared to Alternative A.

Managing 17,610 acres (14 percent of public lands in the IFNM) as roaded natural and 14,540 acres (11 percent of public lands in the IFNM) as semi-primitive motorized could cause localized surface disturbance and remove vegetation resources from recreation use and access roads. Restricting vehicle-based overnight camping to areas identified as open and allowing large-group camping at two designated sites would also cause surface disturbance in localized areas. This would reduce surface disturbance compared to Alternative A.

Restricting public and equestrian access to designated public or community sites helps retain existing vegetation resources by reducing surface disturbance in other areas. However, identified sites and access points would be subject to more intense use, resulting in increased localized compaction and/or erosion at those sites. In addition, managing 2 acres as the Pan Quemado communication site and 3 acres of the Confidence Peak site could restrict surface disturbance compared with Alternative A. This could decrease erosion and sediment loads in localized areas by reducing surface disturbance compared to Alternative A.

Developing new routes for public travel management when necessary would disturb surfaces in localized areas and could result in erosion and increased sediment loads. Non-motorized mechanized uses and equestrian use of roads closed to motorized vehicles could cause localized erosion, and continued use could limit opportunities for soil stabilization and/or rehabilitation in localized areas along these routes. In addition, authorizing rights-of-way to provide legal public access to IFNM lands or to provide access to non-Federal land inholdings would be considered on a case-by-case basis. These authorized rights-of-ways could increase erosion and sediment loads in localized areas.

Implementation decisions for soil and water resources, vegetation, wildlife and wildlife habitat, special status species, and lands and realty could maintain or improve vegetation resource conditions by reducing erosion and sedimentation. Constructing or implementing specific erosion control measures could improve soil and watershed conditions by reducing erosion in the planning area. Maintenance or removal of existing non-functioning flood- and erosion-control structures could cause short-term erosion from surface disturbance. Long-term, this could improve soil and watershed conditions in localized areas. Implementation of protective measures in authorized rights-of-way would reduce vegetation removal and subsequent erosion. This could help maintain or improve soil and watershed conditions by reducing erosion and sediment loads to a greater extent than Alternative A.

Establishment or modification of wildlife waters and fences could result in localized disturbance to soils. In addition, removing fences, roads, facilities, and utility lines and fencing along designated routes to prevent damage to sensitive and unique vegetation would remove vegetation in the short-term. However, long-term, this implementation action could help retain existing vegetation in localized areas. Rehabilitation of disturbed areas would help improve soil and watershed conditions by reducing the potential for erosion and sediment load. This could help maintain or improve soil and watershed conditions by reducing erosion and sediment loads to a greater extent than Alternative A.

Not developing an activity-level plan for the Cocoraque Butte–Waterman Mountain Mountains Multiple Resource Management Area could result in slower improvements to soil and watershed conditions. Not

relocating water sources away from rare plant populations could reduce surface disturbance in localized areas and would retain existing vegetation resources.

Improving ecological site conditions could reduce surface disturbance to soil and water resources. This could reduce erosion in the IFNM. In addition, reclaiming abandoned mines could increase cover of desired vegetation, which could improve soil and watershed conditions by reducing erosion and sediment loads. Soil and watershed conditions could improve compared to Alternative A by reducing surface disturbance, erosion, and improving ecological site conditions.

Impacts from route designation would be similar to Alternative A, except managing 258 miles of routes for non-motorized use could help maintain or improve soil and watershed conditions by reducing erosion and sediment loads. Developing a transportation and travel plan could help retain existing vegetation resources by reducing surface disturbance through regulation of access points and routes.

#### 4.3.3.4 Alternative C

Impacts on soil and water resources from livestock grazing would be the same as those that would occur under Alternative A, except locating range improvements to minimize additional disturbance would help retain a greater amount of existing vegetation. In addition, managing 980 acres for utility corridors and the IFNM as an avoidance area could further reduce effects of surface disturbance. Impacts from management of scenic and visual resources and vegetation would be the same as Alternative B, except managing 124,900 acres as VRM Class II and 6,780 acres as a VHA also could reduce surface disturbance. This could help maintain or improve soil and watershed conditions by reducing erosion and sediment loads, as compared with Alternative A.

Localized surface disturbance from collecting geological resources and excavation of cultural resources as authorized by a permit could degrade soil and water conditions if increased erosion and sedimentation occurs. Increasing the area managed as semi-primitive motorized to 36,230 acres could increase surface disturbance in localized areas. Impacts from large-group campsites would be the same as those that would occur under Alternative B, except increasing the number of campsites to three would increase localized surface disturbance. However, Alternative C would allow equestrian in all areas of the IFNM, which could result in the proliferation of trails, compact soils and increase erosion in localized areas. This could increase surface disturbance as compared with Alternative B, and reduce impacts as compared with Alternative A.

Impacts from management of scenic and visual resources would be the same as those that would occur under Alternative B, except increasing the total area managed as VRM Class III and IV by 210 acres could increase surface disturbance from human uses. This would decrease the area where surface disturbance from human uses could occur, as compared with Alternative A.

Impacts from OHV use would be similar to those that would occur under Alternative A. However, managing 10,880 acres as closed to OHV use and 117,520 acres as limited to designated routes would decrease surface disturbance compared to Alternative A. Compared to Alternative B, there would be 27,170 fewer acres of BLM-administered lands closed to OHV use, and 27,170 more acres in the area managed as limited to designated routes. In addition, the development of additional new routes would be the same as Alternative B.

Impacts from vegetation and lands and realty management actions would be the same as those under Alternative B, except using both native plants and non-native plants to prevent degradation of resources and acquiring inholdings could improve vegetation diversity and structure. This could improve soil and watershed conditions by reducing erosion and sediment load to a greater extent than that which would occur under Alternative A or B.

Impacts from managing areas for wilderness characteristics would be the same as Alternative B, except over less area. Managing 9,510 acres to maintain wilderness characteristics would restrict where ground and surface-disturbing activities could occur in an effort to maintain naturalness. However, compared to Alternative A, this increases the area where restrictions would be applied to restoration projects.

Implementation decisions under Alternative C would be the same as Alternative B, except for livestock grazing, lands and realty, and travel management. Providing additional livestock water sources could increase vegetation diversity and structure in localized areas; this could help or improve soil and watershed conditions by reducing erosion and sediment loads. However, modifying current livestock waters would disturb surfaces and remove vegetation in localized areas. Livestock watering areas could become areas of concentration for livestock, increasing localized surface disturbance, soil compaction and the removal of vegetation compared with Alternative B, where additional livestock waters would not be authorized. An increase in the number and variety of wildlife and livestock enclosures would minimize livestock impacts on priority plant species and habitats, which could increase vegetation diversity and structure in localized areas. However, wildlife and livestock waters in the enclosures also would become areas of concentration, resulting in increased localized soil compaction and erosion. Localized erosion of soils could occur from vehicle travel along existing fence line roads.

Designating acquired lands as right-of-way avoidance areas, unless within a designated corridor, would result in impacts similar to Alternative B; however, this could increase short-term, localized surface disturbance. In addition, impacts from motorized and non-motorized use route designations would be the same as those under Alternative B, except managing 187 miles of routes as non-motorized could decrease impacts on soil and water resources, as compared with 347 miles under Alternative A.

#### 4.3.3.5 Alternative D

Management of wildlife and wildlife habitat would have the same impacts as those that would occur under Alternative B, while impacts from livestock grazing would have the same impacts as those under Alternative C. Restoring areas on a case-by-case basis would improve soil and watershed conditions by reducing erosion and sediment load; however, this could reduce the areas restored, as compared with Alternatives A, B, and C.

Management of visual resources, recreation, and travel management would have impacts similar to those that would occur under Alternative C, except the area managed as VRM Class II would be decreased to 122,580 acres, areas managed as roaded natural would increase to 19,060 acres, and areas managed as semi-primitive motorized would increase to 59,020 acres. In addition, managing 4,220 acres as VRM Class III and 1,600 acres as VRM Class IV would increase the area where effects from human uses would occur, as compared with 3,290 acres as Class III under Alternative B and 3,500 acres as Classes III and IV under Alternative C. This would decrease the area, as compared with 128,400 acres managed as Class III under Alternative A.

Impacts from large-group camping sites would be similar to those that would occur under Alternative B, but allowing four designated sites would increase surface disturbance in localized areas, as compared with two large group sites under Alternative B and three large group sites under Alternative C.

Implementing management actions under Alternative D would have the same impacts as those that would occur under Alternative C. In addition, impacts from motorized and non-motorized use route designations would be the same as those under Alternative B, except managing 100 miles of routes as non-motorized could decrease impacts on soil and water resources, as compared with 0 miles under Alternative A (where 347 miles of motorized routes would occur).

### 4.3.4 Impacts on Vegetation

This analysis addresses potential impacts on vegetation, including xeroriparian and riparian areas. This analysis will focus on those management decisions that have the potential to cause physical disturbance of vegetation, and the loss or disturbance of vegetation, including xeroriparian areas on public lands within the IFNM. Particular focus was placed on vegetation communities with the greatest potential for changes in structure and species composition, and most at risk from severe mortality events from drought, insects, and disease.

The effects of management actions on vegetation, particularly in xeroriparian areas could vary widely, depending on a variety of factors such as the type of soils, soil moisture, topography, and plant reproductive characteristics. Impacts on vegetation resources would vary depending on the structure and composition of the vegetation communities, which are described in Chapter 3. The composition of a plant community changes over time due to the interactions of many factors, such as climate, resource uses, and disturbance. In many cases, the potential composition of an area differs from the existing composition due to the area's disturbance history. Actions that cause surface disturbance remove existing vegetation and could increase the potential for establishment of noxious weeds and invasive species, which would reduce overall vegetation diversity, desirable plant cover and the ecological health of vegetation. Increasing surface disturbance also could increase erosion rates.

The following assumptions were used in the analysis of impacts on vegetation, including xeroriparian:

- Following surface disturbance, adequate vegetative ground cover and species composition for site stabilization would typically occur within 5 years in vegetative communities.
- Adequate forage would be available for wildlife population objectives.
- All plant communities would be managed toward achieving an appropriate mix of species composition, cover, and age classes.
- The degree of impact attributed to any one disturbance or series of disturbances would be influenced by several factors, including location within the watershed, the type, time and degree of disturbance, existing vegetation, and precipitation.
- Incidental noxious and invasive weeds would continue to be introduced and spread as a result of ongoing vehicle traffic in and out of the IFNM, recreational activities, wildlife and livestock grazing and movements, and surface-disturbing activities.
- Weed and pest control would be carried out in coordination with the appropriate county weed and pest control district and owners of adjacent property.
- Climatic fluctuation would continue to influence the health and productivity of plant communities.

Impacts on vegetation communities and priority vegetation habitats include direct and indirect impacts on species composition and structure. Consequences to vegetation density and composition were based on likely changes relative to desired conditions. Particular focus was placed on vegetation with the greatest potential for changes in density and composition, and at most risk from severe mortality events from drought, or insects and disease. In the absence of quantitative data, best professional judgment was used, and impacts are described using ranges of potential impacts or in qualitative terms if appropriate.

#### 4.3.4.1 Impacts Common to All Alternatives

The diversity of species within plant communities, the relative distribution of plant communities, and the relative occurrence of structural stages of those communities would be affected under all alternatives.

However, implementation of any alternative would not result in the complete elimination of a plant species, plant community, or structural stage. Impacts resulting from management actions that are common to all the alternatives include surface disturbance from fire suppression, recreation use, and minerals management. These activities would result in the removal of existing vegetation and the conversion of areas to an earlier structural stage and could change vegetation community succession. Converting areas to an earlier structural stage could increase the primary productivity of the vegetation community and could reduce the diversity of scrubland and desert grassland vegetation and the overall ecological health of vegetation communities in those areas. In general, vegetation communities naturally recover from surface disturbance and gradually return to a composition and structure that existed prior to disturbance. Surface-disturbing activities could increase the potential for establishment of noxious weeds and invasive species. While disturbance does not always lead to plant invasion, it could provide a temporary location for invasive species to establish. Reclamation of disturbed areas reduces the effects of surface disturbance on vegetation communities and opportunities for establishment of noxious weeds and invasive species.

Reduction in vegetation structural diversity and ground cover often leads to increased soil erosion. Soil erosion rates on desert scrub and grassland communities are highly dependent on the proportion of soil surface protected by vegetation from raindrop impacts. Erosion rates increase exponentially as plant cover decreases (Meeuwig 1970).

Impacts from management actions common to all alternatives that restrict surface-disturbing activities or improve soil resources from soil and water, vegetation, wildlife and wildlife habitat, special status species, scenic and visual resources, energy and minerals, and recreation management actions would help retain existing vegetation diversity, species composition, and successional states and patterns. Withdrawal of the monument from all forms of mineral entry and closing or limiting areas where motorized vehicles would be allowed could reduce erosion rates by retaining existing vegetation resources. This would decrease the potential for establishment of noxious weeds and invasive species by reducing surface disturbance. However, mining activities at valid existing claims (approximately 4,590 acres) could cause localized surface disturbance and remove existing vegetation resources. This could locally increase opportunities for establishment of noxious weeds and invasive species.

Construction of facilities, such as water developments (such as wildlife waters), fences, roads, campsites, interpretive sites, and mineral materials extraction would involve crushing and uprooting vegetation in the immediate vicinity and along vehicle access routes. Most impacts from construction would be direct, short term, and limited to the immediate project area. In the long term, facility development could have indirect impacts as a result of greater use by or for livestock, recreation, and administration at the site and along roads and fences. Increased use could compact soils, reduce vegetation cover in localized areas, cause plant mortality or reduction in vigor, and produce conditions favorable to the establishment and spread of noxious weeds and invasive species.

OHV and recreation use could remove vegetation and cause erosion. Concentrated OHV and recreation activities could remove native plants, increasing erosion and off-site sedimentation, and could introduce and spread noxious weeds or invasive species.

Depending on location and density, livestock and wildlife grazing could affect the density and composition of vegetation communities. If foraging activities were concentrated in small areas or along fence lines, soil disturbance and vegetation removal from trampling and grazing would be greater in those areas, increasing the potential for establishment of noxious weeds and invasive species. Concentrations of foraging activities in xeroriparian areas, where alternate water supplies are not available, could lead to destruction of stream and wash banks, removal of vegetation through trampling and grazing, and a long-term change in the vegetation community structure.

Eliminating or controlling the establishment and spread of noxious weeds would improve or maintain natural vegetation composition and structure by decreasing invasive and noxious weed reproduction and competition for limited resources. In the long term this could increase the percent cover of desirable plant species in and adjacent to treated areas. Controlling the establishment and spread of noxious weeds would improve the overall ecological health of vegetation communities through increases in habitat productivity, species diversity, and disease/pest resistance in treated areas.

Managing fire and fuels for full fire suppression and implementing programs to reduce unwanted ignitions would improve the ecological health of vegetation communities by decreasing impacts on native vegetation diversity. Maintaining and increasing native vegetation diversity could indirectly increase resistance to disease and insect pest infestations. Long term this could reduce opportunities for establishment of noxious weeds and invasive plant species. Fuel treatments to maintain non-hazardous fuel levels using manual, biological, mechanical, or chemical treatments would result in the short-term loss of vegetation depending on the treatment applied. Some losses of vegetation would be of undesirable plant species including exotic and invasive species, which are treated to reintroduce or promote desirable plant species. This would improve species diversity in treated areas.

Managing the uplands and xeroriparian areas to meet desired resource conditions and Arizona Standards for Rangeland Health and Guidelines for Grazing Administration would increase the percent cover of desired vegetation species, and improve vegetation diversity and structure. Improving areas of allotments that are not meeting rangeland health standards would improve vegetation diversity, riparian functioning condition, and the ecological health of vegetation communities. Improving vegetation health could reduce the potential for establishment of noxious weeds and invasive species, also improving the ecological health of desert grasslands and scrublands in areas not meeting rangeland health standards.

Land acquisitions that result in large contiguous blocks of public land could improve BLM's ability to manage vegetation and other resources. This could improve vegetation diversity and the ecological health of vegetation communities and increase riparian functioning conditions by improving management of areas to limit activities that could affect vegetation structure, density and species composition in these areas. This could help maintain or improve special status species habitat and could increase the protection of Nichol Turk's head cactus habitat.

Under all alternatives, impacts on vegetation and xeroriparian/riparian resources are not anticipated as a result of implementing management actions for air quality and paleontological resources. Under all alternatives, there would be no impacts on vegetation resources from implementation-level decisions for air quality, geology, paleontological resources, and recreation.

#### 4.3.4.2 Alternative A (No Action)

Developing an activity plan for the Cocoraque Butte–Waterman Mountains Multiple Resource Management Area, designating approximately 2,720 acres as the Avra Valley Cultural Resource Management Area (CRMA), and promoting the maximum utilization of existing right-of-way routes, including joint use whenever possible, could restrict surface-disturbing activities. Managing approximately 41,470 acres (32 percent of public lands in the IFNM) as the Desert Bighorn Sheep Management Area, which closes 800 acres to motorized vehicles, and managing 2,240 acres of public land to protect Nichol Turk's head cactus habitat, also could reduce surface disturbance.

Custodial management of recreation use, allowing camping except within ¼ mile of a natural water hole containing water, or a man-made watering facility containing water (which could both restrict access to water sources by livestock and wildlife), and allowing cross-county equestrian use would result in localized surface disturbance. This could increase opportunities for establishment of noxious weeds and invasive species in these areas.

Limiting OHV use to existing routes on 127,580 acres (99 percent) of public lands in the IFNM, and closing 820 acres (less than 1 percent) of public lands in the IFNM to motorized vehicles use could help retain existing vegetation conditions and reduce the potential for establishment of noxious weeds and invasive species. Closing the Special Management Area (20 acres) to motorized vehicles and issuing rights-of-way to maximize use of existing routes could reduce the potential for establishment of noxious weeds and invasive species.

Managing 128,400 acres to meet VRM Class III objectives (Table 4-2) and 8,240 acres (6 percent of the public lands in the IFNM) for utility and right-of-way corridors including 2,480 acres of priority vegetation communities could result in surface disturbance. In addition, managing 160 acres as the Pan Quemado communication site also would result in localized surface disturbance, and also could increase the potential for the establishment of noxious weeds and invasive species.

**Table 4-2: Alternative A–Vegetative Communities Within VRM Class III**

| Vegetative Community | VRM Class III | |
|---|---|---|
| | Acres | % of Public Lands in the IFNM |
| Arizona Upland Sonoran Desertscrub | 87,550 | 68 |
| Lower Colorado River Sonoran Desertscrub | 29,590 | 23 |
| Xeroriparian | 10,960 | 9 |

Managing rangeland improvements to not allow activities that conflict with desert tortoise populations and acquiring lands could improve vegetation resources by decreasing the potential for activities that would decrease vegetation diversity and structure. In addition, developing and implementing an activity plan for Cocoraque Butte–Waterman Mountains Multiple Resource Management Area could improve vegetation diversity and structure in that area by limiting actions that could increase the potential for establishment of noxious weeds and invasive species.

Implementation-level management actions would limit surface disturbance to existing disturbed areas and improve the ecological health of vegetative communities. Limiting motorized vehicle use to 347 miles of existing routes (Table 4-3: and Map 2-17) would help maintain existing vegetation diversity and structure by reducing surface disturbance and the potential for establishment of noxious weeds and invasive species.

**Table 4-3: Alternative A–Miles of Routes Within Each Vegetative Community**

| Vegetative Community | Miles |
|---|---|
| Arizona Upland Sonoran Desertscrub | 256 |
| Lower Colorado River Sonoran Desertscrub | 66 |
| Xeroriparian | 25 |
| Total | 347 |

Providing water sources away from rare plant populations could indirectly improve vegetation diversity by improving livestock or wildlife distribution and forage utilization. Relocating water sources would cause localized surface disturbance and remove vegetation resources; however, it would allow for reclamation of the former sites. In addition, providing additional livestock water sources in the Twin Tanks and Cocoraque Pastures could increase vegetation diversity and structure in localized areas by improving forage utilization and distribution.

Implementing an activity plan for the Agua Blanca Ranch Multiple Resource Management Area and the Nichol Turk's head cactus recovery plan, and improving ecological site conditions to a "good" status could reduce surface disturbance, increase the percent cover of desirable vegetation species, and increase vegetation species diversity. In addition, requiring the implementation of mitigation measures for maintenance of established rights-of-way could reduce the effects of surface-disturbing activities. Reducing the effects of surface-disturbing activities could help retain existing vegetation resources and reduce the potential for noxious weed and invasive species establishment.

Developing communication facilities at designated sites would remove vegetation in localized areas and could increase the potential for establishment of noxious weeds and invasive species. Designating 347 miles of routes as motorized could result in localized surface disturbance from route proliferation.

#### 4.3.4.3 Alternative B

Impacts from management actions that restrict surface disturbance would be similar to those under Alternative A, except additional restrictions would apply. Managing 60,000 acres as semi-primitive non-motorized and managing 29,420 acres as primitive (Table 4-4), and prohibiting ground-disturbing activities on 63,180 acres (49 percent of public lands in the IFNM) with sensitive or fragile soils could reduce surface disturbance, compared with Alternative A. In addition, prohibiting surface disturbance on the 14,340 acres of priority vegetation communities with sensitive or fragile soils would help retain existing conditions, compared with Alternative A. Increasing the motorized vehicle closure areas to 38,040 acres would further increase restrictions on surface-disturbing activities, compared with Alternative A.

**Table 4-4: Alternative B–Vegetative Communities Within Each Recreation Management Zone**

| | Roaded[1] | | Semi-Primitive Motorized | | Semi-Primitive Non-Motorized[2] | | Primitive | |
|---|---|---|---|---|---|---|---|---|
| Vegetative Community | Acres | % of Public Lands in the IFNM | Acres | % of Public Lands in the IFNM | Acres | % of Public Lands in the IFNM | Acres | % of Public Lands in the IFNM |
| Arizona Upland Sonoran Desertscrub | 11,950 | 9 | 11,170 | 9 | 32,640 | 25 | 25,490 | 20 |
| Lower Colorado River Sonoran Desertscrub | 3,950 | 3 | 2,080 | 1 | 20,780 | 17 | 2,780 | 2 |
| Xeroriparian | 1,320 | 1 | 1,290 | 1 | 6,570 | 5 | 1,140 | 1 |

NOTES: [1] Roaded includes categories Roaded Natural, Rural Industrial, Rural Residential, and Rural Agricultural.
[2] Semi-Primitive Non-Motorized includes Ragged Top.

Managing 36,990 acres for wilderness characteristics and 125,110 acres as VRM Class I and II (Table 4-5), could reduce the effects to vegetation by emphasizing natural landscapes compared, with Alternative A (where 128,400 acres would be VRM Class III). However, this also could restrict the type or extent of restoration projects in these areas, compared with Alternative A.

Managing 3,290 acres to meet VRM Class III objectives decreases surface disturbance compared to Alternative A. This could decrease opportunities for noxious weeds and invasive species establishment. Managing 17,610 acres as roaded and 14,540 acres as semi-primitive motorized would emphasize public recreation use. This use could cause localized surface disturbance in and near recreation use areas and access roads, removing vegetation resources and increasing the potential in these areas for noxious weeds and invasive species establishment.

**Table 4-5: Alternative B–Vegetative Communities Within Each VRM Class**

| Vegetative Community | VRM Class I Acres | VRM Class I % of Public Lands in the IFNM | VRM Class II Acres | VRM Class II % of Public Lands in the IFNM | VRM Class III Acres | VRM Class III % of Public Lands in the IFNM |
|---|---|---|---|---|---|---|
| Arizona Upland Sonoran Desertscrub | 32,820 | 26 | 53,290 | 41 | 1,730 | 1 |
| Lower Colorado River Sonoran Desertscrub | 2,790 | 2 | 25,560 | 20 | 1,250 | 1 |
| Xeroriparian | 1,380 | 1 | 9,270 | 7 | 310 | <1 |

Managing 38,040 acres (Map 2-18) as closed to OHV use and limiting use on 90,360 acres to designated routes would help retain designated vegetation diversity and structure. Closing areas and limiting use to existing routes could reduce the spread of noxious weeds and invasive species in areas adjacent to routes.

Restricting camping to designated areas could result in localized surface disturbance, but could reduce surface disturbance overall. Localized surface disturbance would occur as a result of allowing large-group camping at two designated sites, public and equestrian access (see Map 2-18), and managing 2 acres as the Pan Quemado communication site and 3 acres as the Confidence Peak site. However, compared to Alternative A, localized surface disturbance would be reduced.

Management actions for soil and water, vegetation, livestock grazing, and lands and realty could retain a greater amount of vegetation than Alternative A by minimizing surface disturbance and maintaining existing surface water and groundwater resources. In addition, prohibiting the removal of living or dead native plant material would help retain existing vegetation and seed sources. Removing livestock grazing as leases expire could move vegetation communities toward desired conditions. Managing the entire IFNM as a right-of-way exclusion area and not establishing utility corridors would also reduce surface disturbance and help maintain existing vegetation diversity and structure.

Management actions for wildlife, vegetation, and lands and realty could improve the ecological health of vegetative communities, compared with Alternative A. Managing priority wildlife and special status species and their habitats, including 29,820 acres as the Desert Bighorn Sheep WHA and 2,240 acres for Nichol Turk's head cactus, could indirectly move vegetation communities toward desired conditions by improving the ecological health of vegetative communities. Closing desert bighorn lambing areas to human entry could reduce surface disturbance during a portion of the vegetative growing season. In addition, pursuing an integrated weed management approach and priority control of noxious weeds and invasive species would improve vegetation diversity and structure by removing competition for limited resources. Acquiring lands that improve access for administrative purposes or where development and/or disturbance is foreseeable and inholdings within VHAs could improve BLM's ability to manage vegetation resources. This could improve vegetation diversity and structure and reduce opportunities for establishment of noxious weeds and invasive species, compared with Alternative A.

Using native plants in active restoration and utilizing a variety of reclamation methods would improve vegetation diversity, structure, and composition over the long term. However, in areas where native plant species growth is slow, passive restoration could require a greater period of time to achieve restoration goals, which could increase the potential for establishment of noxious weeds and invasive species. Developing a land restoration plan would facilitate restoring disturbed areas within IFNM, improve vegetation diversity and structure, and reduce opportunities for establishment of noxious weeds and invasive species over a larger area than under Alternative A.

Implementation management actions for soil resources would be the same as those under Alternative A, except implementing specific erosion control measures could increase vegetation cover over a greater area. Impacts from route designations would be similar to those under Alternative A, except Alternative B would designate 71 miles of existing travel routes for motorized access/use. In addition, identifying 258 miles for non-motorized use and identifying 18 miles of existing routes for reclamation could decrease surface disturbance to vegetation, compared with Alternative A (Table 4-6). In addition, developing a transportation and travel plan also could help retain existing vegetation resources by reducing the amount of surface disturbance and the potential for establishment of noxious weeds and invasive species, compared with Alternative A.

**Table 4-6: Alternative B–Miles of Routes Within Vegetative Communities**

| Vegetative Community | Miles of Routes | | |
|---|---|---|---|
| | Motorized | Non-Motorized | Reclamation |
| Arizona Upland Sonoran Desertscrub | 51 | 197 | 8 |
| Lower Colorado River Sonoran Desertscrub | 14 | 44 | 8 |
| Xeroriparian | 6 | 17 | 2 |
| Total | 71 | 258 | 18 |

Not developing an activity level plan for the Cocoraque Butte–Waterman Mountains Multiple Resource Management Area could result in longer time periods for realized improvements to vegetation diversity and structure in a local area. In the short term, this could increase opportunities for establishment of noxious weeds and invasive species, compared with Alternative A.

#### 4.3.4.4 Alternative C

Impacts from management actions that restrict surface disturbance would be the same as those under Alternative B. Decreasing the area managed as semi-primitive non-motorized to 57,450 acres (49 percent of public lands in the IFNM) (see Table 4-7), and managing 3,420 acres as VRM Class III and 80 acres as VRM Class IV (Table 4-8) would decrease surface-disturbance restrictions, compared with Alternative A, and reduce restrictions, compared with Alternative B.

**Table 4-7: Alternative C–Vegetative Communities Within Each Recreation Management Zone**

| Vegetative Community | Roaded[1] | | Semi Primitive Motorized | | Semi Primitive Non-Motorized[2] | | Primitive | |
|---|---|---|---|---|---|---|---|---|
| | Acres | % of Public Lands in the IFNM | Acres | % of Public Lands in the IFNM | Acres | % of Public Lands in the IFNM | Acres | % of Public Lands in the IFNM |
| Arizona Upland Sonoran Desertscrub | 12,700 | 10 | 23,290 | 17 | 37,010 | 29 | 14,860 | 12 |
| Lower Colorado River Sonoran Desertscrub | 4,360 | 3 | 9,320 | 6 | 15,890 | 12 | 0 | 0 |
| Xeroriparian | 1,890 | 1 | 3,580 | 3 | 4,550 | 4 | 920 | 1 |

NOTES: [1] Roaded includes categories Roaded Natural, Rural Industrial, Rural Residential and Rural Agricultural.
[2] Semi-Primitive Non-Motorized includes Ragged Top.

Managing 9,510 acres as primitive (7 percent of public land in the IFNM) including areas managed for wilderness characteristics, would decrease the amount of surface disturbance compared with Alternative A (Table 4-8). However, this would increase the area where surface disturbance could occur, by 27,480 acres, compared with Alternative B. This could restrict the type or extent of restoration projects, compared with Alternative A and reduces restrictions, compared with Alternative B.

**Table 4-8: Alternative C–Vegetative Communities Within Each VRM Class**

| | VRM Class | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | I | | II | | III | | IV | |
| Vegetative Community | Acres | % of Public Lands in the IFNM | Acres | % of Public Lands in the IFNM | Acres | % of Public Lands in the IFNM | Acres | % of Public Lands in the IFNM |
| Arizona Upland Sonoran Desertscrub | 8,752 | 7 | 77,220 | 60 | 1,860 | 1 | 20 | <1 |
| Lower Colorado River Sonoran Desertscrub | 0 | 0 | 28,300 | 22 | 1,250 | 1 | 30 | <1 |
| Xeroriparian | 790 | 1 | 9,840 | 8 | 310 | 0 | 20 | <1 |

Impacts from RMZs would be the same as those under Alternative B, except that 18,380 acres (14 percent of public lands in the IFNM) would be managed as roaded, 36,230 acres (28 percent of public lands in the IFNM) as semi-primitive motorized, and 57,450 acres (45 percent) as semi-primitive non-motorized (see Table 4-7). In addition, impacts from OHV management would be the same as Alternative B, except 10,880 acres (8 percent of the public lands in the IFNM) would be closed to OHV travel and travel would be limited to designated routes on 117,520 acres (91 percent of public lands in the IFNM). This could reduce the amount of surface disturbance, compared with Alternative A and increase surface disturbance, compared with Alternative B.

Impacts from managing priority wildlife, special status species habitat, and public access (see Map 2-19) would be the same as those under Alternative B, except allowing camping in VHAs could increase localized surface disturbance. In addition, increasing the number of large-group camping sites to three and allowing the collection of geologic resources as authorized by a permit would increase surface disturbance in localized areas. Alternative C would allow equestrian use in all areas of the IFNM. With repeated use in an area this could result in the proliferation of trails and the degradation of special status species habitat. This would increase localized effects, compared with Alternative B, but decrease effects, compared with Alternative A.

Impacts from surface disturbance associated with utility corridors and rights-of-way would be similar to Alternative A, except reducing the area managed as a utility corridor to 980 acres (including 330 acres of priority vegetation habitats), and considering rights-of-way on a case-by-case basis could reduce surface disturbance (Map 2-17). In addition, managing public lands in the IFNM as an avoidance area except for designated corridors could reduce surface disturbance in areas outside designated corridors. This could decrease surface disturbance, compared with Alternative A, and increase effects, compared with Alternative B.

Impacts from management activities to reduce erosion or restore areas would be similar to those under Alternative B, except using non-native plants in areas to protect resources could reduce vegetation diversity in the short term, compared with Alternative B. However, over the long term, vegetation diversity and structure would improve due to restoration efforts, compared with Alternative A and would be similar to Alternative B. In addition, restricting or requiring mitigation for ground-disturbing activities in areas with sensitive or fragile soils (63,180 acres) would have the same impacts as Alternative B.

Impacts from implementation level actions for vegetation and livestock grazing would be the same as those under Alternative A, except locating range improvements to minimize disturbance, and minimizing livestock impacts on priority plant species and habitats would retain a greater amount of existing vegetation than Alternative A. In addition, retaining livestock grazing on 11 allotments (approximately 128,400 acres) would have the same impact as Alternative A; however, vegetative communities could

attain desired conditions more slowly than under Alternative B since BLM-administered lands would be unavailable for livestock grazing as leases expire.

Managing acquired lands as right-of-way avoidance areas, unless in a designated corridor, could reduce the amount of surface disturbance in other areas of the IFNM, compared with Alternative A. Providing additional wildlife and livestock water sources could improve vegetation diversity and structure in localized areas, compared with Alternatives A and B. However, modifying current livestock waters would result in short-term localized areas of surface disturbance.

Implementing management actions to designate routes would have the same impacts as Alternative B, except designating 142 miles as motorized (including 33 miles in priority vegetation habitats) could decrease surface disturbance (Table 4-9). Designating 187 miles of routes as non-motorized and reclamation on 18 miles also could reduce opportunities for establishment of noxious weeds and invasive species, compared with 347 miles under Alternative A.

**Table 4-9: Alternative C–Miles of Routes Within Vegetative Communities**

| Vegetative Community | Miles of Routes | | |
|---|---|---|---|
| | Motorized | Non-Motorized | Reclamation |
| Arizona Upland Sonoran Desertscrub | 102 | 145 | 8 |
| Lower Colorado River Sonoran Desertscrub | 30 | 29 | 8 |
| Xeroriparian | 10 | 13 | 2 |
| Total | 142 | 187 | 18 |

### 4.3.4.5 Alternative D

Impacts from management actions that restrict surface disturbance would be the same as those under Alternative C. Decreasing the area managed as semi-primitive non-motorized to 43,770 acres (34 percent of public lands in the IFNM) the increasing the area managed as semi-primitive motorized to 59,020 (46 percent of public lands in the IFNM) would decrease surface disturbance restrictions, compared with Alternative C (Table 4-10). Managing 122,580 acres (95 percent of public lands in the IFNM) to meet VRM Class II objectives (Table 4-11) reduces the areas where surface disturbance restrictions apply, compared with Alternatives B and C, and increases surface disturbance restrictions, compared with Alternative A. In addition, this could restrict the location or extent of restoration projects in these areas, compared with Alternative A, and would reduce restrictions compared with Alternatives B or C.

**Table 4-10: Alternative D–Vegetative Communities Within Each Recreation Management Zone**

| Vegetative Community | Roaded[1] | | Semi-Primitive Motorized | | Semi-Primitive Non-Motorized[2] | | Primitive | |
|---|---|---|---|---|---|---|---|---|
| | Acres | % of Public Lands in the IFNM | Acres | % of Public Lands in the IFNM | Acres | % of Public Lands in the IFNM | Acres | % of Public Lands in the IFNM |
| Arizona Upland Sonoran Desertscrub | 12,840 | 10 | 40,350 | 31 | 34,670 | 27 | 0 | 0 |
| Lower Colorado River Sonoran Desertscrub | 4,370 | 3 | 12,760 | 10 | 12,450 | 10 | 0 | 0 |
| Xeroriparian | 1,900 | 1 | 5,900 | 5 | 3,150 | 3 | 0 | 0 |

NOTES: [1] Roaded includes categories Roaded Natural, Rural Industrial, Rural Residential, and Rural Agricultural.
[2] Semi-Primitive Non-Motorized includes Ragged Top.

**Table 4-11: Alternative D–Vegetative Communities Within Each VRM Class**

| Vegetative Community | VRM Class II Acres | VRM Class II % of Public Lands in the IFNM | VRM Class III Acres | VRM Class III % of Public Lands in the IFNM | VRM Class IV Acres | VRM Class IV % of Public Lands in the IFNM |
|---|---|---|---|---|---|---|
| Arizona Upland Sonoran Desertscrub | 84,310 | 66 | 2,740 | 2 | 800 | <1 |
| Lower Colorado River Sonoran Desertscrub | 27,800 | 22 | 1,160 | 1 | 640 | <1 |
| Xeroriparian | 10,470 | 8 | 320 | 0 | 160 | <1 |

Impacts from OHV management actions would be the same as those Alternative A, except managing 128,400 acres as limited to designated routes for OHV use could reduce the amount of surface disturbance, compared with Alternative A, and would increase the areas where effects would occur, compared with Alternatives B and C.

Impacts from management actions that cause surface disturbance would be the same as those under Alternative B, except managing 4,220 acres as VRM Class III, and 1,600 acres as VRM Class IV, and 43,770 acres (34 percent) as semi-primitive non-motorized would decrease the areas with restrictions, compared with Alternative A, and increases the area where surface disturbance could occur, compared with Alternatives B and C.

Managing 2,660 acres as designated for utility corridors could result in the disturbance or removal of vegetation, which could increase the potential for establishment of noxious weeds and invasive species by disturbing surfaces as compared to Alternative C. Managing Corridor 3 to allow for additional above ground major rights-of way also could increase surface disturbance (see Map 2-18) compared to Alternatives B and C. However, this could retain a greater amount of existing vegetation, compared with Alternative A.

Impacts from management of recreation and public access would be the same as those under Alternative B, except allowing large-group camping at four designated sites (versus two under Alternative B and three under Alternative C) would help retain existing vegetation resources by reducing the amount of surface disturbance. This could reduce opportunities for noxious weeds and invasive species establishment. This would increase effects to vegetation compared to Alternative B and C by increasing surface disturbance.

Increasing the number by allowing up to two additional facilities at the Pan Quemado and Confidence Peak communication sites could increase the amount of surface disturbance, compared with Alternative B and C. This would decrease the amount of surface disturbance compared with Alternative A.

Impacts from implementation management actions would be similar to Alternative C, except 243 miles of routes would be managed as motorized (Table 4-12), including 56 miles in sensitive vegetation habitats. This would decrease the amount of surface disturbance from routes compared to 347 miles under Alternative A, and increase surface disturbance, compared with 71 miles under Alternative B and 142 miles under Alternative C. In addition, reclamation of 4 miles of routes would be greater than Alternative A, and less than of the 18 miles under Alternatives B and C.

**Table 4-12: Alternative D–Miles of Routes Within Vegetative Communities**

| Vegetative Community | Miles of Routes | | |
|---|---|---|---|
| | Motorized | Non-Motorized | Reclamation |
| Arizona Upland Sonoran Desertscrub | 186 | 68 | 3 |
| Lower Colorado River Sonoran Desertscrub | 39 | 25 | >1 |
| Xeroriparian | 18 | 7 | >1 |
| Total | 243 | 100 | 4 |

### 4.3.5 Impacts on Wildlife and Wildlife Habitat

This section presents potential impacts on wildlife and wildlife habitat from management actions. Impacts on wildlife and wildlife habitat would occur from the following: (1) disturbance and/or loss of plant communities, food supplies, cover, breeding sites, and other habitat components necessary for population maintenance used by any species to a degree considered vital to the population, and (2) interference with a species movement patterns that decreases a species' ability to breed successfully, to a degree considered vital to the population.

Surface disturbance and disruptive activities cause habitat fragmentation or loss and wildlife displacement depending on the type, amount, and location of activity. Surface disturbance can alter vegetative composition and cover resulting in habitat fragmentation and changes to the type and quality of wildlife habitat. Habitat fragmentation can reduce usable ranges; disrupt movements between crucial habitats (e.g., crucial breeding ranges), transitional areas, and breeding areas; and isolate populations and species, which lead to decreased genetic diversity and increased potential for extirpation of localized populations or even extinction. Further, habitat fragmentation changes microclimates by altering temperature and moisture regimes, changes nutrient and energy flows, and increases opportunities for predation and exploitation by humans. Disturbed areas could change wildlife species composition, favoring generalist native species and some exotic and naturalized exotic wildlife species.

Displacement from surface disturbance or disruptive activities moves animals into less desirable habitat and could increase competition for available resources with other species and uses. Surface disturbance could result in mortality to individuals of a species from collision with construction equipment and entombment in underground burrows. Noise disturbance during surface disturbance activities could temporarily cause wildlife to avoid the area during importance life-history cycles, such as breeding. Indirect impacts on wildlife occur from displacement and physiological stress with human presence and activity during sensitive life stages. Disturbance of wildlife incurs a physiological cost either through excitement (preparation for exertion) or locomotion. A fleeing or displaced animal incurs additional costs through loss of food intake and potential displacement to poorer (lower) quality habitat. Chronic or continuous disturbance can result in reduced animal fitness and reproductive potential.

Invasive species also have the ability to displace native plant and animal species, disrupt nutrient and fire cycles, and alter the character of the community by enhancing additional invasions. The integrity of wildlife populations and habitats is affected by invasion through resource competition, predation, hybridization, habitat alteration, and through the introduction of diseases and toxins.

Direct impacts on wildlife and wildlife habitat from fire or fire management activities typically result from mortality or displacement of individuals, disturbance from reduced air or water quality from smoke and ash, and alteration of immediate post-fire or post-treatment environments through loss of or changes to key habitat components. These direct impacts may affect wildlife populations or habitats for several years after a fire or a vegetation treatment activity, depending on the ability of wildlife species to recolonize burned or altered habitats. Indirect impacts on fish and wildlife resources from fire or fire management activities typically result from influences of post-fire succession, recovery, or rehabilitation

of the habitat. These impacts tend to be long term, depending on the severity of the habitat alteration, and can change species assemblages (relative abundances or species composition), species behaviors, or overall population trends, benefiting some species and adversely affecting others.

Fuel wood collection can reduce the abundance of large-diameter snags and dead-and-down logs. Large-diameter snags function as important nesting structures for cavity-nesting birds and as roost sites for bat species. Dead-and-down logs provide important wildlife habitat and ecosystem functions. Roads created for access to fuel wood can further fragment woodlands and adversely affect important habitats, such as xeroriparian and riparian habitat, by transporting non-native organisms and altering wildlife habitat structure.

It is difficult to separate individual causal factors that influence habitats or wildlife species. Multiple factors are closely linked in cause-and-effect relationships across spatial and temporal scales. Adverse effects from multiple ecosystem stressors can have cumulative effects that are much more significant than the additive effects alone, with one or more stressors predisposing wildlife and habitats to additional stressors.

The abundance of individuals within a wildlife population, the distribution of wildlife species within a community, and the ecological condition of wildlife habitats would be affected under all alternatives. However, implementation of any alternative would not result in the complete elimination of a wildlife species, wildlife community, or wildlife habitat from IFNM. Impacts at a local scale would generally be greater than those for the entire IFNM.

Assumptions for analysis include:

- The loss of any wildlife habitat would cause a reduction in wildlife populations.
- If monitoring reveals unsuccessful mitigation, immediate measures to prevent further impacts would be implemented as appropriate to the species affected.
- Disturbance of any component of a species habitat could be detrimental in the short term, with the degree of detriment dependent on the importance of the habitat component to the maintenance of the population.
- Impacts to non-native wildlife species are not considered unless they provide an important component for native species that would otherwise not be adequately available.
- Sufficient habitat exists to maintain current AGFD objectives.
- Disruptive activities would displace wildlife; but some wildlife adaptation would occur.

Impact analyses and conclusions are based on interdisciplinary team knowledge of resources and the project area, review of existing literature, and information provided by other agencies. Effects are quantified where possible. Spatial analyses were conducted using GIS data and analyses. In the absence of quantitative data, best professional judgment was used. Impacts are described using ranges of potential impacts or in qualitative terms, if appropriate. Analyses of impacts on wildlife and wildlife habitat would be based on achieving the wildlife and wildlife habitat objectives of managing resources to maintain or improve habitat quality and long-term viability of wildlife populations.

#### 4.3.5.1 Impacts Common to All Alternatives

Withdrawal of the IFNM from all forms of mineral entry would reduce surface disturbance and help maintain wildlife habitat conditions by retaining existing vegetation, and could reduce erosion rates.

Restricting surface disturbance would also reduce opportunities for establishment of noxious weeds and invasive species.

Surface disturbance from mining activities on 4,590 acres of mining claims could result in habitat fragmentation and loss though associated land clearing, road building, and disturbance from traffic, hauling, and maintenance activities, if valid. This could reduce the quality of wildlife habitat and wildlife populations. Mitigation would reduce the loss of wildlife habitat and individuals.

Soil and water resource alternatives that maintain and improve soil cover and productivity would maintain and improve wildlife habitat by maintaining existing vegetation structure and composition, or improving establishment or re-establishment of vegetative resources utilized by wildlife for food supplies, cover, breeding sites, and other habitat components necessary for population maintenance.

Managing fire and fuels for full fire suppression and implementing programs to reduce unwanted ignitions, would improve the ecological health of wildlife habitats by maintaining native vegetation diversity, and would protect wildlife habitats from wildfires that alter native vegetation communities. Fuel treatments to maintain non-hazardous fuel levels using manual, biological, mechanical, or chemical treatments would result in the short-term loss of vegetation depending on the treatment applied. Some losses of vegetation would be of undesirable plant species including exotic and invasive species, which are treated to reintroduce or promote desirable plant species. This would improve wildlife habitat in treated areas.

OHV travel and recreation activities can alter characteristics of soil, vegetation, and xeroriparian or riparian systems. By directly altering these components of wildlife habitat from surface disturbance or disruption, recreation and OHV recreation use can reduce wildlife habitat quality. The significance and magnitude of recreation and OHV recreation use are related to the extensiveness, intensity, and timing of the activity.

#### 4.3.5.2 Alternative A (No Action)

Managing public lands within the IFNM to meet VRM Class III objectives could result in soil erosion and reduced vegetation cover (Map 2-6) from surface disturbance. In addition, 1-mile-wide utility corridors within the Silver Bell RCA (Map 2-13), promotion of maximum utilization of existing right-of-way routes, and designation of the 160 acre Pan Quemado communication site within the Silverbell RCA would all contribute to increased surface disturbance. Short-term construction activities in utility corridors impact wildlife and wildlife habitat from surface disturbance, and disruption to and the potential mortality of wildlife individuals. Long-term impacts to wildlife and wildlife habitat could include increased edge effect, reduced habitat connectivity, and disruption of wildlife movement corridors.

Custodial management of recreation and allowing recreational shooting within the IFNM outside developed areas would also increase surface disturbance and disruptive impacts on wildlife. Displacement from surface disturbance or disruptive recreational activities would move wildlife into less desirable habitat and increase competition for available resources with other species and uses. Allowing dispersed camping throughout the entire IFNM also could increase surface disturbance and disruptive impacts to wildlife in localized areas. The removal and/or use of living or dead and downed native plant material could reduce food supplies, cover, breeding sites, cavity holes, and other habitat components necessary for population maintenance in localized areas.

The impact of livestock grazing on wildlife is largely dependent on the grazing management practices used. Grazing management variables that affect wildlife habitat include stocking rates, stocking density, the age and physiological condition of cattle, grazing season, forage selection, and cattle distribution. In addition, factors such as range condition, soil type, temperature, and precipitation also greatly influence

the relationships between grazing and habitat quality for rangeland wildlife. Managing livestock grazing allotments to meet the Standards for Rangeland Health (BLM 1997) would enhance wildlife habitat by increasing the amount of desirable vegetation cover, structure, and wildlife species diversity.

Managing 41,470 acres (38 percent of public lands in the IFNM) as the Desert Bighorn Sheep WHA would prohibit surface occupancy for oil/gas on 800 acres and closes 800 acres to motorized vehicles on Ragged Top (Map 2-1). Approximately 3,340 acres managed as the Waterman ACEC (including 2,240 acres of public land) to protect Nichol Turk's head cactus habitat would result in prohibition of land use authorizations, except along existing roads, acquisition of 1,140 acres of non-Federal land, and implement the 1986 Habitat Management Plan (HMP) (Map 2-3). Together, these actions would limit or prohibit surface disturbance, and maintain or improve wildlife habitat conditions.

Retention of public lands, acquisition of approximately 40,110 acres of State and private land, and acquisition of non-Federal mineral estates in the Silverbell RCA would reduce surface disturbance, bring additional acres under BLM management, and reduce impacts to wildlife and wildlife habitat from mining activities. Furthermore, limiting vehicular travel on public land to existing roads and trails would reduce impacts on wildlife and wildlife habitat by reducing surface disturbance and disruption to areas adjacent to routes.

Allowing only those new range improvements for livestock in desert tortoise Category I and II habitat areas (approximately 45,420 acres) that would not create conflicts with tortoise populations would help retain existing habitat conditions and could reduce changes to the ecological condition of tortoise habitat.

Implementing activity plans for the Agua Blanca Ranch Multiple Resource Management Area and the Cocoraque Butte-Waterman Mountain Management Area improve watershed condition, increase soil cover, and reduce sediment which would improve wildlife habitat by improving vegetation diversity, density, and structural complexity; improving water quantity and quality; improving food supplies, cover, and breeding sites; and enhancing the function of movement corridors and habitat connectivity.

Restriction of surface disturbance would occur by implementing (1) the Nichol Turk's head cactus recovery plan to improve ecological site condition to good, (2) conservation measures that reduce the effects of fire management actions on threatened and endangered species, (3) mitigation measures to ensure that maintenance of established rights-of-way does not conflict with the natural resource goals, and (4) issuing land use authorizations (permits, leases, easements, and rights-of-way) only when compatible with the natural and cultural resource goals for the monument. Implementing these actions could help maintain or improve wildlife habitat throughout the IFNM.

Implementation level actions for livestock grazing would provide additional water sources in the Twin Tanks and Cocoraque Pastures. All additional waters would be constructed to accommodate deer, javelina, and quail. Greater availability of water for wildlife populations could improve habitat conditions and wildlife population health. Improved safety of new waters could reduce mortality of wildlife populations from drowning and improve survivorship of wildlife populations. Modification of fences could improve movement of wildlife species including priority species by eliminating barriers to wildlife movement. Designating 347 miles of routes for motorized use could disturb surfaces and disrupt wildlife in localized areas. Route proliferation could result in the localized degradation of wildlife habitat.

#### 4.3.5.3 Alternative B

Minimizing surface disturbance during construction, reconstruction, or maintenance of facilities, and developing mitigation plans to restore and stabilize soils in disturbed areas would reduce surface disturbance and disruption. This could reduce mortality of individuals. The Pan Quemado communications site could cause surface disturbance to 2 acres of the Desert Bighorn Sheep WHA, while

the Confidence Peak communications site could cause surface disturbance to 3 acres of desert bighorn sheep habitat. The Pan Quemado and Confidence Peak communications sites would disturb 155 fewer acres under Alternative B.

Not developing an activity-level plan for the Cocoraque Butte–Waterman Mountains Multiple Resource Management Area could result in fewer improvements to watershed conditions and soil cover and sediment reductions, compared with Alternative A. This could result in slower improvements to wildlife habitat.

Prohibiting surface-water diversions and groundwater pumping that removes water from the monument would maintain wildlife habitat by maintaining sufficient available surface and groundwater to support existing vegetation structure and composition. In addition, minimizing or restricting disturbance to vegetation and prohibiting the removal of live, dead, or downed native plant material would reduce impacts to wildlife and wildlife habitat, and reduce disturbance to wildlife from surface-disturbing activities. An integrated weed management approach would reduce spread of invasive weeds and help maintain the existing vegetation composition and structure, fire regime, and other habitat components necessary for wildlife population maintenance. Implementation of land restoration strategies could improve wildlife habitat by increasing food supplies; improving cover vegetation; improving vegetation condition in movement corridors; reducing habitat fragmentation and edge effect; and improving habitat connectivity. Use of native plants for all restoration projects would improve wildlife habitat by using wildlife species that are evolutionarily adapted for most advantageous utilization. However, native plants tend to have lower germination rates, decreasing the amount of revegetation occurring. This could result in an increase in erosion and may reduce habitat quality until restoration goals are met. Alternative B for vegetation resources would result in greater improvements to wildlife habitat, compared with Alternative A.

Managing 29,820 acres as the Desert Bighorn Sheep WHA would have the same types of impacts as management of the Silver Bell Desert Bighorn Sheep Management Area would (refer to Map 2-2) except Alternative B is 11,650 fewer acres than Alternative A. This could decrease wildlife habitat quality and desert bighorn sheep populations, compared with Alternative A. However, closing lambing areas within the WHA to human entry from January 1 through April 30 would reduce human disturbance during lambing season and potentially improve breeding success. In addition, closing the WHA to sheep and goats would reduce the risk of disease transmission from sheep and goats to desert bighorn sheep, and could improve the survivorship of desert bighorn sheep populations. Reintroductions, transplants, and supplement stockings could improve the survivorship of wildlife populations, improve the breeding success of wildlife populations, promote genetic interchange between wildlife populations, and improve genetic diversity within wildlife populations. However, reintroductions, transplants, and supplemental stockings could disrupt natural systems and increase exposure and transmission of wildlife diseases. Prohibiting dogs on public land within the monument would eliminate disturbance from dogs (not including feral dogs) on wildlife. This could improve wildlife habitat and reduce disruptive activities, compared with Alternative A.

Prohibiting land use authorizations except along designated routes, and prohibiting camping on 2,240 acres managed as a VHA for Nichol Turk's head cactus could reduce surface disturbance. Management actions for Nichol Turk's head cactus could improve habitat quality for wildlife species that share the same ecological range as Nichol Turk's head cactus. Prohibition of land use authorizations except along existing roads could reduce or eliminate impacts such as soil compaction, soil erosion, surface disturbance, and physical damage to Nichol Turk's head cactus. This could increase protection of Nichol Turk's head cactus populations, compared with Alternative A.

Prohibiting land use authorizations except along designated routes, and prohibiting camping on BLM-administered lands managed 6,780 acres as the Ragged Top Mountain VHA could improve wildlife

habitat by reducing surface disturbance and disruption (see Map 2-4). Increasing the area managed as a VHA could increase protection of wildlife habitat and populations, compared with Alternative A.

In addition, managing 125,110 acres as VRM Class I and II could reduce surface disturbance and maintain wildlife habitat by emphasizing natural landscapes, compared to no VRM Class I or Class II designations under Alternative A.

Making all allotments within IFNM unavailable for grazing as leases expire could eliminate livestock grazing on public land within IFNM. However, this could result in additional fencing of the Federal lands within the IFNM, which could reduce movement of large wildlife species such as bighorn sheep and mule deer, compared with Alternative A.

Designation of RMZs (Map 2-10) could reduce surface disturbance and impacts on wildlife and wildlife habitat compared to custodial management actions in Alternative A. Managing 60,000 acres as semi-primitive non-motorized and 14,540 acres as semi-primitive motorized could decrease disruption to wildlife and wildlife habitat, compared with Alternative A. Managing 13,320 acres of bighorn sheep habitat and 26,130 acres of desert tortoise habitat as primitive also could decrease surface disturbance and disruption compared with Alternative A (Table 4-13).

**Table 4-13: Alternative B–Desert Tortoise and Desert Bighorn Sheep Habitat Within Each Recreation Management Zone**

| Recreation Management Zones | Tortoise Habitat 1 | Tortoise Habitat 2 | Tortoise Habitat 3 | Tortoise Totals | Desert Bighorn Sheep |
|---|---|---|---|---|---|
| Primitive (P) | 8,700 | 13,890 | 3,540 | **26,130** | 13,320 |
| Roaded Natural | 650 | 2,580 | 8,390 | **11,620** | 2,990 |
| Semi-Private Non-Motorized | 690 | 8,780 | 16,610 | **26,080** | 4,810 |
| Semi-Private Motorized | 760 | 5,070 | 4,100 | **9,940** | 3,020 |

Prohibiting wood campfires and the use of firearms within the IFNM could reduce wildfire ignitions. Furthermore, limiting overnight camping to open areas would reduce localized surface disturbance and disruption of wildlife habitat and populations. This could improve wildlife habitat, compared with Alternative A. Limiting areas of camping and group size would reduce impacts on wildlife and wildlife habitat, compared with Alternative A.

Alternative B would allow access into the IFNM from areas of urban interface via designated public or community access points only. Impacts on wildlife and wildlife habitat from access into the IFNM would depend on the location of access points and the level of recreational activity at an access point. Access points tend to concentrate recreation activity and could result in localized impacts on soils and vegetation, which could reduce available food supply and shelter for wildlife. Equestrian access/staging locations within the WHA could cause local deterioration of wildlife habitat, disturb bighorn sheep and other wildlife, and disturb lambing ranges for desert bighorn sheep and breeding habitat for other wildlife species. In addition, allowing equestrian uses on routes designated as open or closed to motorized vehicles could promote the spread of invasive plant species that could reduce quality of wildlife habitat and change fire regimes. Limiting access to designated areas would reduce impacts on wildlife and wildlife habitat, compared with Alternative A, by reducing surface disturbance and disruption to localized areas.

The entire monument would be designated as an exclusion area for rights-of-way. Furthermore, no utility corridors would occur in the monument, reducing impacts on wildlife and wildlife habitat from surface disturbance and disruption (Map 2-14).

Impacts from OHV recreation use would be the same as those under Alternative A; however managing 90,360 acres (Map 2-18) as limited to designated routes and 38,040 acres as closed to OHV recreation use could reduce surface disturbance and disruption compared with Alternative A. Alternative B would result in the least impacts to wildlife and wildlife habitat by closing the largest areas of all alternatives to OHV use. Closing 19,730 acres of bighorn sheep habitat and 34,120 acres (Table 4-14) of desert tortoise habitat to OHV use would reduce surface disturbance and disruption, compared with Alternative A.

**Table 4-14: Alternative B–Desert Tortoise and Desert Bighorn Sheep Habitat With Each OHV Designation**

| OHV Designation | Tortoise Habitat 1 | Tortoise Habitat 2 | Tortoise Habitat 3 | Tortoise Totals | Desert Bighorn Sheep |
|---|---|---|---|---|---|
| Closed (to all motor vehicle use year round) | 12,720 | 15,330 | 6,070 | **34,120** | 19,730 |
| Limited (to designated routes) | 1,820 | 15,560 | 29,280 | **46,650** | 10,090 |

Management of 36,990 acres of the IFNM to maintain wilderness characteristics would minimize changes to landscapes and vegetation resources from human uses. This could decrease surface disturbance and help retain existing wildlife habitat quality, compared with Alternative A.

Impacts from implementation decisions for soil and water resources, travel management, and wildlife and wildlife habitat could alter conditions on public lands in the IFNM. Not developing an activity-level plan for the Cocoraque Butte–Waterman Mountains and the Agua Blanca Multiple Resource Management Areas could result in fewer improvements to watershed conditions, soil cover, and sediment reductions. This could result in slower improvements to wildlife habitat, compared with Alternative A.

Impacts from route designations would be similar to those under Alternative A except, Alternative B would designate 71 miles of existing travel route for motorized access/use, designate 258 miles for non-motorized use, and identify 18 miles of existing routes for reclamation. These actions could decrease the effects to wildlife habitat, as compared with Alternative A, by reducing long-term surface disturbance and disruption along routes.

Improved safety of wildlife waters would reduce mortality of wildlife populations and improve survivorship of wildlife populations. In addition, construction of new wildlife waters would improve access to water sources for wildlife populations where natural sources of water no longer exist, or where access to natural sources is impaired. However, new wildlife waters could expose wildlife populations to greater rates of predation than exists without the wildlife waters. Construction, modification, or removal of fences could improve movement of wildlife species including priority species by eliminating barriers to wildlife movement. Survey of abandoned mines could provide greater understanding of existing bat populations and could improve adaptive management for wildlife and wildlife habitat. This could improve wildlife habitat, compared with Alternative A, by decreasing hazards for wildlife populations and individuals.

Monitoring and mitigation programs for invasive species, special status species, and visual resources would avoid and minimize impacts on wildlife and wildlife habitat. Likewise, avoidance of projects or activities that disturb species and habitat would eliminate impacts on wildlife and wildlife habitat

resources. Designation of acquired land as exclusion areas for rights-of-way would eliminate surface disturbance and disruption to wildlife from utility construction and other allowable rights-of-way.

#### 4.3.5.4 Alternative C

Impacts on wildlife and wildlife habitat would be the same as those under Alternative B, except designating utility corridors (Map 2-15), allowing new rights-of-way, and exercise of existing rights-of-way would be allowed for access and utilities. This could increase surface disturbance and disruption and direct mortality to wildlife individuals. In addition, the construction of new trail connections and new equestrian trails could increase habitat fragmentation, and increase disruption of wildlife compared to Alternative B in localized areas. Compared with Alternative A, these management actions would reduce surface disturbance and disruption of wildlife and wildlife habitat.

Impacts from VRM would be the same as those under Alternative B, except the area managed as VRM Class II would increase to 124,900 acres, while the area managed as VRM Class III would increase to 3,420 acres. Managing 80 acres to meet VRM Class IV objectives could increase surface disturbance. This could improve wildlife habitat, compared with Alternative A, but increase surface disturbance, compared with Alternative B.

Increasing the area managed as semi-primitive motorized to 36,230 acres and decreasing the area managed as semi-primitive non-motorized to 57,450 acres would be less restrictive than Alternative B and could increase disruption of wildlife and degradation of wildlife habitat. Decreasing the amount of tortoise habitat and bighorn sheep habitat managed as primitive to 8,990 acres and 6,760 acres, respectively (Table 4-15), could allow an increase in surface disturbing activities compared with Alternative B.

**Table 4-15: Alternative C–Desert Tortoise and Desert Bighorn Sheep Habitat Within Each Recreation Management Zone**

| Recreation Management Zone | Tortoise Habitat 1 | Tortoise Habitat 2 | Tortoise Habitat 3 | Tortoise Totals | Desert Bighorn Sheep |
|---|---|---|---|---|---|
| Primitive | 6,230 | 1,130 | 1,630 | **8,990** | 6,760 |
| Roaded Nature | 650 | 2,900 | 8,970 | **12,520** | 2,880 |
| Semi-Private Non-Motorized | 2,210 | 17,850 | 12,400 | **32,460** | 7,970 |
| Semi-Private Motorized | 1,700 | 8,480 | 9,830 | **20,010** | 6,440 |

Allowing overnight camping within the Nichol Turk's head cactus VHA and Ragged Top VHA, and increasing the number of large-group sites to three could increase surface disturbance and disruption to wildlife in localized areas. In addition, allowing campfires would increase the potential for wildfire, which could increase surface disturbance in localized areas. Camping within the VHA could degrade wildlife habitat, disturb bighorn sheep and other wildlife, and disturb lambing ranges for desert bighorn sheep, and breeding habitat for other wildlife species. In addition, Alternative C would allow equestrian use in all areas of the IFNM. With repeated use in an area this could result in the proliferation of trails and the degradation of special status species habitat in localized areas. These management actions would increase impacts on wildlife (particularly desert bighorn sheep) compared with Alternative B and reduce impacts, compared with Alternative A.

Alternative C would close 10,880 acres to OHV use, which is less than the 38,040 acres closed under Alternative B, which could increase surface disturbance and impacts on wildlife and wildlife habitat. However, this could decrease impacts on wildlife and wildlife habitat, compared with Alternative A, by

reducing surface disturbance. The acres of tortoise habitat and desert bighorn sheep habitat within each OHV designation are shown in Table 4-16.

**Table 4-16: Alternative C–Desert Tortoise and Desert Bighorn Sheep Habitat Within Each OHV Designation**

| OHV Designation | Tortoise Habitat 1 | Tortoise Habitat 2 | Tortoise Habitat 3 | Tortoise Totals | Desert Bighorn Sheep |
|---|---|---|---|---|---|
| Closed (to all motor vehicle use year round) | 6,880 | 1,600 | 1,750 | **10,230** | 7,650 |
| Limited (to designated routes) | 7,660 | 29,280 | 33,600 | **70,540** | 22,170 |

Impacts from managing 124,900 acres as VRM Class II and areas managed for wilderness characteristics would be the same as those under Alternative B. However, decreasing the area managed for wilderness characteristics to 9,510 acres and not managing areas as VRM Class I could increase surface disturbing activities. This could decrease surface disturbance from human uses, compared with Alternative A.

Implementing vegetation resource decisions would result in impacts similar to those under Alternative B except allowing for the consumption of live, dead, or downed plants by livestock and using non-intrusive, non-native plants in limited emergency situations where they may be necessary to protect the resources or when taking no action would further degrade the resources could result in the establishment of unintended species. This could decrease wildlife habitat quality, compared with Alternative B.

Impacts from management of livestock grazing would be the same as those under Alternative A, except locating range improvements to minimize disturbance to wildlife and minimizing livestock impacts on priority plant species and habitats would retain a greater amount of existing vegetation relative to Alternative A. In addition, retaining livestock grazing on 11 allotments would have the same impacts as those under Alternative A; however, vegetative communities could attain desired conditions slower than under Alternative B.

Impacts from implementation-level decisions would be the same as those under Alternative B, except designating 142 miles as routes for motorized vehicle use could increase the scope of effects. Designating 187 miles of routes as non-motorized and identifying on 18 miles for reclamation could reduce disruption to wildlife and wildlife habitat compared with Alternative A.

#### 4.3.5.5 Alternative D

Impacts would be similar to those under Alternative C, except increasing the area managed as utility corridors to 2,660 acres could increase surface disturbance, compared with Alternatives B and C. This would decrease surface disturbance relative to the 8,240 acres of utility corridors under Alternative A. Decreasing the area managed as the Ragged Top VHA to approximately 6,500 acres (Map 2-5) and managing 122,580 acres (95 percent of public lands in the IFNM) to meet VRM Class II objectives and 1,600 acres as VRM Class IV (a 1,520-acre increase from Alternative C) would reduce the areas where surface disturbance restrictions apply, compared with Alternative B and C. This would increase surface disturbance restrictions, compared with Alternative A. Impacts from managing areas for RMZs would be the same as those under Alternative B, except increasing areas managed as roaded natural could increase the potential for disruption of wildlife and degradation of wildlife habitat, compared with Alternative B and C. Table 4-17 shows tortoise and desert bighorn sheep habitat within each RMZ.

**Table 4-17: Alternative D–Desert Tortoise and Desert Bighorn Sheep Habitat Within Each Recreation Management Zone**

| Recreation Management Zone | Tortoise Habitat 1 | Tortoise Habitat 2 | Tortoise Habitat 3 | Tortoise Totals | Desert Bighorn Sheep |
|---|---|---|---|---|---|
| Primitive | 0 | 0 | 0 | **0** | 0 |
| Roaded Nature | 700 | 2,760 | 9,180 | **12,640** | 2,950 |
| Semi-Private Non-Motorized | 5,320 | 14,390 | 5,640 | **25,350** | 10,670 |
| Semi-Private Motorized | 4,830 | 13,180 | 18,220 | **36,230** | 10,530 |

In addition, increasing the number of large group campsites to four would increase localized surface disturbance, compared with three under Alternative C. This could increase impacts to wildlife, particularly bighorn sheep, compared with Alternatives B and C, but would reduce impacts, compared with Alternative A.

Impacts from implementation actions under Alternative D would be similar to those under Alternative C, except 243 miles of routes would be managed as motorized. This would decrease the effects from routes, as compared with Alternative A, and increase the effects, as compared with Alternatives B and C. In addition, reclamation of 4 miles of routes is greater than Alternative A and less than 18 miles under that of Alternatives B and C.

### 4.3.6 Impacts on Special Status Species

This section presents potential impacts on special status species including federally listed species as well as BLM sensitive and state listed species, as a result of disturbances from management actions and resulting effects to species or their populations and changes to the condition of their habitats. Federal protections and BLM policy protecting threatened, endangered, and sensitive species were considered as an outlet to reduce the potential for impacts from permitted activities. While data are available on known locations and habitats within the IFNM, the data are neither complete nor comprehensive of all special status species known to occur or potential habitat that may exist. Known and potential special status species and habitat locations were considered in the analysis. However, the potential for species to occur outside these areas was also considered and, as a result, some impacts are discussed in more general terms.

Management actions that would cause or reduce surface disturbance would tend to have the greatest impacts on special status species. Management of energy and minerals, lands and realty, and recreation could result in surface disturbance and disruptive activities. Management of special status species, wildlife habitat management areas, vegetation habitat management areas and vegetation would have potential to enhance conditions for special status species.

The analysis is based on the following assumptions:

- Compliance with Section 7 of the Endangered Species Act of 1973 (ESA) would be completed before implementing specific projects resulting from RMP decisions.
- Ground-disturbing activities could lead to modification (positive or negative) of habitat and/or loss or gain of individuals, depending on the amount of area disturbed, the species affected, and the location of the disturbance.

- Changes in air, water, and habitat quality could lead to direct impacts, and could have cumulative impacts on species survival.
- Sufficient habitat exists to maintain current U.S. Fish and Wildlife Service and Arizona Game and Fish Department objectives.

Since special status species have specific habitat requirements, disturbance to the species or their habitat could result in population declines, which could affect survivability of local populations. Specific habitat requirements, population trends in the IFNM, and factors affecting population trends in the IFNM are detailed in Chapter 3 (Section 3.1.6), relevant recovery plans or conservation strategies, and the biological assessment prepared for this RMP under ESA Section 7 requirements. The abundance of individuals within a special status species population, the distribution of special status species within a community, and the ecological condition of special status species habitats could be affected under all alternatives. However, no special status species or habitat would be completely eliminated from the IFNM under any of the alternatives. Impacts at a local scale would generally be greater than those for the entire IFNM.

Impact analyses and conclusions are based on interdisciplinary team knowledge of resources and the project area, review of existing literature, and information provided by other agencies. Effects are quantified where possible. Spatial analyses were conducted using GIS data and analyses. In the absence of quantitative data, best professional judgment was used. Impacts are described using ranges of potential impacts or in qualitative terms, if appropriate. Analyses of impacts on special status species are based on achieving the special status species objectives of managing resources to maintain or improve habitat quality and long-term viability of special status species populations.

#### 4.3.6.1 Impacts Common to All Alternatives

Displacement due to surface disturbance or disruptive activities moves animals into less desirable habitat and increases competition for available resources with other species and uses. Surface disturbance could result in mortality to individuals of a species from collision with construction equipment and entombment in underground burrows. Noise disturbance during surface-disturbing activities could temporarily cause wildlife to avoid the area during importance life-history cycles, such as breeding. Indirect impacts on wildlife occur from displacement and physiological stress, with human presence. A fleeing or displaced animal incurs additional costs through loss of food intake and potential displacement to poorer (lower) quality habitat. Chronic or continuous disturbance can result in reduced fitness and reproductive potential.

Surface disturbance and disruptive activities cause habitat fragmentation or loss and wildlife displacement, depending on the type, amount, and location of activity. Habitat fragmentation occurs when a contiguous habitat is divided by surface-disturbing activities, causing a reduction in usable ranges; disruption of movements between crucial habitats; and the isolation of populations and species, which leads to decreased genetic diversity and increased potential for extirpation of localized populations or even extinction. Habitat fragmentation alters vegetative composition and cover and the type and quality of the food base. Further, habitat fragmentation changes microclimates by altering temperature and moisture regimes, changes nutrient and energy flows, and increases opportunities for predation and exploitation by humans. In contrast, management to maintain or improve soil cover and to restrict authorization of land uses to area along roads would help maintain special status species habitat conditions.

Extractive resource uses such as mining development can influence ecosystem function, resilience, and sustainability. Extractive resource uses may result in habitat fragmentation and loss though associated land clearing, road building, and disturbance from traffic, hauling, and maintenance activities. Associated point-source pollution causes heavy-metal and highly acidic water pollution, air pollution, noise, and

habitat conversion. Any of these activities and their adverse outcomes may ultimately lead to the reduction of special status species populations or habitat. Mitigation to minimize the loss of habitat could be implemented; however mining could result in the long-term loss of suitable habitat for special status species.

The impact of livestock grazing on rangeland wildlife is largely dependent on the grazing management practices used. Broad generalizations regarding the impact of livestock grazing on rangeland wildlife are typically incorrect because different grazing practices are unique and wildlife species have different habitat requirements. Grazing management variables that affect wildlife habitat include stocking rates, stocking density, the age and physiological condition of livestock, grazing season, forage selection, and livestock distribution. In addition, factors such as range condition, soil type, temperature, and precipitation also greatly influence the relationships between grazing and habitat quality for rangeland wildlife. Grazing plans, therefore, need to be site-specific and based on the habitat needs of the wildlife species of interest. Impacts of grazing practices on special status species include increased competition for limited water, forage, and space, alteration of vegetation composition and structure, impacts on stream hydrology and water quality, and reduced soil permeability and potential to support plants due to soil compaction.

Fuel wood collection can reduce the abundance of snags and dead-and-down logs. Snags function as important nesting structures for cavity-nesting birds and as roost sites for bat species, including lesser long-nosed bat. Dead-and-down logs provide important special status species habitat and ecosystem functions. Routes created for access to fuel wood can further fragment and adversely affect important habitats. Fuel wood collection may also introduce disturbances from noise, OHV use, or accidental fire ignition.

OHV travel can cause damage to soils and vegetation and impact wildlife by destroying and fragmenting habitat, causing direct mortality of wildlife or plants, or alter behavior and reproduction through stress and disturbance.

Recreation activities can alter some characteristics of soil, vegetation, or drainage systems. By directly impacting these components, recreation affects an animal's food supply and availability as well as shelter, or living space. In turn, impacts on food and living space influence behavior, survival, reproduction, and distribution. The significance and magnitude of any effect are related to the extent, intensity, and timing of the activity. The vulnerability and rarity of the habitat, and its importance to wildlife, should also be considered. Recreation management alternatives that reduce the size, duration, and timing, and that prohibit recreational activities in sensitive habitats would tend to reduce impacts on special status species.

Invasive species have the ability to displace native plant and animal species, disrupt nutrient and fire cycles, and alter the character of the community by enhancing additional invasions. The integrity of native fauna populations is adversely affected by non-native species through resource competition, predation, hybridization, habitat alteration, and through the introduction of diseases.

Direct impacts on special status species from fire or fire management activities typically result from mortality or displacement of individuals, disturbance from reduced air or water quality from smoke and ash, and alteration of immediate post-fire or post-treatment environments through loss of or changes to key habitat components. These direct impacts may affect wildlife and plant populations including Nichol Turk's head cactus or habitats for several years after a fire or a vegetation treatment activity, depending on the ability of wildlife species to recolonize burned or altered habitats. Indirect impacts on wildlife and vegetation resources from fire or fire management activities typically result from influences of post-fire succession, recovery, or rehabilitation of the habitat. These impacts could be long term, depending on the severity of the habitat alteration, and can change species assemblages (relative abundances or species composition), species behaviors, or overall population trends, benefiting some species and adversely

affecting others. Fuel treatments to maintain non-hazardous fuel levels using manual, biological, mechanical, or chemical treatments would result in the short-term loss of vegetation depending on the treatment applied. Some losses of vegetation would be of undesirable plant species including exotic and invasive species, which are treated to reintroduce or promote desirable plant species. This would improve special status species habitat in treated areas. Mitigation for fire management activities would be implemented under the Arizona Statewide Land Use Plan Amendment for Fire, Fuels and Air Quality Management (2004) (refer also to Appendix E, Conservation Measures).

Roads and utility corridors and the use of routes have the potential to be detrimental to special status species. They fragment habitats and landscapes, dividing large landscapes into smaller patches and converting interior habitat into edge habitat. In addition, collisions with vehicles can constitute a major source of wildlife and plant mortality. Roads and utility corridors can serve as a means of dispersal for many non-native and invasive plant species. Ground disturbance associated with the construction and maintenance of these facilities provides additional opportunities for establishment of non-native species. The establishment of non-native species can reduce the quality of habitat for special status wildlife and plant species. Areas with many access roads and surface disturbances could disrupt migration corridors that link crucial habitats. Migration routes could be altered or eliminated, changing some traditional wildlife use patterns on a regional level.

It is difficult to separate individual causal factors that influence habitats or species. Multiple factors are closely linked in cause and effect relationships across spatial and temporal scales. Adverse effects from multiple ecosystem stressors can have cumulative effects that are much more significant than the additive effects alone, with one or more stressors predisposing wildlife, plant species and habitats to additional stressors.

#### 4.3.6.2 Alternative A (No Action)

Managing all public land, including the Waterman Mountain ACEC, as a VRM Class III area would increase surface disturbance, which could result in increased soil erosion and reduced vegetation cover (Map 2-6). Altered vegetative composition and cover could increase habitat fragmentation and change the type and quality of the food base or could alter habitat for plant species such as the Nichol Turk's head cactus and reduce reproduction. Changes to the vegetation community could reduce the forage plants available to lesser long-nosed bat and desert tortoise. Soil erosion could degrade the habitat quality of Nichol Turk's head cactus. In addition, 1-mile-wide utility corridors within the Silverbell RCA (Map 2-13), promotion of maximum utilization of existing right-of-way routes, and designation of the 160-acre Pan Quemado communication site within the Silverbell RCA would all contribute to increased surface disturbance. Construction activities in utility corridors could have short-term impacts on wildlife such as disturbance and direct mortality to individuals. Less mobile species, such as the desert tortoise, or non-mobile species, such as plants, could be injured or destroyed by construction equipment or buried in underground burrows. Long-term impacts on special status species could include an increased edge effect, reduced habitat connectivity, and disruption of wildlife movement corridors. Permanent localized changes to the habitat could lead to displacement of desert tortoise. All impacts would be localized and would not lead to a deleterious reduction in population size or available habitat for special status species.

Continuation of mining activity on valid mining claims could influence ecosystem function, resilience, and sustainability. Existing mining estates in Nichol Turk's head cactus habitat could lead to habitat destruction and fragmentation, habitat degradation through associated point-source pollution, and reduced population. Custodial management of recreation resources could also increase surface disturbance and disruptive impacts on special status species and their habitat. Displacement from surface disturbance or disruptive recreational activities moves animals into less desirable habitat and increases competition for available resources with other species and uses. Furthermore, dispersed vehicle-based and non-motorized

camping allowed throughout BLM-administered lands in the IFNM would also increase surface disturbance and disruptive impacts to wildlife and plants.

Surface disturbance would be restricted by soil and water resource actions that maintain and improve soil cover and productivity. Improved soil condition would enhance wildlife habitat by maintaining existing vegetation structure and composition, or improving establishment or re-establishment of vegetative resources utilized by wildlife for food supplies, cover, breeding sites, and other habitat components necessary for population maintenance.

Implementing activity plans for the Agua Blanca Ranch Multiple Resource Management Area and the Cocoraque Butte–Waterman Mountain Multiple Resource Management Area would improve watershed condition, increase soil cover, and reduce sediment, which would improve special status species habitat by improving vegetation diversity, density, and structural complexity; improve water quantity and quality; improve food supplies, cover, and breeding sites; and enhance the function of movement corridors and habitat connectivity.

Managing 41,470 acres of public land (38 percent of public lands in the IFNM) as the Desert Bighorn Sheep Management Area would prohibit surface occupancy for oil/gas on 800 acres, close 800 acres to motorized vehicles on Ragged Top (Map 2-1), and restrict surface disturbance. Managing approximately 2,240 acres of public land as the Waterman Mountains ACEC to protect Nichol Turk's head cactus habitat would result in prohibiting land use authorizations except along existing roads, acquiring 1,140 acres of non-Federal land, and implementing the 1986 HMP (Map 2-3). Together, these actions would limit or prohibit surface disturbance, and maintain or improve special status species habitat conditions.

Retention of public lands, acquisition of lands in the Waterman Mountains, acquisition of approximately 40,110 acres of State and private land, and acquisition of non-Federal mineral estate in the Silverbell RCA could reduce surface disturbance and may help protect Nichol Turk's head cactus and other special status species habitat. These management actions could bring additional acres under BLM management, and reduce impacts on special status species from mining activities. Furthermore, limiting vehicular travel on public land to existing roads and trails would reduce impacts on special status species. Transportation management actions to limit OHV use in sensitive areas would reduce impacts on special status species.

Managing fire and fuels for full fire suppression and implementing programs to reduce unwanted ignitions would protect special status species habitat from wildfires that alter native vegetation communities. In addition, allowing only those new range improvements for livestock in desert tortoise Category I and II habitat areas (approximately 45,420 acres) that would not be in conflict with tortoise populations would eliminate impacts and changes to the ecological condition of tortoise habitat. Furthermore, removal or use of living, dead and downed native plant material could reduce food supplies, cover, breeding sites, cavity holes, and other habitat components necessary for special status species in localized areas. Finally, this alternative would allow recreational shooting within the monument outside developed areas, which could disturb wildlife. Recreational shooting could disturb wildlife.

Restriction of surface disturbance would occur by implementing (1) the Nichol Turk's head cactus recovery plan, (2) conservation measures that reduce the effects of fire management actions on threatened and endangered species, (3) mitigation measures to ensure that maintenance of established rights-of-way does not conflict with the natural resource goals, and (4) issuing land use authorizations (permits, leases, easements, and rights-of-way) only when compatible with the natural and cultural resource goals for the monument.

Implementation decisions for livestock grazing would provide additional water sources in the Twin Tanks and Cocoraque Pastures. All additional waters would be constructed to accommodate deer, javelina, and quail. Greater availability of water for wildlife populations could improve habitat conditions and special

status species population health. Improved safety of new waters would reduce mortality of special status species populations from drowning and improve survivorship of wildlife populations. Modification of fences could improve movement of special status species by eliminating barriers to wildlife movement.

Designating 347 miles of routes for motorized use could disturb surfaces in localized areas. Route proliferation could result in the localized degradation of special status species habitat and may result in the mortality of special status plant species. Managing the Waterman Mountain ACEC with 10 miles of routes open to motorized use could disturb areas adjacent to roads and subsequently degrade Nichol Turk's head cactus habitat. Recreation use in areas away from routes could cause increased disruption to wildlife and plant species habitats.

#### 4.3.6.3 Alternative B

Alternative B has fewer actions that would contribute to surface disturbance, compared with Alternative A. The Pan Quemado communications site could cause surface disturbance to 2 acres of Desert Bighorn Sheep Wildlife Habitat Management Area (WHA), while the Confidence Peak communications site could cause surface disturbance to 3 acres of desert bighorn sheep habitat. The Pan Quemado and Confidence Peak communications sites would disturb 155 fewer acres than under Alternative A. Not developing an activity level plan for the Cocoraque Butte–Waterman Mountains Multiple Resource Management Area could result in fewer improvements to watershed conditions, soil cover, and sediment reductions than Alternative A. This could result in slower improvements to special status species habitat.

Compared with Alternative A, management actions to limit surface-disturbing activities would be more restrictive, which would provide the most protection to special status species. Impacts from management actions that restrict surface disturbance would be the same as those under Alternative A, except management actions would increase the area where restrictions apply.

Though 11,650 fewer acres than Alternative A, allocation of 29,820 acres for the Desert Bighorn Sheep WHA (Map 2-2) would protect habitat, lambing areas, and movement corridors. Closure of the WHA to sheep and goats would reduce the risk of disease transmission from sheep and goats to desert bighorn sheep, and could improve the survivorship of desert bighorn sheep populations. Closure of lambing sites within the WHA to human entry from January 1 through April 30 would reduce human disturbance during lambing cycles and could potentially improve breeding success. Prohibiting dogs on public land within the monument would eliminate disturbance from dogs (not including feral dogs) on wildlife. Reintroductions, transplants, and supplement stockings could improve the survivorship of wildlife populations, improve the breeding success of wildlife populations, promote genetic interchange between wildlife populations, and improve genetic diversity within wildlife populations. However, reintroductions, transplants, and supplement stockings could disrupt natural systems and increase exposure and transmission of wildlife diseases.

Alternative B would manage approximately 2,240 acres of Nichol Turk's head cactus habitat as a VHA in the Waterman Mountains (Map 2-4). Management actions within the VHA would (1) prohibit land use authorizations except along designated open routes, (2) acquire non-Federal land, which upon acquisition would be managed as part of the VHA, (3) revise and implement the 1986 HMP, and (4) prohibit camping (on BLM-administered land) in the VHA. Management of Nichol Turk's head cactus habitat as a VHA could reduce or eliminate impacts such as soil erosion to Nichol Turk's head cactus through limiting or prohibiting activities, such as recreational use. Management actions for Nichol Turk's head cactus also could improve habitat quality for special status species that have a similar ecological range as the cactus. Prohibition of land use authorizations except along existing roads could reduce or eliminate impacts such as soil compaction, soil erosion, surface disturbance, and physical damage to the cactus. Adding lands to the VHA could protect populations of Nichol Turk's head cactus not currently within the

boundary of the VHA. Prohibition of camping in the VHA could reduce soil erosion and compaction, and eliminate physical damage to Nichol Turk's head cactus from campers. These management actions could maintain or improve Nichol Turk's head cactus habitat compared with Alternative A.

Designation of 6,780 acres as a VHA at Ragged Top Mountain (see Map 2-4) could improve special status species habitat by improving cover vegetation; improving vegetation condition in movement corridors; reducing habitat fragmentation and edge effect; and improving habitat connectivity for many special status species. Management actions would (1) acquire non-Federal land, which upon acquisition would be managed as part of the VHA and (2) prohibit camping (on BLM-administered land) in the VHA. Adding lands to the VHA could protect populations of special status species not currently within the boundary of the VHA. Prohibition of camping in the VHA could reduce soil erosion and compaction, and eliminate physical damage to special status species habitat from campers.

Management of soil and water resources under Alternative B would minimize surface disturbance during construction, reconstruction, or maintenance of facilities, and develop mitigation plans to restore and stabilize soils in disturbed areas, which would minimize and mitigate habitat fragmentation and loss, displacement of special status species, and mortality to individuals. Likewise, actions that prohibit surface water diversions and groundwater pumping that removes water from the IFNM would maintain special status species habitat by maintaining sufficient available surface and groundwater to support existing vegetation structure and composition.

Management of vegetation resources would (1) minimize or restrict disturbance to vegetation resources under this alternative, (2) prohibit removal of live, dead, or downed native plant material (except where specifically authorized), (3) pursue an integrated weed management approach, (4) develop a land restoration plan, and (5) require the use of native plants for restoration projects. Minimizing or restricting disturbance to vegetation would reduce impacting special status species, and reduce disturbance to wildlife from surface-disturbing activities. Prohibiting removal of live, dead, or downed native plant material would reduce impacts on food supplies, cover, breeding sites, cavity holes, and other habitat components. An integrated weed management approach would reduce spread of invasive weeds and help maintain the existing vegetation composition and structure, fire regime, and other habitat components necessary for wildlife population maintenance. Implementation of land restoration strategies could improve wildlife habitat by increasing food supplies, improving cover vegetation, improving vegetation condition in movement corridors, reducing habitat fragmentation and edge effect, and improving habitat connectivity. Use of native plants for all restoration projects would improve and optimize wildlife habitat restoration by using native plants for which native wildlife species are evolutionarily adapted for most advantageous utilization. However, native plants tend to have lower germination rates slowing the rate of revegetation. This could result in an increase in soils loss and degrade special status species habitat in localized areas. Management of vegetation resources under Alternative B would result in greater improvements to wildlife habitat, as compared with Alternative A.

Impact from managing 3,290 acres as VRM Class III could allow surface disturbance similar to Alternative A, however to a much lesser extent. Managing 125,110 acres as VRM Class I and II could reduce surface disturbance and maintain wildlife habitat by emphasizing natural landscapes, compared with Alternative A (which has no VRM Class I or Class II designations).

Making all allotments within IFNM unavailable for grazing as leases expire could eliminate livestock grazing on public land within IFNM. The livestock operators would have to find alternative sources of feed or reduce their herds to a size that could be maintained year-round on non-Federal property after the leases expire. Other private land or State Trust pastures would have to be rented, and these may not be available. A large amount of additional fencing would have to be built to keep livestock off the Federal lands within the monument, which would greatly increase the impacts to movement of large wildlife species such as bighorn sheep and mule deer. The livestock operators may have to buy additional feed in

order to maintain their current numbers (although supplemental feeding is prohibited on State Trust lands), or be forced to sell some or their entire livestock herd. Impacts discussed in this section would affect livestock leases until they expired.

Designation of RMZs would reduce surface disturbance and impacts on special status species compared with custodial management actions in Alternative A. Managing 32,150 acres as roaded natural and semi-primitive motorized including 1,820 acres of the VHA, could cause more disruption to special status species if these areas were used more often. Managing 96,200 acres as semi-primitive non-motorized including 390 acres within the VHA, could reduce surface disturbance and disruption (Map 2-10), particularly from motorized uses. This could reduce surface disturbance to special status species compared with Alternative A.

Prohibiting wood campfires would eliminate localized impacts on special status species from wood collection (such as removal of vegetation, food supplies, destruction of habitat, and disruption of ecosystem cycles), reducing impacts on special status species, relative to Alternative A. Furthermore, prohibiting camping on 2,240 acres of public land in the IFNM could limit impacts on special status species and their habitat compared with Alternative A.

Management under Alternative B would prohibit the use of firearms within the IFNM, except for permitted or authorized hunting. Prohibition of recreational shooting would reduce impacts on special status species relative to Alternative A.

Alternative B would allow access into the IFNM from areas of urban interface via designated public or community access points only. Impacts on special status species from access into the IFNM would depend on the location of access points and the level of recreational activity at an access point. Access points tend to concentrate recreation activity and could result in localized impacts on soils and vegetation which could reduce available food supply and shelter for wildlife. Limiting public or community access points would reduce impacts on special status species, compared with Alternative A.

Alternative B identifies six areas within semi-primitive motorized and roaded natural RMZs for access/staging locations for equestrian uses. These are located at Manville Road, Avra Valley Road, Reservation Road, Silverbell Road, near the West Silver Bell Mountains, and Aries Drive to the power line. In addition, Alternative B would allow equestrian uses on routes open or closed to motorized vehicles; however, no new trails would be constructed. Equestrian access/staging locations at West Silver Bell Mountains would be located within the Desert Bighorn Sheep WHA. Equestrian access/staging locations within the WHA could cause local deterioration of wildlife habitat, disturb bighorn sheep and other wildlife, and disturb lambing ranges for desert bighorn sheep and breeding habitat for other wildlife species. Equestrian use could promote the spread of invasive plant species that could reduce quality of wildlife habitat and change fire regimes. Alternative B could restrict equestrian use to designated access points and routes; Alternative A has no decisions for equestrian use, which could result in greater impacts on special status species, relative to Alternative B.

Non-motorized and mechanized recreation could alter some characteristics of soil, vegetation, or aquatic systems. Recreation could affect an animal's food supply and availability of living space. In turn, impacts on food and living space influence behavior, survival, reproduction, and/or distribution. The significance and magnitude of any effect are related to the extensiveness, intensity, and timing of the activity. The vulnerability and rarity of the habitat and its importance to wildlife should also be considered. Alternative B would impose the greatest restriction on non-motorized and mechanized recreation uses; therefore, Alternative B would have the least impact on special status species.

The entire monument would be designated as a right-of-way exclusion area; however, existing rights-of-way would be recognized. As a result, impacts resulting from lands and realty decisions would be limited

to areas with existing rights-of-way. In addition, no decisions exist for specific acquisition of parcels; however, acquisition of non-Federal land would be based on special status species concerns including ecologically important areas and habitat corridors. Furthermore, no utility corridors would be designated and rights-of-way would occur only where required by law; therefore, few impacts on special status species would take place as a result of utility construction and maintenance (Map 2-14).

Alternative B would limit OHV use to designated routes on 90,360 acres and close 38,040 acres to OHV use (Map 2-18), which would protect special status species, particularly in closed areas.

Management of 36,990 acres to maintain wilderness characteristics would minimize changes to landscapes and vegetation resources. In addition, managing areas as a primitive RMZ could minimize impacts on special status species from recreation.

Impacts from decisions for fire ecology and energy and mineral resources would be similar to those under Alternative A. However, allowing surface disturbance for scientific and historical research related to cultural resource management could degrade special status species habitat including areas suitable for Nichol Turk's head cactus.

Not developing and implementing an activity-level plan for the Cocoraque Butte–Waterman Mountains Multiple Resource Management Area could result in fewer improvements to watershed conditions, soil cover, and sediment reductions as compared with Alternative A, and therefore could result in slower improvements to wildlife habitat.

Implementation-level decisions to improve the safety of wildlife waters would reduce mortality and improve survivorship of wildlife populations. In addition, construction of new wildlife waters would improve access to water sources for wildlife populations where natural sources of water no longer exist, or where access to natural sources is impaired. However, new wildlife waters could expose wildlife populations to greater rates of predation.

Construction, modification, or removal of fences could improve movement of wildlife species including priority species by reducing barriers to wildlife movement. Implementing the removal of roads or facilities that are no longer necessary could reduce disturbance to special status species. Short-term, the removal of structures would disturb surfaces in localized areas and could temporarily degrade habitat conditions.

Implementation of monitoring and mitigation programs for special status species and visual resources and to control invasive species would avoid and minimize impacts on special status species. Likewise, avoidance of projects or activities that disturb species and habitat would reduce impacts on special status species resources. Furthermore, designation of acquired land as right-of-way exclusion areas would eliminate surface disturbance and disruption to wildlife from utility construction and other allowable uses of rights-of-way.

Mineral resource implementation actions would (1) survey abandoned mines within the monument for the presence of physical and chemical hazards, and wildlife habitat and (2) reclaim abandoned mines posing the greatest and immediate risk to human health, or convert mines to another use protective of other resources. Mines could provide roosting habitat for bats. Survey of abandoned mine could provide great understanding of existing bat populations and could improve adaptive management for special status species. If reclamation of abandoned mines sealed entrances this could reduce or eliminate access to roost sites for bats that occupy those mines.

Implementation-level decisions designating 71 miles of existing travel routes for motorized access/use, 258 miles for non-motorized use, and identifying 18 miles of existing routes for reclamation could

decrease the effects to special status species habitat, as compared with 347 miles under Alternative A. In addition, restricting motor vehicle use to 3 miles the VHAs could reduce surface disturbance in these areas.

#### 4.3.6.4 Alternative C

Impacts from management of soil and water resources, special status species, fire ecology, and energy and mineral resources would be similar to those under Alternative B. Management actions that contribute to surface disturbance would be similar to actions under Alternative B, with a few exceptions. Alternative C would designate approximately 980 acres as utility corridors as shown on Map 2-15. Two utility corridors would be designated: Corridor 1 (200 feet wide) and Corridor 2 (300 feet wide). Development and use of utility corridors and rights-of-way could have short-term impacts on special status wildlife such as disturbance and direct mortality to individuals. Long-term impacts on special status species could include increased edge effect, reduced habitat connectivity, and disruption of wildlife movement corridors. Disturbed areas in the utility corridor could change wildlife species composition, favoring generalist native species, and some exotic and naturalized exotic wildlife species. Furthermore, new rights-of-way and exercise of existing rights-of-way would be allowed for access and utilities.

Managing the area as an avoidance area for rights-of-way including the VHA could increase surface disturbance. However, within the VHA rights-of-way and land use authorizations would be restricted to areas along routes. Travel-management actions would allow for the construction of new routes. Construction of new routes could increase habitat fragmentation, degrade existing habitat, and amplify disruptive impacts on wildlife.

Under Alternative C, no public lands within the IFNM would be designated as VRM Class I area (versus 36,990 acres of Class I under Alternative B). VRM Class II area would increase to 124,900 acres, while VRM Class III would increase to 3,420 acres. Alternative C also would classify 80 acres as VRM Class IV. Together, these VRM designations would be less restrictive than those under Alternative B, which could increase surface disturbance and impacts on special status species and their habitat.

Increasing the area managed as motorized to 54,610 acres including 1,280 acres of the VHA and decreasing the area managed as non-motorized to 73,740 acres, including 80 fewer acres within the VHA could increase the potential for disruption of special status species and habitat degradation compared with Alternative B.

Compared with Alternative B, management under Alternative C would allow (1) campfires when firewood is from non-monument sources, (2) overnight non-vehicle-based camping within semi-primitive motorized RMZs, (3) large-group camping near the West Silver Bell Mountains, and (4) camping within the Nichol Turk's head cactus VHA and Ragged Top VHA. Allowing campfires would increase the potential for wildfire. A large group campsite at West Silver Bell Mountains would be located within the Desert Bighorn Sheep WHA. Camping within the VHA could deteriorate wildlife habitat, disturb bighorn sheep and other wildlife. However, this large group campsite would be closed during bighorn lambing season. This would reduce disruption to special status species during a portion of the year. In addition, Alternative C would allow equestrian use in all areas of the IFNM. With repeated use in an area this could result in the proliferation of trails and localized degradation of special status species habitat. This alternative would allow greater impacts on wildlife, particularly bighorn sheep, relative to Alternative B.

Alternative C would close 10,880 acres to OHV use (Map 2-19). Compared with Alternative B, reducing the area closed to OHV by 27,160 acres could result in increased surface disturbance and impacts on special status species and their habitats.

Under Alternative C, 9,510 acres of IFNM would be managed to maintain wilderness characteristics—27,480 acres fewer than Alternative B. Furthermore, managing these areas as VRM Class II, versus as VRM Class I under Alternative B, special status species habitat in these areas would allow for less restrictive uses compared with Alternative B.

Management of vegetation resources under Alternative C would result in impacts similar to those under Alternative B, with the following exceptions (1) consumption of live, dead, or downed plants by livestock and (2) the use of non-intrusive, non-native plants in limited, emergency situations where they may be necessary to protect the resources or when taking no action would further degrade the resources. Non-intrusive non-native plants could provide habitat for wildlife in emergency situations where no action would result in greater impacts on special status species. Use of non-intrusive non-native plants in emergency situations, such as use for soil stabilization following wildfire, could result in the establishment of noxious weed species. Once established, some exotic species have the ability to displace or replace native plant species, disrupt nutrient and fire cycles, and cause changes in the pattern of plant succession resulting in disturbance and/or loss of plant communities, food supplies, cover, breeding sites, and other habitat components necessary for special status species population maintenance.

Impacts from management of livestock grazing would be the same as those under Alternative A, except locating range improvements to minimize disturbance, minimizing livestock impacts on priority plant species and habitats would retain a greater amount of existing vegetation relative to Alternative A. In addition, retaining livestock grazing on 11 allotments would have the same impact relative to Alternative A; however, vegetative communities could attain desired conditions slower than under Alternative B, which has public lands within the IFNM unavailable for livestock grazing after existing leases expire.

Implementing measures to improve the safety of wildlife waters would reduce mortality and improve survivorship of wildlife populations. In addition, construction of new wildlife waters would improve access to water sources for special status wildlife species where natural sources of water no longer exist or where access to natural sources is impaired. However, new wildlife waters could expose special status species wildlife to greater rates of predation.

Implementation-level decisions designating 142 miles as motorized including 10 miles in the VHAs would have the same type of impacts but could increase the extent of effects, compared with 71 miles under Alternative B. Designating 187 miles of routes as non-motorized including 12 miles in the VHAs and reclaiming 18 miles could reduce disruption to special status species, relative to Alternative A.

#### 4.3.6.5 Alternative D

Impacts from decisions for soil and water resources, special status species, special status species, fire ecology, livestock grazing, and energy and mineral resources would be similar to Alternative C. Management actions that contribute to surface disturbance would be similar to actions under Alternative C, with a few exceptions. Management of lands and realty under Alternative D would designate 2,660 acres in three ¼-mile-wide utility corridors (as shown on Map 2-16) located in the Sawtooth Mountains and West Silver Bell Mountains could increase surface disturbance compared with 980 acres under Alternative C. However, this would reduce the area where surface disturbance associated with utility corridors could occur compared with 8,240 acres under Alternative A.

Managing 6,500 acres as the Ragged Top VHA (Map 2-5) would reduce the size of the VHA by 280 acres, relative to Alternatives B and C. Furthermore, managing 122,580 acres (95 percent of public lands in the IFNM) to meet VRM Class II objectives (a 2,320-acre decrease relative to Alternative C) would reduce the area where surface disturbance restrictions apply, and would increase surface disturbance restrictions, compared with Alternative A.

Increasing the area managed as roaded natural and semi-primitive motorized to 78,080 acres, and decreasing the area managed as non-motorized to 50,270 acres could increase the potential for disruption of special status species and degradation of habitat, relative to Alternatives B and C.

Compared with Alternative C, Alternative D would allow (1) campfires using dead, downed, and detached wood, (2) overnight, non-vehicle-based dispersed camping throughout the monument unless camping in an area is specifically prohibited for protection of resource values, (3) large-group camping near the Sawtooth Mountains, and (4) equestrian uses on routes designated as motorized or non-motorized and cross-country equestrian travel in all areas open to public use. Firewood collection could affect an animal's food supply and availability of living space. In turn, impacts on food and living space influence behavior, survival, reproduction, and/or distribution. The significance and magnitude of any effects are related to the extensiveness, intensity, and timing of the activity. Large-group campsites at Sawtooth Mountains would be located within the Desert Bighorn Sheep WHA. Camping within the WHA could degrade wildlife habitat, disturb bighorn sheep and other wildlife, and disturb lambing ranges for desert bighorn sheep and breeding habitat for other wildlife species. However, this large group campsite would be closed during bighorn lambing season. This would reduce disruption to special status species during a portion of the year. This alternative could result in greater impacts on special status species, particularly desert bighorn sheep, relative to Alternatives B and C, but would reduce impacts relative to Alternative A.

Implementation-level decisions designating 243 miles of routes as motorized, including 15 miles in the VHAs, would decrease impacts from motorized routes, compared with 347 miles under Alternative A, and increase impacts relative to 71 miles under Alternative B and 142 miles under Alternative C. In addition, designating 100 miles of routes as non-motorized including 6 miles in the VHAs and identifying 1-mile of route in the VHAs for reclamation would be greater than that under Alternative A.

### 4.3.7 Impacts on Fire Ecology and Management

This section describes potential impacts on fire ecology and management that could occur from the implementation of management actions for other resource programs. Management actions can affect the frequency and intensity of wildland fires, the cost of fire suppression efforts, and the safety of firefighters and the public. Relative impacts are evaluated in terms of fire ignition (fire frequency), spread (fire size), and intensity (amount of heat released).

The following assumptions were used when assessing the impacts on fire ecology and management.

- Fire is an important functional, natural disturbance in many of the ecological systems found in the planning area.
- A direct relationship exists between the density of use of public land within the planning area and the frequency of human-caused fires.
- A direct relationship exists between fuel loading and potential fire size and intensity.
- Livestock and wildlife water developments could be used for fire suppression.
- Restoration projects would be successful over the long term.

Impact analyses and conclusions are based on interdisciplinary team knowledge of resources and the project area, review of existing literature, and information provided by BLM resource specialists. Effects are quantified where possible or are described in qualitative terms in the absence of quantitative data.

#### 4.3.7.1 Impacts Common to All Alternatives

On the IFNM, wildfire would be suppressed in all instances, and the average cost (per acre) of suppressing fire would be the same under all alternatives. Priority suppression areas would be outlined in implementation-level documents (i.e., Fire Management Plan), which would be tiered to a long-term land use plan (RMP). Under all alternatives, implementation of programs that create greater public awareness of fire dangers could prevent unwanted ignitions. Programs that emphasize fire detection and techniques for rapid fire suppression could reduce the size of burned areas (wildfires are easier to suppress when caught early).

Continuing management in compliance with the Arizona Standards for Rangeland Health and Guidelines for Grazing Administration would prevent deterioration of plant communities in the IFNM, with potential to alter the fire regime on a landscape level. This would promote retention of the current Fire Regime Condition Class (FRCC) I throughout the IFNM, resulting in a fire-return interval of 35 to 100 years and fires of mixed severity.

Improvement of ecological site conditions in Nichol Turk's head cactus areas could improve the resiliency of plant communities against invasive plants. Improved ecological site conditions could reduce the percentage of invasive grass species cover lending the plant community greater ability to slow the spread of fire.

Fire size could increase in localized areas where invasive plant material accumulates. Using biological mechanical or chemical treatments to maintain non-hazardous levels of fuels would reduce the risk of unwanted ignitions.

Designated areas within the IFNM that harbor specific priority resources such as special status species habitat may affect fire size in those areas. For example, minimum impact suppression techniques (MIST) might be necessary during wildfire suppression to protect areas of sensitive natural resources. The intent of MIST is to suppress wildfires, with the least impact to the land. Use of MIST would be at the discretion of a resource advisor who could be deployed along with other fire suppression personnel during fire suppression activities in the IFNM. In some cases, MIST could result in larger fires. For example, MIST could include letting a fire burn to a natural barrier rather than creating a fuel break with heavy equipment.

Acquisitions of land in the IFNM could increase the acres where the BLM would have primary fire suppression responsibilities. Acquisition of additional lands would not likely increase the average cost of wildfire suppression (in dollars per acre), but it would increase the probability that wildfire suppression activities would take place in the IFNM during any given year. Land acquisitions could improve BLM's ability to manage resources to reduce the potential for ignitions by increasing the opportunities for implementing the fuels management/fuel break program over a larger area.

Existing transmission lines and pipelines would continue to present hazards to firefighters during suppression operations in site-specific areas. Suspended transmission lines pose an overhead hazard to hand crews, engine crews, and aviation crews. Aviation crews would be unaffected by underground pipelines, but heavy equipment may be inappropriate in the vicinity of pipelines. Firefighter-safety concerns associated with transmission lines and pipelines could alter fire-suppression tactics from direct, to indirect. The use of indirect suppression tactics could result in larger fires where utility corridors exist. The use of indirect suppression tactics because of safety concerns could lead to larger fires in site-specific areas. For example, firefighters might let fires burn in the vicinity of safety hazards until the fire spreads outside the hazard's area of influence, where direct suppression is possible without the threat of safety hazards. These transmission lines and pipelines could provide linear fuel breaks to the extent that they require removal of vegetative cover.

Under all alternatives, impacts on wildfire and fuels management are not anticipated as a result of implementing management actions for the following resource programs: air quality, geological resources, energy and minerals, and scenic and visual resources.

#### 4.3.7.2 Alternative A (No Action)

Controlling erosion in site-specific areas would reduce opportunities for invasive grasses and weeds (e.g., bufflegrass and red brome) that can carry wildfire beyond its historic range of variation. Improvement of ecological site conditions in the Cocoraque Butte–Waterman Mountains Multiple Resource Management Area would improve the resiliency of existing plant communities against the establishment of invasive plants. As a result, plant communities in the Cocoraque Butte–Waterman Mountains Multiple Resource Management Area would possess a greater ability to slow the spread of fire. Managing 41,470 acres (32 percent of public lands in the IFNM) as the Silver Bell Desert Bighorn Sheep Management Area could minimize surface disturbance and reduce opportunities for the establishment of noxious weeds and invasive species. These areas would be less prone to the types of invasive plants that tend to carry fires beyond their natural range of variation. These decisions would indirectly help retain FRCC I and maintain the current fire regime.

Livestock grazing in the IFNM would reduce fine fuels indirectly reducing the potential for wildfire to spread (fire size) in site-specific areas where invasive annual grasses would otherwise accumulate. Furthermore, it could reduce the potential for ignition (fire frequency) if invasive annual grasses become established landscape-wide in the future, rather than just in site-specific areas, as they are now. Meanwhile, the selection of herbaceous species by livestock could, over time, result in an indirect increase in the amount of heat released during fires (heat intensity) if the amount of woody vegetation increased. Managing two allotments as ephemeral could reduce the amount of fine fuels in years when production was sufficient. This could reduce the severity and frequency of wildfire on 28,020 acres (22 percent of public lands in the IFNM) during years of high vegetation productivity.

The closure of 820 acres (<1 percent of public lands in the IFNM) to motorized vehicle use would continue to reduce potential for ignition on those acres. Campfires would continue to be potential sources of ignitions throughout the IFNM. Fire frequency could increase if campfires escape into surrounding vegetation.

One-mile-wide right-of-way corridors could act as fuel breaks if vegetation is cleared in those areas, and could help prevent the spread of wildland fires in site-specific areas. If new transmission lines and pipelines were constructed in those corridors, safety hazards to firefighters could increase on 8,240 acres (6 percent of public lands in the IFNM).

Implementation-level decisions for livestock grazing and travel management also have potential to affect fire and fuels management. The provision of additional livestock water sources in the Twin Tanks and Cocoraque Pastures would provide additional waters for wildfire suppression in site-specific locations. Designating 347 miles of routes for motorized use could increase the risk of ignition along routes from vehicles.

#### 4.3.7.3 Alternative B

Minimizing surface disturbance, along with an integrated noxious weed management approach throughout the IFNM, would reduce opportunities for the establishment of noxious weeds and invasive species. These decisions would indirectly help maintain current FRCC I ratings in site-specific areas, which would help to promote establishment of diverse vegetation communities that are more capable of stopping or slowing the spread of fire than communities with active populations of noxious weeds and other invasive plants. Prohibiting the removal of living and dead native plant material would help

maintain the existing surface fuel conditions by maintaining FRCC I conditions in the IFNM. Restoration of disturbed areas in the IFNM would reduce fuels by replacing non-native invasive species with native vegetation. Fire frequency could be reduced in restoration areas where projects succeed in keeping invasive grasses out and maintaining the current FRCC. Short-term restrictions on surface disturbance that preclude certain types of fire suppression and fuels treatment activities could indirectly increase the overall size of wildfires throughout the IFNM.

Prohibiting the removal of plant material except when fuel loading is high could allow the buildup of living and dead invasive herbs in localized areas in the IFNM. WUI areas would be particularly sensitive. Invasive herbs are fine fuels that may carry a fire but would not increase the intensity of a fire. Therefore, while the majority of the IFNM would continue to display the historic fire regime, there could be isolated areas—generally where invasive species establish—where the historic fire regime would move outside the historic range of variability.

Management of the Desert Bighorn Sheep WHA would have similar impacts to those described for the Silver Bell Desert Bighorn Sheep Management Area under Alternative A, where surface disturbance and the potential for the spread of invasive species would be reduced. However, these effects would occur over a smaller area under this alternative: the WHA would be approximately 29,820 acres (23 percent of public lands in the IFNM), a decrease of approximately 11,650 acres as compared with Alternative A. Human entry into this area would be restricted from January 1 to April 30, which would reduce the potential for human-caused ignitions in the WHA during this period. Implementing measures to conserve desert tortoise habitat also could reduce surface disturbance and opportunities for establishment of noxious weeds and invasive species in the IFNM. This could indirectly promote retention of the current FRCC I by maintaining plant community resiliency against colonization from invasive plant species, over the short term. Maintaining annual grasses in tortoise habitat areas could increase fine fuels in localized areas where invasive grasses are present, resulting in a higher potential for wildfire ignition and spread, if annual grasses were not utilized as forage.

Suppression methods may be altered on 36,990 acres (29 percent of IFNM) managed for wilderness characteristics. For example, certain types of heavy equipment used for suppression efforts may be inappropriate. This could increase response time and result in larger fires on these acres. In other areas outside those managed for wilderness characteristics, installation of new wildlife waters could enhance fires suppression efforts by increasing the availability of water for wildfire suppression in site-specific areas.

New right-of-way development would not occur under this alternative unless mandated by law; only existing right-of-way would be recognized and no utility corridors would be designated. This would decrease potential for development of rights-of-way that would act as fuel breaks, as compared with Alternative A. However, reduced potential for construction of new utility lines relative to Alternative A would reduce the potential for introduction of new safety hazards to firefighters. Existing transmission lines would continue to compromise firefighters safety.

Making 11 allotments unavailable for livestock grazing after existing grazing leases expire could increase the amount of fine fuels available for ignition compared to Alternative B. Fire could spread in localized areas if the unused forage were not consumed by wildlife. The potential for increased ignitions and larger fires could increase in localized areas, as compared with Alternative B, because the entire monument would be unavailable for livestock grazing after existing leases expire under that alternative.

Recreation management decisions regarding campfires, firearms, and OHV designations would reduce the likelihood of ignitions in the IFNM, relative to Alternative A. The potential for ignitions from campfires would be reduced because only camp stoves and charcoal fires–which tend to produce fewer firebrands and are easier to control than traditional wood campfires–would be allowed. Fire frequency

would be reduced to the extent that escaped campfires are reduced in the IFNM. Prohibiting the use of firearms within the IFNM–an activity that could cause an accidental ignition–also would reduce the potential for human-caused ignitions. Discharge of firearms for permitted hunting would continue to be a potential source of ignitions in localized areas of the IFNM.

Impacts on management of fire and fuels from closure of areas to vehicle use would be the same as Alternative A, except vehicles would cease to be a source of human-caused ignitions over a much larger portion of the IFNM. Under this alternative, the potential for ignitions that originate from motorized vehicles would be reduced on approximately 38,040 (30 percent of public lands in the IFNM) of the IFNM—this potential would be reduced on 37,220 more acres, as compared with Alternative A. Most of the vehicle closure areas coincide with areas managed for wilderness characteristics under this alternative. The potential for human-caused ignitions would be reduced on 36,990 acres (29 percent of public lands in the IFNM) of lands managed for wilderness characteristics due to the absence of motorized equipment and authorized land uses in those areas.

Implementation-level decisions also would contribute to potential impacts on fire and fuels management. Removal of any utility lines would remove potential overhead safety hazards for firefighters in site-specific areas. However, removal of roads no longer needed for access could increase the size of fires in site-specific areas because the roads would be reclaimed with vegetation and would not provide effective fuel breaks.

Designating only 71 miles of road for motorized travel could result in the reduced risk of ignitions from motorized vehicles, as compared with 347 miles under Alternative A.

#### 4.3.7.4 Alternative C

Minimizing surface disturbance throughout the IFNM, along with an integrated noxious weed management approach, would have the same impacts on the current FRCC, fire suppression efforts, and hazardous fuels treatments as those that would occur under Alternative B. Management decisions would include the following: maintain and improve soil cover and productivity through erosion preventative measures and land treatments, restore disturbed areas to the natural range of native plant associations, and select appropriate plants for restoration.

Management of wildlife habitat would have the same impacts to current FRCC and potential sources of wildfire ignition as those that would occur under Alternative B. Management decisions would include the following: establish the Desert Bighorn Sheep WHA, install additional wildlife waters, and implement measures to conserve desert tortoise habitat.

Prohibiting the removal of living and dead plant material would have similar impacts on the current fire regime condition class ratings and fuels as those that would occur under Alternative B. However, more fine vegetative material would be removed from plant communities under this alternative due to livestock grazing operations. Prohibitions on the removal of plant material under this alternative would result in a reduction of fine surface fuels (herbaceous), as compared with Alternative B and an increase in woody surface fuels as compared with Alternative A. Current FRCC ratings would be unchanged, across all alternatives.

Under Alternative C, the risk of ignition from campfires would remain the same as that under Alternative A, but would be limited to localized areas. This would increase risk compared with Alternative B because natural wood campfires would be allowed, and these types of campfires have a higher potential for escape due to firebrands than the types of fires that would be permitted under Alternative B.

Livestock grazing would have the same impacts on fine fuels, fire ignition potential, and fire size as those under Alternative A. However, fine fuels would decrease slightly in grazed areas where livestock favor herbaceous vegetation. This would reduce fuel loading in localized, site-specific areas and could reduce fire frequency in livestock grazing allotments relative to Alternative B because the entire monument would be unavailable for livestock grazing under that alternative. Managing livestock to allow adequate and suitable native forage would have the same impacts on fire frequency, intensity, and severity as those that would occur under Alternative A. Provision of additional livestock watering areas would have the same impacts on wildfire suppression efforts as those that would occur under Alternative A.

Prohibitions on the use and discharge of firearms would have the same impacts to ignition potential within the IFNM as those that would occur under Alternative B.

Existing rights-of-way would have similar but less widespread impacts as those that would occur under Alternative A. Corridors under this alternative would be 200 to 300 feet wide, compared with one-mile wide under Alternative A. As a result, there would be less potential for the rights-of-way to act as fuel breaks under this alternative. Any additional rights-of-way granted by the BLM where additional transmission lines or pipelines are constructed could increase the number of safety hazards to firefighters in site-specific areas.

Closing 10,880 acres (8 percent of public lands in the IFNM) to motorized vehicle use would reduce the area where vehicle-related ignition could occur, relative to 820 acres closed under Alternative A and increase the area where it could occur, relative to Alternative B (where 38,040 acres would be closed).

Management of lands for wilderness characteristics under this alternative would have the same potential to increase fire size as management under Alternative B if fire suppression methods were restricted in these areas; however 9,510 acres (13 percent of public lands in the IFNM) would be managed to maintain wilderness characteristics, which is less than Alternative B.

Implementation-level decisions would have similar impacts on those described under Alternative B, except motorized travel would be allowed on 142 miles of road; the risk for ignitions from motorized vehicles in the IFNM would be much reduced compared with 347 miles under Alternative A and increased compared with 71 miles under Alternative B.

#### 4.3.7.5 Alternative D

Minimizing surface disturbance throughout the IFNM, along with an integrated noxious weed management approach, would have the same impacts on current FRCC, fire suppression efforts, and hazardous fuels treatments as those that would occur under Alternative B. These decisions would include: maintain and improve soil cover and productivity through erosion preventative measures and land treatments, restore disturbed areas to the natural range of native plant associations, and select suitable plants for restoration activities.

Establishing the Desert Bighorn Sheep WHA, installing additional wildlife waters, and implementing measures to conserve desert tortoise habitat would have the same impacts on current FRCC and potential sources of wildfire ignition as those that would occur under Alternative B.

Prohibiting the removal of living, dead, and downed native plant material would have similar impacts on those that would occur under Alternative B. However, allowing the removal of vegetation for consumption by livestock and the collection of dead and down wood for firewood use in the IFNM reduces restrictions compared with Alternatives B and C. There would be less accumulation of surface fuels under this alternative compared with Alternatives B and C since collection of firewood would be permitted in addition to livestock grazing.

Maintaining livestock grazing would have the same impacts regarding ignition potential, fire size, and fire intensity as those that would occur under Alternative A. Any provision of new livestock water sources would have the same impacts on fire suppression efforts as those that would occur under Alternative A.

Campfires would pose the same potential for unwanted ignitions as that under Alternative C. The restrictions on the use of firearms would be the same as those described under Alternative A.

Utility corridors and rights-of-way would be ¼ mile wide under this alternative—wider than those under Alternative B, but narrower than those under Alternative A. This could increase fire size, relative to Alternative A, because narrower corridors would not be as effective as fuel breaks under this alternative. Corridors would occupy approximately 2,660 acres (about 2 percent of public lands in the IFNM).

No acres would be closed to motorized vehicle use under this alternative, but travel would be limited to designated roads and trails. The 820 acres closed to vehicle use under Alternative A would be effectively closed under this alternative also, as none of the existing roads and trails in that area would be designated for motorized vehicle use.

An implementation-level decision would designate 243 miles of routes (versus 347 miles under Alternative A) for motor-vehicle travel. This would reduce the risk of vehicle related ignition compared with Alternative A and increase risk compared with 71 miles under Alternative B or 142 miles under Alternative C.

### 4.3.8 Impacts on Cultural Resources

This section discusses impacts on cultural resources from the proposed management decisions for other resources and resource uses. Impacts on cultural resources from most management decisions are difficult to quantify because the locations of most cultural resource sites in the IFNM are not known and the alternatives do not identify specific areas for ground-disturbing activities. The extent of impacts on cultural resources among the alternatives varies in regard to two primary factors: (1) the potential adverse effects of different types and intensities of authorized uses of public land, especially the extent of ground-disturbing activities, and (2) the potential effects due to targeted management of cultural resources in specific areas.

The following assumptions were used when assessing the impacts on cultural resources.

- The cultural resource program would continue to be implemented in accordance with BLM policies, which implement numerous Federal laws and regulations. The four major elements of the cultural program include (1) inventory and evaluation, (2) protection and preservation, (3) resource use in accordance with resource allocations, and (4) planning. BLM reviews activities and other authorized uses of the public lands pursuant to Section 106 of the National Historic Preservation Act (NHPA), NEPA, and the American Indian Religious Freedom Act.
- Any actions proposed on public land administered by BLM land would include an evaluation of (1) the potential for the presence of important cultural 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 cultural resources, including project avoidance, redesign, and if necessary, data recovery.
- Access or surface disturbance associated with a specific future action could 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 number of sites that could be impacted by various actions would be directly correlated with the degree, nature, and quantity of surface-disturbing activities within the IFNM and the cultural sensitivity of the area.
- Scientific excavation of identified sites could occur (if not restricted by the RMP).
- As each alternative would comply with Federal laws and agency guidelines governing the identification, evaluation, and protection of cultural resources and Native American sacred/traditional sites, cultural resources would continue to be considered, identified, and evaluated in association with all Federal Undertakings (see Glossary). The cultural resources data acquired through these inventories and evaluations would increase knowledge of cultural resources in the region.

Federal Undertakings are required to comply with Section 106 of the NHPA. Section 106 requires Federal agencies to take into account the effects of their undertakings on properties eligible for or included in the National Register of Historic Places (NRHP) and mandates the consideration of avoidance or mitigation of adverse impacts on those properties. To know what resources need to be considered, cultural resource inventories are usually associated with Section 106 compliance. BLM policy, types of undertakings, and consultation with the State Historic Preservation Office (SHPO) determine the level of inventory required for an undertaking. Compliance with Section 106 also requires the appropriate levels of consultation and interaction with Native American tribal groups to assure that the concerns of indigenous peoples are addressed and their rights protected. Compliance with Section 106 and other laws and policies, including appropriate inventories, ensures that there would be no significant impacts on cultural resources.

#### 4.3.8.1 Impacts Common to All Alternatives

Under all alternatives, cultural resources would continue to be affected by natural weathering and erosion processes, and some resources may be degraded by uses of the IFNM or vandalism if no protective or preventative action is taken. More cultural resources will be found on public land administered by the BLM within the IFNM, but quantity and quality of uninventoried resources are not known until they are discovered and properly evaluated. The cultural resources that have been inventoried provide a basis for modeling the types and distribution of unrecorded archaeological and historical resources within the IFNM.

Without sufficient law enforcement associated with recreational activities, actions such as off-road travel, inadvertent damage, vandalism, and pot hunting would result in a loss of cultural resource information. As most recreation activities are dispersed in nature and do not require permitting, these impacts would be mitigated on a case-by-case basis as they are discovered.

The emergency nature of wildfire can lessen management ability and priority to conserve cultural resources. Surface-disturbing impacts on cultural resources from wildfires are largely associated with fire suppression activities. Wildfire suppression activities have a considerable potential to damage prehistoric and historic sites through fire line construction (hand line and bulldozer line), establishment of helicopter bases, fire camps, and related activities. Fire camps and staging areas in or near known or unidentified prehistoric or historic sites may subject the associated surface artifacts to removal or displacement.

The dispersed nature of livestock grazing creates difficulties in applying Section 106 to all areas of potential disturbance due to livestock. Areas where livestock congregate and livestock trailing occurs at or crosses cultural resource sites could impact cultural resources by altering their context. Cattle congregating and rubbing could damage standing structures and abrade rock art panels. Trampling at water sources and along stream banks, as well as trailing, could remove protective vegetation cover and increase compaction, creating indirect impacts on cultural resources by accelerating natural erosion and

exposing artifacts to illegal surface collection and vandalism. These types of impacts would be localized to individual sites. Impacts on specific areas would be identified and mitigated through the leasing process on a case-by-case basis.

Activities and projects associated with the management of natural resources include air quality improvements, range improvements, erosion control structures, habitat improvement projects, and vegetation treatments, which may include 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 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.

Retention of Federal land within the IFNM would provide regulatory protection for cultural resources, and acquisition of non-Federal land would provide regulatory protection to cultural resources within those lands, as well as further the protective natural and cultural resource goals of the monument.

Because of review procedures and flexibility of potential action, adverse effects on cultural resources are not anticipated as a result of implementing management actions for the following resources and resource uses: air quality, paleontological resources, special designations, or scenic and visual resources management.

#### 4.3.8.2 Alternative A (No Action)

Management of cultural resources is usually a non-disturbing 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 ,motorized vehicles or the public; research involving excavation; and development of interpretive projects or facilities, such as signs, kiosks, and public events could affect cultural resources, as well as other resources. Such projects rarely involve disturbance of more than 1 acre in any given year.

Within the IFNM, the Waterman Mountains ACEC is the only special designation, which was primarily established to manage vegetation. Because special designations tend to limit or carefully manage ground-disturbing activities, the Waterman Mountains ACEC also provides some coincidental protection of cultural resources within its approximately 2,240 acres of public land.

The closure of the 20-acre Special Management Area to motorized vehicles would continue under Alternative A. Closures and restrictions of vehicle uses reduce the potential for effects to the integrity of the site, but could cause limitations to opportunities for public interpretation and education. Protection for cultural resources also would be provided through the continued management of the 2,720-acre Avra Valley CRMA.

Management actions for special status species, wildlife and wildlife habitat, vegetation, and soil and water resources could coincidentally protect cultural resources by minimizing impacts from livestock, installing fencing to protect vegetation, and through soil erosion reduction efforts. Decisions associated with natural resources could disturb cultural resources during ground-disturbing activities.

Uses of public lands would include mineral extraction, livestock grazing activities, construction within and use of various types of rights-of-way, recreation, and research projects. When these uses require Federal authorization they would be reviewed to ensure that potential effects on cultural resources are considered. Many uses, including issuance of rights-of-way, livestock facilities, and mineral development, would have secondary effects because they could create new vehicle access, which could

lead to inadvertent damage and vandalism of fragile cultural resources. By altering the local environment, these developments also could 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 OHV use in unrestricted areas, also would have the potential to disturb cultural resources. Alternative A provides the least protection for cultural resources from these uses because it would impose very few restrictions on recreation management and OHV use.

The implementation of mitigation measures to ensure that maintenance of established rights-of-way do not conflict with the natural and cultural resource goals of IFNM, and the consideration of land use authorizations on a case-by-case basis specifically to assess compatibility with natural and cultural resource goals would result in protection of cultural resources. Limiting motorized vehicle use to existing routes could protect cultural resources, but use of the 347 miles of existing routes also could disturb cultural resources or increase access to cultural resources along roadways. Implementing conservation measures during fire suppression operations to reduce the effects of fire management actions on threatened and endangered species also could coincidentally protect cultural resources.

#### 4.3.8.3 Alternative B

The potential impacts of activities and projects associated with the proposed management decisions for special status species, wildlife and wildlife habitat, vegetation, and soil and water resources under Alternative B would be similar to Alternative A and would have the same impacts as those described under Alternative A.

Cultural resources would be provided some coincidental protection within the Waterman Mountain VHA. In contrast to Alternative A, Alternative B specifically provides for the allocation and reallocation of cultural resources into one of the five use categories according to the BLM Cultural Resource Manual 8100: (1) scientific use, (2) conservation for future use, (3) traditional use, (4) public use, and (5) experimental use. Site allocation and reallocation would protect and promote appropriate uses of cultural resources. Allocation of sites to scientific use and allowing non-ground-disturbing scientific and historical studies of these sites would promote appropriate management of the informational values of theses sites and increase understanding of the cultural history of the region. Under Alterative B, no sites would be allocated to public use, which would protect and preserve cultural resources, but eliminate opportunities for public interpretation. Allocation of sites to traditional use under Alternative B would promote the preservation of cultural traditions.

Closure of the Santa Ana de Cuiquiburitac area to motorized vehicles would continue under Alternative B, but would be enlarged to encompass 640 acres (620 acres more than under Alternative A), and the historic site would be allocated to conservation for future use. The expansion and allocation would increase the protection of the site, but allocation to conservation for future use would restrict opportunities for types of research and public interpretation and education. The Avra Valley CRMA would be eliminated under Alternative B, but this action would have no effect on cultural resources because the area is provided the same level of protection through the designation of the monument.

Acquisition of non-Federal mineral estate underlying Federal surface holdings throughout the IFNM could coincidentally protect cultural resources by eliminating ground-disturbing activities associated with exploitation of minerals since Federal minerals in the IFNM are withdrawn from entry under the mining laws.

Managing the IFNM as an exclusion area with no utility corridors identified which limits the potential for new rights-of-way to be authorized, could coincidentally protect cultural resources by reducing surface

disturbance. Managing 125,110 acres (about 97 percent of the public lands within the IFNM) as VRM Class I and II and making public lands within the IFNM unavailable for livestock grazing as leases expire could reduce surface disturbance, providing more protection to cultural resources than Alternative A.

Impacts on cultural resources from recreation activities requiring a permit, such as commercial and competitive events, are addressed through NEPA and Section 106 processes. Dispersed recreation does not require a permit and has the greatest potential to affect cultural resources, particularly when it involves the use of OHVs. Recreational use of public lands 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, particularly recreational OHV use and geocaching activity. Alternative B would increase protection of cultural resources over Alternative A by closing 38,040 acres to OHV use and limiting OHV use to designated routes in an area of 90,360 acres (compared to 820 acres closed and 127,580 acres limited to designated or existing routes in Alternative A). Motorized use is prohibited year-round within Cocoraque Butte, as well as within a 640-acre area surrounding Santa Ana de Cuiquiburitac.

In addition, overnight vehicle-based camping would be limited to identified sites, which would decrease potential disturbance to cultural resources caused by dispersed camping. Limitation of the development of new routes could help protect cultural resources within IFNM as well.

Implementation-level decisions for special status species, wildlife and wildlife habitat, vegetation, and soil and water resources could coincidentally protect cultural resources by reducing soil erosion, decreasing public access by removing roads and facilities, and installing fences to protect vegetation. Implementation decisions associated with natural resources could disturb cultural resources during associated ground-disturbing activities, and management of some special status species and native vegetation could affect species and vegetation that have traditional cultural significance.

Designation of exclusion areas upon the acquisition of land could coincidentally protect cultural resources. Limiting motorized vehicle use to designated routes (71 miles motorized and 258 miles non-motorized) and implementing a Travel and Transportation Management Plan, could protect cultural resources; however, use of roads by motorized and non-motorized uses also could disturb cultural resources.

Implementation-level decisions for scenic and visual resources to rehabilitate disturbed areas could coincidentally restore or maintain the settings for cultural resources. Providing access for wildlife viewing opportunities under recreation could disturb cultural resources through increased access, but also could provide coincidental opportunities for public interpretation and education. Implementing survey and reclamation of abandoned mines could reveal information about historical mining within the IFNM and lead to the recording of additional cultural resources related to mining, but reclamation also could disturb cultural resources. Providing access to geological sites and/or features could disturb cultural resources, but public viewing and enjoyment of geologic sites could offer opportunities to interpret cultural resources. As a result of these decisions, Alternative B decisions provide for more opportunities to increase understanding of cultural resources within the IFNM than Alternative A.

#### 4.3.8.4 Alternative C

The potential impacts of activities and projects associated with the proposed management decisions for special status species, wildlife and wildlife habitat, vegetation, and soil and water resources under Alternative C would be similar to Alternative A and would have the same impacts as those described under Alternative A. Allocating land as the Waterman Mountains VHA would result in the same impacts as those described under Alternative B.

Excavation of sites allocated to scientific use would be allowed, which would promote long-term preservation of the informational values to these sites and increase understanding of the regional cultural history. In contrast to Alternative B, which allocates no cultural resources to public use, Alternative C would allocate Cocoraque Butte, segments of the historic Sasco Railroad, historical sites associated with the Silver Bell Mine, historical ranching sites, and certain agricultural use areas within the existing Avra Valley for public use. Other sites may be allocated to public use based on specific criteria. This decision addresses program goals for public interpretation and educational opportunities, but increased visitation without adequate management could degrade the integrity of cultural resources. The allocation of sites to traditional use would result in the same impacts as those described under Alternative B.

A 640-acre area surrounding Santa Ana de Cuiquiburitac would be closed to motorized vehicles as in Alternative B, but instead of allocating the site to future use, the site would be allocated for scientific use. This allocation would allow for further research to enhance documentation and understanding of the site. Eliminating the Avra Valley CRMA would result in the same impacts as those described under Alternative B.

Designation of two utility corridors and construction of utilities within those corridors could disturb cultural resources. Rather than prohibiting authorization of new rights-of-way as in Alternative B, rights-of-way for access and utilities could be considered on a case-by-case basis. Limitation of new rights-of-way could coincidentally protect cultural resources, but issuing new rights-of-way could disturb cultural resources if impacts could not be avoided. All 11 grazing allotments would be available for grazing, which also could disturb cultural resources to a greater extent than Alternative B. In addition, the protection of the settings of cultural sites could decrease under Alternative C, with 124,900 acres within the IFNM being managed as VRM Class II, compared to 125,110 acres managed as VRM Classes I and II in Alternative B.

Approximately 10,880 acres would be closed to OHV use and OHV use would be limited to designated routes on 117,530 acres (compared to 820 acres closed and 127,580 acres limited to existing or designated routes in Alternative A). Alternative C does not provide as much protection to cultural resources as Alternative B (38,040 acres closed and 90,360 acres limited to designated routes). Like Alternative B, Alternative C prohibits motorized use year-round within Cocoraque Butte, as well as within a 640-acre area surrounding Santa Ana de Cuiquiburitac.

Overnight vehicle-based camping would be limited to identified sites throughout the IFNM resulting in the same impacts as those described under Alternative B. However, dispersed non-vehicle based camping would be allowed and could disturb cultural resources.

The implementation of management actions for special status species, wildlife and wildlife habitat, vegetation would result in the same impacts as those described for Alternative B. Alternative C allows for new and continued ground-disturbing activities in areas with sensitive or fragile soils, but impacts would be mitigated.

Designating acquired lands as avoidance rather than exclusion area (except in designated corridors) would potentially provide greater, though still limited, opportunities for rights-of-way resulting in ground disturbance compared to Alternative B. Allowing motorized vehicle travel on 142 miles of designated routes and non-motorized travel on 187 miles of designated routes would offer less protection to cultural resources than Alternative B (71 miles designated for motorized uses, 258 miles designated for non-motorized uses).

#### 4.3.8.5 Alternative D

The potential impacts of activities and projects associated with the management actions for special status species, wildlife and wildlife habitat, vegetation, and soil and water resources under Alternative C would be similar to Alternative A and would have the same impacts as those described under Alternative A.

Allocating land as the Waterman Mountains VHA would result in the same impacts as those described under Alternative B. Like Alternative C, Alternative D allows for the excavation of sites allocated to scientific use (including the Santa Ana de Cuiquiburitac site), which would promote the long-term preservation of the informational values of these sites and increase understanding of the regional cultural history. Like Alternative C, Alternative D would allocate Cocoraque Butte, segments of the historic Sasco Railroad, historical sites associated with the Silver Bell Mine, historical ranching sites, and certain agricultural use areas within the existing Avra Valley for public use. Other sites may be allocated to public use based on specific criteria. This decision addresses program goals for public interpretation and educational opportunities, but increased visitation without adequate management could degrade the integrity of cultural resources. Allocating sites to traditional use would result in the same impacts as described under Alternative B. Closing a 640-acre area surrounding Santa Ana de Cuiquiburitac to motorized vehicle travel would result in the same impacts as those described under Alternative C. Eliminating the Avra Valley CRMA would result in the same impacts as those described under Alternative B.

Alternative D also provides more protection than Alternative A for cultural resources by modified management of the use of other resources on public land, but less protection than Alternatives B and C. With Alternative D, three utility corridors would be identified, and construction activities in those corridors, could disturb cultural resources. No utility corridors would be identified under Alternative B and only two would be identified under Alternative C. Allowing 11 grazing allotments to remain available for grazing would result in the same impacts as those described under Alternative C. Alternative D would manage 122,580 acres as VRM Class II, which is less than Alternative B (VRM Class I and II areas totaling 125,110 acres) and less than Alternative C (VRM Class II areas totaling 124,900). Reducing the area of VRM Class II designation could affect the integrity of the settings of sensitive cultural resources.

Through closure and limitation of OHV use, Alternative D provides similar protection of cultural resources as Alternative A. Under Alternative D, OHV use on 128,400 acres would be limited to designated routes (compared with 820 acres closed and 127,580 acres limited to designated routes Alternative A). Alternative D does not provide as much protection to cultural resources as Alternative B (38,040 acres closed and 90,360 acres limited to designated routes) or Alternative C (10,880 acres closed and 117,520 acres limited to designated routes). However, Cocoraque Butte, as well as a 640-acre area surrounding Santa Ana de Cuiquiburitac, would remain closed to motorized vehicle use year-round resulting in the same impacts as those described under Alternative B.

Under Alternative D, overnight vehicle-based camping would be limited to identified sites, with the same resulting impacts as those described under Alternative B. Non-vehicle-based camping would result in the same impacts as those described under Alternative C.

The implementation of management actions for special status species, wildlife and wildlife habitat, vegetation, and soil and water resources would result in the same impacts as those described for Alternative C.

Designating acquired lands as avoidance rather than exclusion area (except in designated corridors) would result in the same impacts as those described under Alternative C. Allowing motorized vehicle travel on 243 miles of designated routes and non-motorized travel on 100 miles of designated routes

would offer less protection to cultural resources than Alternative B (71 miles designated for motorized uses, 258 miles designated for non-motorized uses) or Alternative C (142 miles designated for motorized uses, 187 miles designated for non-motorized uses). Implementation-level decisions regarding grazing would impact cultural resources the same way as decisions under Alternative A.

### 4.3.9 Impacts on Paleontological Resources

This section discusses impacts on potential paleontological resources that could occur from management of other resources and resource uses. Although paleontological resources are currently not known within the IFNM, management actions can potentially cause damage to or destroy fossil-bearing geological formations, resulting in the loss of vertebrate fossils or other scientifically significant fossil resources. Apart from natural weathering and erosion, resources can be damaged or lost by excavation and other surface-disturbing activities, theft or vandalism. Management-related activities involving excavation or other surface disturbance can, at the same time, "discover," as well as damage or destroy paleontological resources. When discovery occurs, resources can be curated for scientific, educational, and/or recreational values. Though damage or destruction can diminish the potential value of paleontological resources, without removal of some of the rock surrounding fossils, the fossils would remain largely undetected Management actions that result in erosion do not necessarily damage paleontological resources; however, the excessive erosion resulting from other surface disturbance could damage fossils present at the surface.

Increased access to areas could allow for discovery of paleontological resources, which could lead to proper collection and curation for the resource and add to the scientific knowledge of the IFNM area. Conversely, with increased access the fossil resource may be damaged, destroyed, or lost due to vandalism or theft. Restriction of public access could both reduce the potential for discovery and diminish the chance of vandalism or theft. While the location of every significant paleontological locality in the IFNM is not known, the analysis considers the different management actions and their potential to directly or indirectly impact paleontological resources.

This analysis is based on the following assumptions:

- Paleontological resources are subject to an active discovery process.
- Areas containing vertebrate fossils or noteworthy occurrences of invertebrate or plant fossils are expected to occur within three of the four Paleontological Sensitivity Management Classes prepared by BLM's Regional Paleontologist (Classes 4, 3, and 2; ranging from high to moderate sensitivity).
- Inventories prior to surface disturbance in high-probability areas would result in the identification and evaluation of previously undiscovered resources, which BLM would then manage accordingly.
- Unmitigated surface-disturbing activities could dislodge or damage paleontological resources and features that were not visible prior to surface disturbance.

Impact analyses and conclusions are based on an inventory of the paleontological resources in the area and the geologic units that occur at IFNM and on the Paleontological Sensitivity Management Classes prepared by the BLM's Regional Paleontologist.

#### 4.3.9.1 Impacts Common to All Alternatives

Activities that occur during the suppression of wildland fires (e.g., construction of fire lines, bulldozing of access roads, and general movement of heavy equipment) could disturb the surface, creating impacts on mineral soils. This can damage or destroy paleontological resources; however, most of the areas in the

IFNM where paleontological resources could be present at the surface lack characteristics that encourage the ignition and spread of wildland fires, and do not support significant vegetation. Developing an activity plan or restoration plan within the IFNM would reduce loss of potentially significant paleontological resources (though none are known to occur in the IFNM) to soil erosion, weathering, and exposure by reducing surface disturbance.

Paleontological resources could be identified (and subsequently documented) as a result of cultural resource inventories, recordation, evaluations, and data recovery excavations, as well as by paleontological assessments that would be required before transferring lands from Federal jurisdiction. Regarding land tenure adjustments, including RP&P leases, documentation and evaluation of resources and implementation of mitigation measures before changes in ownership would ensure that lands with scientifically significant paleontological resources are retained or obtained, providing protection under Federal management policies.

The withdrawal of federal lands from all forms of sale or leasing would reduce the potential for surface disturbance from development of energy and mineral resources, providing coincidental protection for any paleontological resources in the IFNM. Prohibiting the collection of paleontological resources and limiting collection to scientific uses would protect resources in the IFNM.

Under all alternatives, impacts on paleontology resources are not anticipated as a result of implementing management actions for the following resources programs: air quality, wildlife and wildlife habitat, special status species, fire ecology, and livestock grazing. Under all alternatives, impacts on paleontology are not anticipated as a result of implementation-level decisions for the following resource programs: vegetation, scenic and visual resources, energy and minerals, recreation, lands and realty, and management of lands to maintain wilderness characteristics.

#### 4.3.9.2 Alternative A (No Action)

Under Alternative A, mining activity related to valid existing claims would be allowed on case-by-base basis, which could result in the loss or destruction of paleontological resources from related surface and subsurface disturbance. Mining activities could also expose paleontological resources, and with proper mitigation, this could add to the resource database and scientific knowledge of the area.

Under Alternative A, continuing management of recreation would allow access to areas with sensitive paleontological resources. If resources are discovered as a result, this could increase scientific knowledge of the area if resources are properly curated. However, access could also cause loss of or damage to paleontological resources.

Development and implementation of an activity plan for the Cocoraque Butte–Waterman Mountains Multiple Resource Management Area could reduce surface disturbance and thereby reduce loss of paleontological resources to soil erosion, weathering, and exposure. Limiting vehicle travel and closing 820-acres to motorized travel would also reduce surface disturbance and could reduce erosion, providing coincidental protection of paleontological resources. Limiting OHV use to existing or designated routes on 127,580 acres (99 percent of public lands in the IFNM) could result in surface widening, route braiding, and route pioneering. OHV use on existing routes could degrade roads and increase erosion. Impacts to paleontological resources from this erosion and surface disturbance could continue in areas where travel would be limited to designated routes.

Issuing rights-of-way for joint use could create access to areas with sensitive paleontological resources. This could increase discovery of such resources, which could increase scientific knowledge of the area if the resources are properly curated; however, greater access to IFNM lands along rights-of-way could also result in loss of resources through damage, vandalism, or theft. Implementing activity plans for the Aqua

Blanca Ranch Multiple Resource Management Area could also reduce erosion in those areas, with coincidental protection to paleontological resources.

#### 4.3.9.3 Alternative B

Paleontological resources may be present in geologic resources that warrant special management, providing coincidental protection of those resources in localized areas. Prohibiting the collection of geologic resources also could protect paleontological resources. On the other hand, providing adequate access to geologic sites and/or features could allow the public to gain greater scientific, educational, and recreational value from the resource. Minimizing surface disturbance and stabilizing soils would minimize potential exposures of paleontological resources to loss or damage by weathering and soil erosion. The implementation of specific erosion control measures could further reduce loss of paleontological resources to weathering and exposure, as compared with Alternative A. In addition, managing 125,110 acres as VRM Class I and II, 60,000 acres for semi-primitive non-motorized recreation and 36,990 acres for wilderness characteristics would provide coincidental protection to paleontological resources by restricting surface-disturbing activities in those areas.

Under Alternative B, a monitoring scheme to evaluate the condition of cultural resources and to stop, limit, or repair damage to cultural resources would be developed and implemented. This would provide coincidental protection to recent paleontological resources (if discovered) that are a part of cultural resource sites. In addition, the development of memorandums of understanding with appropriate scientific organizations could offer additional protection and the potential for better scientific evaluation of paleontological resources on IFNM, as compared with Alternative A. Additional discoveries could occur if interest results in additional surveys for paleontological resources. Requiring field surveys for paleontological resources and mitigation according to BLM guidelines prior to any ground disturbing activities on IFNM could increase protection to paleontological resources, as compared with Alternative A.

No new rights-of-way would be authorized under Alternative B (except as required by law), which could both reduce discovery, and protect paleontological resources against surface-disturbing projects. Closing 38,040 acres (areas shown on Map 2-18) to motorized vehicles would have the same impacts as those that would occur under Alternative A, but public access would be decreased. This could decrease discovery of resources by the public, but would increase the area where resources would be protected, as compared with Alternative A.

Designating 258 miles of routes for non-motorized use (as shown on Map 2-18), could limit public access, and therefore reduce the loss of paleontological resources, as compared with 347 miles open for motorized use under Alternative A.

#### 4.3.9.4 Alternative C

Impacts to paleontological resources under Alternative C would be the same as those under Alternative B, except allowing the collection of resources for scientific research or educational uses could increase the knowledge of paleontological resources (relative to both Alternatives A and B).

Rights-of-way for access and utilities would be authorized on a case-by-case basis, with the same potential impacts as those that would occur under Alternative A. Impacts from management of visual resource management would be the same types as those that would occur under Alternative B where 125,110 acres are managed as VRM Class I and II, but managing 3,420 acres to meet VRM Class III, and 80 acres to meet VRM Class IV objectives could increase surface disturbance. In addition, impacts from managing 9,510 acres for wilderness characteristics (as shown on Map 2-22) would be the same as Alternative B and also could reduce surface disturbance from human uses.

Impacts on paleontological resources from implementation-level decisions under Alternative C would be the same as those that would occur under Alternative B, except designating 187 miles of routes as non-motorized (as shown on Map 2-19), could further limit public access. This could reduce the loss of paleontological resources, relative to Alternatives A and B.

#### 4.3.9.5 Alternative D

Under Alternative D, impacts would be the same as those under Alternative C, except managing 1,600 acres as VRM Class IV could increase surface disturbance relative to Alternatives A, B, and C. In addition, increasing the area managed as roaded natural to 19,060 acres could increase surface disturbance, relative to Alternatives B, C, and D. In addition, increasing the number of large group camping sites to four also would increase surface disturbance, relative to Alternatives B and C.

Impacts on paleontological resources from implementation-level decisions under Alternative D would be the same as those that would occur under Alternative C, except designating 100 miles of routes as non-motorized (as shown on Map 2-20), could limit public access. This could reduce the loss of paleontological resources by decreasing public access, relative to Alternatives A, B, and C.

### 4.3.10 Impacts on Scenic and Visual Resources

This section describes potential impacts on scenic and visual resources from management actions discussed in Chapter 2. Impacts on scenic and visual resources are first identified and then evaluated for consistency VRM objectives. The VRM classes and class objectives are used to guide the impact analysis. Generally, VRM Class I and Class II areas are more sensitive to changes because of the high scenic value attached to those landscapes. This analysis focuses on two potential results of management decisions: (1) the introduction of elements into a natural landscape that would be evident and in contrast—in color, line, form, or texture—with that landscape, and (2) direct or indirect protection of visual resources against introduction of such contrasting elements.

The alternatives are analyzed according to changes within a landscape that would (or could potentially) occur as a result of a management action, regardless of VRM class. Direct changes are those that would immediately occur as a result of any one action (or combination of actions). Indirect impacts are those that would promote conditions that retain, degrade, or enhance visual resources within a landscape.

The following assumptions were used in the analysis of impacts on visual resources.

- Scenic vistas within the IFNM would increase in value over the next 20 years.
- Access to scenic landscapes would become increasingly important to residents and visitors to the area.
- Management of all resources would be consistent with the VRM objectives for the IFNM; management-related projects or activities would be avoided or mitigated if they would fail to maintain those objectives. Mitigation could include designing projects to have less visual impacts.
- Visual contrast ratings would be conducted on a case-by-case basis to determine the visual impacts of proposed projects or activities.

#### 4.3.10.1 Impacts Common to All Alternatives

Land treatments and other erosion prevention measures could introduce temporary visual contrasts in the landscape where manmade physical structures (e.g., straw bales, silt fences, etc.) or materials foreign to

the Sonoran Desert (e.g., mulch) are used. These eventually would be removed once the site is stabilized. Land treatments to prevent erosion and deposition of soils would help retain the existing visual qualities within the IFNM and could enhance those qualities by reducing contrasts in color and texture where native plant species re-establish in disturbed areas.

Under all alternatives, suppression of wildfire in all areas of the IFNM could limit burned areas that could cause contrasts in color and texture on the landscape. Suppression would continue to protect existing vegetation and prevent conversion of native vegetation to more fire-dependent species, and limit the potential for smoke, and haze that could obscure vistas in the IFNM. However, surface disturbance from fuels treatments could result in contrasts in color, line, and texture in localized areas.

Authorization of mining activity on valid existing mining claims on a case-by-case basis could result in mining activities that change the appearance of landforms, vegetation, and structural landscape features at mining sites. Potential impacts from mining activities could include the appearance of tailings piles, waste-rock piles, heavy equipment, and surface disturbance in localized areas. Impacts could be short term with effective mine reclamation.

Permitting the collection of paleontological resources could result in surface-disturbing activities such as digging and vegetation removal. The small-scale visual contrasts in color and texture that would occur within the landscape as a result of these activities would be very localized and not inconsistent with VRM class objectives.

The Arizona Standards for Rangeland Health and Guidelines for Grazing Administration would apply under all alternatives. The guidelines promote the proper functioning of ecological conditions, and would help preserve or enhance the scenic quality of the natural landscapes within the IFNM.

Existing facilities at the Pan Quemado communication site would continue to be visual intrusions into the landscape (contrasting in line, form, texture, and scale) in and around an isolated area south of Avra Valley Road. The structures are visible from a greater distance south of the site than from the north due to differences in topography and landform. Visual impacts to the north do not extend beyond existing hills and mountains that interrupt the line of sight. Existing facilities and towers at the Confidence Peak communication site would continue to be in contrast with the landscape in and around areas of the Silver Bell Mine. However, the scenic quality of this area has already been disturbed by mining-related alterations to the landscape and the presence of existing overhead transmission lines. Existing overhead transmission lines would continue to create visual contrasts in surrounding areas. Visual contrasts related to the El Tiro Glider Port Recreation and Public Purpose Act (R&PP) lease area (including roads, fields, runways, hangars and support structures, aircraft, and flying activity) would continue for at least the term of the lease and any future lease renewals; no new R&PP leases would be issued.

Measures to conserve habitat for desert tortoise and Nichol Turk's head cactus would provide coincidental protection to existing visual resources by restricting surface-disturbing activities and disturbance to vegetation.

#### 4.3.10.2 Alternative A (No Action)

Under Alternative A, the public lands in the IFNM (128,400 acres) would be managed as VRM Class III. To be consistent with VRM objectives for this class, all projects and surface-disturbing activities in the IFNM could attract the attention of the casual observer, but should not change the existing character of the landscape. Many activities that would have large-scale visual impact with potentially high visual contrasts could be restricted or precluded based on the need to protect the objects of the monument, but not necessarily due to the VRM Class III objectives.

Under Alternative A, motorized vehicle travel would continue to be allowed on all existing routes throughout the monument (except in closed areas), and vehicles would continue to be visible throughout a majority of the IFNM. Equipment associated with vehicle-based camping in areas accessible to motorized vehicles would continue to be visible in localized areas and would be elements of contrast along the less traveled routes in the IFNM, with concentrations in the most scenic and attractive mountainous areas. Elements of visual contrast from dispersed camping, including fire rings, trash, or other localized surface disturbance, would continue to be visible around accessible and scenic areas of Ragged Top and the Silver Bell Mountains. Continuation of motorized vehicle use in the IFNM without an established transportation plan could increase surface disturbance, erosion, or accumulation of debris on existing routes (due to a combination of high use and a lack of restrictions), creating visual contrasts in color and texture within the landscape. Visitors using the IFNM for recreational shooting could leave behind targets, used shells, and trash, and cause surface disturbance (e.g., damage to vegetation or defacement of soils and rocks).

Maintaining the three existing mile-wide utility corridors would allow for construction of new major utilities, maintenance access roads, and ancillary facilities and structures, and could result in vegetation clearing. These would be consistent with VRM Class III objectives. Overhead transmission lines could be visible for miles. Existing facilities and towers at the Pan Quemado communication site would continue to be in contrast with the landscape (in line, form, texture, and scale) in and around an isolated area south of Avra Valley Road. Additional structures at the 160-acre site would be allowed and would be visible from a greater distance south of the site than from the north due to differences in topography and landform. Visual impacts to the north would not extend beyond existing hills and mountains that interrupt the line of sight. Retaining public land (128,400 acres) and acquiring land could promote retention of the current visual characteristics of those lands because, consistent with VRM objectives, overall landscape characteristics could be retained on up to approximately 26,890 acres of land identified for acquisition, if that land were acquired; however, VRM Class III would allow for some changes in the landscape.

Implementation of an activity plan for the Cocoraque Butte–Waterman Mountains Multiple Resource Management Area that helps restore damaged watershed areas would improve watershed condition to satisfactory, increase soil cover, reduce sediment yield, and improve ecological site condition to good, thereby reducing the potential for visual contrasts that could otherwise occur due to excessive erosion. Management actions that prevent erosion and deposition of soils would promote retention of the existing visual qualities within the IFNM and could enhance those qualities by reducing contrasts in color and texture where native plant species reestablish in disturbed areas.

Managing 11 allotments as available for livestock grazing could create visual contrasts from the presence of livestock, range improvements, and consumption of vegetation. New rangeland improvements could be developed to manage livestock, particularly fences and water developments, which could introduce noticeable structures that would draw the attention of casual observers in localized areas, but would not be expected to change the overall character of the landscape. Range improvements would be less likely in desert tortoise habitats (Category I and II) because they would be discouraged in those areas.

Prohibiting land use authorizations (except along existing roads) within the Waterman Mountains ACEC would limit the potential for new structures and activities that could introduce contrasting elements into the surrounding landscape on approximately 2,240 acres (2 percent) of the public land within the IFNM. Activities generating visual contrasts along existing roads still could be authorized.

Implementation decisions, including the implementation of an activity plan for the Agua Blanca Ranch Multiple Resource Management Area that would help improve the condition of that watershed, would reduce the potential for visual contrasts from excessive erosion because the plan would improve watershed condition to satisfactory, increase soil cover, and reduce sediment yield. Management actions that prevent erosion and deposition of soils would promote retention of the existing visual qualities within

the IFNM and could enhance those qualities by reducing contrasts in color and texture where native plant species reestablish in disturbed areas.

Implementing conservation measures for desert tortoise habitat would result indirect protection of visual resources in areas where surface disturbing activities were restricted or prohibited.

Installing new fencing would introduce visual contrasts in localized areas. The visual contrast of elements visible from important viewing and/or observation areas would be limited and consistent with VRM class objectives.

Managing livestock to increase forage for desert tortoises would promote retention of the natural character of vegetation in desert tortoise habitat areas and could enhance visual resources.

Developing new stock water sources would increase the number of manmade structures, generating a localized but noticeable change in the landscape within the areas of the Twin Tanks and Cocoraque Pastures. This also could lead to indirect, localized impacts on the visual character of natural vegetation water sources because livestock would tend to congregate around water sources.

Authorizing specific land use permits, easements, and rights-of-way on a case-by-case basis would ensure that projects and activities meet the corresponding VRM class objectives and that those projects or activities not in compliance would be restored.

Limiting communication facilities to designated sites would protect visual resources, as no communication facilities could be established elsewhere in the IFNM.

#### 4.3.10.3 Alternative B

This alternative differs from Alternative A primarily due to the various VRM classifications that would establish greater restrictions on activities that could result in visual contrasts within the IFNM. VRM Class I designations would preserve the existing character of the landscape on approximately 36,990 acres (29 percent) of the most scenic, natural appearing, and visually sensitive parts of the public lands in the IFNM. Only those management activities that would introduce very low visual contrasts into the landscape would be allowed in VRM Class I areas, which would include the Sawtooth Mountains, West Silver Bell Mountains, and the Roskruge Mountains. VRM Class II designations would retain the existing character of the landscape in approximately 88,120 acres (68 percent) of the public lands in the IFNM, including sensitive biological, cultural, and recreation areas. Only those management activities that would introduce low visual contrasts would be allowed in VRM Class II areas (though slightly greater contrasts would be allowed compared to Class I areas). Surface-disturbing activities would be required to blend in with the landscape and not attract the attention of the casual observer. VRM Class III designation would partially retain the existing character of the landscape on approximately 3,290 acres (3 percent) of the public lands in the IFNM, including communication sites, utility corridors, and areas with existing landscape modifications. Projects and surface-disturbing activities with moderate visual contrasts that could attract the attention of the casual observer could be allowed in these areas. Overall, the existing visual quality and natural character of the landscape in the IFNM would be preserved, and some existing visual impacts would be mitigated (e.g., reclamation of routes in closed areas). Visual contrasts from existing and anticipated landscape modifications would be localized and would blend in with the natural landscape.

Short-term direct and indirect visual impacts from motorized vehicles would be similar to those under Alternative A, but the locations and concentrations of those impacts would be different under this alternative. Motorized vehicle traffic and dust would decrease in extent under this alternative, but could become more concentrated in some areas relative to Alternative A because some roads would be closed.

OHV would be excluded from 38,040 (29 percent) of the public lands in the IFNM. Visual impacts associated with motorized vehicles under this alternative would be similar, but could be more concentrated than those described under Alternative A if there is a displacement of OHV activity that results from closure areas. The closure areas would reduce the appearance of vehicles and dust around the Sawtooth, West Silver Bell, and Roskruge Mountains.

Compared to Alternative A, this alternative would establish RMZs that would provide for different recreational activities and experiences in each RMZ, resulting in different types and locations of visual impacts throughout the IFNM. In general, visual impacts from recreation would be focused in some areas and dispersed in others. Visual contrasts generated from recreational activities would be most noticeable in approximately 17,610 acres (14 percent) of the public lands in the IFNM in the roaded natural zone, where the appearance of routes and vehicle traffic would be concentrated. Visitor services and facilities such as BLM personnel patrols, parking turnouts and/or driveways, kiosks, signs, fences, campsites, overlooks, range improvements, sanitation, and incidental visitor management activities would be most noticeable in the roaded natural RMZ. Visual contrasts within the landscape created by vehicle-based camping (e.g., campers, wide roads, parking turnouts, recreation or interpretive site improvements) would be site-specific, but concentrated in the roaded natural RMZ. For example, visual impacts related to group camping (e.g., large open areas, multiple vehicles, pets, recreation activity) would be noticeable at the two identified large group sites located at Manville and Reservation Roads, respectively. The appearance of vehicles and campfire smoke would be more likely in those group-camping areas. Meanwhile, impacts concentrated in the roaded natural RMZ would be reduced in the remaining areas of the IFNM compared to Alternative A.

Recreation management activities within the semi-primitive motorized RMZ would promote retention of existing visual landscape qualities on 14,540 acres (11 percent) of the public lands in the IFNM. Visual impacts in the semi-primitive motorized zone would mainly be caused by the presence of primitive roads, turnouts and/or parking areas, signs, kiosks, fences, and relatively infrequent visitors.

Prohibiting native wood campfires would promote a more natural appearance of the Sonoran Desert landscape in localized areas (e.g., in the vicinity of popular campsites) since more dead and downed vegetation would remain as litter, and the amount of standing deadwood would increase relative to Alternative A. There also would be a reduction in the amount of campfire smoke under this alternative relative to Alternative A, since charcoal and camp stoves tend to produce less smoke than wood fires, which would be prohibited under this alternative. There would be a reduction in the appearance of shooter refuse (e.g., targets, spent shells) compared to Alternative A because of the limitations on the use and discharge of firearms under this alternative.

Visual impacts from proliferation of access points, gates, and routes would be prevented along the developing urban interface and around developed private land inholdings. Controlling access could increase the traffic at the designated access points and on related travel routes, and could require installation of barriers to implement closures, generating localized impacts on visual resources. Providing equestrian staging areas would generate noticeable visual changes at the designated sites (relatively large parking spaces/staging areas, vehicles with trailers, signs, manure, etc.). Equestrian use on routes designated for motorized or nonmotorized travel would not be expected to diminish visual qualities.

Minimizing surface disturbance and loss of existing vegetation during construction activities would limit the amount of visual contrast caused by the alteration of vegetation and soils resulting from management activities in the IFNM. Minimizing these contrasts would promote retention of the existing visual qualities found throughout IFNM. Further, a rapid revegetation would be promoted in areas where vegetation is removed, which would mitigate for visual contrasts created by surface disturbances that may become necessary. Removal of living or dead vegetation would generally be prohibited under this alternative, with only a few specific exceptions (e.g., trimming vegetation along routes designated for

motorized travel). These exceptions would result in localized, small-scale visual contrasts that would not be noticeable by casual observers. Visual contrasts from any authorized activities would be consistent with VRM class objectives. The natural landscape character could be indirectly enhanced in site-specific areas where soils are stabilized and restored. Stabilizing and restoring soils would promote establishment of native plant species, reduce the potential for invasive weed establishment, and reduce soil erosion and/or deposition.

Locating facilities away from and prohibiting ground-disturbing activities within areas of sensitive or fragile soils would prevent visual contrasts in some areas while potentially increasing visual contrasts in others. These actions would promote retention of existing visual characteristics in areas with sensitive or fragile soils because there would be less potential for visual contrasts that are associated with surface-disturbing activities (soil erosion and/or deposition, construction of facilities, range improvements, etc.) compared to Alternative A. Meanwhile, areas without sensitive or fragile soils would have a higher potential for visual contrasts in color and texture resulting from surface-disturbing activities relative to Alternative A. Mitigation efforts in areas without sensitive or fragile soils could alleviate the visual contrasts arising from surface-disturbing activities if disturbed vegetation and soils were restored.

Prohibiting surface-water diversions and groundwater pumping that removes water from the IFNM would prevent visual contrasts from potential water wells and conveyance systems (pipelines, ditches) that could otherwise occur. The decision would promote retention of the existing visual character throughout the IFNM.

Visual contrasts in line, color, and texture would result from the development of new routes or realignments and may be noticeable to the casual observer in localized areas. Development of a travel and transportation plan could indirectly reduce impacts to visual resources where monitoring identifies conflicts with VRM class objectives.

Implementing an integrated weed management program that assigns priority control areas would promote retention of existing visual qualities associated with the vegetative communities within the IFNM. While weed control areas likely would include treatments that introduce localized visual contrasts in color over the short term, the action would prevent the spread of weeds that could otherwise threaten the visual qualities associated with the natural vegetation of the landscape, thus improving visual resources over the long term. Visual contrasts from weed treatments would be consistent with VRM class objectives. Visual contrasts in color from populations of weeds could be eliminated where weed treatments permanently remove weeds from vegetative communities.

The IFNM land restoration plan would reduce visual contrasts created from disturbed vegetative plant communities by identifying disturbed areas and prioritizing them for restoration. Passive restoration would be emphasized under this alternative, which would eventually reduce the visual contrasts created by invasive plants and soil erosion and/or deposition of disturbed areas. Contrasts in color and texture of disturbed areas would remain on the landscape over the short term until passive restoration efforts became effective. Localized areas of contrast could be introduced to the landscape where active restoration methods are used depending on the treatment and project design. Active restoration methods that incorporate mechanical and chemical techniques could create visual contrasts in color, line, and texture with the landscape over the short term relative to the surrounding landscape. Short-term impacts would result where the application of herbicide and mechanical treatments created areas of bare ground, dead plant material, or discoloration. These impacts would be localized and would cease once new vegetation became established. Establishment of a natural range of native plant associations would decrease visual contrasts in color, line, and texture of degraded areas relative to the surrounding landscape over the long term because the restored plant community would likely match the plant community of the surrounding landscape more closely than non-native plant associations.

Priority wildlife habitat areas and special status species habitats likely would experience a reduced potential for surface disturbance, which would promote retention of visual qualities associated with those landscapes. Visual resources would be protected to the extent that surface-disturbing activities are restricted in these areas. Prohibiting land use authorizations generally throughout the IFNM could limit the potential for new projects and activities. Visual impacts of potential land use authorizations would be limited to disturbed areas along travel routes, and would have little additional visual contrasts. The closure of lambing areas within the Desert Bighorn Sheep WHA would reduce the opportunities for wildlife viewing activities on a short-term, seasonal basis. However, wildlife population enhancement proposals could result in an increase in wildlife viewing opportunities in areas throughout the IFNM from the increased abundance and/or diversity of wildlife.

Classification of cultural sites for scientific use and measures taken to protect the integrity of those sites would promote retention of visual qualities associated with those sites in localized areas. There could be temporary, short-term visual contrasts from scientific and historical studies that utilize research equipment and personnel. The impacts would be short-term because surface disturbance would not be permitted under this alternative. The lack of public use designations for cultural sites under this alternative would promote retention of existing visual qualities of those sites since the potential for human disturbances (e.g., surface disturbance, litter) would be reduced. The physical barriers used to exclude motorized vehicles from cultural resource sites would introduce structures that increase visual contrasts in that area depending on the barrier type and design, but the visual impact would be localized and noticeable only in views within the project area. Collection and study of paleontological resources would have the same visual contrasts in localized areas as those described under Alternative A. The field surveys for paleontological resources, which would be required under this alternative prior to any ground-disturbing activities, would identify the presence of paleontological resources, which indirectly could help protect visual resources from degradation in localized areas.

Visual contrasts associated with livestock grazing and range improvements under this alternative could increase in some areas and decrease in other areas, compared with Alternative A. Visual impacts from grazing operations and range improvements would be restored in the long term to visual contrast levels appropriate for the VRM class in respective areas because livestock grazing activities would cease once current leases expire. Vegetation contrasts and surface disturbance associated with watering sites and diet supplement (e.g., salt licks, protein supplement) areas would be reduced and possibly eliminated. However, increased fencing could be required to keep livestock off public land, which could cause surface disturbance and additional visual contrast in localized areas.

The potential for development of new utility lines would be reduced under this alternative compared to Alternative A because few, if any, new rights-of-way would be granted under this alternative. New major transmission lines would be precluded except for an existing right-of-way in the Aguirre Valley area, which has not been developed. Some views and portions of the IFNM could be affected by development of utilities on adjacent lands, but acquisition of non-Federal lands and mineral estate within the IFNM boundaries could help protect visual resources from development. Visual contrasts related to routes through military withdrawals on approximately 300 acres (<1 percent) of the IFNM would be reduced because the routes would likely be reclaimed to natural conditions if and when the land is returned to BLM, and if no alternative public use for the site is found.

Under the implementation-level decisions, the activity plan for the Agua Blanca Ranch Multiple Resource Management Area would not be developed or implemented; however, management actions related to soil resources would occur throughout the IFNM (rather than within one specific area of the IFNM).

Construction of specific erosion control measures on a case-by-case basis could promote retention of visual qualities in localized areas where the potential for visual contrasts in color and texture are reduced

from soil erosion and deposition events. Erosion control measures that employ materials not otherwise found in the IFNM could result in short-term visual contrasts in localized areas.

Analysis of flood and erosion control structures for removal would not alter the existing visual landscape of the IFNM, unless actual removal occurred. If maintained, existing dikes and dense vegetation stands in the impoundment area would remain. Visual contrasts associated with existing control structures have become generally naturalized, blending in with the natural landscape. Visual contrasts on views from important viewing and/or observation areas would remain low. If the structures were breached or removed, plant die off could become noticeable in the dense vegetation stands in the impoundment area. Visual contrasts created from such an event might include variations in color and texture in low-lying basins. These impacts would generally not be visible beyond a localized area due to the low-lying nature of existing water basin collection areas. Potential visual contrasts would remain within the VRM class objectives and be limited to localized areas, but over the long term the areas would be expected to return to natural conditions.

New fencing would introduce visual contrasts in very localized areas along certain travel routes. Visual contrasts evident in views from important viewing and/or observation areas would be consistent with VRM class objectives.

Construction of new wildlife waters could introduce visual contrasts in localized, small project areas related to their structural features, possible vegetation clearing, and access points. Visual impact from maintained or modified waters would be reduced if project designs involve removal of rainfall collection structures and protective fences. Removal of unnecessary waters could help restore the visual quality of localized areas. New or maintained waters would be designed and located to be consistent with VRM class objectives. Removal of manmade structures would reduce visual contrasts in the IFNM by reducing the appearance of structures constructed of materials not otherwise found in the IFNM and removing forms that do not naturally occur in the IFNM's landscape.

Implementing conservation measures associated with the Lesser Long-nosed Bat Recovery Plan likely would result in restrictions on surface disturbance to bat habitat, indirectly reducing the potential for visual contrast and protection of visual resources. Conservation of desert tortoise habitat would result in the same impacts on visual resources as those described under Alternative A.

Controlling or restricting activities that result in fugitive dust could result in a reduction of fugitive dust in the IFNM and a reduction of visible haze originating from the IFNM, thus increasing visibility. Rehabilitation of disturbed areas also would reduce the long-term visual contrasts associated with those areas.

Reclamation activities at previous mining sites and attempts to return those areas to a natural condition would enhance visual resources by reducing contrasts caused by mining materials and surface disturbance (e.g., removal of tailings piles, equipment, revegetation). Reclamation that involves construction of barriers to keep people from entering mines could cause increased contrasts on a very small scale, in site-specific areas.

Though very few rights-of-way would be issued under this alternative, implementing site-specific protective measures in right-of-way areas would promote retention of visual resources through the right-of-way terms and conditions developed on a case-by-case basis. Visual qualities could be restored where facilities or associated disturbances are brought into compliance with stipulations. The granting of land use authorizations and permits on a case-by-case basis would have the same impacts as those described under Alternative A. In contrast to Alternative A, this alternative would further protect acquired lands from visual contrasts that arise from rights-of-way since all acquired lands would be designated as an exclusion area.

#### 4.3.10.4 Alternative C

This alternative is similar to Alternative B because it too establishes VRM class management objectives that would restrict activities that may contrast with the IFNM landscape. However, there are differences between this alternative and Alternative B. VRM class objectives under this alternative would be somewhat less restrictive than those under Alternative B because there would be no lands managed under VRM Class I objectives under this alternative. VRM Class II designation would retain the existing character of the landscape in areas with sensitive biological resources, cultural resources, and recreation sites over a total of 124,900 acres (97 percent) of the public lands within the IFNM. Activities resulting in visual contrasts in VRM Class III designated areas would be similar to those described under Alternative B but would occur on an additional 130 acres. VRM Class III designation would partially retain the existing character of the landscape on approximately 3,420 acres (3 percent) of the public lands within the IFNM. Eighty acres of the IFNM would be managed according to VRM Class IV objectives. Activities that result in a high level of visual contrast could be permitted in that parcel. Mining activities, utility development, or construction are examples of the types of visual contrasts that could occur in VRM Class IV areas. Overall, the existing visual quality and natural character of the landscape would be retained, and some existing visual impacts could be restored.

Short-term direct and indirect visual impacts from motorized vehicles would be similar to those described under Alternatives A and B, except the extent and possibly the concentration of those impacts would be different under this alternative. Motorized vehicle activity could occur, though limited to routes designated for motorized use, over approximately 117,520 acres (91 percent) of the public lands in the IFNM. Development of a transportation plan would have the same impacts to monitoring and mitigation efforts under this alternative as those described under Alternative B. Efforts made to control fugitive dust emissions under this alternative would reduce the appearance of dust as described under Alternative B. Development of new routes would have the same impacts as described under Alternative B.

The potential for activities resulting in visual contrasts from establishment of RMZs under this alternative would be similar to those described under Alternative B; however, the extent of impacts associated with each zone would be different under this alternative. Visual contrasts associated with the roaded natural RMZ would be similar but more extensive than those described under Alternative B because the roaded natural zone would include 18,380 acres (14 percent) of the public lands in the IFNM under this alternative. The appearance of camping activities under this alternative would be concentrated in the roaded natural RMZ—as described in Alternative B—but there could be greater short-term visual contrasts in that zone under this alternative because campers could burn wood campfires that create smoke. Visual contrasts associated with overnight vehicle-based camping and group camping would be similar to those described under Alternative B, but could occur over a greater extent under this alternative due to the increased availability of vehicle-based campsites. Visual contrasts associated with the semi-primitive motorized RMZ would be similar, but would occur on a greater area relative to Alternative B. Visual impacts associated with semi-primitive motorized RMZ would occur on approximately 36,230 acres (28 percent) of the public lands in the IFNM. Visual impacts associated with semi-primitive non-motorized zones would be similar to those described under Alternative B, but would occur on approximately 57,450 acres (45 percent) of the IFNM, which is a decrease of about 2,550 acres from Alternative B. Visual impacts related to recreational shooting, equestrian staging areas, and the proliferation of access points, gates, trails and/or routes would be the same as those described under Alternative B.

Efforts to minimize surface disturbance and stabilize soils would have the same impacts on visual resources as those described under Alternative B. The location of facilities and ground-disturbing activities under this alternative would have similar types of impacts on visual resources as those described under Alternative B, but there would be increased potential for visual impacts in areas with sensitive or fragile soils because surface disturbance would be allowed in those areas. Mitigation would be necessary

where sensitive or fragile soils were disturbed and could cause short-term contrast with the surrounding natural environment by increasing the amount of manmade structures that appear on the landscape. The prohibition of surface-water diversions and groundwater pumping would have the same impacts on the visual qualities of the IFNM as those described under Alternative B. The possible removal of flood- and erosion-control structures would have the same impacts on visual resources as those described under Alternative B.

An integrated weed management approach that assigns priority weed control areas would have the same impacts on the landscape character of the plant communities of the IFNM as those described under Alternative B. A land restoration plan that emphasizes passive restoration and uses a variety of reclamation methods would have the same impacts on the character of the landscape as those described under Alternative B. In contrast to Alternative B, potential use of non-native plants for restoration efforts may introduce temporary, short-term, and localized visual contrasts in existing disturbed areas because the plants may grow in forms that are not otherwise found in the IFNM. Visual contrasts after reclamation would be consistent with VRM class objectives. Prohibitions on the removal of living or dead and downed native plant material under this alternative would have similar impacts on those described under Alternative B.

Priority wildlife and plant habitat areas would have the same tendency to protect visual characteristics as those described under Alternative B, with one exception: camping could cause localized impacts in the Waterman Mountains VHA and Ragged Top VHA that could be noticeable in the foreground by casual observers. Closure of portions of the Desert Bighorn Sheep WHA during lambing season would have the same impacts on wildlife viewing opportunities as those described under Alternative B. Construction of new wildlife waters would have the same impacts as those described under Alternative B. Removal of unnecessary manmade structures would have the same impacts on the landscape as those described under Alternative B.

Allocation of cultural sites to scientific use would have similar impacts on visual resources as those described under Alternative B. However, under this alternative there could be greater visual contrasts created at the sites from excavation activities that would not occur under Alternative B. Sites allocated to public use would be managed to specifically accommodate public visitation, and the visual sensitivity would increase at these locations accordingly. The development of interpretive facilities and access routes could introduce visual contrasts at the sites by increasing the number of manmade structures in localized areas. Restrictions on the collection of paleontological resources would result in the same impact on visual resources as those described under Alternative A. The requirement for field surveys prior to ground-disturbing activities in the IFNM would result in the same impacts on visual resources as those described under Alternative B. Mine reclamation activities would have the same impacts on surface disturbance and appearance of structures as those described under Alternative B.

Increased visual contrasts could be created from livestock grazing activities under this alternative over the long term when compared with Alternative B. However, these impacts could cease in localized areas if grazing leases are relinquished or cancelled, though BLM could reallocate these areas for grazing. Livestock grazing would have the same direct and indirect impacts on the appearance of vegetation as those described under Alternative A. Visual impacts on vegetation would continue if AUMs were reallocated. Visual contrasts created by rangeland improvements would be similar to those described under Alternative A.

Retaining Federal lands in the IFNM and acquiring additional lands would result in the same impacts on visual resources as those described under Alternative B. Actions associated with the approximately 300-acre military withdrawal would result in the same impact on visual resources as those described under Alternative B.

Potential development in the utility corridors for underground facilities would result in some visual contrasts in line, texture, and color in right-of-way areas. If developed, the underground trenching and clearing used to bury the utility could be noticeable to the casual observer over the short-term and possibly over the long-term depending on the amount of vegetation removed and area disturbed. Reclamation and restoration of the vegetative community after installation would help reduce long-term visual impacts. Potential development in the aboveground utility corridors would result in visual contrasts mainly in the vegetation, and structural features of line, form, texture, and scale with the surrounding landscape.

The implementation-level decision to provide access for wildlife viewing opportunities would have the same impacts as those described under Alternative B.

Conservation measures associated with the Lesser Long-nosed Bat Recovery Plan would result in the same impacts on visual resources as those discussed under Alternative B. Conservation of desert tortoise habitat would result in the same impacts on visual resources as those described under Alternative A.

Fencing used to prevent damage to vegetation would have the same impacts on visual resources as those described under Alternative B.

Rehabilitation efforts and management of fugitive dust would have the same impacts on existing and potential visual contrasts as those described under Alternative B.

Additional stock water sources in the Twin Tanks and Cocoraque Pastures would increase the number of manmade structures, which would create visual contrasts when seen by the causal observer in localized areas. Wildlife exclosure fencing would increase the appearance and number of manmade structures within the landscape in localized areas. This could increase visual contrast in these areas, but would be consistent with the VRM class objectives. Maintenance of existing access routes would perpetuate linear clearings along fenceline, creating or maintaining visual contrasts in the landscape. Visual contrasts from the clearings and the fences would be consistent with the VRM class objectives for those areas.

#### 4.3.10.5 Alternative D

This alternative is similar to Alternative C because nearly all lands in the IFNM would be managed to meet VRM Class II objectives. Approximately 122,580 acres (95 percent) would be managed according to VRM Class II objectives under this alternative, which is 2,320 acres less than Alternative C. Potential visual contrasts associated with VRM Class II areas would be similar to those described under Alternative B but would occur over a lesser extent, since there would be a total of 125,110 acres designated as Class I or II under Alternative B. VRM Class II designation would retain the existing character of the landscape in the IFNM and would include sensitive biological resource, cultural resource, and recreation areas. Approximately 4,220 acres (3 percent) of the IFNM would be managed as VRM Class III. Visual contrasts in VRM Class III areas would be similar to those described in Alternative B. The greatest potential for visual contrasts under this alternative would occur on 2,660 acres of utility corridors. Impacts on visual resources from rights-of-way for underground and overhead lines would be similar to those described under Alternatives B and C, but would occur over an expanded area. Under this alternative, the corridors would be wider (1/4-mile wide, compared to no corridors under Alternative B, and 200- to 300-foot-wide corridors under Alternative C) and there would be an additional corridor, compared to Alternative C, which would allow overhead facilities in the northwestern portion of the IFNM. This alternative would result in fewer potential visual impacts on the landscape than Alternative A in VRM Class II areas, but there would be a greater potential for visual contrast to occur in the VRM Class IV areas under this alternative (which would not be provided for under Alternative A). There potentially could be some increased visual contrasts within the landscape in site-specific areas compared

to Alternative C, mainly as a result of the new corridor establishment. This alternative is similar to Alternatives A and C, in that it would not designate any VRM Class I areas.

Direct and indirect impacts from motorized vehicle use would have similar impacts on the potential for visitors to experience visual contrasts as those described under Alternative B. However, impacts would occur over a greater area under this alternative given that motorized travel on 128,400 acres of the IFNM would be limited to designated motorized routes and no areas would be closed, which could result in more dispersed impacts. The appearance of vehicles and dust would be a potential on designated routes throughout the IFNM. Impacts on visual resources from motorized vehicle use would be similar to those described under Alternative A, and similar but more dispersed than those described under Alternatives B and C.

The designation of RMZs would have similar impacts on visual resources relative to Alternatives B and C, except visual impacts associated with roaded natural zone would occur in more of the IFNM than either Alternative B or C. The roaded natural zone would occur on 19,060 acres (14 percent) of the IFNM. There could be increased visual contrasts in the roaded natural zone under this alternative relative to Alternatives B and C because dead and downed wood, standing deadwood, or dead growth on plants would gradually disappear around campsites and along roadways as it was collected for firewood. This could result in a greater likelihood of tree damage from ripping off branches and visual degradation of vegetation around recreation activity areas relative to Alternatives B and C. Relative to Alternative A, visual impacts from vehicle-based camping would be reduced in areas other than those designated for camping. Camping would result in visual contrasts similar to those discussed under Alternatives B and C, except four group campsites would be identified (two more than under Alternative B, and one more than under Alternative C). Visual contrasts resulting from recreational shooting would be the same as those discussed under Alternative A, but could be reduced in localized areas as a result of fewer miles of routes being designated for motorized travel. Visual contrasts from recreational access and equestrian staging areas would be the same as those discussed under Alternative B.

Actions that minimize surface disturbance and loss of existing vegetation during construction activities would have the same impact on visual resources as those described under Alternative B. Maintenance and improvement of soil cover and productivity would have the same impact on visual resources as those described under Alternative A. Allowing ground-disturbing activities in areas of sensitive or fragile soils would have the same impacts on visual resources as those described under Alternative C. Prohibition of surface water diversions and groundwater pumping would have the same impacts on visual resources as those described under Alternative B.

Prohibitions on the removal and/or use of living or dead and downed native plant material would have impacts similar to those described under Alternative C, except there would be greater potential for collection of firewood around routes and campsites. This could result in greater visual contrasts than under either Alternative B or C. Weed management would have the same impacts on visual resources as those described under Alternative B. Restoration and reclamation techniques would result in the same impacts on visual resources as those discussed under Alternative B. The types of vegetation used for restoration would have the same impacts on visual resources as those described under Alternative C.

Scientific investigations at cultural sites would result is the same impacts on visual resources as those described under Alternative C. Allocation of public uses at cultural sites would result in the same impact on visual resources as those described under Alternative C. Restrictions on the collection of paleontological resources and the requirement for field surveys prior to ground-disturbing activities in the IFNM would result in the same impacts on visual resources as those described under Alternative B.

Retaining Federal lands in the IFNM and acquiring additional lands would result in the same impacts on visual resources as those described under Alternative B. Actions associated with the approximately 300-

acre military withdrawal would result in the same impact on visual resources as those described under Alternative B. Not acquiring mineral estate with surface estate acquisitions could result in surface disturbance to IFNM land in the future, if valid existing claims to minerals were present in acquired areas at the time of acquisition. This surface disturbance could generate contrasts in color, line, form, and texture in those areas, depending on the activities conducted.

Impacts on visual resources resulting from utility corridors would be similar to Alternative C, but would occur over a greater extent (2,660 acres of public land under Alternative D compared with 980 acres of public land under Alternative C), because Corridor 1 would be wider and could be further disturbed for underground development. Corridor 2 also would be wider under this alternative than under Alternative B. Also, there could be greater impacts on visual resources if an overhead transmission line were installed. Construction of an overhead utility in Corridor 3 would impact the casual observer by creating contrast in line, form, texture, scale, and color of the surrounding area. The potential for visual contrasts in utility corridors and rights-of-way would be reduced under this alternative compared to Alternative A because the corridors under this alternative would be ¾ mile narrower under this alternative. Restrictions on new rights-of-way would result in the same impacts on visual contrasts as those discussed under Alternative B. Visual impacts associated with the Pan Quemado communication site would be the same as those described under Alternative B. Visual impacts associated with the Confidence Peak communication site would be similar to those described under Alternative B, but there would be an increase in contrast resulting from the additional facility that would be allowed under this alternative. This visual contrast would occur in the localized area only and would be attenuated by viewing distance and topography and mitigation measures.

Livestock grazing activities in the IFNM would result in the same impacts on visual resources as those described under Alternative C. Establishment of priority wildlife habitats and allocation of the Desert Bighorn Sheep WHA would result in the same impacts on visual resources as those described under Alternative B.

The implementation-level decision to rehabilitate existing disturbed areas and manage fugitive dust would have the same impacts on visual contrasts as those discussed under Alternative B.

Improvement of wildlife viewing opportunities would have the same impacts as those described under Alternative B.

Removal of existing flood- and erosion-control structures, and unnecessary fences, roads, facilities, and utility lines would have the same impacts as those described under Alternative B.

New fencing would have the same impacts on visual resources as those described under Alternative B.

Construction of new wildlife waters would result in the same impacts on visual resources as those described under Alternative B. Additional water sources for livestock and maintenance of those water sources would result in the same impacts on visual resources as those described under Alternative C.

Conservation measures associated with the Lesser Long-nosed Bat Recovery Plan would result in the same impacts on visual resources as those discussed under Alternative B. Conservation of desert tortoise habitat would result in the same impacts on visual resources as those described under Alternative A.

Increasing the number of wildlife and livestock exclosures would result in the same impacts on visual resources as those described under Alternative C.

Designating routes along fence lines for motorized travel would result in the same impacts on visual resources as those described under Alternative C.

Implementing protective and/or mitigation measures for rights-of-way would result in the same impacts on visual resources as those described under Alternative B.

### 4.3.11 Impacts on Wilderness Characteristics

This section describes potential impacts on lands with wilderness characteristics from management of resources and resource uses. The objectives established for lands managed to maintain wilderness characteristics are used to guide the impact analysis. Actions that affect naturalness, opportunities for solitude, and opportunities for primitive and unconfined recreation on lands shown to have wilderness characteristics (described in Chapter 3) are considered under this analysis.

The following assumptions were used in the analysis of impacts on lands with wilderness characteristics.

- Lands with wilderness characteristics constitute 36,990 acres of the public land within the IFNM.
- Uses and activities occurring outside these lands could influence the wilderness characteristic values, though such influences would generally be indirect.

The following analysis considers a management action's potential to cause changes to a landscape that could alter naturalness, and reduce or enhance opportunities for solitude and/or opportunities for primitive and unconfined recreation. For example, some actions could help maintain wilderness characteristics across a broad landscape area; others could diminish wilderness characteristics by increasing the visibility of structures or routes in an area. The terms "localized," "site-specific," and "landscape level" denote the general extents to which impacts could occur. Site-specific impacts are generally small and described geographically when possible. Landscape-level impacts generally occur on a broad scale and affect large areas, or the entire monument.

#### 4.3.11.1 Impacts Common to All Alternatives

Maintaining and improving soil cover and productivity could promote retention of naturalness by preventing erosion of soils from lands with wilderness characteristics. Naturalness would be retained to the extent that native plant communities are protected from direct mortality or indirectly harmed by establishment of invasive plants within the greater plant community.

Managing the IFNM as a suppression area for fire could result in disturbance of areas with wilderness characteristics, as necessary, to control wildfires. Surface disturbance, fuels treatments, vehicle travel in emergency situations, or treatments related to fire suppression could result in diminished naturalness and opportunities for solitude over the short term in localized areas.

Administration of valid existing mining claims on a case-by-case basis would continue to reduce the opportunities for solitude and naturalness in site-specific areas where valid mining claims exist, which could diminish wilderness characteristics in localized areas, particularly within the Silver Bell and West Silver Bell Mountains.

Providing signage for visitor information, regulations, or interpretation could diminish naturalness in localized areas.

Acquiring land within areas with wilderness characteristics could increase the potential for protecting naturalness, opportunities for solitude, and opportunities for primitive unconfined recreation in those areas. In addition, acquiring land or mineral estate could provide indirect protection of wilderness characteristics because naturalness, and opportunities for solitude and primitive unconfined recreation

could be considered before land use authorizations and permits were granted within or around areas with such values. The Confidence Peak communication site would continue to diminish naturalness and primitive recreational opportunities in that very localized area.

Resource programs that would have no impact on wilderness characteristics in the IFNM include those for paleontology resources and special designations.

#### 4.3.11.2 Alternative A (No Action)

Though no lands would be managed to maintain wilderness characteristics, values of naturalness, opportunities for solitude, and/or opportunities for primitive and unconfined recreation would still be present on 36,990 acres; therefore, impacts on those values are assessed based on the management decisions under Alternative A.

Efforts to minimize livestock impacts on rare plant habitats and desert tortoise habitats could result in localized degradation of naturalness to the extent that livestock waters are moved to new areas where no manmade structures exist. Indirect impacts on naturalness also could result where livestock congregate around relocated water sources and damage the plant community. Conversely, naturalness in and around rare plant and desert tortoise habitats could be indirectly enhanced if livestock waters were moved from those areas. The provision of signage for visitor information, regulations, or interpretation could reduce naturalness in localized areas by increasing the appearance of structures in localized areas. However, it is likely that signs or facilities would be located near roads or access points, where the magnitude of such intrusions would be negligible.

Managing the public lands in the IFNM as a VRM Class III area would provide for limited protection of wilderness characteristics, given that modifications to the landscape can occur in VRM Class III areas. While naturalness would not be reduced as a result of the VRM Class III designation, degradation of wilderness characteristics would not be precluded by VRM Class III objectives. Visitors could expect relatively moderate changes to the landscape that attract attention and diminish naturalness. Closing 800 acres to OHV use and limiting vehicular travel to existing routes in areas with wilderness characteristics would promote retention of naturalness, opportunities for solitude, and opportunities for primitive unconfined recreation in localized areas where routes do not exist.

Allowing dispersed non-motorized camping throughout the IFNM would promote retention of wilderness characteristics by providing opportunities for primitive and unconfined recreation. The use of firearms throughout the IFNM could diminish naturalness and opportunities for solitude where shooter refuse (e.g., spent shells, targets, trash) or gunfire occurs within the landscape.

Allowing rights-of-way within areas with wilderness characteristics would diminish naturalness in localized areas, as well as opportunities for solitude during construction and maintenance of the facility.

Implementation-level decisions that would increase the appearance of fences could result in reduced naturalness where fences were obvious features within the landscape. Efforts to minimize livestock impacts on special status plants by moving or replacing livestock watering sites could result in localized degradation of naturalness in those areas where watering sites appear. However, naturalness could be partially restored from this action where livestock watering sites are removed from an area.

Land use authorizations could diminish naturalness and opportunities for primitive recreation in localized areas. However, mitigation measures implemented in right-of-way areas could minimize degradation of wilderness characteristics associated with structures and routes in localized areas. Generally, wilderness characteristics would be protected from the intrusion of vehicles, people, and noise because motorized vehicle use would be limited to 347 miles of existing routes.

### 4.3.11.3 Alternative B

This alternative would provide the greatest protection for wilderness characteristics in the IFNM. Naturalness, opportunities for primitive recreation and solitude would be maintained on 36,990 acres of the IFNM due to the management of wilderness characteristics on that acreage and other decisions in support of that management.

Designating 36,990 acres as VRM Class I (coincident with the areas managed to maintain wilderness characteristics) would provide protection of portions of the Silver Bell Mountains, Sawtooth Mountains, Ragged Top, and Roskruge Mountains as a result of the restrictive objectives for management of VRM Class I areas.

Closing 36,990 acres with wilderness characteristics to motorized vehicle travel would promote naturalness and opportunities for primitive recreation to a greater extent than Alternative A.

The establishment of the primitive and Ragged Top wildlife viewing RMZs (totaling approximately 36,200 acres) within a majority of the area managed to maintain wilderness characteristics would promote naturalness and opportunities for primitive recreation because uses and structures would be restricted in those areas. Conducting surveys at recreation sites could diminish opportunities for solitude in localized areas; however, it is likely that surveys would be conducted near roads or access points, where the magnitude of such intrusions would be negligible. Limiting overnight, dispersed, non-motorized camping to identified campsites would reduce opportunities for solitude in the IFNM because there would be an increased likelihood that overnight campers would encounter each other at the designated campsites. Further, naturalness at these sites could be reduced if there was a concentration of features associated with overnight camping (e.g., surface disturbance, trails, etc.). Restricting large groups to specific campsites would help maintain naturalness and opportunities for primitive recreation and solitude on lands with wilderness characteristics. Restricting the discharge of firearms would provide protection of naturalness, opportunities for solitude, and primitive recreation on lands with wilderness characteristics.

Allocating the IFNM as a right-of-way exclusion would minimize the potential for degradation of naturalness and primitive recreation opportunities that sometimes accompanies new rights-of-way. Very few land use authorizations would be allowed, which would provide protection for naturalness throughout the IFNM.

Surface disturbance during construction and maintenance activities would temporarily reduce naturalness in localized areas. Mitigation and restoration could alleviate the short-term loss of naturalness if there were no new structures associated with the surface disturbance. In areas of sensitive or fragile soils, naturalness would not be affected by surface-disturbing activities. Prohibitions on surface water diversions, groundwater pumping, and surface disturbance for cultural resource investigations in the IFNM would reduce the potential for a loss of naturalness resulting from the mortality of native plants. Native plant communities would tend to maintain their natural resilience to disturbances since water would not be removed from the IFNM. Further, opportunities for primitive recreation would be retained because structures associated with water pumping and diversion would be precluded.

Vegetative material could be removed from the IFNM under very specific instances under this alternative, which could temporarily diminish opportunities for primitive recreation and naturalness in localized areas. Weed management and vegetation restoration activities could temporarily diminish naturalness and opportunities for solitude in localized project areas where activities are either observed directly (e.g., work crews, machinery) or indirectly (e.g., areas of bare ground, decadent vegetation). However, weed management activities and restoration projects could indirectly promote retention of wilderness characteristics by precluding the appearance of those weeds that could otherwise diminish natural native plant communities in areas with wilderness characteristics.

Excluding humans from the Desert Bighorn Sheep WHA could reduce opportunities for solitude and primitive recreation from January 1 through April 30. Efforts to reintroduce native wildlife to the IFNM could enhance naturalness if reintroduction were successful. Prohibition of land use authorizations within the Waterman Mountains VHA and the Ragged Top VHA could indirectly promote retention of naturalness within those areas if native plant communities are maintained. Prohibiting camping within both VHAs would reduce opportunities for solitude and primitive recreation.

Prohibiting range improvements would promote retention of existing wilderness characteristics in the IFNM because the potential for additional intrusions on naturalness from structures like fences, livestock waters, and cattle guards would be reduced.

Efforts to control fugitive dust emissions could enhance naturalness by precluding a temporary loss of visibility that sometimes occurs with fugitive dust. Opportunities for solitude could be enhanced indirectly where fugitive dust plumes are suppressed because visitors would be less likely to observe dust plumes from a great distance. If dust suppression efforts were effective, visitors seeking wilderness characteristics in the IFNM would be less likely to notice vehicles traveling on unpaved roads in the distance.

Implementation-level decisions could result in diminished naturalness in site-specific areas where access to geologic features is improved through the use of roads, signage, or structures. Provisions for access could indirectly reduce opportunities for solitude in localized areas around distinct geologic features if there is a corresponding increase in visitation.

The appearance of fences would have similar impacts as those described under Alternative A.

Avoidance of projects and activities that disturb priority species habitats would indirectly promote retention of naturalness, and opportunities for solitude and primitive recreation in localized areas by minimizing the appearance of structures and/or surface-disturbing activities in priority species habitats. New wildlife watering areas could diminish naturalness and opportunities for primitive recreation if structures were associated with the action.

Rehabilitation of existing disturbed areas to reduce visual contrasts could result in a temporary, site-specific degradation of naturalness, opportunities for solitude, and primitive recreation due to the appearance of equipment and work crews that implement the rehabilitation. However, opportunities for solitude and primitive recreation would be restored after rehabilitation was implemented, and naturalness could be enhanced if rehabilitation is successful in establishing more contiguous native plant communities.

Mitigation measures taken to protect resources from land use authorizations that involve construction and maintenance activities could result in protection of naturalness in localized areas.

Designating 71 miles of routes for motorized use and 258 miles of routes for non-motorized use, and identifying 18 miles of routes for reclamation would promote wilderness characteristics on the 36,990 acres where those values have been identified because no motorized routes would be designated within those areas.

#### 4.3.11.4 Alternative C

Naturalness, and opportunities for primitive recreation and solitude would be maintained on 9,510 acres of the IFNM due to the management of wilderness characteristics on that acreage and other decisions in support of that management, which is less than the 36,990 acres where wilderness characteristics have been identified.

The 36,990 acres where wilderness characteristics have been identified would be managed as VRM Class II, which would provide protection of portions of the Silver Bell Mountains, Sawtooth Mountains, Ragged Top, and Roskruge Mountains as a result of the restrictive objectives for management of VRM Class II areas. This would provide less protection from potential intrusions in those areas relative to Alternative B.

Closing portions of the areas identified as possessing wilderness characteristics to motorized vehicle travel and limiting motorized travel to designated routes, would promote naturalness and opportunities for primitive recreation to a greater extent than Alternative A, though to a lesser extent than Alternative B.

The establishment of the primitive and Ragged Top wildlife viewing RMZs on approximately 16,290 acres of the 36,990 acres where wilderness characteristics have been identified would promote naturalness and opportunities for primitive recreation in those areas because uses and structures would be restricted. In addition, a majority of the remaining 20,700 acres would be allocated to the semi-primitive non-motorized RMZ, which also would afford some protection to wilderness characteristics, as motorized uses would not occur in those areas. A small proportion of the areas identified with wilderness characteristics would be located within roaded natural or semi-primitive motorized zones, where degradation of naturalness and opportunities for solitude could occur as a result of motorized uses and increased numbers of visitors in those areas. Conducting surveys at recreation sites would have the same impacts as those described under Alternative B. Allowing overnight, dispersed, non-motorized camping throughout the IFNM would increase opportunities for solitude in areas identified with wilderness characteristics because there would be a decrease in the likelihood that overnight campers would encounter each other. Restricting large groups to specific campsites and prohibiting the discharge of firearms, except for authorized hunting, would have the same impacts as described under Alternative B, except an additional group campsite would be identified in the area with wilderness characteristics, which could diminish naturalness and opportunities for solitude and primitive unconfined recreation in the localized area near that group campsite.

Allocating the IFNM as a right-of-way avoidance area would help maintain wilderness characteristics on 36,990 acres because rights-of-way that could diminish naturalness and opportunities for solitude during construction and maintenance would be restricted in those areas. This would be less restrictive than Alternative B, under which the IFNM would be an exclusion area.

Management actions restricting surface disturbance would be the same as those under Alternative B, resulting in the same impacts, except that surface-disturbing activities would be allowed in areas of sensitive and fragile soils. As these soils occur in a portion of the areas identified with wilderness characteristics, there could be some degradation of naturalness and loss of opportunities for solitude if surface disturbance were to occur in those areas. Also, surface disturbance could be authorized for cultural resource investigations, resulting in diminished wilderness characteristics in localized areas over the short term.

Management actions for vegetation would be the same as those under Alternative B, except non-native plants could be used for restoration, which could result in diminished naturalness in localized areas within areas identified with wilderness characteristics.

Excluding humans within the Desert Bighorn Sheep WHA and reintroductions of native wildlife would have the same impacts as those described under Alternative B. Prohibition of land use authorizations within the Waterman Mountains VHA and the Ragged Top VHA could indirectly promote retention of naturalness within those areas if native plant communities are maintained. Allowing camping within both VHAs would increase opportunities for solitude and primitive recreation in areas identified with wilderness characteristics.

Efforts to control fugitive dust emissions would have the same impacts as those described under Alternative B.

Implementation-level decisions to provide access to geologic sites would have the same impacts as those described under Alternative B.

New range improvements could diminish naturalness and opportunities for primitive recreation in localized areas, particularly if they are constructed in areas where previously there were no structures visible. The loss of naturalness could be short term or long term depending on the range improvement.

The appearance of fences would have similar impacts as those described under Alternative A. Avoidance of projects and activities that could disrupt priority species habitats would have the same impacts on naturalness and opportunities for primitive recreation as those described under Alternative B. The potential for installation of new wildlife waters would have the same impacts on naturalness as those described under Alternative B. Wildlife and livestock exclosures would result in diminished naturalness and opportunities for primitive recreation where fences are visible to visitors. Monitoring activities within exclosures could result in temporary reductions in opportunities for solitude where exclosures exist due to the presence of work crews at monitoring sites.

Rehabilitation of disturbed areas to achieve contrast levels consistent with VRM class objectives would have the same impacts as those described under Alternative B. Efforts to reduce dust in the IFNM through certain control measures would have the same impact on naturalness as those described under Alternative B.

Mitigation requirements associated with the land use authorization process would have the same localized impacts on naturalness as those described under Alternative B. Impacts on naturalness and opportunities for primitive recreation from land use authorizations would be similar to those described under Alternative A, but fewer areas would be affected due to the avoidance area allocation in contrast to no avoidance or exclusion area establishment under Alternative A.

Designating 142 miles of routes for motorized use and 187 miles of routes for non-motorized use, and identifying 18 miles of routes for reclamation would protect wilderness characteristics on about 9,510 of the 36,990 acres where those values have been identified, because no motorized routes would occur within those areas.

#### 4.3.11.5 Alternative D

Though no lands would be managed to maintain wilderness characteristics, values of naturalness, opportunities for solitude, and/or opportunities for primitive and unconfined recreation would still be present on 36,990 acres; therefore, impacts on those values are assessed based on the management decisions under Alternative D.

Limiting motorized travel to designated routes, would promote naturalness and opportunities for primitive recreation to a greater extent than Alternative A, though to a lesser extent than Alternatives B and C, because no areas would be closed to vehicle use (and additional miles of routes would be designated for motorized travel).

The establishment of the Ragged Top wildlife viewing RMZs on approximately 6,500 acres of the 36,990 acres where wilderness characteristics have been identified would promote naturalness and opportunities for primitive recreation in those areas because uses and structures would be restricted. The remaining 30,490 acres would be allocated to several RMZs including semi-primitive non-motorized, semi-primitive motorized, and roaded natural, which would afford some protection to wilderness characteristics in the

non-motorized areas. Similarly, designating the areas with wilderness characteristics as VRM Class II would provide protection for those values. Areas where motorized uses would be allowed could diminish wilderness characteristics as degradation of naturalness and loss of opportunities for solitude could occur as a result of motorized uses and increased numbers of visitors in those areas. Conducting surveys at recreation sites would have the same impacts as those described under Alternative B. Allowing overnight, dispersed, non-motorized camping throughout the IFNM would increase opportunities for solitude in areas identified with wilderness characteristics because there would be a decrease in the likelihood that overnight campers would encounter each other. Restricting large groups to specific campsites would have the same impacts as described under Alternative C. Allowing the discharge of firearms, except for authorized hunting, would have the same impacts as described under Alternative A.

Allocating the IFNM as a right-of-way avoidance area would have the same impacts as those described under Alternative C.

Management actions restricting surface disturbance would have the same impacts as those described under Alternative C.

Management actions for vegetation would have the same impacts as those described under Alternative C.

Management actions for the Desert Bighorn Sheep WHA, Waterman Mountains VHA, and Ragged Top VHA would have the same impacts as described under Alternative C.

Efforts to control fugitive dust emissions would have the same impacts as those described under Alternative B.

Implementation-level decisions to provide access to geologic sites would have the same impacts as those described under Alternative B.

New range improvements would have the same impacts as those described under Alternative C.

The appearance of fences would have similar impacts as those described under Alternative A. Avoidance of projects and activities that could disrupt priority species habitats would have the same impacts on naturalness and opportunities for primitive recreation as those described under Alternative B. The potential for installation of new wildlife waters would have the same impacts on naturalness as those discussed under Alternative B. Wildlife and livestock exclosures would result in diminished naturalness and opportunities for primitive recreation where fences are visible to visitors. Monitoring activities within exclosures could result in temporary reductions in opportunities for solitude where exclosures exist due to the presence of work crews at monitoring sites.

Rehabilitation of disturbed areas to achieve contrast levels consistent with VRM class objectives would have the same impacts as those described under Alternative B. Efforts to reduce dust in the IFNM through certain control measures would have the same impact on naturalness as those described under Alternative B.

Mitigation requirements associated with the land use authorization process would have the same localized impacts on naturalness as those described under Alternative B. Impacts on naturalness and opportunities for primitive recreation from land use authorizations would be similar to those described under Alternative A, but fewer areas would be affected due to the avoidance area allocation under this alternative, which would not occur under Alternative A.

Designating 243 miles of routes for motorized use and 100 miles of routes for non-motorized use, and identifying 4 miles of routes for reclamation would protect wilderness characteristics in localized areas

where routes are closed, but potentially diminish wilderness characteristics where motorized uses would occur.

## 4.4 RESOURCE USES

### 4.4.1 Impacts on Energy and Minerals

The analysis of potential effects on mineral resources is limited to effects on valid existing mining claims because the Proclamation designating the IFNM withdrew the area from location, entry, and patent under the mining laws, and from disposition under all laws relating to mineral and geothermal leasing, subject to valid existing rights. Impacts on geological resources and features are covered under Section 4.2.2. Impacts on renewable energy resources are covered as land use authorizations under Section 4.3.4.

Withdrawal of the IFNM from mineral entry and development prevents new exploration, and thus the discovery of any undiscovered mineral resources within the monument. In addition, new mining claims may not be located within the IFNM, ground-disturbing prospecting activities may not be conducted, and all existing mining claims must contain verifiable discovery prior to June 9, 2000. If a discovery was not exposed within the limits of the claim prior to the withdrawal date, the claim is void.

Under all alternatives, mining activity within the IFNM (on Federal mineral estate) would continue to be administered on a case-by-case basis for valid mining claims. Existing mining claims (shown on Map 3-8) grant the locator the exclusive right to explore for and develop the locatable minerals plus the right to use the surface resources to the extent required for mining operations. No impacts on the development of valuable minerals would result from any of the alternatives, as the RMP would not affect valid existing mining claims. As a result of case-by-case administration, activities associated with valid existing mining claims could result in surface disturbance on approximately 4,590 acres, and within additional areas, as necessary, to provide adequate access to the valid existing claim.

### 4.4.2 Impacts on Livestock Grazing

This section describes potential impacts on livestock grazing resulting from the implementation of management actions for other resource programs.

The analysis is based on the following assumptions:

- All existing leases are subject to Terms and Conditions, as appropriate.
- Construction of range improvements (e.g., fences, pipeline, water wells, troughs, and reservoirs) result in a localized loss of vegetation cover throughout their useful life.
- Range improvements generally lead to better livestock distribution and may increase the forage base.
- Current trends in livestock market conditions will continue. Livestock values would therefore remain the same as at present.
- Assessments of vegetation-related impacts are based on expectations of normal precipitation during the life of the plan.
- Long-term grazing-use levels are based on monitoring information, including utilization studies and actual use data.

Impact analyses and conclusions are based on interdisciplinary team knowledge of resources in the IFNM, review of existing literature, and information provided by BLM resource specialists. Effects are quantified where possible or are described in qualitative terms in the absence of quantitative data. Impacts

on livestock grazing activities are generally the result of activities that affect the quality and quantity of available forage levels, the ability to construct range improvements, and human disturbance and/or harassment of livestock within grazing allotments.

#### 4.4.2.1 Impacts Common to All Alternatives

Implementation of livestock grazing management actions could impact livestock grazing by requiring operators to make adjustments to grazing practices to comply with the Arizona Standards for Rangeland Health. Such adjustments could include modified turnout dates, modified grazing periods, growing season rest, modified grazing systems, exclosures, implementation of forage utilization levels, and livestock conversions. Managing the uplands, xeroriparian sites, and resource conditions to meet the Arizona Standards for Rangeland Health could increase the percent cover of desired vegetation species and improve vegetation species diversity and structure. In addition, this would reduce opportunities for establishment of noxious weeds and invasive species. Although these adjustments would help to enhance rangeland conditions and increase long-term forage production, animal unit month (AUM) use could decrease for some livestock operators. (This would apply under Alternative B only until leases expire.)

Management of soil, water, vegetation, and wildlife resources generally would serve to enhance vegetative community conditions and indirectly affect livestock grazing by improving forage conditions. Improving soil resources would increase the health and productivity of vegetation resources by reducing erosion. Managing soil and water resources to maintain watershed integrity and functioning hydrology would maintain and enhance vegetation and water quality, which could indirectly increase available forage for livestock use. Uneven distribution of big game populations would cause some grazing allotments to receive a disproportionate amount of wildlife grazing; this is especially true for allotments located either entirely or partially within big game management areas. As a result, livestock operators in these areas could be required to implement grazing adjustments to comply with the Standards for Rangeland Health.

Fire suppression and implementation of programs to reduce unwanted ignitions would limit the potential for loss of forage due to wildfire events. There could be further indirect benefits to livestock where plant mortality and stress is avoided, resulting in a maintenance of plant resistance to disease and insect pest infestations. This could reduce opportunities for establishment of noxious weeds and invasive plant species, and could maintain the quantity or quality of forage available for livestock grazing. Fuel treatments to maintain non-hazardous fuel levels using manual, biological, mechanical, or chemical treatments would result in the short-term loss of vegetation depending on the treatment applied. Some losses of vegetation would be of undesirable plant species including exotic and invasive species, which are treated to reintroduce or promote desirable plant species. This would improve forage available for livestock grazing in treated areas, however short-term there could be a reduction in the area available for livestock grazing.

Recreation activities would impact livestock grazing through direct human disturbance and localized surface disturbance. Surface disturbance could remove vegetation including livestock forage. These impacts could increase animal displacement, harassment, or injury, mainly from the use of vehicles. Preventing cross-country travel by OHVs would prevent a loss of forage and forage quality in the IFNM by preventing plant mortality. The action also would prevent an indirect reduction in forage quality by protecting plant communities from surface disturbance and the potential for establishment of noxious weeds and invasive species.

Mining activities on the 4,590 acres of existing mining claims and construction activities related to the development of rights-of-way would cause localized surface disturbance and increase the potential for establishment of noxious weeds and invasive species. This could remove livestock forage over the short term and could result in changes in grazing management practices and/or stocking levels of individual

allotments. Increased vehicle travel on new roads also would increase the potential for harassment of and injury to livestock. However, an increase in improved roads could facilitate livestock management operations by improving access to remote locations within allotments.

Activities associated with management of cultural resources could remove vegetation resources in localized areas. Fencing cultural sites and excluding grazing from these sites also could result localized loss of forage. Restrictions on surface-disturbing activities near cultural sites could prevent the removal of forage in these areas, but could result in the modification or relocation of rangeland improvement projects.

Retaining all public lands within the IFNM could improve BLM's ability to manage vegetation resources. This could improve vegetation diversity and structure and increase the amount of forage available for livestock grazing.

Withdrawal of the IFNM from all forms of mineral entry could reduce surface disturbance. This would help to maintain or improve the overall health, vigor, and productivity of desirable perennial vegetation, and maintain rangeland health and watershed function.

Under all alternatives, impacts on livestock grazing are not anticipated as a result of implementing management actions for the following resources and resource uses: air quality, geological resources, paleontological resources, and special designations.

#### 4.4.2.2 Alternative A (No Action)

Managing the IFNM to meet VRM Class III objectives could allow for surface disturbance activities that reduce forage in site-specific areas. In addition, managing 8,240 acres in nine allotments as utility corridors and designating the 160-acre Pan Quemado communication site could result in surface disturbance from construction and development. Support facilities such as utility towers constructed in these areas, would result in the permanent loss of vegetation from localized areas, reducing the amount of forage available for livestock grazing. Restoration of disturbed sites could replace the livestock forage that is lost as a result of facility construction.

Dispersed camping and recreational shooting within the IFNM could impact livestock grazing if surface disturbance results in a loss of vegetation in localized areas. These recreational activities could disrupt livestock grazing and reduce forage utilization in localized areas. Harassment of livestock from OHV recreation potentially could occur along existing routes in the 127,580 acres where OHVs are limited to existing routes.

Construction of rangeland improvements would increase livestock distribution and allow livestock to utilize more of the rangeland, which would consequently enhance rangeland conditions. Specifically, developing off-site water sources and fencing riparian areas could draw livestock away from sensitive areas and result in maintaining or increasing riparian conditions and improving livestock distribution.

Restrictions on surface-disturbing activities in priority wildlife habitat areas could reduce the potential loss of forage available for livestock grazing. However, rangeland improvements could also be limited in this area. Bighorn sheep management areas would occur over 41,470 acres on seven allotments and desert tortoise management areas would occur over 30,880 acres on ten allotments.

Implementing management actions to limit motorized vehicle use to 347 miles of existing routes would help improve the overall health, vigor, and productivity of desirable perennial vegetation, and improve or maintain rangeland health and watershed function by limiting surface disturbance. Activity plans for the Agua Blanca Ranch Multiple Resource Management Area and the Cocoraque Butte–Waterman

Mountains Multiple Resource Management Area could improve vegetation diversity and structure by reducing surface disturbance. This could reduce opportunities for establishment of noxious weeds and invasive species, and the quantity and quality of forage available for livestock grazing.

Developing an activity plan for the monument, including plans for the Cocoraque Butte–Waterman Mountains Multiple Resource Management Area and the Silver Bell Desert Bighorn Sheep Management Area, could help to maintain or improve the overall health, vigor, and productivity of desirable vegetation, and maintain rangeland health and watershed function. In addition, acquiring 800 acres of private and state lands could improve BLM's ability to manage vegetation and wildlife resources. This could increase the area and amount of forage available for livestock grazing.

Providing additional water sources could increase vegetation diversity and structure in localized areas by improving livestock distribution. Implementing protective measures during construction to minimize erosion, vegetation loss, disturbance of cultural resources in authorized rights-of-way would help maintain the overall health, vigor, and productivity of desirable perennial vegetation and maintain rangeland health and watershed function. This would indirectly help maintain the existing quantity and/or quality of forage available for livestock grazing.

#### 4.4.2.3 Alternative B

Making all BLM livestock allotments unavailable for grazing as leases expire could eliminate livestock grazing within the planning area. The livestock operators would have to find alternative sources of feed or reduce their herds to a size that could be maintained year-round on non-Federal property after the leases expire. Other private land or State Trust pastures would have to be rented, and these might not be available. The livestock operators could be forced to sell some or the entire livestock herd. Impacts subsequently discussed in this section would affect livestock leases until they expired.

Managing 125,110 acres (97 percent of public lands in the IFNM) as VRM Class I and II could reduce the potential for a loss of forage by restricting surface disturbance while restricting the location, type, or design of proposed range improvements. In addition, managing 36,990 acres (29 percent of public lands in the IFNM) for wilderness characteristics and closing bighorn sheep lambing areas to human entry from January 1 through April 30 could limit access for livestock management activities, while reducing the potential for loss of forage from surface-disturbing activities, compared with Alternative A. Impacts related to VRM Class III management would have similar types of impacts on those described under Alternative A, but would occur over 125,110 fewer acres and could reduce surface disturbance. This could help maintain or improve the amount of forage available for livestock.

Impacts from management actions that restrict surface disturbance would have similar impacts as those described under Alternative A, but they would apply over a greater area. Surface-disturbing activities would be restricted on an additional 63,180 acres of livestock allotments containing sensitive or fragile soils (49 percent of public lands in the IFNM). Excluding rights-of-way and minimizing surface disturbance that results in the loss of vegetation during the construction and maintenance of facilities would help maintain existing forage quantity and quality.

Actions that limit the use of motorized vehicles would have the same impacts as those described under Alternative A, but would occur over a greater area. Closing the 38,040 acres to motorized vehicles could reduce the amount of surface disturbance from human uses, compared with Alternative A. Managing 17,610 acres (14 percent of public lands in the IFNM) as roaded natural and 14,540 acres (11 percent of public lands in the IFNM) as semi-primitive motorized could focus motorized recreation in those areas, which could lead to conflicts between visitors and livestock, such as harassment. Meanwhile, prohibiting recreational shooting, and limiting public and equestrian access to designated sites could reduce conflicts

and disturbance to livestock grazing operations throughout the entire IFNM. This could decrease the amount of surface disturbance and reduce costs for livestock operators, compared with Alternative A.

Implementing the applicable conservation measures for special status species could reduce surface disturbance, increase the percent cover of desirable vegetation species, and improve vegetation species diversity. Opportunities for establishment of noxious weeds and invasive species could be reduced while increasing the quantity and quality of forage available for livestock grazing. Conservation measures could limit the location or type of rangeland improvement projects on 11 allotments. Conservation measures could increase the amount of forage available for livestock grazing, compared with Alternative A. However, if monitoring were to identify livestock grazing as a threat to a special status species, this could result in the restriction or exclusion of livestock from areas.

Prohibiting the removal of living or dead native plant material and special management for geological resources would help promote retention of existing forage and seed sources. Maintaining existing surface and groundwater resources to preserve existing vegetation diversity could promote retention of existing forage quality and reduce opportunities for establishment of noxious weeds and invasive species. Acquisition of non-Federal lands would have the same impacts on forage quantity as Alternative A, except use of the forage by livestock until leases expire could be limited because acquired acreage may be placed into conservation easements.

Development of a land restoration plan could help maintain forage quality and quantity by restricting surface-disturbing activities, improving vegetation diversity, and reducing opportunities for establishment of noxious weeds and invasive species over a greater area, compared with Alternative A. This could increase the amount of forage available for livestock grazing until existing leases expire relative to Alternative A. Passive restoration techniques could result in slower restoration rates relative to Alternative A. Implementing fencing along designated routes to prevent damage to sensitive and unique vegetation and minimize the spread of invasive species and noxious weeds could result in the restriction or exclusion of livestock from certain areas, relative to Alternative A. Livestock operation costs in the IFNM could increase if livestock movement between pastures is restricted as a result of fencing along designated routes. However, fencing along designated routes could improve livestock distribution and forage utilization, resulting in indirect improvement of rangeland plant communities.

Protective measures in authorized rights-of-way and managing land acquisitions as exclusion areas could help maintain the overall health, vigor, and productivity of desirable vegetation and maintain rangeland health and watershed function because surface-disturbing activities would be restricted. In addition, reclaiming abandoned mines could increase the amount of land available for livestock grazing and could increase the amount of forage available for livestock grazing (compared with Alternative A) if the plant communities are restored. This would indirectly help maintain or increase the existing quantity and/or quality of forage available for livestock grazing in localized areas, compared with Alternative A.

#### 4.4.2.4 Alternative C

Changing livestock grazing management to perennial on two allotments could increase the number of permitted AUMs relative to Alternatives A and B. Managing all allotments as perennial could reduce management costs for livestock operators by increasing the predictability of areas available for livestock grazing in the IFNM compared with Alternative A. There could be a decrease of quality forage if livestock operators did not defer grazing during drought years since grazing disturbance during drought can decrease the availability of palatable species within the IFNM.

The amount of forage available for livestock grazing could increase or decrease relative to Alternatives A and B. Allowing the consumption of living and dead plant material by livestock could decrease forage, and allowing the use of native and non-native plants when restoring disturbed areas could increase forage.

Impacts from soil and water resource management would be similar to those described under Alternative B, except range improvements on 10 allotments with sensitive or fragile soils would be allowed under this alternative while prohibited under Alternative B.

Impacts from recreation management actions would be the same as those described under Alternative B, except 18,380 acres (14 percent of public lands in the IFNM) would be managed as roaded natural and 36,230 acres (28 percent of public lands in the IFNM) as semi-primitive motorized, which could decrease the amount of surface disturbance relative to Alternative A and increase the amount of surface disturbance compared to Alternative B. Increasing the number of large-group camping sites to three and allowing overnight camping in 9,020 acres of VHAs would increase localized surface disturbance, compared with Alternative B. Shooting restrictions would have the same impacts as those described under Alternative B.

Impacts on livestock grazing operations from management of visual resources in VRM Classes II and III areas would be similar to those described under Alternative B, but would occur over different extents. Impacts related to VRM Class II areas would occur over 124,900 acres (97 percent of public lands in the IFNM), while impacts associated with VRM Class III areas would occur on 3,420 acres (3 percent of public lands in the IFNM). In contrast to Alternative B, there would be no VRM Class I areas. Considering rights-of-way on a case-by-case basis could reduce the potential for site-specific losses of forage associated with surface-disturbing activities if rights-of-way were denied, and increase the potential for site-specific loss of forage if rights-of-way were granted.

Management actions to restore the ecological health of resources would have impacts similar to those described under Alternative B, except using non-native plants in areas to protect resources could increase vegetation diversity and structure over the long term and restoration activities could include techniques that result in a faster rate of recovery relative to Alternative B. This would reduce opportunities for establishment of noxious weeds and invasive species, and could increase the quantity and quality of forage available for livestock grazing relative to Alternatives A and B.

Impacts from OHV area designations and utility corridors and rights-of-way would be similar to those described under Alternative A, but OHV closure areas on 10,880 acres would result in less surface disturbance and potential for livestock harassment than that under Alternative A. OHV closure areas would occur over 27,160 fewer acres relative to Alternative B. Utility corridors would occur on 980 acres in six allotments, which would be less acres than 8,240 acres under Alternative A, but more than Alternative B where utility corridors would not be identified.

Impacts from implementation-level decisions (including implementing conservation measures, limiting vegetation removal, and developing a restoration plan would be similar to those under Alternative B. The main differences in implementation-level decisions, particularly the miles of routes designated for motorized use would not be anticipated to affect current grazing management, as administrative access could be granted.

#### 4.4.2.5 Alternative D

Management of impacts from recreation would be similar to those described under Alternative B, except managing 19,060 acres (15 percent of public lands in the IFNM) as roaded natural and 59,020 acres (46 percent of public lands in the IFNM) as semi-primitive motorized could increase localized surface disturbance from recreation. In addition, increasing the number of large-group campsites to four also could increase localized surface disturbance, compared with two large group campsites under Alternative B and three large group campsites under Alternative C.

Impacts from management of visual resources would be as the same as those described under Alternative B; 122,580 acres (95 percent of public lands in the IFNM) would be managed to meet VRM Class II objectives, and there would be no VRM Class I areas. This would reduce restrictions on rangeland improvement projects, compared with Alternatives B and C. In addition, not managing areas for wilderness characteristics could increase surface disturbance from human uses, but could reduce restrictions on rangeland improvement projects compared to Alternatives B and C.

Impacts from utility corridors and rights-of-way would be the same as those described under Alternative A, except the extent of those impacts would be reduced to potentially occur on 2,660 acres on six allotments, where surface disturbance could be increased. This could reduce the loss of vegetation from facilities and surface disturbance compared with 8,240 acres under Alternative A, and increase disturbance relative to 980 acres under Alternative C.

Restoring areas on a case-by-case basis would improve vegetation diversity and structure and reduce opportunities for establishment of noxious weeds and invasive species. This could increase the quantity or quality of forage available for livestock grazing relative to Alternative A if it increases the acres restored.

Impacts from implementation-level decisions (including implementing conservation measures, limiting vegetation removal, and developing a restoration plan) would be the same as those described under Alternative B. The main differences in implementation-level decisions, particularly the miles of routes designated for motorized use would not be anticipated to affect current grazing management, as administrative access could be granted.

### 4.4.3 Impacts on Recreation

This section presents potential impacts on recreation from management actions that would result in changes to the recreational settings, opportunities, and experiences. The analysis notes where a particular management action could improve the recreation setting for some users and degrade the recreation setting for others. For example, prohibiting motorized uses in a particular area could increase opportunities for solitude and primitive recreation, but decrease opportunities for vehicle touring or vehicle-based camping. Management actions that result in surface disturbance could decrease vegetation cover or otherwise alter land surfaces, subsequently affecting the recreation setting and the potential recreation experience. In contrast, management actions that restrict surface disturbance could prevent the establishment of some types of recreational facilities in some areas. This would protect settings, but potentially limit experiences. Management actions to improve resource conditions would tend to preserve the existing recreation setting; however, they could reduce opportunities for some recreation experiences, for example, through access restrictions.

The analysis of impacts on recreation is based on the following assumptions:

- Demand for recreational opportunities available in the IFNM will increase, with a corresponding increase in visitor use.
- Traditional recreational uses within the IFNM will continue, and the following uses will increase: motorized recreation, wildlife viewing, environmental interpretation, hiking, mountain biking, equestrian, camping, and new recreational activities (potentially including geocaching and/or the use of horse-drawn coaches and wagons).
- Increasing recreational use will increase the potential for resource damage and conflicts between users.
- Demand for Special Recreation Permits (SRPs) will increase during the life of the plan.

- BLM will continue to issue SRPs for commercial recreational use, organized group activities, and competitive events in accordance with regulations at 43 CFR 2930.
- Management of recreational opportunities will require cooperation and coordination with private landowners or other land-managing agencies, given the land ownership pattern within and around the IFNM.
- Motorized and non-motorized vehicle use will be limited to designated roads and trails.
- Adequate staffing will be available for law enforcement, visitor services, and use supervision.

The impact analyses and conclusions are based on interdisciplinary team knowledge of resources and the IFNM, review of existing literature, and information from other agencies. Effects are quantified where possible. In the absence of quantitative data, qualitative descriptions and best professional judgment were used. Analysis of impacts on recreation was conducted by researching the RMP decisions for all actions for any resource or resource use that could cause a change or changes to recreational opportunities, settings, or experiences available in the IFNM.

#### 4.4.3.1 Impacts Common to All Alternatives

Withdrawal of the IFNM from all forms of energy and mineral entry would preserve the natural character of the landscape, which would maintain existing recreational settings. However, administering approximately 4,590 acres of valid existing mining claims on a case-by-case basis could impact the recreational setting by changing the natural character of the landscape as a result of surface disturbance. Mining activities also could alter the recreation experience for non-motorized recreational users if access restrictions were imposed in those localized areas. Site-specific mitigation measures identified during subsequent NEPA analysis could reduce impacts on the natural landscape and maintain recreational settings and opportunities.

Managing the IFNM for full suppression of all fires, in accordance with applicable conservation measures, would help maintain existing recreational settings, as would implementation of programs to reduce unwanted ignitions and emphasize wildfire prevention. Closures of localized areas during fire suppression activities would limit recreational opportunities in the short term. Fuels treatments also could limit recreational opportunities in the short term in localized areas.

Maintaining or improving soil cover and productivity could maintain existing recreational settings by preserving the soil and vegetation resources and reducing soil erosion. Managing the IFNM to meet rangeland health standards and guidelines in accordance with the Arizona Standards for Rangeland Health and Guidelines for Grazing Administration also would help maintain the recreational settings. If rangeland health standards were not being met, this could result in short-term degradation of recreational settings in localized areas. However, in these situations, recreational opportunities could be limited through access restrictions in order to achieve rangeland health standards.

Prohibiting the collection of objects, including paleontological resources, would limit surface-disturbing activities that could degrade recreational settings. However, eliminating this casual collection activity would reduce recreational opportunities in the IFNM.

Acquiring non-Federal lands could decrease the potential for surface-disturbing activities and increase the area of public land available for recreational opportunities and experiences.

In general, retention of all public land would provide for continued recreational opportunities within the IFNM (though the specific opportunities in localized areas would vary by alternative). Existing recreation opportunities, settings, and experiences would be preserved and could increase if additional areas not presently available for public recreational use are acquired. The continued presence of two

communication sites (regardless of whether additional facilities were allowed at each site) would diminish the recreational settings in localized areas near the communication sites over the long term.

Under all alternatives there would be no impacts on recreation as a result of implementation-level decisions for air quality, geology, and paleontological resources.

#### 4.4.3.2 Alternative A (No Action)

Custodial recreation management could increase the number of vehicle-based campsites in areas near existing routes, providing for opportunities for vehicle-based camping throughout the IFNM. However, this dispersed use could result in increased surface disturbance in localized areas, degrading the natural landscape and diminishing recreational settings over time. Similarly, allowing recreational shooting outside of developed areas would provide for that recreational opportunity, but could increase surface disturbance in localized areas with frequent use, potentially diminishing the recreational settings. As a result of limiting motorized vehicle travel to existing routes, dispersed non-vehicle-based camping opportunities would be preserved in areas that are not near or accessible by existing roads. Allowing recreationists to collect wood for use in campfires including the use of rustic fireplaces and fire rings would provide for the ongoing opportunity, but could diminish the natural landscape in areas of concentrated use, which could degrade the recreational setting. Continuing to allow cross-country equestrian travel would provide for opportunities for those users to experience more remote areas of the IFNM without conflicts with motorized or non-motorized vehicles.

Managing the IFNM (128,400 acres) as VRM Class III and continuing the designation of utility corridors on 8,240 acres would allow surface disturbance throughout a majority of the IFNM, reducing naturalness and degrading recreational settings. If facilities were installed, opportunities for semi-primitive non-motorized recreation could be diminished in localized areas as a result of increased motorized uses within those areas that would be necessary to maintain the facilities. Site-specific mitigation imposed as part of any land use authorization could reduce potential impacts on the natural landscape (and associated recreational settings) surface disturbance, as well as any restrictions that could result on recreational opportunities.

Managing 127,580 (99 percent) of the IFNM as limited to designated or existing routes would maintain opportunities for motorized recreation, throughout the monument. As motorized uses would be limited to designated or existing routes, the potential for conflicts between motorized-vehicle users and IFNM users seeking more primitive forms of recreation would be limited.

Closing 820 acres (1 percent) to OHV use, managing 41,470 acres as the Silver Bell Bighorn Sheep Management area and 2,240 acres of public land as the Waterman Mountains ACEC (including prescriptions limiting land use authorizations to areas along existing or designated routes) would restrict surface-disturbing activities in those areas, reducing opportunities for motorized vehicle travel and associated recreational uses, such as vehicle-based camping and vehicle sightseeing. Reducing surface disturbance in these areas would help maintain the existing recreational settings by preserving natural landscapes; this also would increase semi-primitive recreational opportunities.

Acquiring non-Federal mineral estate underlying Federal surface holdings could reduce surface disturbance from potential mining activities, which would help maintain existing recreational opportunities and settings in those localized areas.

The development of an activity plan for the Agua Blanca and Cocoraque Butte-Waterman Mountains Multiple Resource Management Area could restrict recreation uses and activities in localized areas where surface disturbance is restricted. In contrast, reducing surface disturbance would protect the natural

landscape and help maintain the area's recreational settings, which subsequently could increase opportunities for semi-primitive recreation and enhance the recreational experiences.

Implementation-level decisions to develop and implement activity plans for Aqua Blanca Ranch and Cocoraque Butte-Waterman Mountains Multiple Resource Management Area could result in actions or restrictions that would maintain the natural landscape by improving watershed conditions, reducing erosion, and retaining vegetation – all of which would maintain the recreational settings and associated opportunities for semi-primitive non-motorized recreation. In addition, implementing the Nichol Turk's head cactus recovery plan could reduce surface disturbance resulting in enhanced watershed conditions, which could contribute to continued semi-primitive non-motorized recreational experiences in that area. However, this could restrict some types of recreation opportunities, particularly motorized recreational uses.

Providing additional stock water sources in the Twin Tanks and Cocoraque pastures would cause short-term surface disturbance, degrading the recreation setting in localized areas. Long-term this could support wildlife-based recreation (watching, hunting) activities.

Managing 347 miles of routes as open for motorized use would maintain existing recreation opportunities in those areas. However, as recreational uses in the IFNM increase, the frequency of conflicts between motorized and non-motorized recreational users would be expected to increase – as motorized and non-motorized users would share these routes.

#### 4.4.3.3 Alternative B

Allocating the IFNM as a Special Recreation Management Area (SRMA) would be associated with the development of specific recreation niches, management objectives for recreational activities, production of varied experiences and benefits, and defining the character of the recreational settings associated with the target market(s). Within the SRMA, each RMZ would target different recreation niches, with different targeted recreation experiences (or outcomes) and settings. Most of the defined recreational settings would rely on a relatively natural, undeveloped landscape. Visitor services would support production of varied recreational experiences, with signs of management presence varying depending on the character of the setting (patrols, indirect controls, facilities, signs) associated with each RMZ. Managing the IFNM with RMZs would help maintain the recreational settings by providing five distinct RMZs that each would accommodate various uses, which could reduce conflicts between different recreational users. For example, recreationists seeking solitude could visit the primitive RMZ, while those who prefer vehicle touring could visit the roaded natural or semi-primitive motorized RMZs. However, the RMZs would reduce opportunities for motorized recreation by managing 96,200 acres (75 percent) of the public lands in the IFNM for primitive or semi-primitive non-motorized recreation opportunities and experiences. In addition, managing 38,040 acres (30 percent) as closed to OHV use also could reduce opportunities for motorized recreational experiences relative to Alternative A. Prohibiting dogs and recreational shooting would represent the loss of certain recreational opportunities compared to Alternative A, but could result in the potential for maintaining naturalness in localized areas where shooting would no longer occur. Equestrian uses would be restricted to routes designated for motorized and non-motorized travel, limiting the type and location of recreational experiences for these users compared to Alternative A.

Prohibiting ground-disturbing activities in areas of sensitive or fragile soils on 17,820 acres that are within the roaded natural and semi-primitive motorized RMZs and managing 36,990 acres for wilderness characteristics could restrict the location of recreation facilities and the potential for recreational activities that would cause surface disturbance. In contrast, prohibiting ground-disturbing activities and managing areas to maintain wilderness characteristics would help maintain the natural landscape in those areas, consistent with the allocations of the semi-primitive non-motorized, Ragged Top watchable wildlife, and primitive RMZs. In addition, management actions designating public access sites, reducing erosion, or

protecting vegetation could indirectly increase non-motorized recreational opportunities, by improving the setting for non-motorized activities by protecting the naturalness of the area and reducing the potential for conflicts with motorized uses.

Managing 125,110 acres (97 percent) to meet VRM Class I and II objectives, managing the IFNM as an exclusion area for rights-of-way, and managing 29,820 acres as the Desert Bighorn Sheep WHA also would reduce surface disturbance. In addition, minimizing surface disturbance during the construction, reconstruction, or maintenance of facilities, excluding new rights-of-way (to the extent possible) also could reduce surface disturbance. As a result of reduced surface disturbance, natural landscapes would be maintained, along with the associated recreational settings. Within these areas, non-motorized recreational opportunities, including wildlife watching, hunting, and dispersed non-vehicle-based camping, would be maintained or even enhanced relative to Alternative A. However, these management actions could reduce opportunities for motorized travel and motorized-based recreational uses—restricting the potential experiences to areas along designated motorized routes relative to Alternative A.

Managing 3,420 acres (3 percent) to meet VRM Class III and managing 17,610 acres as the roaded natural RMZ could result in surface disturbance and degrade the recreational setting in localized areas. In contrast, opportunities for motorized travel and motorized-based recreational uses would be provided in these areas, similar to the opportunities provided under Alternative A. Allowing overnight camping at identified sites only and group camping at two specific sites and establishing public access points would restrict camping and access opportunities to specific locations, but would help maintain the natural landscape and recreational settings throughout the IFNM. Fencing along travel routes would result in short-term surface disturbance in localized areas that could degrade the recreational settings and reduce the quality of semi-primitive recreation experiences in these areas.

Management actions to support control of dust emissions from vehicle travel, prevent vegetation loss, manage noxious weeds, and protection of priority or special status species habitats could restrict recreation activities and reduce recreation opportunities in localized areas. Similarly, allocating cultural sites for scientific use could result in restrictions on recreational access to protect resources causing a localized reduction in recreation opportunities relative to Alternative A.

Developing and implementing a restoration plan for the IFNM could help maintain or enhance recreational settings and, over the long term, increase recreation opportunities and experiences by restoring disturbed areas. However, restoration activities could restrict access resulting in diminished recreational opportunities or experiences in localized areas relative to Alternative A.

The implementation-level decision to develop a transportation plan could reduce conflicts between motorized and non-motorized users, enhancing recreation opportunities and experiences for both user groups. Non-motorized transportation by the public would be permitted on approximately 258 miles of routes, providing for more opportunities for non-motorized users, but fewer opportunities for motorized users (on 71 miles of routes), relative to Alternative A.

The removal of fences, roads, facilities, and utility lines no longer necessary for transportation, monument administration, or other purposes in their present locations would restore or enhance the natural landscape and associated recreational setting in those areas. The barriers presented by fences also would be removed, enhancing unconfined recreation activities, such as hunting or dispersed hiking and/or horseback riding.

Installing new wildlife waters could enhance wildlife-based recreation opportunities, but the water developments would have a short-term, localized impact on recreation setting from surface disturbance.

Providing adequate access to geologic sites and/or features for viewing and enjoyment (where public access would not conflict with other resource goals or uses) could enhance the recreation opportunities in the IFNM.

#### 4.4.3.4 Alternative C

Management of RMZs would reduce opportunities for motorized recreation relative to Alternative A as approximately 73,740 acres (57 percent) of public lands in the IFNM would be allocated for primitive or semi-primitive non-motorized recreation opportunities and experiences (including the Ragged Top area); however, this would provide more opportunities for motorized recreation relative to Alternative B. In addition, managing 10,880 acres (8 percent) as closed to OHV use could reduce opportunities for motorized recreational experiences relative to Alternative A. Prohibiting recreational shooting would have the same impacts that occur under Alternative B. Allowing dogs within the IFNM (while leashed, unless being used for hunting or livestock operations) would maintain recreational opportunities associated with those uses, such as hiking and/or hunting; however, this could diminish experiences for visitors who prefer to not encounter dogs. Allowing cross-country equestrian travel would result in the same impacts as described under Alternative A.

Allowing ground-disturbing activities in areas of sensitive or fragile soils (with mitigation) within the roaded natural and semi-primitive motorized RMZs (which overlap on 30,720 acres) would result in diminished recreational opportunities or experiences in areas where surface disturbance affects the recreational setting. Managing 9,510 acres for wilderness characteristics would result in the same types of impacts as under Alternative B, though over a lesser extent (since Alternative B includes 36,990 acres managed for wilderness characteristics). Management actions designating public access sites, reducing erosion, or protecting vegetation could indirectly increase non-motorized recreational opportunities and would result in the same impacts as under Alternative B.

Managing 124,900 acres (97 percent) to meet VRM Class II objectives, managing the IFNM as an avoidance area for rights-of-way, and managing 29,820 acres as the Desert Bighorn Sheep WHA would have similar impacts as those under Alternative B. However, there would be a slightly increased potential for surface-disturbing activities to occur from land use authorizations, resulting in diminished recreational settings and potential short-term restrictions on access that could reduce recreational opportunities in localized areas as a result of managing as an avoidance rather than exclusion area (for rights-of-way) and due to the less restrictive VRM class objectives on a limited number of acres.

Managing 3,420 acres (3 percent) to meet VRM Class III and managing 54,610 (43 percent) as the roaded natural and semi-primitive motorized RMZs could result in surface disturbance and degrade the recreational setting in localized areas, but also could increase opportunities for motorized recreation experiences compared to Alternative B. Allowing overnight dispersed non-motorized-based camping throughout the IFNM would provide for opportunities that would not exist under Alternative B. Allowing group camping at three specific sites would result in the same impacts that occur under Alternative B, but at one additional site—providing for slightly increased group camping opportunities. Establishing public access points and fencing along travel routes would result in the same impacts that occur under Alternative B.

Designating utility corridors would allow for surface disturbance in localized areas, reducing naturalness and degrading recreational settings. If facilities were installed, opportunities for semi-primitive non-motorized recreation could be diminished in localized areas as a result of increased motorized uses within those areas that could be necessary to maintain the facilities. Site-specific mitigation imposed as part of any land use authorization could reduce potential impacts on the natural landscape (and associated recreational settings) from surface disturbance, as well as any restrictions that could result on recreational opportunities. These impacts would be similar to those that would occur under Alternative A, but over a

lesser extent due to the reduced width of the corridors (200 to 300 feet wide under Alternative C, compared to one mile wide under Alternative A).

Allowing group tours at cultural sites open to public uses would increase recreational opportunities.

Allowing livestock grazing at all eleven allotments and acquiring the mineral rights when acquiring surface estate could help maintain the recreation setting. Short-term areas where livestock congregate could degrade the recreation setting and experience by removing vegetation. By acquiring mineral estate when acquiring surface estate, BLM could limit future surface disturbance in those areas.

Impacts from implementation decisions would have the same impacts as Alternative B, except non-motorized travel by the public would be permitted on approximately 187 miles of routes and motorized travel on 142 miles of routes, representing increased motorized opportunities relative to Alternative B, but fewer than Alternative A; in contrast more non-motorized recreational opportunities would be provided relative to Alternative A, but fewer than Alternative B.

#### 4.4.3.5 Alternative D

Management of RMZs would reduce opportunities for motorized recreation relative to Alternative A, but increase them relative to Alternatives B and C as approximately 50,270 acres (39 percent) of public lands in the IFNM would be allocated for semi-primitive non-motorized recreation opportunities and experiences (including the Ragged Top area). Limiting motorized vehicle travel to designated routes throughout the IFNM would result in similar impacts on opportunities for motorized recreational as Alternative A (as the 820 acres closed under Alternative A would not include any routes designated for motorized travel under Alternative D). Allowing recreational shooting would have the same impacts that occur under Alternative A. Allowing dogs within the monument would result in the same impacts that occur under Alternative C. Allowing collection of firewood would result in the same impacts that occur under Alternative A. Allowing cross-country equestrian travel would result in the same impacts as described under Alternative A.

Allowing ground-disturbing activities in areas of sensitive or fragile soils within the roaded natural and semi-primitive motorized RMZs would result in the same impacts as under Alternative C, though over a greater extent (41,420 acres, compared to 30,720 acres under Alternative C). Management actions designating public access sites, reducing erosion, or protecting vegetation could indirectly increase non-motorized recreational opportunities and would result in the same impacts as under Alternative B.

Managing 122,580 acres (95 percent) to meet VRM Class II objectives, managing the IFNM as an avoidance area for rights-of-way, and managing 29,820 acres as the Desert Bighorn Sheep WHA would have similar impacts as those under Alternative B. However, there would be a slightly increased potential for surface-disturbing activities to occur from land use authorizations, resulting in diminished recreational settings and potential short-term restrictions on access that could reduce recreational opportunities in localized areas as a result of managing as an avoidance rather than exclusion area (for rights-of-way) and due to the less restrictive VRM class objectives on a limited number of acres.

Managing 4,220 acres (3 percent) to meet VRM Class III objective, managing 1,600 acres (1 percent) to meet VRM Class IV objectives, and managing 78,080 acres (61 percent) as the roaded natural and semi-primitive motorized RMZs could result in surface disturbance and degrade the recreational setting in localized areas, but also could increase opportunities for motorized recreation experiences compared to Alternatives B and C. Allowing overnight dispersed non-motorized-based camping throughout the IFNM would result in the same impacts that occur under Alternative C. Allowing group camping at four specific sites would result in the same impacts that occur under Alternative B, but at two additional sites—

providing for increased group camping opportunities. Establishing public access points and fencing along travel routes would result in the same impacts that occur under Alternative B.

Allowing group tours at cultural sites and allowing livestock grazing at all eleven allotments would have the same impacts that occur under Alternative C.

Designating utility corridors would have the same impacts as Alternative C, though over a greater extent as a result of the wider corridors that would be established relative to Alternative C (corridors would be ¼-mile wide under this alternative, compared to 200- to 300-feet wide under Alternative C).

Impacts from implementation decisions would have the same impacts as Alternative B, except non-motorized travel by the public would be permitted on approximately 100 miles of routes and motorized travel on 243 miles of routes, representing increased motorized opportunities relative to Alternatives B (71 miles) and C (142 miles), but fewer than Alternative A (347 miles); in contrast more non-motorized recreational opportunities would be provided relative to Alternative A (no routes designated), but fewer than Alternatives B (258 miles) and C (187 miles).

### 4.4.4 Impacts on Lands and Realty

The analysis of potential effects on lands and realty from the proposed alternatives is limited to effects on land tenure (ownership) and the opportunities for land use authorizations within the IFNM. Generally, in areas defined in the RMP as having restrictions for issuing land use authorizations could limit opportunities for facilities such as utilities. In addition, various management prescriptions could alter BLM's ability to authorize land uses. For example, areas closed to OHV travel would potentially limit BLM's ability to authorize a right-of-way through that area.

The following assumptions were used when assessing the impacts on lands and realty:

- BLM would use voluntary approaches to acquire surface (and mineral) estate.
- Site-specific impacts caused by development of facilities in designated corridors or development of communication sites would be assessed in accordance with NEPA using an environmental assessment or EIS process prior to approval by BLM, and mitigation measures could be required.
- The demand for rights-of-way would increase within the life of this plan.
- Right-of-way holders may maintain their use and access at their discretion consistent within the terms of their grant.

Impact analyses and conclusions are based on an understanding of BLM's authority to acquire land within the boundary of the IFNM as well as BLM's responsibilities to authorize various uses of public land through a lands and realty program (e.g., issuing rights-of-way). Spatial analyses were conducted using GIS data and analyses. Impacts are described qualitatively to differentiate among the alternatives; impacts are quantified wherever possible. Analyses of impacts on lands and realty are based consideration of the goals of the lands and realty program to secure non-Federal land and interests in land, and manage land use authorizations, such as rights-of-way, in a way that minimizes impacts on the natural and cultural resources of the IFNM, and their uses.

#### 4.4.4.1 Impacts Common to All Alternatives

Under all alternatives, BLM could acquire land and incorporate those lands into the IFNM. No lands would be transferred out of Federal ownership, per the Proclamation, unless an exchange would further the protective purposes of the monument. Under all alternatives acquisitions would be dependent upon

having a willing seller. The resulting impact would be that more area within the IFNM's boundaries could be managed by BLM in the future.

Mining claims shown to be valid could restrict BLM's ability to issue land use authorizations in localized areas.

Under all alternatives, impacts on lands and realty are not anticipated as a result of implementing management actions for the following resources and resource uses: air quality, geologic resources, fire ecology, cultural resources, paleontological resources, energy and mineral resources, and livestock grazing.

#### 4.4.4.2 Alternative A (No Action)

Very few management prescriptions would have impact on lands and realty or BLM's ability to authorize land uses within the IFNM. Land tenure adjustments and land use authorizations would be affected primarily as a result of decisions under lands and realty, travel management, and special designations. To a lesser extent, decisions for managing vegetation and scenic and visual resources also would potentially impact lands and realty or BLM's ability to authorize land uses. No impacts on lands and realty would be anticipated under Alternative A from decisions for soil and water resources or recreation.

Land tenure adjustments would focus on acquisition of non-Federal land in the Waterman Mountains, Sawtooth Mountains, Agua Blanca Ranch area, Cocoraque Butte area, Silver Bell Mountains, and three sections of land in the West Silver Bell Mountains. Acquisitions would be driven by opportunities or land availability in these geographic areas. In addition, BLM would pursue acquisition of non-Federal mineral estate underlying Federal surface holdings, which would reduce the need for land use authorizations for surface uses in areas that are not Federal minerals—that is, BLM would have management jurisdiction over both surface and subsurface uses as a result of successful acquisitions. Also under lands and realty decisions, the existing corridors (approximately 8,240 acres of public land) would be maintained for existing and future rights-of-way (Map 2-15). Land use authorizations for major utility rights-of-way, such as high-voltage transmission lines, would be restricted to these corridors. Other rights-of-way, such as distribution lines to inholdings, could be granted in the corridors as well; however, BLM would maintain the ability to authorize uses such as these outside the designated corridors. Communication facilities would be restricted to the two designated sites. Other rights-of-way could be consolidated to the extent practicable.

Closing 820 acres to OHV (or any motorized-vehicle) travel would include about 800 acres around Ragged Top for protection of vegetation and wildlife habitat and about 20 acres for the Special Management Area. These closures could effectively restrict land use authorizations in these areas as a result of access limitations that would be enforced as part of the OHV closure. OHV travel in the remaining areas of the IFNM would be restricted to existing routes, which could limit opportunities for land use authorizations to areas along existing routes if the authorization (e.g., right-of-way) required motorized vehicle access for construction, operation, or maintenance (unless administrative access was granted for such purposes).

Continuing the designation of the Waterman Mountains ACEC (shown on Map 2-3) and its associated management prescriptions for the protection of the Nichol Turk's head cactus would restrict BLM's opportunities to authorize land uses (e.g., rights-of-way) to areas along existing routes on the 2,240 acres of public land within the ACEC. The 60 miles of existing roads within the ACEC would provide numerous opportunities for rights-of-way within the ACEC.

Development and implementation of an activity plan for the Cocoraque Butte–Waterman Mountains Multiple Resource Management Area could result in additional, but very localized restrictions to land use

authorizations in that area to meet natural resource objectives. Cocoraque Butte is a special restriction area for vehicle travel (refer to Map 2-19), which is essentially managed as closed to motorized vehicle travel.

Managing public lands within the IFNM as VRM Class III would not preclude land use authorizations, but would allow only moderate changes to the landscape, not "major modification" of the landscape character. As such, land use authorizations requiring major modifications would not be permitted, or proponents of such uses would be required to implement mitigation measures to, at a minimum, partially retain the landscape character.

The implementation-level decisions under Alternative A generally would be analyzed on a site-specific basis for their impacts on lands and realty. However, under travel management, limiting motorized vehicle travel to existing routes (Map 2-19) could effectively limit opportunities for future rights-of-way or other land use authorizations that may require additional access routes (unless administrative access was granted for such purposes).

#### 4.4.4.3 Alternative B

Land use authorizations under this alternative would be restricted primarily as a result of decisions under lands and realty, soil and water resources, wildlife and wildlife management, special status species, scenic and visual resources, recreation, and travel management. To a lesser extent, decisions for managing vegetation also would potentially impact lands and realty or BLM's ability to authorize land uses.

Land tenure adjustments would focus on acquisition of non-Federal land throughout the monument, on an opportunistic basis, rather than within specific areas. This would provide greater flexibility for BLM in prioritizing land for acquisition and would account for ongoing, changing conditions in and around the IFNM. In addition, BLM would pursue acquisition of non-Federal mineral estate underlying Federal surface holdings, which would reduce the need for land use authorizations for surface uses in areas that are not Federal minerals—that is, BLM would have management jurisdiction over both surface and subsurface uses as a result of successful acquisitions. BLM would not acquire surface estate unless subsurface estate (minerals) could be acquired concurrently, in order to ensure that management of the acquired lands would be consistent with the goals of the IFNM. As a result, this could limit acquisition opportunities in some areas. Over time, these decisions would lead to increased land being managed as part of the IFNM under BLM's jurisdiction.

Allocating all of the public lands within the IFNM, approximately 128,400 acres, as an exclusion area (without any designated utility corridors), would result in the consideration of land use authorizations such as rights-of-way only when required by law. The only exception would be at two designated communication sites, where communication facilities would be authorized on up to a total of approximately 5 acres of public land. These decisions would effectively prohibit new land use authorizations within the IFNM; existing authorizations would be allowed to continue. In the event that a land use authorization was required by law, mitigation could be required to ensure protection of monument objects.

Prohibiting ground-disturbing activities in areas of fragile and sensitive soils would severely restrict land use authorizations in those areas. Similarly, prohibiting surface water diversions and groundwater pumping that removes water from the IFNM could limit land use authorizations associated with those types of activities.

Establishing the Desert Bighorn Sheep WHA to protect habitat lambing areas and movement corridors, and limiting public access within localized areas of the WHA during lambing season could result in localized restrictions on land use authorizations; however, the allocation of the IFNM as an exclusion

area for rights-of-way would almost entirely eliminate the potential for any land use authorizations to occur within this area at all.

Establishing the Waterman Mountains Vegetation Habitat Management Area (VHA) and its associated management prescriptions would restrict land use authorizations (unless necessary or required by law within the exclusion area) to areas located along routes designated for motorized travel.

Designating 36,990 acres of the IFNM as VRM Class I, 88,120 acres as VRM Class II, and 3,290 acres as VRM Class III (Map 2-7) would result in restrictions on any required land use authorizations to comply with the objectives for the respective management class. Opportunities for land use authorizations in areas managed as VRM Class I would be severely limited, while some, but limited, opportunities for land use authorizations would be available in VRM Class II areas. Areas designated as VRM Class III would provide the greatest opportunities for land use authorizations, particularly those that would be noticeable within the landscape.

The RMZs under Alternative B would result in approximately 96,200 acres of public land being managed for non-motorized recreational opportunities (which includes approximately 29,420 acres of primitive zone, 6,780 acres of Ragged Top wildlife-viewing zone, and 60,000 acres of semi-primitive non-motorized zone) (Map 2-12), consistent with the routes designated as closed to motorized vehicle travel. Land use authorizations, though not specifically restricted in these areas under the recreation decisions, could effectively be limited due to the reduced opportunities for motorized access in these areas (unless administrative access was granted for such purposes). Opportunities for land use authorizations would be greatest within the 17,610-acre roaded natural RMZ and the 14,540-acre semi-primitive motorized RMZs.

Closing approximately 38,040 acres to OHV travel would result in further restrictions on land use authorizations in those areas (primarily associated with the primitive RMZ and areas managed to maintain wilderness characteristics) (Map 2-20), beyond the restrictions that already would occur as a result of allocating the IFNM as an exclusion area for land use authorizations. OHV travel in the remaining area of the IFNM would be restricted to designated routes, which would limit opportunities for land use authorizations to areas along those designated routes if the authorization (e.g., right-of-way) required motorized vehicle access for construction, operation, or maintenance (unless administrative access was granted for such purposes).

Minimizing or mitigating for surface-disturbing activities under vegetation could result in localized restrictions to land use authorizations.

The implementation-level decisions under Alternative B generally would be analyzed on a site-specific basis for their impacts on lands and realty. However, under travel management, vehicle travel would be limited to 71 miles of routes designated for motorized vehicle travel (Map 2-20), which could limit opportunities for future rights-of-way or other land use authorizations if additional access and/or routes were required for that specific right-of-way (unless administrative access was granted for such purposes).

#### 4.4.4.4 Alternative C

Under Alternative C, land use authorizations would be restricted primarily as a result of decisions under lands and realty, soil and water resources, wildlife and wildlife management, special status species, scenic and visual resources, recreation, and travel management. To a lesser extent, decisions for managing vegetation also would potentially impact lands and realty or BLM's ability to authorize land uses.

Land tenure adjustments for surface and/or subsurface estate would occur as described under Alternative B, with the same resulting impacts.

All of the public lands within the IFNM except two designated utility corridors (one for underground utilities only, and one for underground or overhead utilities, totaling 980 acres) would be allocated as avoidance area for future rights-of-way. Similar to Alternative A, land use authorizations for major utility rights-of-way would be restricted to the designated corridors, and other rights-of-way could be granted in the corridors. Though BLM would maintain the ability to authorize land uses such as these outside the designated corridors, the allocation of the IFNM as an avoidance area would limit opportunities for rights-of-way. As with Alternative B, communication facilities would be restricted to the two designated sites, totaling approximately 5 acres of public land, which would provide for two localized and very limited opportunities for additional communication facilities within the IFNM.

Ground-disturbing activities in areas of fragile and sensitive soils would be allowed rather than prohibited compared to Alternative B, which would provide opportunities for land use authorizations in those areas. However, site-specific restrictions and/or mitigation could be required.

Establishing the Desert Bighorn Sheep WHA and Waterman Mountains VHA would have the same impacts as those described under Alternative B.

Designating approximately 122,580 acres to VRM Class II and approximately 4,220 acres to VRM Class III (Map 2-8) would result in restrictions on land use authorizations to comply with the objectives for the respective management class. Opportunities for land use authorizations would be limited, though not completely prohibited, in VRM Class II areas, and some restrictions also would apply in VRM Class III areas. The approximately 1,600acres designated as VRM Class IV would not greatly restrict land use authorizations, given the objectives of that VRM class.

The recreation zoning under Alternative C would result in approximately 73,740 acres of public land being managed for non-motorized recreational opportunities (which includes approximately 57,450 acres of public land identified as semi-primitive non-motorized RMZ, 6,780 acres of public land identified as the Ragged Top wildlife-viewing RMZ and approximately 9,510 acres of public land identified as a primitive RMZ) (Map 2-13), consistent with the routes designated as closed to motorized vehicle travel. Though land use authorizations are not specifically restricted in these areas according to the recreation decisions, authorizations would effectively be limited due to the reduced opportunities for motorized access in these areas (unless administrative access was granted for such purposes). Opportunities for land use authorizations would be greatest within the 18,380-acre roaded natural RMZ and the 36,230-acre semi-primitive motorized RMZs.

Closing approximately 10,880 acres to OHV travel would result in restrictions on land use authorizations in those areas (Map 2-21), beyond the restrictions that already would occur as a result of allocating the IFNM as an avoidance area for land use authorizations. OHV travel in the remaining area of the IFNM would be restricted to designated routes, which would limit opportunities for land use authorizations to areas along those designated routes if the authorization (e.g., right-of-way) required motorized vehicle access for construction, operation, or maintenance (unless administrative access was granted for such purposes).

Minimizing or mitigating for surface-disturbing activities would result in similar impacts as those that would occur under Alternative B.

The implementation-level decisions under Alternative C generally would be analyzed on a site-specific basis for their impacts on lands and realty. However, under travel management, motorized vehicle travel would be limited to 142 miles of routes designated for motorized travel (Map 2-21), which would limit opportunities for future rights-of-way or other land use authorizations that may require additional access routes (unless administrative access was granted for such purposes).

#### 4.4.4.5 Alternative D

Land use authorizations would be restricted primarily as a result of decisions under lands and realty, soil and water resources, wildlife and wildlife management, special status species, scenic and visual resources, recreation, and travel management. To a lesser extent, decisions for managing vegetation also would potentially impact lands and realty or BLM's ability to authorize land uses.

Land tenure adjustments for surface and/or subsurface estate would occur as described under Alternative B, with the same resulting impacts, except mineral estate acquisitions would not be required as part of surface estate acquisitions. This could result in an increase in the amount of split estate land within the IFNM, where BLM would not have jurisdiction to manage or prohibit uses of subsurface estate.

All of the public lands within the IFNM except three designated utility corridors (one for underground utilities only, and two for underground or overhead utilities, totaling approximately 2,660 acres) would be allocated as avoidance area for future rights-of-way. Impacts would be similar to those described under Alternative C, though with slightly greater area allocated for corridors compared to Alternative C.

Allowing ground-disturbing activities in areas of fragile and sensitive soils would result in the same impacts as those described under Alternative C.

Establishing the Desert Bighorn Sheep WHA and Waterman Mountains VHA would have the same impacts as those described under Alternative B.

Designating approximately 117,940 acres to VRM Class II and approximately 3,190 acres to VRM Class III (Map 2-9) would result in restrictions on any required land use authorizations to comply with the objectives for the respective management class. Opportunities for land use authorizations would be limited, though not completely prohibited in VRM Class II areas, and some restrictions also would apply in VRM Class III areas. The approximately 7,270 acres designated as VRM Class IV, primarily associated with utility corridors, would not greatly restrict land use authorizations, given the objectives of that VRM class.

The recreation zoning under Alternative D would result in approximately 50,270 acres of public land being managed for non-motorized recreational opportunities (which includes approximately 43,770 acres of public land identified as semi-primitive non-motorized RMZ and 6,500 acres of public land identified as the Ragged Top wildlife-viewing RMZ) (Map 2-14), consistent with the routes designated as closed to motorized vehicle travel. Though land use authorizations are not specifically restricted in these areas according to the recreation decisions, authorizations could be limited due to the reduced opportunities for motorized access in these areas (unless administrative access was granted for such purposes). Opportunities for land use authorizations would be greatest within the 19,060-acre roaded natural RMZ and the 59,020-acre semi-primitive motorized RMZs.

No areas would be closed to motorized vehicle travel; OHV travel on public lands would be restricted to designated routes (Map 2-22), which would limit opportunities for land use authorizations to areas along those designated routes if the authorization (e.g., right-of-way) required motorized vehicle access for construction, operation, or maintenance (unless administrative access was granted for such purposes).

Minimizing or mitigating for surface-disturbing activities would result in similar impacts as those that would occur under Alternative B.

The implementation-level decisions under Alternative D generally would be analyzed on a site-specific basis for their impacts on lands and realty. However, under travel management, motorized vehicle travel

would be limited to 243 miles of routes designated for motorized travel (Map 2-22), which would limit opportunities for future rights-of-way or other land use authorizations that may require additional access routes (unless administrative access was granted for such purposes).

### 4.4.5 Impacts on Travel Management

The analysis of effects on travel into and within the IFNM—including access to areas within the monument—from management decisions proposed under the alternatives focuses on the loss or gain of access for motorized and non-motorized surface travel and air transportation. The impacts are determined by whether current access throughout the IFNM would be changed and the degree to which management would meet the goals and objectives for travel management.

Monument ingress and egress would be affected by surface travel route closures, limitations, and other management actions limiting access. Increased access by way of new route designations, route maintenance, and the opening of closed areas would affect surface travel. Changes to access of inholdings also would affect surface travel.

The following assumptions were used when assessing the impacts on travel and access:

- During implementation planning, the BLM will assess all proposed actions for site-specific effects in order to avoid long-term impairment of travel and access to areas within the monument.
- Changes to travel management, as outlined in each alternative, will be consistent with the other management decisions proposed under that particular alternative.

Impact analyses and conclusions are based on study of the project area and existing planning documents. Spatial analyses were conducted using GIS data. Impacts are quantified where possible or described in qualitative terms, if appropriate. Impacts on travel and access would include short- or long-term effects from changes in access for OHV travel, and changes in the routes that are available for motorized and non-motorized surface travel.

#### 4.4.5.1 Impacts Common to All Alternatives

Erosion prevention measures and land treatments to maintain and improve soil cover and productivity would correct drainage and erosion problems on existing travel routes, improving road conditions. Such measures and/or treatments would be applied to routes consistent with OHV use designations and individual route designations.

Under all alternatives, wildfire on the IFNM would be suppressed in all instances. Fire suppression activities could require emergency access that may not be accommodated by the travel route system. As a result, additional routes, though possibly only temporary and administrative, could be required for management of wildfires or to conduct fuels treatments. Overall, this would not increase the routes or areas where motorized uses would be allowed.

Mining activity within the IFNM would continue to be administered on a case-by-case basis. Access needs related to mining claims would be accommodated consistent with OHV areas and route designations under each alternative, to the extent possible. However, valid existing mining claims could require additional access that may not be accommodated by the travel route system. As a result, additional routes could be established for the specific purpose of exercising a valid existing mining claim. Site-specific impacts would be identified and mitigated through subsequent NEPA analysis.

Acquiring lands would protect and potentially expand public travel and access within the IFNM because additional routes and access points could become available for public use. These potential localized changes to travel management would be addressed on a case-by-case basis. In contrast, the acquisition of non-Federal mineral estate would eliminate potential access needs related to the private development of minerals on split estate.

No impacts on travel management would occur as the result of decisions for geological resources, vegetation, special status species, paleontological resources, livestock grazing, or special designations.

#### 4.4.5.2 Alternative A (No Action)

Restrictions on travel within the IFNM would result primarily from the travel management decisions. To a lesser extent, decisions for managing wildlife and wildlife habitat, lands and realty, scenic and visual resources, and recreation also could affect travel management. No impacts on travel management would result from management decisions for air quality, cultural resources, or wilderness characteristics because the management decisions proposed for these resources under Alternative A would not result in restrictions on travel management or increased access within the IFNM.

Motorized travel within the IFNM would be limited to existing routes in accordance with the Proclamation (a total of 347 miles of roads and trails). Closing 820 acres to OHV travel and limiting motorized vehicle travel to existing (or designated) routes on the remaining approximately 127,580 acres would provide an extensive travel network throughout the IFNM, with very few areas where motorized travel would be prohibited. Approximately 800 acres of the closure would occur around Ragged Top to protect wildlife and wildlife habitat, and the remaining 20 acres would occur in the Special Management Area. Cross-country equestrian uses would be allowed, providing for access into remote areas by equestrian users, but that could result in the establishment of additional trails from continued use.

Maintaining three 1-mile-wide utility corridors within the IFNM and allowing rights-of-way throughout the IFNM would require continued access for construction and maintenance of such facilities (though administrative access could be granted for such purposes).

Designating the IFNM entirely as a VRM Class III area and continuing custodial management for recreation would support the travel-management decision that limits motorized travel to existing routes throughout the IFNM (except within the 820 acres that would be closed); these decisions would not generate any additional direct impacts on travel management. Cross-country horseback riding would continue, resulting in increased public access into remote areas, but such use could result in the establishment of additional trails.

The implementation-level decision designating approximately 347 miles of routes for motorized vehicle travel (i.e., the existing routes) would provide extensive access throughout the IFNM for both motorized and non-motorized uses.

#### 4.4.5.3 Alternative B

Restrictions on travel within the IFNM would result primarily from the travel-management decisions. To a lesser extent, decisions for managing air quality, soil and water resources, wildlife and wildlife habitat, cultural resources, lands and realty, scenic and visual resources, areas managed to maintain wilderness characteristics, and recreation also could affect travel management.

Closing approximately 38,040 acres (almost 30 percent of the public lands within the IFNM) to motor vehicle travel and limiting motorized vehicle travel to designated routes on 90,360 acres would restrict travel and access within the IFNM, compared to Alternative A. Restricting access into the IFNM to

identified locations would limit access from nearby areas, but also could prevent the proliferation of unauthorized routes from various locations. Travel and access restrictions would be associated with VRM Class I areas, areas managed to maintain wilderness characteristics, protection of cultural resources, and the primitive RMZ.

Controlling fugitive dust emissions, particularly through the use of road-use restrictions that limit or eliminate access, could affect travel management in localized areas.

Prohibiting surface disturbance to protect soil and water resources in areas of sensitive or fragile soils could constrain travel and access in those areas, particularly from future consideration of new route development.

Allocating approximately 29,820 acres for the Desert Bighorn Sheep WHA would reduce public access to that area; lambing areas would be closed year-round to all motorized travel, and to non-motorized travel (and public entry) during the lambing season.

As no cultural resource sites would be allocated to public use under Alternative B, access to such sites could be restricted in localized areas.

Eliminating the utility corridors within the IFNM and allowing rights-of-way only when required by law (i.e., allocating the entire IFNM as a right-of-way exclusion area) would limit the need for additional access for construction and maintenance of such facilities. Access for existing facilities would not be affected.

Designating a majority of the IFNM as VRM Classes I and II areas (36,990 and 88,120 acres, respectively), managing 36,990 acres to maintain wilderness characteristics, and designating approximately 96,200 acres as non-motorized RMZs (including the primitive, Ragged Top, and semi-primitive non-motorized RMZs) would support the travel-management decisions to close 38,040 acres to motorized uses and limit motorized travel to designated routes on the remaining 90,360 acres. Limiting vehicle-based and dispersed camping to identified sites and limiting large-group camping to two sites would restrict access for camping to specific areas within the IFNM. Cross-country horseback riding would not be allowed, resulting in a lack of access to remote areas by equestrian users, but also preventing the proliferation of unauthorized trails; however, equestrian travel would be allowed on routes designated for motorize and non-motorized travel. In addition, six staging areas would be established for equestrian users of the IFNM, limiting areas where users could access the IFNM.

The implementation-level decision that would designate approximately 71 miles of routes for motorized vehicle travel would provide limited access throughout the monument for both motorized and non-motorized uses, which would be much more restrictive for motorized uses relative to Alternative A. In addition, there would be a provision to provide increased access, as necessary, to unique geological features in the IFNM. However, other routes could be reclaimed if they are no longer needed for transportation, wildlife management, monument administration, or other purposes.

#### 4.4.5.4 Alternative C

Restrictions on travel within the IFNM would result primarily from the travel management decisions. To a lesser extent, decisions for managing air quality, soil and water resources, wildlife and wildlife habitat, cultural resources, lands and realty, scenic and visual resources, areas managed to maintain wilderness characteristics, and recreation also could affect travel management.

Closing approximately 10,880 acres (about 8 percent of the public lands within the IFNM) to motorized travel and limiting it to designated routes for on 117,520 acres would be more restrictive relative to travel

and access compared to Alternative A, but less restrictive compared to Alternative B. Restricting access into the IFNM to identified locations would result in the same impacts as described under Alternative B. Travel and access restrictions would be associated with management for wildlife habitat, protection of cultural resources, and the primitive RMZ.

Controlling fugitive dust emissions would have the same impacts as those described under Alternative B.

Travel and access could be constrained (but not eliminated) where protection of soil and water resources (in areas of sensitive or fragile soils) would restrict, but not prohibit, surface disturbance, providing for greater travel and access opportunities relative to Alternative B.

Allocating approximately 29,820 acres for the Desert Bighorn Sheep WHA would result in the same impacts as those described under Alternative B.

Allocating cultural resource sites to public use would provide opportunities for increased access into localized areas, which would be precluded under Alternative B.

Allocating two 200- to 300-foot-wide utility corridors and allocating the IFNM as a right-of-way avoidance area would limit the need for additional access for construction and maintenance of facilities to a greater extent compared to Alternative A (1-mile-wide corridors), and to a lesser extent, relative to Alternative B (no corridors). Access for existing facilities would not be affected.

Designating a majority of the IFNM as VRM Class II (124,900 acres), managing 9,510 acres to maintain wilderness characteristics, and designating approximately 73,740 acres to non-motorized RMZs (including the primitive, Ragged Top and semi-primitive non-motorized RMZ) would support the travel-management decisions to close 10,880 acres to motorized uses and limit motorized travel to designated routes on the remaining 117,520 acres. Limiting vehicle-based camping to identified sites and limiting large-group camping to three sites would restrict access for camping (except dispersed non-motorized based camping) to specific areas within the IFNM. Cross-country horseback riding would be allowed under this alternative, providing similar access for equestrian users that would be available under Alternative A, and increased access compared to Alternative B. Cross-country horseback riding would result in increased public access into remote areas, but such use could result in the establishment of additional trails from continued use. Providing six staging areas for equestrian users would have the same impacts as described under Alternative B.

The implementation-level decision designating approximately 142 miles of routes for motorized vehicle travel would provide limited access throughout the IFNM for both motorized and non-motorized uses, which would be much more restrictive for motorized uses compared to Alternative A, though less restrictive compared to Alternative B. Provisions for increased access (for geological resources) and route reclamation would result in the same impacts as those described under Alternative B.

#### 4.4.5.5 Alternative D

Restrictions on travel management within the IFNM would result primarily from the travel-management decisions. To a lesser extent, decisions for managing air quality, soil and water resources, wildlife and wildlife habitat, cultural resources, lands and realty, scenic and visual resources, areas managed to maintain wilderness characteristics, and recreation also could affect travel management.

Limiting motorized vehicle use to designated routes on 128,400 acres would be more restrictive of travel and access within the IFNM relative to Alternative A, but less restrictive relative to Alternatives B or C. Restricting access into the IFNM to identified locations would result in the same impacts as those described under Alternative B.

Controlling fugitive dust emissions would have the same impacts as those described under Alternative B.

Management to protect soil and water resources (in areas of sensitive or fragile soils would allow greater access to those areas, relative to Alternative B, and the same access, relative to Alternative C (ground disturbance would be restricted rather than prohibited) as described under Alternative C.

Allocating approximately 29,820 acres for the Desert Bighorn Sheep WHA would result in the same impacts as described under Alternative B.

Allocating cultural resources sites to public use would have the same impacts as described for Alternative C.

Allocating three ¼-mile utility corridors and allocating the IFNM as a right-of-way avoidance area (outside those corridors) would limit the need for additional access for construction and maintenance of facilities, to a greater extent than under Alternative A (due to the 1-mile corridor width under Alternative A), but to a lesser extent than Alternatives B (no corridors) or C (200-300 foot-wide corridors). Access for existing facilities would not be affected.

Designating a majority of the IFNM as a VRM Class II area (122,580 acres) and approximately 50,270 acres to non-motorized RMZs (including the Ragged Top and semi-primitive non-motorized RMZs) would support the travel-management decision limiting motorized travel to designated routes, which would affectively limit access throughout the IFNM. Limiting vehicle-based camping to identified sites and limiting large-group camping to four sites would result in impacts similar to those described under Alternative C. Cross-country horseback riding would be allowed with the same resulting impacts as described for Alternative C. Providing six staging areas for equestrian uses would have the same impacts as those described under Alternative B.

The implementation-level decision designating approximately 243 miles of routes for motorized vehicle travel would provide limited access throughout the IFNM for both motorized and non-motorized uses, which would be much more restrictive for motorized uses relative to Alternative A (347 miles), though less restrictive relative to Alternatives B (71 miles) or C (142 miles). Provisions for increased access (for geological resources) and route reclamation would result in the same impacts as those described for Alternative B.

### 4.4.6 Impacts on Special Designations

Special designations provide additional protection for areas with unique natural, historic, scenic, or recreational resources. The existing Waterman Mountains ACEC is the only such designation in the IFNM (the same area is identified as the "Waterman Mountains VHA" under all other alternatives). The area was originally designated to protect habitat for the Nichol Turk's head cactus.

The following assumptions were used when assessing the impacts on special designations:

- Only changes as to whether the Waterman Mountains ACEC would be designated would affect ACECs.
- Specific impacts on resources or uses resulting from the continuation or elimination of the Waterman Mountains ACEC are included under resource sections (e.g., vegetation and special status species).

Impacts are described qualitatively to differentiate among the alternatives, and are quantified wherever possible.

#### 4.4.6.1 Impacts Common to All Alternatives

No impacts would be common to all alternatives, as the Waterman Mountains ACEC would only remain designated under Alternative A.

#### 4.4.6.2 Alternative A (No Action)

Under Alternative A, only decisions for special status species and special designations would affect ACECs. The Waterman Mountains ACEC (approximately 2,240 acres of BLM-administered land) would continue to be designated for the protection of the Nichol Turk's head cactus.

#### 4.4.6.3 Alternative B

Under Alternative B, the 2,240-acre Waterman Mountains ACEC designation would not continue because the IFNM designation and management proposed for the IFNM (in this Draft RMP/EIS) would provide protection of the special status species for which the ACEC was established.

#### 4.4.6.4 Alternative C

Under Alternative C, the 2,240-acre Waterman Mountains ACEC designation would not continue because the IFNM designation and management proposed for the IFNM (in this Draft RMP/EIS) would provide protection of the special status species for which the ACEC was established.

#### 4.4.6.5 Alternative D

Under Alternative D, the 2,240-acre Waterman Mountains ACEC designation would not continue because the IFNM designation and management proposed for the IFNM (in this Draft RMP/EIS) would provide protection of the special status species for which the ACEC was established.

## 4.5 IMPACTS ON SOCIAL AND ECONOMIC RESOURCES

The social and economic conditions are characterized by the needs, demands, and values of the local, regional, and National publics as well as the economic opportunities, benefits, and constraints that are represented by the IFNM. The programs with the strongest correlation between BLM management and social and economic conditions are energy and minerals, grazing, recreation, and lands and realty.

This analysis of the potential social and economic impacts of the alternatives for the IFNM RMP considers the current contribution (i.e., impact) of IFNM to the social and economic environment of the region (i.e., social and economic study area, see Section 3.5). Economic impacts are defined as expected gains or losses from market transactions on local jobs and income and market and non-market value of resources to users. Social impacts are defined as the consequences to human populations that alter the way in which people live, work, recreate, relate to one another, organize to meet their needs, and generally cope as members of society. Social impacts also include cultural impacts involving changes to the norms, values, and beliefs that guide and rationalize their cognition of themselves and their society (Interorganizational Committee on Principles and Guidelines 2003). Social impacts are defined as direct, meaning that they would potentially result from the action taken, or secondary, meaning that they result from the primary or direct impacts and often are separated from the direct impact in terms of both time and geographic distance.

Key economic impact variables that were considered as part of the analysis include employment, income, economic dependency, and market and nonmarket economic value of resources to users within the social and economic study area and at the regional and national levels. Key social impact variables include

population change, community and institutional structures, political and social resources, community and family changes, and community resources.

Impact analyses and conclusions are based on interdisciplinary team knowledge of social and economic conditions within the planning and decision areas, which included BLM specialists from the Tucson Field Office and cooperating agencies, as well as a review of existing literature. Effects are quantified where possible using field investigations, demographic data and geographic information systems. In the absence of quantitative data, the magnitude of impacts is described qualitatively.

It is assumed that the current trends for economic and social needs, demands and values will continue for the next 20 years.

### 4.5.1 Impacts Common to All Alternatives

Regardless of alternative, management of the IFNM would continue to be subject to compliance with the Proclamation, which emphasizes the protection of monument objects. All alternatives would continue to recognize the social value of resource protection and include minor to moderate expenditures and earnings associated with BLM management of the IFNM. The national monument designation is an expression of the broad social value that public land with notable biological, cultural, and geological resources should be conserved. All alternatives for management of IFNM support the objectives of the Proclamation, and consequently contribute to the protection of social values in the IFNM.

In accordance with the Proclamation, the IFNM would continue to be withdrawn from location, entry, and patent under the mining laws, and from disposition under all laws relating to mineral and geothermal leasing. Only those nonpatented mining claims within the IFNM that predate the establishment of the IFNM could potentially be developed; and that development would continue to be subject to establishment of valid rights. Since there currently is no activity within the decision area associated with nonmetallic mineral mining, salable minerals, leasing and development for fluid minerals, or permits for energy resources, no existing operations would be affected by BLM management decisions. Where development on valid existing rights occurs, economic gains would be realized commensurate with the scale of the activity. As the majority of the active mining claims in the IFNM are owned by Asarco Silver Bell Mining, L.L.C. and almost all of the claims are located around the Silver Bell Mountains, social impacts would be minimal and localized in scale because activities would be clustered in the same previously disturbed area. Two other claimants own the remaining claims. According to the reasonably foreseeable development scenarios mineral resource development, it is unlikely that there would be significant pressure to develop the grandfathered mining claims. Regardless of alternative, any proposals to develop valid existing rights would be subject to site-specific, case-by-case review of mine plans, plans of operation, and other development plans to ensure that other resources are protected prior to the issuance of a permit or lease. BLM would receive royalties for the development of such resources; lease fees and the royalty schedules would vary by operation.

Land acquisitions could result in the acquisition of mineral rights that would then be withdrawn from future exploration and development by virtue of the Proclamation. This would preclude the potential economic development of these resources. Acquisition of mineral rights supports those values and beliefs that the IFNM should not be disturbed by mining activities and supports those values and beliefs that these resources should be accessible and economic opportunities realized.

The continuation of policy to retain federal land (surface and subsurface estate) would preclude economic activity that could potentially be associated with land development activity on disposed lands.

BLM could issue free use permits for mineral materials to government agencies, charitable organizations, and non-profit corporations on a case-by-case basis and subject to resource protection requirements. This would represent a continued opportunity for obtaining low cost mineral materials for these agencies.

Fire suppression and associated programs would continue to have minor socioeconomic impacts related to protection of life and property, fire ecology, aesthetics, and the employment and expenditures related to these programs.

Arizona Standards for Rangeland Health and Guidelines for livestock grazing would be implemented, affecting both resource management decisions and livestock grazing. Associated socioeconomic conditions (addressed in Section 3.5) would continue to be affected because this management supports local ranching and promotes sustainable use of public land for grazing. All alternatives would have potential for only minor fiscal impacts, changes in Payment in Lieu of Taxes (PILT) payments, or changes in the BLM budgetary process.

For implementation-level decisions, the following socioeconomic impacts would be common to all alternatives. Land use authorizations for permits and easements would continue to be considered on a case-by-case basis, contingent on compatibility with the natural and cultural resource goals of the IFNM. Social and economic impacts related to permits and easements would be driven primarily by the support provided to local livestock grazing, recreation, and mineral and other development. Under all alternatives, the implementation decision to limit vehicle use to designated routes could prohibit development of mineral resources where valid existing rights occur in those areas where access would be reduced.

Under all alternatives, there would be no environmental justice impacts because there would be no disproportionate adverse impacts to minority and/or low income populations as a result of implementation of the proposed management alternatives.

### 4.5.2 Alternative A (No Action)

Under the no action alternative, BLM management of public lands in the IFNM would continue under current management direction. The implications for energy and minerals, livestock grazing, recreation, and lands and realty are detailed below. For other resources, management and implementation decisions would generally recognize the social values for the protection of air quality, geologic resources, soil and water resources, vegetation, wildlife and wildlife habitat, special status species, cultural resources, paleontological resources, special designations, and management of wilderness characteristics. Under existing management decisions, some of the issues or concerns expressed during scoping and ongoing public involvement would not be addressed through the RMP process.

Under Alternative A, potential economic gains from development of mineral or energy resources would be (1) limited by the reduced access to or other restriction on valid existing rights or (2) not realized, as development of acquired mineral rights would be precluded in accordance with the terms of the Proclamation (see Management Common to All Alternatives). The social impact would be mixed: favorable to those that value protection of lands from impacts that would be associated with mineral or energy resource development, but unfavorable to those that value the potential development of mineral and energy resources on public lands.

Prohibitions or restrictions would continue to potentially affect the development of valid existing mineral rights and, thereby, potential economic gain and social change. Site-specific impacts and mitigation would be identified through case-by-case analysis of future proposed activities.

The continuation of the management decisions for the 41,470-acre Silver Bell Desert Bighorn Sheep Management Area (to limit motorized vehicles to existing routes and acquire land within this area and,

thereby, withdraw these lands without valid existing rights from development per the Proclamation) could limit options for the development of mineral and energy resources. There are mining claims in this area, which is part of a copper mineral district. However, the continuation of existing management decisions for the 800-acre portion of the Silver Bell Desert Bighorn Sheep Management Area (to prohibit surface occupancy for oil/gas development and designate the area as closed to OHVs) would have no impact because there are no valid existing rights in this area and, therefore, the affected area is withdrawn for mineral and energy development per the Proclamation.

The continuation of the management decision to acquire through exchange non-Federal mineral estate underlying Federal surface holdings in the Silver Bell RCA would continue to result in the withdrawal of these mineral resources from exploration and development per the terms of the Proclamation. Acquisition of additional lands in the Sawtooth Mountains CRMA could result in the acquisition of mineral rights, with similar potential impacts on economic gains. The Sawtooth Mountains include a manganese mineral district.

Alternative A would allow continued open range ranching at the IFNM, which is considered an important part of regional history and community. Economic gains from livestock operations and the BLM grazing fees would be tied to allowable stocking of cattle on grazing allotments, which would continue to be commensurate with annual rainfall and maintenance of Rangeland Health Standards. Ongoing application of the guidelines for grazing administration from BLM's Arizona Standards for Rangeland Health and Guidelines for Grazing Administration would continue to potentially lead to adjustments in stocking rates or require range improvements that could have economic impacts, including adjustments in livestock operators' income and expenditures and grazing fees paid to BLM.

The continuation of existing recreation management programs would result in relatively minor economic impacts due to visitor expenditures and highly varied social impacts associated with the availability and quality of recreation activities in the IFNM. Many of the issues and concerns raised during public scoping and ongoing public involvement for this Draft RMP/EIS were centered around potential impacts on resources from recreation uses of the IFNM. Without changes in current management, some of these issues and concerns would not be addressed by the RMP process. Associated social effects, such as conflicts among uses, would continue and possibly escalate.

The continuation of existing management of realty actions would have minor impacts on the potential economic activity associated with development related to lands and realty transactions. Land acquisition strategies would be focused on pre-monument status and existing right-of-way corridors would remain and allow for additional use and new right-of-way development. Development within existing or new rights-of-way would have potential social impacts related to the location the development, and economic impacts on the service population affected by infrastructure improvements. These impacts would be evaluated on a site-specific basis in accordance with NEPA.

Continuing to limit motorized vehicle use to existing routes would potentially result in additional expense for project proponents and localize social impacts to those viable options for siting facilities along existing routes.

Implementation decisions to meet public land health standards or protect desert tortoise habitat could affect stocking rates and range management. Minor expenditures and earnings would be associated with providing additional (stock) water sources in the Twin Tanks and Cocoraque Pastures.

### 4.5.3 Alternative B

Aggregate socioeconomic impacts that potentially would occur under Alternative B have been grouped into four categories: (1) BLM expenditures and earnings associated with prescribed projects or protective

measures requiring additional work or increased expense, (2) restrictions on use that recognize social values for resources but that may deny certain use/access opportunities, (3) indirect economic impacts from potential changes in levels of IFNM visitation (which are closely related to recreation and other public use/access decisions), and (4) changes to special designations or natural/cultural resource allocations. Aggregate social and economic impacts would result from the additive impact of minor expenditures and earnings associated with prescribed projects or protective measures requiring additional work or increased expense. These include:

- air quality projects to control fugitive dust emissions
- soil and water resource management decisions for areas of sensitive or fragile soils; soil resource protection during construction, reconstruction, or maintenance projects; and implementation-level decisions for erosion control and flood protection projects
- vegetation resource management decisions for integrated weed management and invasive species/noxious weed control including land restoration actions, various vegetation reclamation methods; use of native plants in restoration; and implementation decisions for fencing along designated routes and monitoring invasive species and noxious weed treatment areas
- paleontological resource management decisions for field surveys and implementation decisions for database development and maintenance
- implementation of RMP and implementation-level decisions for wildlife management and special status species, including RMP decisions for the proposed management of the Desert Bighorn Sheep WHA and wildlife population enhancement and implementation decisions for wildlife water projects; removal of fences, roads, facilities, and utilities lines no longer needed; construction and/or modification of fencing for safe travel; and special status species monitoring programs
- resource management decisions for cultural resource studies and implementation decisions for the prescribed monitoring scheme for cultural resources
- implementation-level decisions for prescribed actions for visual resource management
- implementation decisions for proposed motorized vehicle area and road closures and travel and transportation maintenance plan actions

Each resource-based management decision recognizes the social value attached to that resource (e.g., air quality – social value for clean air, biological resources – belief that special protection should be afforded to special status species, livestock grazing – value for etc.). On overall balance, Alternative B supports the values and beliefs that favor the protection or conservation of monument objects and other natural and cultural resources and allows for the minimum amount of allowable human use within the IFNM, based on valid existing rights and meeting BLM's multiple use mandate. This is reflected in management actions to close sensitive areas to motorized vehicle use; managing 36,990 acres to maintain wilderness characteristics; road restrictions for air quality; restrictions on access use for geologic resources warranting special management protection; prohibiting surface water diversion and groundwater pumping that affects IFNM values; minimizing surface disturbance for vegetation; prohibiting camping on BLM-administered land in the Waterman Mountains VHA and Ragged Top VHA; not allocating cultural resource sites for public use and designating most of the IFNM as VRM Class I or VRM Class II. Management decisions that result in restrictions on public access/use opportunities would strike a balance between social values for unfettered access to public lands, but consistent with the social value of resource protection.

Management actions related to prohibiting dogs and human entry for protection of desert bighorn sheep would have mixed social and potential minor economic effects. The resource management decision to prohibit dogs on public land within the IFNM would provide a protective measure for the desert bighorn sheep, which is socially valued. However, those who visit the IFNM or live within, adjacent to, or nearby the IFNM that attach value to the companionship and experience with their dogs would be precluded from such experiences. Those that live on inholdings within the IFNM would be required to confine their dogs to private or State Trust lands. Additionally, those that use dogs as working dogs in their livestock operations and those that use dogs to augment their hunting success on public lands would be impacted both socially (i.e., changing the way that people work and recreate) and economically (i.e., reduced hunting success, change in range operations). The management action to seasonally close the lambing areas within the Desert Bighorn Sheep WHA to human entry similarly aligns with the social value for protection of the desert bighorn sheep, but is counter to the social value for the protection of access/use of public land and associated people-place connections associated with seasons. A healthy desert bighorn sheep population is intertwined with spending associated with visitation, especially for wildlife viewing opportunities; such expenditures would become more seasonal and may increase (or at least not decrease) as a result of management actions.

The resource management decision to manage 36,990 acres for wilderness characteristics recognizes the social value for these areas and would potentially increase the non-market value of these areas. There would be an increased likelihood that proposals for use in these areas (to be considered on a case-by-case basis) would not be permitted.

Some Alternative B management decisions could potentially translate into indirect economic impacts from changes in IFNM visitation. Potential decreases in visitation may occur for some users as a result of increased restrictions on use and reduced opportunities for public access. These include restrictions on motorized access, camping, recreational target shooting, equestrian use, non-motorized mechanized use, prohibiting dogs on public land within the IFNM, seasonally closing lambing areas to human entry, not allowing group tours of cultural resources, and closing environmentally sensitive areas. The following decisions under recreation are specific examples of such restrictions that also deny recreation opportunity:

- Prohibiting native wood campfires and allowing camp stoves/charcoal only at identified campsites would be protective of resource values, but would deny the continued opportunity for this experience
- Prohibiting the use and discharge firearms would be consistent with those publics concerned about the resource impacts of recreational shooting at the IFNM, but counter to those who value the opportunity for recreational shooting at the IFNM
- Limiting non-motorized and mechanized uses on routes designated as open to motorized use may increase conflicts between users
- Prohibiting non-motorized mechanized use within areas managed to maintain wilderness characteristics could limit certain types of activity-based people-place connections associated with this use in these areas

Economic activity associated with IFNM visitation (e.g., expenditures at business in local communities) could be shifted to other recreation sites within the general area that are not as restrictive as the IFNM would become under this alternative (e.g., BLM lands outside of the IFNM where recreational target shooting is allowed under certain circumstances or areas where mountain biking trails are separated from motorized use trails). Nonetheless, given the increasing urbanization in the area and the wider attraction because of the monument designation, the overall visitation of the IFNM from local and regional residents would be expected to increase or remain unchanged despite of these management changes. Out of town visitation likely would remain unchanged by these management actions; other factors likely

would continue to dominate trends within changes in this type of visitation (national coverage of interest stories for the IFNM, wildflower season, national travel trends, etc.).

The potential countervailing impact is that there may be minor increased visitation due to the proposed protection of resource sites and access to them where people-place connections have been identified as important. These include geologic resource sites, VHAs, WHAs, watchable wildlife areas, and management for species and habitat, including hunted species. Such protection could result in increased publicity for the IFNM and increased public interest and visitation both from local and out of town visitors. In addition, a countervailing impact could result from the purchase of materials such as camp stoves or firewood in the local community for use on the IFNM since native wood campfires would no longer be allowed within the IFNM.

Under the Alternative B decisions for recreation, the designation of the IFNM as a SRMA for Undeveloped Recreation-Tourism Market excludes major investments in facilities, but allows major investments in visitor services and recognizes the social value for dispersed recreation opportunities at the IFNM. The allocation of RMZs would have a combined impact with the management decisions for transportation and public access and management of areas to maintain wilderness characteristics under this alternative. The emphasis would be on providing semi-primitive non-motorized opportunities (to include those areas identified to be managed to maintain wilderness characteristics), with most intensive use activities occurring within roaded natural areas. Visitor service presences would correlate with the RMZ environment. Under Alternative B, if any visitor center facilities were to be provided, they would be provided offsite in coordination with the local communities, providing a potential opportunity for a development project in the local communities.

Overnight use would become more restrictive and shifted from vehicle-based camping in dispersed locations (currently available throughout the IFNM) to identified sites only. Not allowing for continued camping within the Ragged Top VHA and closure of localized areas to camping to protect resources, and limiting group camping to large identified campsites (two identified at this time) would eliminate certain opportunities that exist today for camping throughout the IFNM including in areas where people and/or groups may have established sense of place connections. Non vehicle-based camping would be allowed at identified campsites within the IFNM. People-place connection may similarly be limited by the requirement for non-vehicle-based camping to occur at identified sites.

Alternative B would discontinue the designations for the Waterman Mountains ACEC, Silver Bell Desert Bighorn Sheep Management Area, Silver Bell RCA, Sawtooth Mountains CRMA, Cocoraque Butte-Waterman Mountains Multiple Resource Management Area, Agua Blanca Multiple Resource Management Area, and Avra Valley CRMA. Generally, the discontinuation of these designations may be counter to any social value specific to their designation. Such impacts would be minimized by allocation of the Waterman Mountains VHA (for the Waterman Mountains ACEC vicinity) and Desert Bighorn Sheep WHA (for the Silver Bell Desert Bighorn Sheep Management Area), which recognize the social value and provide for the protection of the resource values for which these areas were designated. The discontinuation of the Silver Bell RCA and Cocoraque Butte-Waterman Mountains Multiple Resource Management Area would have no social or economic impact. Unlike ACECs, there are not those who attach value to these specific designations. Additionally, the resources within these areas would be managed under other provisions (e.g., land tenure decisions to retain all Federal land acquire non-Federal land throughout the IFNM and cultural resource management decisions including allocation of the butte area of Cocoraque Butte to public use). The discontinuation of the Sawtooth Mountains CRMA could be perceived as a loss of recognition of the recreation value and opportunities for cooperative management in this area, but such concerns would be addressed through other management provisions (BLM would seek cooperative management of the IFNM through administrative actions such as those included in Appendix D) negating any socioeconomic impact.

Other notable aggregate effects are as follows:

- The resource management decisions pertaining to the removal and/or use of living dead and downed native plant material aligns with the social impacts of the overall conservative/restrictive nature of this alternative as noted above. In addition, Alternative B incorporates various specific social values for plant material use, but fails to recognize the social and cultural value for the collection of plant materials for other purposes (e.g., collection of firewood, non-Native American use, etc.).
- The prohibition of economic activity related to commercial plant collection within the IFNM (e.g., selling of native seeds, firewood, etc.) would potentially result in the purchasing of firewood and plant material from community vendors rather than removing it from the IFNM.
- Allocation of cultural resource sites for scientific use but not for public use recognizes the social value associated with the protection of cultural resources, but prioritizes those who value cultural resource protection and study over those who also value public access to cultural resources. This alternative would potentially deny access to cultural resource sites, including those where there is a people-place connection. Allocation and management of sites for traditional use recognizes the social value and people-place connections attached to these sites, including for affiliated Indian tribes and ongoing consultation with Native American tribes. Closing an expanded area around Santa Ana de Cuiquiburitac to motorized vehicles would provide for additional protection of socially important cultural resource sites within identified people-place connections.

Under Alternative B, the difference in the socioeconomic impact related to existing valid rights to develop energy and mineral resources centers on the designation of protected resources or areas and restrictions on use for these resources and/or areas as follows:

- For the Ragged Top VHA, management prescriptions prohibiting land use authorizations except along designated motorized routes could limit mineral/energy development on valid existing rights. This VHA is within copper mineral districts and includes areas of existing mining claims.
- Similar to the above, the management decision to close 38,040 acres of areas to motorized use could prohibit development of mineral and energy resources where valid existing rights occur. Many of the mining claims in the Silver Bell Mountains area are within areas identified as lands to be managed for wilderness characteristics under this alternative.
- The management decision to acquire non-Federal mineral estate underlying Federal surface holdings throughout the IFNM and to not acquire surface estate unless mineral estate can be acquired concurrently (or is already Federally owned), could increase the areas withdrawn from mineral development as compared to Alternative A. This alternative also includes prescriptions for acquisition of non-Federal lands for various resource protection values and within the Waterman Mountains VHA and Ragged Top VHA.
- Other management decisions could limit or restrict mineral or resource development such as prohibition of additional ground-disturbing activity in areas of sensitive or fragile soils, prohibiting surface water division and groundwater pumping that removes water from the IFNM or adversely affects the monument's values, minimizing surface disturbance that results in loss of existing vegetation cover, use of native plants for all restoration projects, mitigation of site-specific impacts possibly being required where development of valid existing rights could affect priority species and/or habitats, and VRM Class I and II designations. In order to minimize or mitigate impacts from such potential impacts, there

may be minor increased expense to those seeking to explore or develop valid existing rights (although review of proposals on a case-by-case basis as would occur under the no-action alternative could result in similar mitigation requirements).

Alternative B would result in loss of economic activity related to livestock grazing and impacts on social value for ranching at and near the IFNM. The economic impact would be minor in context of the overall community economy, but individual livestock operators could be impacted by no longer operating on the public lands in the IFNM. The social impact would be greatest and somewhat localized to ranchers operating in the affected area, but other impacts likely would occur in the greater ranching community and among those with values or beliefs that oppose livestock grazing within the IFNM.

The major resource management decision that could result in both social and economic impacts related to livestock grazing is the decision to make all 11 allotments (only the portion within the IFNM) unavailable for grazing to maximize preservation of IFNM resources. Allotments would become unavailable for grazing upon expiration of existing leases. As the leases expire there would be a gradual loss in AUMs and fees paid to BLM for livestock grazing. When all leases expire, a total of 7,843 AUMs would be eliminated. At the current (2006) grazing fee rate ($1.56 per AUM), the total annual loss in fees paid to BLM when all grazing leases have expired would be $12,235. (Note that this is a representative loss based on the 2006 grazing fee, the grazing fees changes annually and has a mandated low of $1.35 per AUM and reached as high as $1.79 per AUM in 2004.) Two grazing allotments that are located almost entirely within the decision area would become unavailable for grazing. Livestock operations in the remaining nine allotments would be forced to operate only on State Trust lands and private lands, which are interspersed with BLM-administered lands in a checkerboard pattern. Within grazing allotments, existing fences largely do not differentiate between State Trust lands, private lands, and BLM-administered lands. In order for operators to comply with the closure of grazing on the BLM-administered portions of their grazing allotments, their operations would have to be modified in such a manner as to eliminate livestock grazing on BLM-administered lands. For some of the existing small and independent operators, this management burden would likely result in the inability to continue to graze livestock. Livestock operators with allotments comprised predominantly of State Trust lands and that extend beyond the IFNM (e.g., Old Sasco and King allotments) would have less of an overall management burden than those allotments that are predominantly comprised of BLM-administered land and occur largely within the boundaries of the IFNM (e.g., Claflin, Agua Dulce, Tejon Pass). BLM management responsibilities would shift from an emphasis on lease administration and general range improvement projects to an emphasis on addressing trespass cattle. No range improvements would be permitted under this alternative, though additional fencing would be necessary, resulting in limited associated expenditures and earnings associated with such projects.

The social value associated with ranching on BLM-administered lands in the IFNM would be lost along with the loss of grazing in allotments. Individuals, families, and social groups are connected by the ranching that has historically occurred on the BLM-administered lands and the vicinity. Some operators live on inholdings within the IFNM and have a strong connection to ranching in how they live and work, recreate, relate to one another, organize to meet their needs, and generally cope as members of society. These impacts on values and beliefs would be felt greatest at the localized level, but also would have impacts in the greater western Tucson area livestock operator community. The opposing viewpoint is tied to the belief that ranching is inconsistent with the native ecosystem function in the Sonoran Desert or causes damage to the environment and the value for environmental protection.

The establishment of designated access points and access/staging areas for equestrian uses could eliminate or reduce current “backyard” access to the IFNM, which is valued by some IFNM neighbors. Such impacts would be highly localized and primarily social in nature. Proximity of designated access points, group camping areas, and equine staging areas to businesses, may translate to economic gains to local businesses from visitor expenditures.

Under the lands and realty decisions for Alternative B, all Federal land (surface and subsurface) would be retained except in special instances where land exchanges could be utilized to further natural and cultural resource goals of the IFNM. Any economic activity associated with such an exchange would be expected to be relatively minor. There could be expenditures and earnings associated with exchange, purchase, and/or donation of acquired lands. As mentioned under the discussion of mineral and energy resources, the acquisition of non-Federal mineral estate would preclude mining activity and associated socioeconomic activity throughout the IFNM. The R&PP lease for the Tucson Soaring club could be renewed; therefore, associated social and economic activity may continue.

Decisions to not establish utility corridors or new rights-of way and to designate the IFNM as an exclusion area would be additive to impacts associated with promoting resource conservation through decisions for travel management, VRM, and management of areas to maintain wilderness characteristics in terms for protection and enhancement of natural and cultural resources. These decisions would preclude economic opportunity for new utilities and rights-of-way within the IFNM. As a result, new utility service to the potential service population would need to be provided through alternate routings, which could potentially be at more cost to the utility company and ultimately the consumer. Minor socioeconomic impacts associated with the existing communication sites at the IFNM (e.g., site-specific gains for communication companies providing services to their clientele and localized social impacts associated with visual impacts of communication sites) would continue under this alternative.

### 4.5.4 Alternative C

The overall BLM expenditures and earnings associated with Alternative C would be similar to those for implementation of Alternative B. A few distinctions are that Alternative C would allow the use of non-intrusive, non-native plants in limited, emergency situations for reclamation. Reclamation using such plants may require less expenditure than the use of native plant species only. Allocation of cultural resource sites to public use and scientific study prescribed in association with the allocation of the Santa Ana de Cuiquiburitac site to scientific use may result in minor expenditures and earnings. Collection and removal of geological resources for educational and/or scientific purposes under special use permit would be allowed under Alternative C, potentially resulting in minor expenditures and earnings associated with such research.

As compared to Alternative A, this alternative would support the values and beliefs for the protection of IFNM resources and objects to a slightly greater extent because management decisions respond to issues and concerns and place more emphasis on resource protection. Alternative C provides a mix of resource protection and human uses supporting multiple sets of values and beliefs. In sensitive resource areas, it proposes a higher level of resource protection and less public use, while opportunities for public use are emphasized in less sensitive resource areas. Social and economic impacts related to motorized use closures would be the same as Alternative B, but to a lesser extent, as OHV closure areas would encompass 10,880 acres under Alternative C rather than 38,040 acres under Alternative B and 142 miles of routes rather than 71 miles of routes would be designated for motorized travel. Similarly, the same social and economic impacts noted for management of areas to maintain wilderness characteristics under Alternative B would apply to Alternative C, but reduced in scale, as 9,510 acres (areas of the West Silver Bell Mountains and the Roskruge Mountains) would be managed to maintain wilderness characteristics as opposed to 36,990 acres. Unlike Alternative B, camping would be allowed within Ragged Top VHA. Visual resources would allow for more diversity of use than under Alternative B. Under Alternative C, the majority of the IFNM would be VRM Class II, Class I VRM areas would be limited to the West Silver Bell and Roskruge mountains, and there would be slightly more Class III than Alternative B. As with Alternative B, collection of geological resources would be prohibited, but collection and removal of geological resources for educational and/or scientific purposes under special use permit would be allowed. This recognizes the social value for educational and/or scientific use of such resources.

Alternative C would allow for dogs on public lands within the IFNM as long as they are leashed, but allows for dogs to be used off-leash for hunting or livestock operations.

With regard to special designations or natural or cultural resource allocations (i.e., the discontinuation of the Waterman Mountains ACEC, Silver Bell Desert Bighorn Sheep Management Area, Silver Bell RCA, Sawtooth Mountains CRMA, Cocoraque Butte-Waterman Mountains Multiple Resource Management Area, Agua Blanca Multiple Resource Management Area, and Avra Valley CRMA), the impacts of Alternative C would be the same as Alternative B.

The potential social and economic impacts of Alternative C related to valid existing rights to develop energy and mineral resources are similar to those described for Alternative B. Distinctions are as follows:

- Acquiring the mineral estate as available when acquiring surface estate lands under Alternative C, rather than acquiring surface estate only when mineral estate can be acquired concurrently (or is already Federally owned), could reduce the areas of mineral estate withdrawn from future exploration and development compared to Alternative B.
- Potential prohibitions or limitations to mineral and energy resource development are limited somewhat under this alternative, as ground-disturbing activities in areas of sensitive or fragile soils may be restricted or mitigation required (rather than prohibited, as under Alternative B). As designated utility corridors would be VRM Class III and IV, disturbance associated with mineral or energy development along the corridors would be less restricted than under Alternative B, where these areas would be managed as Class II. Closure of areas to motorized vehicle use (approximately 10,880 acres as opposed to 38,040 acres) and management of areas to maintain/enhance wilderness characteristics (approximately 9,510 acres rather than 36,990 acres) under Alternative C also would have less potential to affecting mineral and resource development than under Alternative B.

Under Alternative C, the public lands within the IFNM for all 11 allotments would remain available for livestock grazing. Expenditures and earnings associated with grazing administration and rangeland improvements would continue under this alternative. Tejon Pass and Morning Star allotments would gain active AUM allocations (a combined increase of 449 active AUMs or 6 percent total increase). This increase in permitted AUMs is actually an average of the livestock grazing on these allotments over the last 10 years. Therefore, there would not be an obvious change in livestock grazing related socioeconomic activity as a result of this increase in active AUMs. The management decision to evaluate whether to reallocate allotments for livestock or wildlife use when a lease is relinquished or cancelled would potentially preclude or delay continued socioeconomic activity associated with livestock grazing. Unlike Alternative B, this alternative recognizes the social value of the continuation of traditional open range ranching at the IFNM.

Other resource management actions could reduce disturbance and increase the quantity and/or quality of forage available for livestock grazing. These include soil erosion control, prohibiting the removal of living or dead native plant material, pursuing an integrated weed management approach, using native plants and non-native plants in restoration, monitoring of invasive species and weed treatments, and establishing priority habitats for wildlife and special status species. Using active reclamation practices to stabilize and reclaim sites could result in short-term reductions in livestock use, restriction or exclusion of livestock, changes in period of use, or other management actions, but would likely increase the quantity or quality of available forage in the long-term. The overall effect of this management would be to ensure sustainable grazing opportunities to support local ranching.

Closing lambing areas to human entry could impose restrictions or exclusions on livestock grazing, changes in stocking levels, seasons of use, and timing and duration of grazing activities (including

rangeland improvement projects). The impacts of such changes on the social and economic contributions of associated livestock grazing operations would be minimized in that lambing areas are generally located in upland areas that are not heavily utilized for livestock grazing and that closures would reduce surface disturbance during a portion of the growing season, which could improve forage conditions.

The potential changes in visitation under Alternative C would be the same as Alternative B, with a few notable exceptions. Unlike Alternative B, Alternative C would allow for dogs to continue to accompany visitors to public lands within the monument, although it requires that they must be leashed, except when being used for hunting. This alternative would allow for visitors to continue to have experiences that include their dogs and, therefore, no associated change in visitation would be expected. For dog owners on inholdings, the impacts of keeping dogs leashed (rather than not allowing them) while on public lands within the monument would have reduced social impacts as compared to Alternative B. Hunters and livestock operators would continue to be able to use dogs, resulting in the potential for increased success in hunting and utility in livestock operations and continued associated social and economic effects. Another notable difference between these alternatives is that Alternative C would provide for public access to group tours of cultural resource sites, including those where people-place connections have been established. Minimal to moderate economic gains could occur in association with this level of access. Allocation of the Santa Ana de Cuiquiburitac site to scientific use recognizes the social value of scientific study and would potentially result in expenditures and earnings for studies.

Under recreation, Alternative C as compared to Alternative B would allocate additional areas as semi-primitive motorized and less area as semi-primitive non-motorized, providing for more of a balance between motorized and primitive recreational uses. Wood fires would be allowed with non-monument wood sources, thereby resulting in continued/potential increase in purchase of wood for campfires from local vendors. As compared to Alternative B, there would be greater options for vehicle-based camping under this alternative and, therefore, less impacts on people-place connections. Alternative C allows for overnight non-vehicle-based camping within both semi-primitive non-motorized and semi-primitive motorized RMZs (rather than just within semi-primitive non-motorized as with Alternative B). This allows for continued people-place connections associated with non-vehicle-based camping within a larger area than under Alternative B, although such use would also be limited to identified campsites within these zones. The impacts of restricting group camping to three identified large campsites would be similar to the impacts discussed for Alternative B, but the one additional group camping site (near the West Silver Bell Mountains) would be located more remotely than the other two and businesses near access points to this area may be potentially affected by visitor expenditures. Finally, Alternative C would allow for non-motorized, mechanized use to occur on routes open or closed to public use, thereby allowing for separation of these uses and limiting the access for non-motorized, mechanized uses to a lesser extent than under Alternative B. Social and economic activity associated with non-motorized, mechanized uses would likely be unchanged as a result of this decision, although such use may increase as a result of other trends.

The social and economic impacts of land tenure decisions for Alternative C are essentially the same as those of Alternative B, although under Alternative B surface estate could potentially be acquired without underlying mineral estate. Therefore, lands acquired could potentially be mined for economic gain, but would be subject the BLM approval process for surface access. With regard to corridors and rights-of-way, Alternative C would allow for potential future development of utilities within the designated corridor. The limitation on alignments may increase the costs for right-of-way developments if suboptimal locations are used, or due to the requirement of underground utilities within one corridor.

The implementation decision to close routes would have the same potential impacts as described for Alternative B; however, the scale of the impact would be less under Alternative C, as 187 miles of routes rather than 258 miles of routes would be closed. Implementation decisions on grazing and range management would result in the same socioeconomic impacts associated with Alternative A. Minor

economic impacts associated with expenditures and earnings would potentially result from increasing the number and variety of wildlife and livestock exclosures and maintaining yearlong water sources in all pastures for livestock and water maintenance, movement, or replacement actions. Finally, the implementation decision that existing roads along fences would remain open (administratively at a minimum) and access to corrals, wells, and water infrastructure would be maintained ensures that access for livestock management operations would be provided and maintained, having socioeconomic impacts both for livestock operations and in minor expenditures and earning from access maintenance actions.

Implementation-level decisions could have additional socioeconomic effects. The decision to survey and reclaim abandoned mines would potentially result in minor expenditures and earnings for BLM staff or supporting contractor personnel. The travel management implementation decision to close 192 miles of routes to motorized use could prohibit the development of mineral resources where valid existing rights occur and limit certain recreational opportunities. The impact to social and economic conditions would be as described for other decisions limiting or precluding energy or mineral resource development and changing recreation opportunities. The implementation decision to provide access for wildlife viewing opportunities recognizes the social value for such opportunities and may translate in economic activity associated with associated visitation.

### 4.5.5 Alternative D

Overall BLM expenditures and earnings from Alternative D would be similar to Alternative C. Alternative D generally supports the values and beliefs for the least restrictive management and places an emphasis on maintaining the existing levels of human uses in the monument. This alternative identifies areas most appropriate for various public uses and emphasizes those uses, particularly with respect to transportation and recreation. No areas within the IFNM would be managed to maintain or enhance wilderness characteristics. Therefore, the social and potential non-market value associated with management of areas for wilderness characteristics would not be recognized and development and/or use options would not be limited via the aggregate impact of management to maintain/enhance wilderness characteristics and other management decisions for land use authorizations, transportation and access, etc.

Resource management decisions regarding removal and/or use of plant material would allow for collection of dead and downed wood for firewood use while camping within the IFNM (except where BLM has determined there would be adverse impacts on monument resources). This aligns with the social value for this outdoor recreation experience. Unlike Alternatives B and C, the VRM designations proposed under Alternative D would provide less emphasis on visual resource values and greater emphasis on potential for development and/or use and associated socioeconomic activity.

Socioeconomic impacts of Alternative D related to special designations or natural or cultural resource allocations (i.e., the discontinuation of the Waterman Mountains ACEC, Silver Bell Desert Bighorn Sheep Management Area, Silver Bell RCA, Sawtooth Mountains CRMA, Cocoraque Butte-Waterman Mountains Multiple Resource Management Area, Agua Blanca Multiple Resource Management Area, and Avra Valley CRMA), would be the same as described for Alternative B.

The potential social and economic consequence of Alternative D related to existing valid rights to develop energy and mineral resources would be as described for Alternative B. The lands and realty decision to not consider mineral estate as a factor in surface estate acquisitions could potentially allow for more economic gains for private industry as a result of mineral and energy resource development on non-Federal mineral estate.

Alternative D would have the same impacts on the social and economic aspects of livestock grazing as described for Alternative C.

No changes in visitation would be expected as a result of implementation of Alternative D. Visitation use rates would continue at current levels with fluctuations in visitation primarily influenced by the trends and population growth in the area that would occur under all alternatives. Overall, social and economic impacts would correspond to changes in visitation rates.

Under recreation, the allocation of RMZs under Alternative D would align with the social value for semi-primitive motorized setting, as there would be a greater area allocated to semi-primitive motorized than semi-primitive non-motorized, a greater amount of roaded natural, and a slightly smaller area allocated as the Ragged Top Watchable Wildlife Area. Continuing to allow campfires using dead, down, and detached wood while camping at existing campsites (unless it has been identified that there are adverse impacts to the IFNM) aligns with the social value for the continuation of this opportunity on the monument. Similar to Alternative C, allowing for overnight vehicle-based camping throughout the monument (unless specifically prohibited for protection of resource values) would provide greater options for vehicle-based camping as compared to Alternative B, thereby providing a lesser effect on denying people-place connections associated with this activity. There would be fewer impacts to group camping under this alternative than under Alternatives B and C with four identified group campsites. The fourth, to be located in the Sawtooth Mountains, would potentially result in associated expenditures at businesses located near access points to this location. Any changes to visitation use associated with changes in camping policy could result in changes in associated economic activity. A wide range of people-place connections associated with equestrian use and non-motorized, mechanized use and associated economic activity would be allowed to continue under this alternative.

The social and economic impacts of land tenure decisions would be the same as Alternative B. Impacts with regard to corridors and rights-of-way would be the same as Alternative C, except that Alternative C would provide for greater flexibility for potential routings (i.e., more options for placement of facilities or corridor development), thus decreasing potential expenses (limitations may not allow for options that could reduce development costs). Alternative D also allows for additional development at the Confidence Peak communication site, which (if developed) would have moderate socioeconomic impacts for the communications company and provide services to the community.

The implementation decision to designate routes would have the same potential impacts as described for Alternative B; however, the scale of the impact would be less under Alternative D, as more miles of routes would remain designated for motorized use (243 miles of routes would be designated for motorized use under Alternative D as compared to 71 miles designated for motorized use under Alternative B).

## 4.6 IMPACTS ON PUBLIC SAFETY

This section describes the potential impacts of hazardous materials on public safety resulting from management actions related to other resources and resource uses. It includes a discussion of the risks associated with hazardous wastes and solid wastes potentially found within IFNM, and potential threats to public safety posed by natural as well as manmade hazards.

Risks associated with hazardous materials and wastes, including solid wastes, are directly proportionate to the level and frequency of resource use as well as the type of use within IFNM. Typically, the presence of hazardous materials and wastes is due to vehicular travel through the IFNM, and can occur as a result of a vehicular accident, either from the vehicle itself or from hazardous materials and/or wastes that the vehicle might be transporting. Similarly, activities related to recreation can result in releases or spills of hazardous materials or wastes. Trash and other solid waste left in areas where recreational activities occur, and personal items discarded by undocumented immigrants traveling through the IFNM, also can pose hazards. Hazardous materials and chemicals used to suppress fires can create a hazard in the event

materials are accidentally spilled during application, and unexploded ordnance and abandoned hazardous wastes from military operations also can pose threats to public safety.

Apart from the potential dangers of hazardous materials, public safety also can be threatened by a wide spectrum of issues, most of which are subject to change and circumstance. As with hazardous materials, impacts on public health and safety occur in proportion to the level and frequency of resource use and the type of activities or uses that occur. Typically, threats to public safety on the IFNM arise from the use of motor vehicles (including ATVs and motorcycles), recreational target shooting, active and abandoned mines and prospects, the proximity of military operations, the presence of unexploded ordnance, activities related to smuggling and undocumented immigrants, wildfires, and natural hazards associated with the desert.

The following assumptions were used when assessing the impacts related to hazardous materials and public safety:

- The IFNM is protected from commercial development of facilities that would be likely to use, generate, store, treat, or dispose of hazardous materials. Facilities on public land within the IFNM that might use some forms of hazardous materials, such as utilities or recreational facilities, would be managed under the specific authorization process for such facilities.
- When the use of hazardous materials becomes necessary, such as for the suppression of wildfires or the elimination of noxious weeds, chemicals would be handled and applied in accordance with the manufacturers' directions. However, spills and/or releases of hazardous materials or deposition of wastes can occur under other circumstances, such as during transportation of chemicals, from vehicular accidents, or illegal dumping.
- Public safety assessments are evaluations of risk associated with any circumstance. There are no absolute measures of safety.
- Precautions mitigate risk, but accidents and injuries are bound to occur to some extent when human activity takes place.
- In areas where construction or maintenance of motorized routes, fences, campsites, non-motorized trails, and trailheads, or where any other activity is undertaken, or where the use of hazardous chemicals would be required, appropriate protocol would be followed, thereby decreasing the risk of accident or injury.
- The safety of workers, firefighters, or emergency management teams would be the primary consideration at a rescue site.
- Emergency access may occur throughout the IFNM to protect public safety, though such access would be minimal.

Impact analyses with regard to hazards and public safety are based on the distribution of risk sites or areas, the potential consequences of an accident or incident, and the factors mitigating the risk of an accident or incident. Available literature regarding recreational activities and trends has been reviewed, and BLM specialists were consulted. All conclusions are based upon a consideration of available information using best professional judgment.

### 4.6.1 Impacts Common to All Alternatives

Safety risks and hazards would exist to some degree under all alternatives. No management or implementation-level decision can eliminate risk, though some varying degree of risk can be realized. Emergency and rescue operations would be available on an as-needed basis regardless of the level of risk allowed under any of the alternatives.

The use and transport of hazardous materials and wastes would be handled and disposed of according to State and Federal requirements under all alternatives. Spills or releases of hazardous materials or wastes could occur in various degrees of risk under any of the alternatives. In the event of spills or releases, cleanup activities would be undertaken in accordance with all applicable procedures and reporting requirements. In addition, a framework for BLM's hazardous materials management policies is provided in Manual Section 1703 (MS-1703), and these policies would be applicable across all alternatives. Compliance with these regulations and policies would minimize potential impacts related to hazardous materials.

The IFNM designation withdrew all public lands within the IFNM from mineral entry, eliminating a majority of the risk of accidents associated with mining and mineral entry. However, mining activity within the IFNM would continue to be administered on a case-by-case basis for valid mining claims, with the associated risk of accidents or injury.

BLM would continue to administer programs to reduce unwanted ignitions and to maintain full fire suppression in all areas of the IFNM. Maintaining full suppression would reduce the risk of burned area hazards such as falling trees and the possibility of debris flows resulting from erosion reduction. However, the use of hazardous materials, vehicles, or an aircraft to suppress fires could result in an unintended spill or release of hazardous materials.

Continuing the R&PP lease for the glider park could affect public health and safety; hazardous material spills or accidents could occur with aircraft operation and gliding activities at or near that site.

Under all alternatives, the management of air quality, geological and cave resources, vegetation, special status species, cultural resources, paleontological resources, scenic and visual resources, and special designations is not expected to have any impact on public safety or contribute to the presence of hazardous materials or waste on public land.

### 4.6.2 Alternative A (No Action)

Under Alternative A, the current BLM programs and policies for management of hazardous materials and public safety would remain in place. Risk would continue to be a factor in any activities taking place in the IFNM, and the level of risk would change with the level of activity. Risks to public safety and the potential for deposition of hazardous materials would primarily result from management decisions concerning travel and recreation. To a lesser extent, management of lands and realty also would potentially impact risks. Implementation-level decisions concerning soil and water resources, livestock grazing, and wildlife and wildlife habitat would result in minimal impacts. Management impacts on public safety or risks associated with hazardous materials would not be anticipated under Alternative A from decisions for areas managed to maintain wilderness characteristics (since none would occur under this alternative).

Closing only 820 acres (approximately 1 percent of public lands in the IFNM) to OHV travel and allowing OHV travel on existing routes in the remaining areas (99 percent) would translate into risks of exposure for public health and safety and exposure for hazardous materials contamination in localized areas. Hazardous material spills involving automobiles could result from damage to vehicles or the spill of cargo, with both having potential to contaminate soil or water.

Under Alternative A, existing access for dispersed vehicle-based and non-motorized camping would continue. The risk of vehicle-related or recreation-related accidents or injuries attached to unlimited access for vehicle-based camping would continue. Though non-motorized camping holds no potential for vehicular accidents traveling to campsites, accidents and injuries related to camping and recreational activities could still occur. The permissible collection of dead and downed wood for use in campfires on

public lands would increase the potential for accidents and injury related to camping, campfires, and other recreational activities.

Dispersed recreational shooting throughout the IFNM would continue to create a public health and safety risk from accidental shootings and could increase the risk of lead contamination to soil from the increased presence of spent shell casings. This also would be a solid waste issue, as no directives regarding cleanup of the trash or spent shells would be established. With the occurrence of shooting dispersed throughout the IFNM, cleanup would be difficult.

Construction activities within existing utility corridors, communication sites, and as a result of granting rights-of-way throughout the IFNM, could result in injuries or hazardous material spills resulting from construction activities, but risks would be confined to localized areas.

Implementation-level decisions under Alternative A also hold risk potential. Approximately 347 miles of routes on BLM lands within IFNM would remain available for motorized vehicle travel—the most of any alternative—where automobile accidents could cause injury or death. Implementation-level decisions concerning soil and water resources, livestock grazing, and wildlife and wildlife habitat decisions would increase the potential for accidents or injuries from construction or maintenance of facilities on public lands (e.g., installation of livestock and/or wildlife water sources, fences, or erosion control), in addition to increasing the introduction of hazardous materials or wastes during installation or construction.

### 4.6.3 Alternative B

Under Alternative B, risks regarding public safety and hazardous materials would primarily result from management of travel and recreation. To a lesser extent, the level of risk also could be affected by management of lands and realty and areas with wilderness characteristics. Implementation-level decisions regarding soil and water resources, livestock grazing, and wildlife and wildlife habitat decisions would have minimal impacts in this respect.

Approximately 38,040 acres (30 percent) of public lands in the IFNM would be closed to motorized travel, which could decrease the risk of injury from vehicle accidents compared with Alternative A. It also could decrease the potential for exposure to hazardous materials contamination that could occur with a spill or release in the event of an accident compared with Alternative A.

Establishing RMZs that prohibit motorized travel would reduce motorized travel on approximately 96,200 acres (75 percent) of the public lands within the IFNM, reducing the risk for automobile accidents (which can cause injury or the release of hazardous substances) compared with Alterative A. Concentration of vehicle-based recreational activities on RMZs that allow motorized travel (approximately 32,150 acres, 25 percent of the public lands within the IFNM) would create the potential for accidents resulting in injury or the release of hazardous materials as a result of recreational activity in this area.

Allowing charcoal fires and camp stoves would reduce the potential for accident or injury related to wood gathering, and also would likely decrease the ignition of wildland fires. However, the use of charcoal and camp stoves could increase the potential for spills and release of hazardous materials in very localized areas.

Under Alternative B, overnight non-motorized based camping would be allowed on public land at identified sites only. This would limit the areas use for camping since fewer camping opportunities would be provided on public land compared to Alternative A, and as a result, the risk of injuries or accidents or hazardous material spills would be reduced. Similarly, limiting group camping to the two identified campsites would limit health and safety issues as well as hazardous materials accidents to localized areas. Prohibiting firearm use, except for authorized hunting, would decrease the risk of injury to recreational

shooters and visitors from inappropriate use of weapons as well as the risk of lead contamination to soil from the increased presence of spent shell castings.

Restricting equestrian uses to routes designated for motorized and non-motorized travel would increase the opportunity for accidents and injuries involving collisions with automobiles (on motorized routes) that would injure people or result in the spill or release of hazardous materials. It also could increase the potential for a conflict between recreationists.

Continuation of the R&PP lease would have the same impacts as those described under Alternative A. Since no utility corridors would be designated and only very few rights-of way would be allowed on BLM-administered land (as a result of allocating the IFNM as an exclusion area), minimal impacts on public safety would result from construction, though the types of impacts would be similar to those described under Alternative A. Similarly, prohibiting additional facilities at designated communication sites would decrease the risk of injuries or hazardous materials spills resulting from construction activities. However, accidents still could occur during operation and maintenance of the existing facilities.

Approximately 36,990 acres would be managed to maintain wilderness characteristics, which would reduce potential for spills of hazardous substances and the risk of injury that could result from automobile accidents, since no motorized vehicles would be allowed within these areas.

The implementation decision designating approximately 71 miles of routes on BLM lands for motorized vehicle travel would allow for risks associated with potential vehicle accidents that could cause injury or death on those routes. The risks would be greatly reduced compared to the 347 miles that would be available for motorized travel under Alternative A.

Implementation decisions from soil and water resources, livestock grazing, and wildlife and wildlife habitat decisions would result in the same impacts described under Alternative A.

Implementation decisions for lands and realty would allocate acquired land within the IFNM as exclusion areas for rights-of-way, which could reduce the potential for accidents and injuries to occur during construction and maintenance since very few facilities would be constructed.

### 4.6.4 Alternative C

Under Alternative C, risks to public safety and the potential for presence of hazardous materials would primarily result from management decisions under travel management and recreation. To a lesser extent, decisions for managing lands and realty and areas managed to maintain wilderness characteristics also would potentially impact risks. Implementation decisions for soil and water resources, livestock grazing, and wildlife and wildlife habitat decisions would result in minimal impacts.

Approximately 10,880 acres (8 percent) of public lands in the IFNM would be closed to public travel, which would decrease the potential risks of injury from automobile accidents compared to Alternative A, but increase risks compared to Alternative B. Similarly, the closure of this area would decrease the potential for exposure of hazardous materials contamination that could potentially occur as a result of a spill or release in the event of an accident compared to Alternative A, but increase the potential compared to Alternative B.

Establishing RMZs that prohibit motorized vehicle travel would reduce motorized travel use on approximately 73,740 acres (57 percent) of the public lands within the IFNM, reducing the risk for vehicle accidents that could cause injury or the release of hazardous substances compared to Alterative A, but increasing risks compared to Alternative B. The presence of vehicle-based activities on 54,610 acres

(43 percent) of the public lands within the IFNM would create the potential for accidents resulting in injury or the release of hazardous materials as a result of recreational activity.

Allowing for charcoal fires, camp stoves, and wood fires (as long as wood was from a non-monument source) would result in the same impacts as those described for Alternative B, except the likelihood for wildland fires would be increased because of the provisions for wood fires and dispersed non-motorized-based camping throughout the IFNM. In addition, allowing dispersed non-motorized camping would increase the number of visitors resulting in an increased probability for more accidents on public land, compared to Alternative B. Impacts associated with group camping would be similar to Alternative B, though would occur at three identified sites instead of two. Prohibiting firearm use, except for authorized hunting, would result in the same impacts as those described under Alternative B.

Allowing equestrian uses on routes designated for motorized travel and non-motorized travel, as well as cross-country uses, would reduce potential collisions and/or conflicts with motorized uses compared to Alternative B, as opportunities for equestrian uses would be dispersed throughout the IFNM, rather than concentrated on routes designated for motorized travel (as it would be under Alternative B).

Continuation of the R&PP lease would have the same impacts as those described under Alternative A. The designation of utility corridors and granting of rights-of-way would result in impacts similar to those described under Alterative A, though slightly reduced given the narrower widths of corridors (200-300 feet wide under this alternative, compared to 1-mile wide under Alternative A), and because of the allocation of the IFNM as an avoidance area for future rights-of-way. Management actions with regard to communication sites would have the same impacts as those described under Alternative B.

Approximately 9,510 acres would be managed to maintain wilderness characteristics, significantly decreasing the amount of IFNM managed area from the 36,990 acres under Alternative B. Due to the smaller amount of area closed to motorized vehicles under Alternative C, resource destruction (from hazardous substances) and the risk of injury that could result from vehicle accidents would be slightly increased compared to Alternative B.

The implementation decision designating approximately 142 miles of routes on BLM lands for motorized vehicle travel would allow for risks associated with potential vehicle accidents that could cause injury or death on those routes. The risks would be greatly reduced compared to the 347 miles that would be available for motorized travel under Alternative A, but increased compared to Alternative B.

Implementation decisions from soil and water resources, livestock grazing, and wildlife and wildlife habitat decisions would result in the same impacts described under Alternative A.

Implementation decisions for lands and realty would allocate any acquired land within the IFNM as avoidance areas for rights-of-way, which could reduce the opportunity for accidents and injuries to occur during construction and maintenance in those areas, though risks would be increased compared to Alternative B, which would allocate lands as exclusion area for future rights-of-way.

### 4.6.5 Alternative D

Under Alternative D, risks to public safety and the potential for presence of hazardous materials would primarily result from management decisions under travel management and recreation. To a lesser extent, decisions for managing lands and realty also would potentially impact risks. Implementation decisions for soil and water resources, livestock grazing, and wildlife and wildlife habitat decisions would result in minimal impacts. No impacts on public safety or risks associated with hazardous materials would be anticipated from decisions for areas managed to maintain wilderness characteristics (since more are proposed under this alternative).

Motorized vehicle travel would be limited to routes designated as open for such use on all 128,400 acres of public land within the IFNM, which would result in impacts similar to those described for Alternative A (though route designations under implementation decisions would reduce the potential risks).

Establishing RMZs that prohibit motorized vehicle travel would reduce motorized travel use on approximately 50,270 acres (39 percent) of the public lands within the IFNM, reducing the risk for vehicle accidents that could cause injury or the release of hazardous substances compared to Alterative A, but increasing risks compared to Alternatives B or C. The presence of vehicle-based activities on approximately 78,080 acres (61 percent) would create the potential for accidents resulting in injury or the release of hazardous materials as a result of recreational activity.

Allowing for charcoal fires, camp stoves, and wood fires (including monument sources of dead and downed wood) would result in the same impacts as those described under Alternative C, except that individuals could be injured during wood collection. Allowing dispersed non-motorized camping would result in the same impacts as those described under Alternative C. Impacts associated with group camping would be similar to Alternative B, though would occur at four identified sites instead of two. Allowing firearm use would result in the same impacts as those described under Alternative A.

Allowing equestrian uses on routes designated for motorized travel and non-motorized travel, as well as cross-country uses, would have the same impacts as those described under Alternative C.

Continuation of the R&PP lease would have the same impacts as those described under Alternative A. The designation of utility corridors and granting of rights-of-way would result in impacts similar to those described under Alterative A, though slightly reduced given the narrower corridor widths (1/4 mile wide under this alternative, compared to 1-mile wide under Alternative A) that would be established, and because of the allocation of the IFNM as an avoidance area for future rights-of-way. Management actions with regard to communication sites would have similar impacts as those described under Alternative B, though with slightly increased risks given the additional facilities that would be allowed under this alternative.

The implementation decision designating approximately 243 miles of routes for motorized vehicle travel would allow for risks associated with potential vehicle accidents that could cause injury or death on those routes. The risks would be greatly reduced compared to the 347 miles that would be available for motorized uses under Alternative A, but increased compared to Alternatives B or C.

Implementation decisions from soil and water resources, livestock grazing, and wildlife and wildlife habitat decisions would result in the same impacts described under Alternative A.

Implementation decisions for lands and realty would allocate any acquired land within the IFNM as avoidance areas for rights-of-way would result in the same impacts as those described under Alternative C.

## 4.7 CUMULATIVE IMPACTS

Cumulative impacts are those effects on the environment that result from incremental impacts of management direction contained in this Draft RMP/EIS when added to the effects of other past, present, and reasonably foreseeable future actions, regardless of what agency (Federal, tribal, state, or local) or private entity undertakes such actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time (40 CFR 1508). Analysis focuses on the cumulative impacts of the alternatives for this Draft RMP/EIS and other actions both within and outside the IFNM. Potential cumulative impacts, projects, and actions in or near the IFNM were

determined by examining other plans in the region, discussions with local governments and State and Federal land managers, and from information provided by the BLM.

The timeframe for this cumulative impact analysis encompasses past activities in the planning area since as early as 1860, but generally focuses on activities that occurred in the 1900s. It also includes present activities and future activities that may extend 20 years into the future, which is the assumed life of the RMP. Table 4-18 presents the cumulative impact assessment area for the resources, resource uses, and socioeconomic conditions. Cumulative Impact Analysis Areas

**Table 4-18: Cumulative Impact Analysis Areas**

| Resource/Resource Use | Cumulative Impact Boundary |
|---|---|
| Air | IFNM boundary and areas within 50 miles |
| Soil and water resources | IFNM boundary and watershed boundaries that intersect the IFNM |
| Vegetation | IFNM and watershed boundaries that intersect the IFNM |
| Wildlife and wildlife habitat | IFNM and the home ranges of species (varies by species) |
| Special status species | IFNM and the home ranges of species (varies by species) |
| Fire ecology and management | IFNM boundary and areas within 50 miles |
| Cultural resources | IFNM and neighboring lands with a high potential for connected resources |
| Paleontological resources | IFNM and neighboring lands with a high potential for connected resources |
| Scenic and visual resources | IFNM |
| Wilderness characteristics | IFNM boundary and Wilderness within 50 miles |
| Livestock grazing | IFNM and allotments that extend into adjacent management areas |
| Recreation | IFNM boundary and areas within 50 miles |
| Lands and realty | IFNM and major rights-of-way that extend beyond the IFNM boundary |
| Travel management | IFNM and State, county, and local access roads |
| Social and economic conditions | IFNM and Pima and Pinal Counties |

### 4.7.1 Past, Present, and Reasonably Foreseeable Future Actions

Past, present, and potential future actions are considered in the analysis to identify whether the environment has been degraded or enhanced and to what extent, whether ongoing activities are causing impacts, and trends for activities and impacts in the area. Projects and activities are evaluated based on: proximity, connection to the same environmental systems, potential for subsequent impacts or activity, similar impacts, and if the project is reasonably foreseeable. A description of projects and activities are included in Table 4-19. The areas of primary concern for cumulative impacts related to this plan are Pima and Pinal Counties in Arizona, and Table 4-19 contains a description of the cumulative impact boundary for each resource or resource use. Projects outside these areas also were considered if they have the potential to affect resources in the region. Additional information was obtained through discussions with agency officials and review of publicly available materials and websites.

Actions undertaken by private individuals and entities are assumed to be captured in the information made available by the agencies. Effects of past actions and activities are manifested in the current condition of the resources, as described in Chapter 3, Affected Environment.

Reasonably foreseeable future actions are those future actions that have been committed to or that are known proposals that could take place within the 20-year planning period. Reasonably foreseeable future action scenarios are projections made only for the prediction of future impacts; they are not actual planning decisions or resource commitments. Projections, which have been developed for analytical purposes only, are based on current conditions and trends and represent best professional estimates.

Unforeseen changes in such factors as economics, demand, and Federal, State, and local laws and policies could result in different outcomes than those projected for this analysis.

Table 4-19 provides a description of the past, present, and potential future actions that are reasonably foreseeable over the life of the RMP.

**Table 4-19: Past, Present, and Reasonably Foreseeable Future Actions**

| Name | Description of Action |
|---|---|
| **Past Actions** | |
| Historical mining | Numerous small mines and mine prospects were located in places throughout the planning area in the 1800s and early 1900s. Mining booms in the area began in the 1860s with the opening of the Silver Bell Copper Mine (1860s-1920s). Records identifying mining claims indicate that mining locatable minerals within the decision area has not been an economically viable industry, copper notwithstanding. Salable minerals such as sand and gravel have been economically viable. Metals recovered at Silver Bell Mine include copper, molybdenum, lead, zinc, and silver, along with small amounts of gold. The abandoned Silver Hill Mine on the south flank of Waterman Peak was a high-grade lead-zinc-copper mine. |
| Historical ranching activities | Ranching has long been prevalent throughout the planning area. Free grazing on the public domain brought ranchers west, and they built their operations around it. Prior to 1934, no governing regulations per se applied to grazing activities on public land, and much of the land was heavily grazed. Fluctuations in precipitation and temperature affect the growth of natural rangeland vegetation; this combined with heavy grazing caused many areas to become unsuitable for grazing. Additionally, as more and more people moved into the area to settle, the number of cattle increased and disputes over grazing uses grew.<br>A major drought in 1891 to 1893 killed large proportions of the livestock and many areas experienced major topsoil erosion after loss of vegetative cover. Heavy livestock grazing continued after the drought, but animal numbers had peaked in 1891. Wagoner (1952 appendix I) lists numbers of cattle for Pima County, Arizona, as 11,741 in 1880, 121,377 in 1891, and 49,599 in 1893 (Milchunas 2006). |
| Taylor Grazing Act of 1934 | Late in the nineteenth century, the number of livestock on the public lands of the southwest increased dramatically until a combination of drought and harsh winters decimated herds. The effects of this historic grazing use severely degraded millions of acres of marginal, semi-arid lands. Congress enacted the Taylor Grazing Act to regulate the grazing use that was damaging resources and to stabilize the livestock industry. The Act vested the Secretary of the Interior with authority to create grazing districts after public hearings. The Grazing Service was required to issue grazing permits or leases to ranchers and supervise and regulate the grazing authorized. Allotments within the IFNM are leased under Section 15 of the Act, which applies to grazing leases on public lands outside the original grazing district boundaries. |
| Community settlement and development | Associated with changes in agricultural practices and land use, the Santa Cruz River underwent a period of pronounced arroyo entrenchment during the late 1800s. Human manipulation of the Santa Cruz River channel for irrigation is one of the primary reasons for the extensive erosion that occurred in the Tucson area. This downcutting created a dependence on groundwater for irrigation, domestic, and industrial uses. Subsidence was first detected in Arizona in 1948 near Eloy in the lower Santa Cruzbasin (Gelt 1992). The population of Arizona in 1905 was 105,000, and in 1940 the population increased to 489,000. The population of Tucson increased from 22,818 in 1910 to 72,838 in 1940. Associated with these population increases and military installations in 1942 near present day Marana, residential development increased in the area |

| Name | Description of Action |
|---|---|
| Indian Reservations | Between 1859 and 1939, Indian Reservations containing approximately 3.2 million acres were created in southeastern Arizona. Tribes associated with these reservations are from the Piman Indian group of tribes. The largest reservation, the Tohono O'odham Indian Reservation borders the IFNM along its southern and western boundary. The Gila Indian Reservation is located approximately 30 miles north of the IFNM and the Ak Chin Indian Reservation is about 30 miles northwest of the IFNM. Establishment of these reservations and change in access to irrigation water altered land use patterns in the area surrounding the IFNM. |
| Coronado National Forest | Between 1902 and 1907, 1,780,000 acres were designated as a U. S. Forest Reserve forming the Coronado National Forest in southeastern Arizona and southwestern New Mexico. The Coronado National Forest boundary is approximately 30 miles east of the IFNM. |
| **Present Actions** | |
| Current ranching and agricultural activities | Agricultural and ranching continues to take place within the planning area. Management of the rangeland in the last 50 years also has placed regulations on grazing allotments classified as perennial, perennial/ephemeral, and ephemeral to protect resources. Prices for agricultural products, cattle and changing social and land values have affected the viability of farming and ranching businesses. |
| City of Tucson Water Department | The City of Tucson Water Department is now operating a pilot Central Avra Valley Water Storage and Recovery Project on City-owned land near Sandario Road and Mile Wide Road. The Central Avra Valley Storage and Recovery Project results from the passage of Proposition 200, the Water Consumer Protection Act, which prevents the delivery of Central Arizona Project (CAP) water directly to customers and requires that overpumping in the Central Wellfield be eliminated to prevent the land in the overpumped area from sinking (known as subsidence). |
| Western Army National Guard Aviation Training Site (WAATS) | The Western Army National Guard Aviation Training Site (WAATS) is located at the Silver Bell Army Heliport (AHP) in Marana, Arizona, on the northwest side of Pinal Airpark. The heliport is five miles east of the IFNM boundary. The WAATS mission is U.S. Army Directed Aviation Training. Training is conducted on the AH64A Apache helicopter, and the WAATS program is the only U.S. Army flight school that trains on this aircraft. There are currently about 500 employees at the WAATS training center and is expected that the student load will double over the next 5 years. Due to encroachment, particularly between the Silver Bell AHP and the Picacho Peak area on the helicopter transition routing area and beyond, training has become more restricted. Most missions near the Silver Bell AHP are conducted 1,000 feet above and 2,000 feet lateral of neighboring communities. "Dusty landings," conducted to train for landing in dusty environments, are conducted in the Waterman Mountains, Sawtooth Mountains, and near Silver Bell Mine within the planning area. |
| Wilderness | Wilderness created by acts of Congress within approximately 50 miles of the planning area include South Maricopa Mountains Wilderness (in Sonoran Desert National Monument); Table Top Wilderness (in Sonoran Desert National Monument); Pusch Ridge Wilderness (in Coronado National Forest); West Saguaro Wilderness (in Saguaro National Park); East Saguaro Wilderness (in Saguaro National Park); Rincon Mountain Wilderness (in Coronado National Forest); Coyote Mountain Wilderness (on BLM-administered public land); Baboquivari Peak Wilderness (on BLM-administered public land); Buenos Aires Wilderness (in Buenos Aires National Wildlife Refuge). |

| Name | Description of Action |
|---|---|
| Saguaro National Park establishment and General Management Plan | On October 14, 1994, Saguaro National Park was established. A general management plan provides a foundation to help park managers guide programs and set priorities for resource stewardship, visitor understanding and appreciation, partnerships, and facilities and operations for the next 15 to 20 years. The planning process focuses on why the park was established and results in a vision shared by NPS managers and the public about the kinds of resource conditions and visitor experiences that will best fulfill the purpose of the park over time. In prescribing the conditions and experiences to be achieved and maintained in the park, general management planning takes the long view, which may be decades into the future when dealing with the time frames of natural and cultural processes. |
| Vehicle-based recreation | The growth of outdoor recreation in the area probably began after World War II as Arizona's population grew, disposable income increased, and civilian four-wheel drive vehicles emerged. Historic recreation activities have included hunting, camping, hiking, sight-seeing, four-wheel driving, and general exploring. Public lands in the vicinity of towns such as Tucson probably received some of the earliest attention for outdoor recreation. Development of civilian off-road-capable vehicles in the 1950s allowed the public to take vehicles to areas previously inaccessible by vehicular travel, beginning perhaps in the 1940s, with the Jeep Willys starting the revolution of off-roading that continued to grow as vehicles went from a standard four-wheel drive to highly-modified, more powerful and capable machines. Vehicle-based recreation has become the norm in the decision area for most recreational outings including camping, hunting, and exploring.<br>As vehicle-based recreation grew and modified OHVs adapted to become more capable, the 1980s saw the birth of ATVs. ATVs were smaller and able to reach areas that larger, more cumbersome truck-like vehicles could not access. ATVs transformed OHV use from having multiple persons per vehicle to one person per vehicle, increasing OHV use on public lands dramatically. The trend continues to grow as ATVs become more and more affordable and popular. |
| AGFD management activities including Arizona's Comprehensive Wildlife Conservation Strategy | The Comprehensive Wildlife Conservation Strategy is designed to address the needs and requirements for managing wildlife in Arizona. It focuses partnership efforts on conservation at the landscape level, to address stressors that constrain wildlife conservation and wildlife-related recreation opportunities. This strategy provides a 10-year vision for achievement, subject to adaptive management and improvement along the way. The strategy covers the entire State, from low desert to alpine tundra. |
| U.S. Border Patrol activities and illegal undocumented immigrant and drug smuggler entry to the United States | The U.S. Border Patrol monitors and interdicts illegal undocumented immigrant and drug smuggler entries to the United States along the entire Arizona/Mexico border. Unauthorized roads and distinct foot trails in the Tohono O'odham Nation and the IFNM have been and continue to be created by border crossers. U.S. Border Patrol mission also includes search and rescue services for stranded migrants. Impacts from illegal off-road driving and foot traffic, authorized Border Patrol off-road driving for interdictions and search and rescue, abandoned vehicles and personal belongings, trash, use of wildlife waters, and some damage to facilities occur regularly. Interdiction activities and infrastructure are being increased. |
| State and county parks | There are several State and county parks within 50 miles of the IFNM, including Picacho Peak State Park; Tucson Mountain County Park; Picture Rocks County Park, Tortolita Mountain County Park; and Catalina State Park. These parks also draw recreational users and provide opportunities for recreation. |
| Arizona State Parks Arizona Trails 2000 and 2005 Plans | These statewide plans provide information and recommendations to agencies for their management of motorized and non-motorized trails. The plan guides the expenditures from the Arizona Off-highway Vehicle Recreation Fund, Arizona Heritage Fund Trails Component, and Federal Recreational Trails Program (1999). The 2005 plan incorporated survey results, focus group workshops, and public comments into the final plan to address the needs and concerns of resources and the public. |
| Pima County Trails Plan | The purpose of the Pinal County Trails Plan is to facilitate a planning framework to create a countywide system of non-motorized trails and a system of motorized trails. In principle each system will complement and enhance the other and provide a wide |

| Name | Description of Action |
|---|---|
| | range of recreational opportunities for all ability levels. Designated non-motorized trails will be used exclusively for non-motorized recreation. Motorized trails can be used for multiple purposes. Public safety, environmental constraints, and wildlife protection are a few examples of factors that may support special uses on some trails. Pinal County is currently developing a revised Open Space and Trails Master Plan. |
| Pima County Plans | The Pima County Comprehensive Plan translates community values and goals into a framework for decision-making on growth, land use, the natural environment, traffic circulation, and water resources. It expresses a long-range vision of how a community is to look and function in the future. The goals, objectives and policies section sets forth those values and goals, giving guidance for achieving that vision. One of these ordinances is the Buffer Overlay Zone Ordinance. The purpose of this ordinance is to preserve and protect the open space characteristics of those lands in the vicinity of the public preserves while at the same time permitting the economically reasonable use of lands and to protect and enhance existing public preserves in Pima County as a limited and valuable resource.<br>Additional plans in Pima County include the Conservation Lands System (CLS) Regional Plan Policy and the Sonoran Desert Conservation Plan. These plans were prepared by Pima County land use planning and include the Pima County Multiple Species Conservation Plan. |
| City of Tucson Habitat Conservation Plan | This Preliminary Draft Habitat Conservation Plan (HCP) has been prepared in support of the City of Tucson's application for an Incidental Take Permit (Permit) in conformance with Section 10 of the Federal Endangered Species Act of 1973 (ESA). Through this HCP, the City is committing to implement certain actions that will minimize and mitigate the impacts of any take of certain specified species that could occur as a result of planned urban development, future Tucson Water Department water supply projects, and associated capital improvement projects. It is anticipated that the permit length will be 50 years. The HCP addresses proposed development activities in three City of Tucson planning sub-areas: Southlands, Avra Valley, and Santa Cruz River. |
| City of Marana Habitat Conservation Plan | The Town is creating a draft HCP, the purpose of which is to protect threatened and endangered species in areas affected by growth and development. |
| Sonoran Desert National Monument | Established by Presidential Proclamation on January 17, 2001 the Sonoran Desert National Monument encompasses approximately 496,337 acres of land, approximately 408,646 acres of which are owned by the Federal government and managed by the BLM and approximately 77,957 acres of which are under the joint jurisdiction of the BLM and the Department of Defense. The Sonoran Desert National Monument is approximately 30 miles west of the IFNM boundary. |
| Utilities | Additional transmission lines are located east of the IFNM along I-10 and associated with Saguaro Power Plant operated by Arizona Public Service. Smaller-scale electrical distribution lines and pipelines are located in and around the IFNM, generally associated with industrial, commercial, and residential development. |
| Urban development | Although agriculture remains important, the area's economy has long been diversified and includes military bases, multiple industries, recreation, and, most recently, explosive urban development both on the urban fringe of Tucson and rural Pima, and Pinal counties. Agricultural land is rapidly being converted to residential and commercial development purposes as new communities/subdivisions are emerging in a matter of years. Growth and development spurred expansion, upgrades, and other changes to the surface transportation system within the planning area. In recent years, arterial roads and local street networks of the Tucson metro-area have expanded into Avra Valley and the vicinities of Oro Valley, Marana, Florence, and Arizona City. |
| Closure of recreational target shooting in NF | Parts of Coronado NF have been closed to recreational target shooting. Currently, there are seven shooting ranges available to the public for a fee, including indoor ranges. Five are located in Tucson, one in Casa Grande, and one in Coolidge. |

| Name | Description of Action |
|---|---|
| Groundwater withdrawal | The IFNM is located within parts of two Active Management Areas (AMAs) for groundwater: Pinal AMA and Tucson AMA. The Pinal AMA is managed as an area of "planned groundwater depletion," meaning that use of groundwater in excess of estimated recharge is acceptable under Arizona law. According to studies by Arizona Department of Water Resources, the overdraft within the Pinal AMA could reach over 300,000 acre-feet by 2025, resulting in lowered groundwater levels. Management of the Tucson AMA is expected to maintain existing groundwater levels. Declining groundwater levels could affect groundwater-dependent resources on public land such as vegetation. |
| **Reasonably Foreseeable Future Actions** | |
| CANAMEX Corridor | Interstate 8, Interstate 10, and State Route 85 have been identified as components of the CANAMEX Corridor in Arizona. The CANAMEX Corridor is one of 43 national high priority corridors identified in the Intermodal Surface Transportation Efficiency Act of 1991 (Public Law 102-240), the 1995 National Highway System Designation Act (Public Law 104-59), and the 1998 Transportation Equity Act for the Twenty-First Century (Public Law 105-78). The National Highway System Designation Act provides that the CANAMEX Corridor will extend from Nogales, Arizona, to Las Vegas, Nevada, to Salt Lake City, Utah, to Idaho Falls, Idaho, to Montana, and to the Canadian border. In Arizona, the corridor is described as extending from Nogales to Tucson to Phoenix to Nevada. The Maricopa Association of Governments and ADOT initiated a study in Fiscal Year 2000 to designate the route for the CANAMEX Corridor through the Maricopa Association of Governments region to connect Interstate 10 from Tucson and U.S. Highway 93 northwest of Phoenix to Nevada. If approved, the CANAMEX Corridor may result in the widening of I-10. |
| Future highways/roads | Arizona Department of Transportation is undertaking an Access Management Study to assess existing and future access points and potential widening and other improvements to I-10. Other freeway/highway developments are also currently being proposed. The Regional Transportation Authority (RTA) has established a plan that is a working document showing a 20-year, multi-modal transportation blueprint for the Pima County region. The 20-year RTA plan addresses cross-town mobility, reduced travel congestion, improved safety and security, improved travel modes and improved bicycle and pedestrian options, for which funding of $2.1 billion was approved on May 16, 2006, along with a separate request for a 1/2-cent excise tax to fund the plan. |
| Renewable energy | There is potential for renewable energy resources such as solar to occur in the decision area, but there currently is no right-of-way permitting activity for renewable energy facilities in or near the monument. There is some small-scale commercial solar energy testing activity on private land in Arizona. A renewable energy production plant has been proposed for construction in west Pinal County. |
| Utilities | Southwest Transmission Cooperative is proposing the construction, operation, and maintenance of a new electrical substation and a 5.2-mile 115kV transmission line in the Avra Valley area near Mile Wide and Reservation Roads, Pima County, Arizona. In September 2005, Southwest Transmission Cooperative began construction on the Sandario Substation and associated transmission line. The substation will occupy approximately 5 acres, and will be surrounded by a buffer of natural vegetation as directed by the Pima County Native Plant Preservation Ordinance. In addition, Tucson Electric Power maintains a right-of-way in the IFNM which could be developed in the future. |

| Name | Description of Action |
|---|---|
| Regional population changes | New municipalities have been developed around the Tucson area as the demand for land available for housing continues to grow. Arizona has experienced unprecedented rates of population growth and development that are affecting increasingly widespread areas; many of which were, until recently, remote from existing urban areas. The number of the retired populations increasing, including those who are part-time residents of southeastern Arizona. With more time and disposable income to actively pursue leisure activities, increases in use of public lands by the retired population can be expected. Development is converting both agricultural and open desert areas to residential and other urban purposes with the consequences of lost habitat, disrupted or severed habitat connectivity, disrupted/rerouted surface water hydrology; increased demand for water, roads and utilities, landfills, sewage disposal, sand and gravel, landscaping rock and outdoor recreation; loss of open space; and increased fugitive dust among other effects. |
| Borderlands rescue beacons | The U.S. Border Patrol has recommended placement of rescue beacons within the IFNM boundaries. Specific locations are yet to be determined; however some could be located on public land. |

### 4.7.2 Cumulative Impacts By Resource Category

Cumulative impacts are discussed only for resources or uses that may experience impacts. The potential for cumulative impacts to the following resource and resources uses is discussed below: air quality, soil and water resources, vegetation, wildlife and wildlife habitat, special status species, fire ecology, cultural resources, paleontological resources, scenic and visual resources, recreation, lands and realty, and social and economic conditions. Cumulative impacts are not anticipated to geological resources, energy and minerals, special designations, and hazardous materials and public safety; therefore, these topics are not discussed.

#### 4.7.2.1 Air Quality

Cumulative impacts on air quality could result when the geographic areas experiencing direct effects from different activities overlap. For instance, if a mineral recovery project were undertaken near an area with OHV recreation use on unpaved roads, the separate activities would contribute to cumulative impacts in a certain locale. A heavily-traveled unpaved road would have direct impacts on air quality that would combine with those from other activities. These cumulative impacts would generally be from increased inhalable particulate matter such as $PM_{10}$ concentrations, which could contribute to continued nonattainment status for air quality in portions of the IFNM.

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 may violate regulatory criteria, then the permit could impose mitigation as appropriate. The locations most at risk for cumulative impacts would be areas surrounding the commodity production or industrial projects, particularly if those areas were located within the nonattainment area for $PM_{10}$.

#### 4.7.2.2 Soil and Water Resources

BLM management actions combined with the proposed construction of additional urban and residential development, the West-wide Energy Corridor, and Southwest Transmission Cooperative's Sandario Project, could increase localized erosion and sediment loading. Comprehensive management plans for habitat and species conservation combined with city and county plans and ordinances that include surface-disturbing restrictions could mitigate the increased potential for soil erosion and the resulting degradation of water quality that could occur.

#### 4.7.2.3 Vegetation

BLM management actions combined with the proposed construction of additional urban and residential development (and associated increased recreational activities), increased roads and highways, the West-wide Energy Corridor and the Southwest Transmission Company's Sandario Project, could increase localized removal of or disturbance to vegetation. State, county, and city comprehensive management plans and HCPs, as well as the IFNM RMP, would restrict surface-disturbing activities, resulting in some mitigation of the vegetation removal or disturbance. Land acquisitions by BLM, or other jurisdictions with interest in maintaining vegetation and wildlife habitat could increase the potential to mitigate removal and/or disturbance of vegetation, especially where such acquisitions by BLM would result in large contiguous blocks of public land. Integrated weed management would reduce the spread and potential for noxious weeds and invasive species establishment.

#### 4.7.2.4 Wildlife and Wildlife Habitat

The cumulative impact boundaries for wildlife and wildlife habitat vary by species. Mobile species and species with a large home range include areas both within and outside the monument boundary. Cumulative impacts on the wildlife and wildlife habitat would result from surface disturbance and disruptive activities in and near the IFNM, such as land development, road construction, and increased recreational activities associated with an increasing population. Cumulative impacts from surface-disturbing activities could include fragmentation of habitat, including important movement corridors, as well as overall degradation of habitat. State, county, and city comprehensive management plans and HCPs, as well as the IFNM RMP, would restrict surface-disturbing activities, resulting in some mitigation of the habitat degradation. However, the quantity and quality of habitat available for wildlife would be expected to decline over time. Land acquisitions by BLM, or other jurisdictions with interest in maintaining vegetation and wildlife habitat could increase the potential to mitigate degradation of wildlife habitat, especially where such acquisitions by BLM would result in large contiguous blocks of public land.

#### 4.7.2.5 Special Status Species

The cumulative impact boundaries for special status plants and wildlife vary by species. Mobile species and species with a large home range include areas both within and outside the IFNM boundary. Cumulative impacts on special status species would result from surface disturbance and disruptive activities in and near the IFNM, such as land development, road construction, and increased recreational activities associated with the increasing population. State, county, and city comprehensive management plans and HCPs, as well as the IFNM RMP, would restrict surface-disturbing activities, resulting in some mitigation of the habitat degradation. However, the quantity and quality of habitat available for special status species would be expected to decline over time. Land acquisitions by BLM, or other jurisdictions with interest in maintaining vegetation and wildlife habitat, including habitat for special status species, could increase the potential to mitigate degradation of habitat, especially where such acquisitions by BLM would result in large contiguous blocks of public land.

#### 4.7.2.6 Fire Ecology

Increased residential development on private lands adjacent to the IFNM would increase the amount of wildland-urban interface (WUI) areas in the IFNM over the long term. Residential development and increasing recreational use adjacent to the IFNM would increase the potential for accidental human caused ignitions, which could spread into or out of the IFNM.

#### 4.7.2.7 Cultural Resources

Proposed construction and additional residential development, infrastructure and utility improvements and expansions could disturb cultural resources. In addition, the continued urban growth in the Tucson and Marana metropolitan areas and surrounding communities has created increased demand for recreational and other uses on public land, which also could disturb cultural resources. The loss of cultural resources resulting from development on non-public land adjacent to the IFNM, such as subdivisions, is likely to occur. In addition, the potential for degradation of cultural resources within the IFNM would increase given the increased visitation and recreational uses that are expected. Comprehensive management plans, as well as city and county plans, may include provisions to protect and conserve cultural resources. State, county, and city comprehensive management plans, as well as the IFNM RMP, would restrict surface-disturbing activities, resulting in some mitigation of the degradation of cultural resources within and outside the monument. However, disturbance and degradation of cultural resources would be expected to occur over time. Land acquisitions by BLM, or other jurisdictions with interest in maintaining cultural resources, could increase the potential to mitigate degradation of these resources, especially where such acquisitions by BLM would result in large contiguous blocks of public land.

#### 4.7.2.8 Paleontological Resources

Proposed construction and additional residential development, infrastructure and utility improvements and expansions could disturb paleontological resources, if significant resources were discovered. In addition, the continued urban growth in the Tucson and Marana metropolitan areas and surrounding communities has created increased demand for recreational and other uses on public land, which also could potentially disturb paleontological resources. The loss of paleontological resources resulting from development on non-public land adjacent to the IFNM, such as subdivisions, is could occur. In addition, the potential for degradation of paleontological resources, if discovered within the IFNM, would increase given the increased visitation and recreational uses that are expected. Surface-disturbing activities within areas containing significant fossils have the potential to damage this fragile, nonrenewable resource. Therefore, disturbance and degradation of paleontological resources would be expected to occur over time.

#### 4.7.2.9 Scenic and Visual Resources

Visual resources within the boundaries of the IFNM have been, and would continue to be affected by projects and activities that occur on lands that are not administered by the BLM, but which could be visible from public lands due to proximity and topography. Varied land use on private inholdings and parcels of land adjacent to the boundary of the IFNM tend to create visual contrasts along the borders of the IFNM. Road construction, farming, mining, utility lines, and residential development are examples of the types of activities that have created these contrasts in the past and have resulted in contrasts of texture, form, line, and color that are often visible to the casual observer at varying distances. Future projects likely would involve increased residential development and road construction, which would continue to create visual contrasts with the landscape. Structures and roads that occur near the borders of the IFNM that are taller than existing vegetation and do not match colors commonly found in the monument landscape would have a cumulative impact because they would be visible in concert with those projects and activities that have, and would continue to occur on inholdings and parcels of land adjacent to the IFNM. However, Pima County's Buffer Overlay Zone Ordinance, if applicable to the IFNM, could require projects to "provide for an aesthetic visual appearance from and to Pima County's public preserves," resulting in some mitigation of the cumulative impacts on scenic and visual resources.

#### 4.7.2.10 Wilderness Characteristics

Major mining complexes immediately adjacent to the IFNM could diminish wilderness characteristics such as naturalness and opportunities for primitive recreation within the decision area if these operations were in direct view from localized portions of the IFNM. In addition, vehicle traffic to and from the mine sites may pass through the IFNM, which would add to traffic impacts to wilderness characteristics. Mining activities that have occurred within the decision area in the past are generally numerous but small. Historic mine shafts and associated barriers, structures, and disturbances could reduce naturalness and opportunities for primitive recreation within the IFNM. Wilderness characteristics could be impacted by projects that occur outside the planning area due to the visibility of outside projects from within the IFNM. The development of residential housing on private lands to the north and east of the IFNM, for example, could be visible from higher elevations in the IFNM such as the Sawtooth Mountains and the Samaniego Hills and would diminish naturalness, and opportunities for solitude in the IFNM. Utility developments on lands adjacent to the IFNM would have similar cumulative impacts as residential lands. Despite the potential for degradation of areas with wilderness characteristics within the IFNM, the designated wilderness within 50 miles of the IFNM would remain protected in perpetuity and such values in those areas would be preserved. Therefore, though some degradation to wilderness characteristics could occur in the IFNM, the regional cumulative impacts on wilderness characteristics would be very limited in nature.

#### 4.7.2.11 Livestock Grazing

Removal of vegetation as a result of surface-disturbing activities, the presence and abundance of grazing wildlife, and general human disturbance including illegal undocumented immigrant travel would result in diminished potential for livestock grazing within and outside the IFNM. Increased recreation use, urban development, and the conversion of private or Arizona State Trust lands to other uses could reduce livestock numbers and forage available for livestock by increasing soil disturbance, vegetation removal, and noxious and invasive weed proliferation. Impacts on livestock grazing could be greater near areas with high recreation use or areas developed for residential, commercial or industrial uses.

Under Alternative B, managing the BLM-administered lands as unavailable to livestock grazing after existing leases expire in conjunction with increased population growth and recreation demands could reduce the number of livestock operators. This could reduce the demand for livestock grazing on Arizona State Trust lands and private lands or potentially increase demand for use of State Trust or private lands for grazing, since BLM-administered lands would not allow that use.

#### 4.7.2.12 Recreation

Various past, present, and reasonably foreseeable future actions affect, or could affect, the supply of and demand for recreational opportunities within the planning area. In addition to the IFNM, the existence of the Coronado National Forest, wilderness areas within 50 miles, Saguaro National Park, State and county parks, various State and regional trails, and the Sonoran Desert National Monument each provide various recreational opportunities. The increased number of students in the next five years at the Western Army National Guard Aviation Training Site, increasing vehicle-based recreation, closure of shooting ranges, and the growing urban development and associated population growth all contribute to increased demand for recreational opportunities in the region. As a result, the IFNM could experience increased recreational visitors over the life of the plan, which could degrade certain recreational settings resulting in diminished recreational opportunities and experiences, or increase user conflicts associated with dispersed unconfined recreational opportunities. Similarly, increasing development, utilities, or rescue beacons within or near the IFNM could degrade certain recreational settings, resulting in diminished recreational opportunities and experiences.

#### 4.7.2.13 Lands and Realty

Restrictions on rights-of-way and utilities near the IFNM could result from implementation of the City of Tucson HCP, City of Marana HCP, and Pima County Plans (including the Pima County Comprehensive Plan, Sonoran Desert Conservation Plan, and Pima County Conservation Lands System), as well as within areas protected as open space, such as Saguaro National Park, Coronado National Forest, and other State and county parks. This could result in increased concentration of rights-of-way for utilities in areas around, but outside the IFNM. Utility projects outside the IFNM, such as Southwest Transmission Cooperative's Sandario Project could reduce demand for land use authorizations (e.g., rights-of-way) as this may reduce the need for a right-of-way within the IFNM, but overall the same types of facilities would be required within the surrounding area. Similarly, the West-wide Energy Corridor Programmatic EIS would not establish additional corridors within the IFNM, but could result in major utilities being located in areas outside the monument, where such facilities would be concentrated. This would result in fewer impacts on the IFNM and the objects for which it was established to protect.

Sales (or exchanges, if permitted in the future) of Arizona State Trust Land by the Arizona State Land Department could result in extensive changes to surface management within the IFNM boundaries. If BLM acquired non-Federal land within the IFNM, the demand for both major utilities and smaller-scale distribution utilities within the IFNM could decrease over time, because the potential for development of those lands (and the associated need for utilities) would decrease. In contrast, BLM likely would need to issue increased rights-of-way to new areas if State Trust Lands were sold to private parties for future development.

#### 4.7.2.14 Travel Management

Past, present, and reasonably foreseeable future actions have affected, and continue to affect travel management within the IFNM and surrounding area. Urban development patterns and areas protected from development have guided the location and development of many highways and roads near and within the IFNM. The continuing growth of vehicle-based recreation, urban development, planned road and highway projects, and population growth are expected to increase demand and construction of transportation routes near the planning area. In contrast, travel within the IFNM would be restricted to certain roads and trails, and very few, if any, additional routes would be developed. As a result, there could be increased concentrations of vehicles within the IFNM, but the cumulative increase would be expected to be minimal compared to the increase that would result from the travel management restrictions imposed under each alternative; that is, restricting the miles of roads open for motorized travel would be expected to increase vehicle concentrations more in the IFNM than the increased regional access and population growth.

#### 4.7.2.15 Social and Economic Conditions

Trends such as population growth, increasing non-labor income, and the increasing importance of open space and preserved land to the regional economy (as evidenced by the number of conservation plans and HCPs developed) 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, BLM-administered lands take on a greater role in community economic development because they provide recreational opportunities and land/open space preservation to some extent. The increasing role of BLM-administered lands for recreation is covered above under Section 4.2.12.

Because of the small magnitude of the socioeconomic impact of BLM's proposed actions relative to the increasing development trends in Pima and Pinal Counties, the alternatives are unlikely to impact tax revenues, employment, population growth, and development of the area overall; however, the existence

of the IFNM may cause long-term increases in property values for adjacent landowners. In addition, if BLM acquired non-Federal land within the IFNM boundaries over time, there could be increases in the PILT payments and a loss of property taxes to the respective jurisdictions.

## 4.8 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Section 102(2)(C) of NEPA requires discussion of any irreversible or irretrievable commitments of resources that would be involved in the plan if it were implemented. An irretrievable commitment of a resource is one in which the resource or its use is lost for a period of time. An irreversible commitment of a resource is one that cannot be reversed.

Implementation of the any of the management plan alternatives would not result in impacts that could be characterized as irreversible and irretrievable commitments as the RMP would provide objectives for resource management and guidance for future activity and implementation-level decisions that minimize the potential for irreversible and irretrievable impacts. Some localized disruption to resources might occur, but could be mitigated, as appropriate.

## 4.9 UNAVOIDABLE ADVERSE IMPACTS

Section 102(C) of NEPA requires disclosure of any adverse environmental effects that cannot be avoided if the any of the management plan alternatives were implemented. Unavoidable adverse impacts are those that remain following implementation of mitigation measures or impacts for which there are no mitigation measures. Some unavoidable adverse impacts would occur as a result of increased visitation and recreational use of the IFNM, in addition to surface disturbance. The alternatives were developed to respond to these impacts and to be protective of the resources while allowing land use to be as diverse as possible; however, some localized unavoidable adverse impacts could occur.

## 4.10 RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

Section 102(C) of the National Environmental Policy Act requires discussion of the relationship between local, short-term uses of the human environment and maintenance and enhancement of long-term productivity of resources. “Short-term” is defined as expected to occur within 1 to 5 years of implementation of the plan. “Long-term” is defined as after the first 5 years of implementation but within the life of the RMP.

Any of the alternatives would result in various short-term effects, such as decreases in visual resource quality and recreational opportunities. The long-term productivity of resources within the IFNM would not be diminished, however, because these short-term uses would be minimized by management actions to effect the opposite change over the long term, as facilitated by the adaptive management approaches proposed under each alternative. Adaptive management is an integrated method for addressing uncertainty in natural resource management. It is a structured process for learning by doing, examining strategies for meeting measurable goals and objectives, and then, if necessary, adjusting future management actions according to what is learned. An adaptive management program is essential for resources with information gaps and biological uncertainty involving a potentially significant risk to the resource. Under an adaptive management approach, the management actions in this plan can be refined continuously in response to changing conditions and varied effectiveness of plan implementation, to ensure that only the most effective components of the actions are retained, while less effective measures are dropped or replaced. As a result, although there would be some disturbance to resources, the flexible and responsive management approaches under all alternatives would protect the long-term productivity of the land, resources, and resource uses.

# CHAPTER 5.0 CONSULTATION AND COORDINATION

This Draft Resource Management Plan and Environmental Impact Statement (Draft RMP/EIS) represents the efforts and involvement of a broad range of participants, including public agencies, tribal councils, and private organizations and individuals. The Bureau of Land Management (BLM) met and consulted with various Federal, State, tribal, and local agencies throughout the process, including coordination with the Arizona Game and Fish Department (AGFD) which assumed a more formal role as a cooperating agency. BLM conducted and attended many meetings throughout the planning process to keep all interested parties informed, and to solicit opinions and input germane to management of public land resources within the Ironwood Forest National Monument (IFNM or monument). The general public also was brought into the process. All interested parties were invited into the process by means of various formal and informal methods, including meetings (with public agencies, tribal councils, interest groups, and individuals), scoping meetings, workshops, e-mail correspondence, and distribution of newsletters. This section summarizes these activities.

## 5.1 COMMUNICATION METHODS

The planning area is a special place to many people, and BLM recognizes there is great interest in the outcome of this planning process. It was the agency's task, therefore, to make the process as transparent as possible and engage the surrounding communities' help in identifying all relevant issues. All those with an interest in the RMP process—including communities, tribes, government agencies, various organizations and groups, and individuals—were informed that the planning process was underway, and presented with opportunities for involvement. The response to this, including verbal and written comments received during all phases of the planning process, was helpful to the development of this Draft RMP/EIS. Comments from the public will continue to be accepted for consideration in the subsequent phases of this planning process.

Internal guidelines were established to ensure that the planning process remain as open and inclusive as possible. In response to these guidelines, BLM followed through with these actions:

- Accepted public comments for consideration throughout all stages of the planning effort
- Granted all requests for information (unless the information was unavailable or prohibited by policy or law)
- Assigned staff and managers to meet with all groups and individuals requesting meetings to discuss the RMP process
- Opened internal processes for review by the cooperating agencies, and actively invited their comments and assistance
- Assigned staff and managers to prepare planning information for all meetings, such as meetings with Federal managers, tribal councils, the Grazing Advisory Board, and the Resource Advisory Council

BLM used the following means to inform all interested parties about the progress of the planning effort:

- Public scoping
- Community-based partnership and stewardship workshops
- Formal presentations to American Indian tribal, band, and chapter councils
- Informal presentations to interested groups

- Planning bulletins
- Posting of information on the BLM website
- Partnerships with cooperating agencies

## 5.2 PLANNING BULLETINS AND WEBSITE

Planning bulletins were sent to interested individuals and groups, affected Federal and State agencies, community groups, and tribes to inform them about planning issues and progress and to invite comment. The bulletins were also made available on BLM's website (http://www.blm.gov/az/LUP/ironwood/ironwood_plan.htm). Table 5-1 lists the four planning bulletins that were placed on the BLM website and sent to those who requested copies.

**Table 5-1: IFNM Planning Bulletins for the Draft RMP/EIS**

| Date | Contents |
|---|---|
| July 2002 | Announcement of scoping meetings |
| August 2003 | Update of planning process and schedule; announcement of URS Corporation as contractor to assist with the development of the RMP/EIS |
| February 2004 | Summary of scoping results; announcement of meetings to develop goals for the long-term management of the IFNM |
| August 2005 | Summary of preliminary draft alternatives; announcement of meeting to review preliminary draft alternatives |
| February 2007 | Announce availability of the Draft RMP/EIS |

Planning information, including the schedule, meeting locations and dates, planning bulletins, the scoping report, the draft alternatives, associated maps, and a copy of this Draft RMP/EIS was posted on the BLM website.

## 5.3 FORMAL PRESENTATIONS TO AMERICAN INDIAN TRIBES

Before and after the notice of intent was published and in accordance with the National Environmental Policy Act (NEPA), the National Historic Preservation Act, and Executive Order 13007, meetings were held with American Indian tribal, band, and chapter councils and members. The goal of these meetings was to inform and solicit input for the planning process from all American Indians living on or near the IFNM, or having cultural or ancestral ties to those who are presently living or once lived in the planning area. Table 5-2 lists those meetings.

**Table 5-2: Meetings with American Indian Tribes**

| Date | Tribe, Band, or Council Meeting | Location |
|---|---|---|
| July 23, 2002 | Gila River Indian Community | Sells, Arizona |
| October 19, 2004 | Gila River Indian Community | Sacaton, Arizona |
| July 15, 2005 | Four Southern Tribes (Tohono O'odham, Gila River Indian Community, Salt River-Pima Indian Community, Ak-Chin Indian Community) | Salt River-Pima Indian Community Learning Center |
| August 18, 2005 | Tohono O'odham | BLM Tucson Field Office |
| January 12, 2006 | Tohono O'odham | IFNM |

## 5.4 PUBLIC SCOPING MEETINGS

The planning process was initiated April 24, 2002, with the publication of a notice of intent in the Federal Register. In July 2002, the BLM Tucson Field Office hosted a series of nine open house public scoping meetings throughout southern Arizona to provide information and a forum for public input into both the plan and the process. The open-house scoping meetings were held in the Arizona communities of Mesa, Casa Grande, Eloy, Arizona City, Tucson, Sells, Picture Rock, Marana, and Green Valley.

## 5.5 COMMUNITY-BASED WORKSHOPS AND COLLABORATIVE PLANNING

BLM held 11 public workshops to encourage active community involvement in the planning process, and establish a management vision for the planning area. The specific goals of these workshops were to:

- Gather input and information from local communities, agencies, groups, and individuals to help establish goals and objectives for management of public land resources within the IFNM.
- Inform participants about the ongoing planning effort
- Encourage active involvement in planning for the IFNM, including establishment of community-based planning groups

Table 5-3 shows the date and topic for each community workshop. Each workshop was held at the Pima County Parks and Recreation Facility.

**Table 5-3: Community Workshops**

| Date | Topic |
|---|---|
| March 8, 2004 | Vision, overarching goals |
| March 29, 2004 | Vision, overarching goals, public participation opportunities |
| April 29, 2004 | Wildlife and wildlife habitat |
| May 19, 2004 | Wildlife and wildlife habitat |
| May 26, 2004 | Vegetation and special status species |
| June 9, 2004 | Cultural resources |
| June 16, 2004 | Soil, water, air, geology, and minerals |
| June 23, 2004 | Recreation and visual resources |
| June 30, 2004 | Travel Management |
| July 21, 2004 | Livestock grazing |
| July 28, 2004 | Mining and lands and realty |

## 5.6 COOPERATING AGENCIES

As discussed in Section 1.6.1, BLM is required by law to prepare NEPA analysis and documentation "in cooperation with State and local governments," and other agencies with jurisdiction by law or special expertise (42 U.S.C. 4331(a), 4332(2)). Qualified agencies, tribes, or other governments that enter into formal cooperation under this provision are called cooperating agencies. In support of the cooperating agency mandate, BLM invited a broad range of Federal, State, tribal, and local agencies to become cooperating agencies on the development of the IFNM RMP. AGFD formally agreed to be a cooperating agency during this planning process, and developed a Memorandum of Understanding with BLM outlining the agencies' various responsibilities with regard to the planning process.

In addition, representatives from other interested Federal and State agencies and tribes provided BLM with ongoing verbal and/or written comments, and provided planning information, including Geographic Information System (GIS) data layers and information.

Various other groups have also played a vital role in the planning process. Their participation has been informal and infrequent. Public involvement in planning for the IFNM is ongoing. There will continue to be many opportunities for public involvement. Planning is merely the beginning of collaboration and communication that translates into healthy landscapes and continuing opportunities to use and appreciate the resources in a wide variety of ways.

## 5.7 IFNM DRAFT RMP/EIS DISTRIBUTION LIST

### 5.7.1 Federal Agencies

- Bureau of Indian Affairs
  - Phoenix, Arizona
  - Reston, Virginia
- Bureau of Land Management
  - Washington D.C. Office
  - Tucson Field Office
  - Phoenix District Office
  - Gila District Office
  - Arizona Strip District Office
  - Colorado River District Office
  - Arizona State Office
- Bureau of Reclamation, Denver, Colorado
- Federal Highway Administration, Phoenix, Arizona
- Department of Transportation, Washington, D.C.
- National Park Service
  - Washington Service Center, Washington, D.C.
  - Pacific West Region, San Francisco, California
  - Saguaro National Park, Tucson, Arizona
- Minerals Management Service
  - Denver, Colorado
  - Herndon, Virginia
- Natural Resources Conservation Service, Phoenix, Arizona
- Office of Environmental Policy and Compliance, Oakland, California
- Office of Surface Mining, Reclamation, and Enforcement, Washington, D.C.
- U.S. Bureau of Mines, Denver, Colorado

- U.S. Department of Energy, Office of Environmental Compliance (EH-23), Washington, D.C.
- U.S. Environmental Protection Agency
  - Washington, D.C.
  - Denver, Colorado
  - San Francisco, California
- U.S. Department of Defense
  - Air Force Regional Environmental Office, San Francisco, California
  - Army Corps of Engineers, Phoenix, Arizona
  - Davis Monthan Air Force Base, Arizona
- U.S. Department of Homeland Security
  - Laguna Nigule, California
  - U.S. Border Patrol, Tucson, Arizona
- U.S. Fish and Wildlife Service
  - Phoenix, Arizona
  - Tucson, Arizona
  - Division of Environmental Quality, Arlington, Virginia
- U.S. Forest Service
  - Coronado National Forest, Tucson, Arizona
- U.S. Geological Survey
  - Tucson, Arizona
  - Reston, Virginia

### 5.7.2 State Agencies and Organizations

- Arizona Army National Guard, Western Army National Guard Aviation Training Site
- Arizona Corporation Commission
- Arizona Department of Agriculture
- Arizona Department of Commerce
- Arizona Department of Environmental Quality
- Arizona Department of Water Resources
- Arizona Department of Mines and Mineral Resources
- Arizona Department of Transportation
- Arizona Game and Fish Department
- Arizona Geological Survey
- Arizona Historical Society

- Arizona Mines and Mineral Resources
- Arizona State Historic Preservation Office
- Arizona State Land Department
- Arizona State Parks

### 5.7.3 Local Governments

- Casa Grande, Arizona
- Eloy, Arizona
- Marana, Arizona
- Oro Valley, Arizona
- Pima Association of Governments
- Pima County
- Pinal County
- Tucson, Arizona

### 5.7.4 Tribal Governments

- Ak Chin Indian Community
- Gila River Indian Community
- Tohono O'odham Nation
- Salt River Pima-Maricopa Indian Community
- San Carlos Apache Indian Community

### 5.7.5 Congressionals

- Senator Jon Kyl, Arizona
- Senator John McCain, Arizona
- Representative Raul Grijalva, Arizona
- Representative Gabrielle Giffords, Arizona
- Representative Rick Renzi, Arizona

### 5.7.6 Libraries

- Geasa-Marana Branch Library, Marana, Arizona
- Salazar-Ajo Branch Library, Ajo, Arizona
- Joel D. Valdez Main Library, Tucson, Arizona
- Casa Grande Public Library, Casa Grade, Arizona

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# GLOSSARY

## A

**Agency:** Any Federal, State, or county government organization participating with jurisdictional responsibilities.

**Air Pollutant:** Generally, an airborne substance that could, in high enough concentrations, harm living things or cause damage to materials. From a regulatory perspective, an air pollutant is a substance for which emissions or atmospheric concentrations are regulated or for which maximum guideline levels have been established due to potential harmful effects on human health and welfare.

**Air Quality:** The cleanliness of the air as measured by the levels of pollutants relative to standards or guideline levels established to protect human health and welfare. Air quality is often expressed in terms of the pollutant for which concentrations are the highest percentage of a standard (e.g., air quality may be unacceptable if the level of one pollutant is 150% of its standard, even if levels of other pollutants are well below their respective standards).

**Air Quality Standard:** Levels of air pollutants prescribed by regulations that may not be exceeded during a specified time in a defined area.

**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.

**Ambient (air):** The surrounding atmospheric conditions to which the general public has access.

**Analysis:** An examination of existing and/or recommended management needs and their relationships in order to discover and display the outputs, benefits, effects, and consequences of initiating a proposed action.

**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 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 groundwater 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 BLM 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 manmade object.

**Attainment Area:** An area that the Environmental Protection Agency has designated as being in compliance with one or more of the National Ambient Air Quality Standards (NAAQS) for sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone, lead, and particulate matter. An area may be in attainment for some pollutants but not for others.

**Avoidance area:** An environmentally sensitive area where rights-of-way may be granted only when no feasible alternative route is available.

# B

**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 widened part of a river or canal (*drainage*, *river, stream basin*).

**Basin and Range:** A geological and geographical landform common to western North America and characterized by a series of tilted-fault-block mountain ranges and broad intervening basins.

**Biodiversity:** The variety of life and its processes, and the interrelationships within and among various levels of ecological organization. Conservation, protection, and restoration of biological species and genetic diversity are necessary to sustain the health of existing biological systems. Federal resource management agencies must examine the implications of management actions and development decisions on regional and local biodiversity.

**Biological Soil Crust:** A living community of lichen, cyanobacteria, algae, and moss growing on the soil surface, creating a crust of soil particles bound together by organic materials. Biological soil crusts are also known as cryptogamic, microbiotic, cryptobiotic, and microphytic crusts and are commonly found in semiarid and arid environments throughout the world.

**Browse:** Leaf and twig growth of shrubs, woody vines, trees, cacti, and other non-herbaceous vegetation available for animal consumption.

# C

**Carbon Monoxide:** A colorless, odorless, poisonous gas produced by incomplete burning of carbon-based fuels including gasoline, oil and wood. Carbon monoxide is also produced from incomplete combustion of many natural and synthetic products.

**Cave:** Any naturally occurring void, cavity, recess, or system of interconnected passages that occurs beneath the surface of the earth or within a cliff or ledge (including any cave resource therein, but not including any vug [a small cavity in a rock], mine, tunnel, aqueduct, or other manmade excavation) which is large enough to permit an individual to enter, whether or not the entrance is naturally formed or manmade. Such term includes any natural pit, sinkhole, or other feature that is an extension of the entrance.

**Characteristic:** That which constitutes a character; that which characterizes; a distinguishing trait, feature, or quality; a peculiarity.

**Clean Air Act:** Federal legislation governing air pollution. The Clean Air Act established NAAQS 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):** 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 have extended responsibilities to the individual states, regulate these programs.

**Community (ecological):** 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 of area is not implied (i.e., organisms associated with a decaying log or with an entire forest each represent communities).

**Compaction:** The process of packing firmly and closely together; for example, mechanical compaction by vehicular, human or livestock activity. Soil compaction results from particles being pressed together so that the volume of the soil is reduced. It is influenced by the physical properties of the soil, moisture content, and the type and amount of compactive effort.

**Composition:** The proportions of various plant species in relation to the total on a given area. It may be expressed in terms of cover, density, weight, etc.

**Contrast:** Diversity of adjacent parts, as in color, tone, or emotions. The closer the juxtaposition of two dissimilar perceptions, in time or space, the more powerful the appeal to the attention.

**Corridor:** A wide strip of land within which a proposed linear facility (e.g., pipeline, transmission line) could be located. A corridor may also be a strip of land that is set aside for conservation purposes, particularly to provide wildlife an area of use to move between patches of habitat.

**Corrosivity:** A characteristic defining a hazardous waste. Solid waste that is defined as corrosive demonstrates the capability to destroy gradually by chemical action.

**Criteria Pollutant:** An air pollutant that is regulated by NAAQS. The Environmental Protection Agency must describe the characteristics and potential health and welfare effects that form the basis for setting, or revising, the standard for each regulated pollutant. Criteria pollutants include sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone, lead, and two size classes of particulate matter, less than 10

micrometers (0.0004 inch) in diameter, and less than 2.5 micrometers (0.0001 inch) in diameter. New pollutants may be added to, or removed from, the list of criteria pollutants as more information becomes available. (See National Ambient Air Quality Standards.)

**Critical Habitat:** Habitat essential to the conservation of an endangered or threatened species that has been designated as critical by the U.S. Fish and Wildlife Service or the National Marine Fisheries Service.

**Cultural Resources:** A cultural resource is any definite location of past human activity, occupation, or use, identifiable through inventory, historical documentation, or oral evidence. Cultural resources include archaeological, historical, or architectural sites, structures, places, objects, and artifacts.

# D

**Decision Area:** BLM-administered public land and private split-estate (i.e., private surface acreage overlying federally owned minerals) within the planning area are referred to in this document as the decision area.

**Desert Pavement:** A surface of angular, interlocking fragments of pebbles, gravel, or boulders found in arid and semiarid environments. These surfaces are found on level or gently sloping desert flats, fans, or bajadas, and lake and river terraces. Desert pavement forms under the influence of daily thermal expansion and contraction as sandy particles slowly sort downward, leaving the larger stones at the surface.

**Desired Plant Community:** An objective regarding a group of compatible plant species, including the desired percentage of occurrence, considered ideal to meet land-management goals for the 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.

**Distance Zones (views/visual resources):** 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.

# E

**Easement:** A right or privilege one may have on another's land.

**Ecological Site:** A distinctive kind of rangeland that differs from other kinds of rangeland in its ability to produce a characteristic natural plant community.

**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.

**Endangered Species**: Plants or animals that are in danger of extinction through all or a significant portion of their ranges and that have been listed as endangered by the U.S. Fish and Wildlife Service following the procedures outlined in the Endangered Species Act and its implementing regulations..

**Environmental Assessment :** 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 (EIS) 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:** An analytical document that portrays potential impacts on the human environment of a particular course of action and its possible alternatives. The document is released to the public for review and comment. 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. An EIS must meet the requirements of the National Environmental Policy Act, the Council on Environmental Quality, and the directives of the agency responsible for the proposed action.

**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 groups, 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. Executive Order 12898 directs Federal agencies to make achieving environmental justice part of their missions by identifying and addressing disproportionately high and adverse effects of agency programs, policies, and activities on minority and low-income populations.

**Erosion:** Detachment or movement of soil or rock fragments by water, wind, or gravity. Accelerated erosion is much more rapid than normal, natural or geologic erosion, primarily as a result of the influence of surface-disturbing activities of people, animals or natural catastrophes.

**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.

# F

**Federal Lands:** Lands, or interests in lands (such as easements and rights-of-way), owned by the United States.

**Federal Undertaking:** A project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency including those carried out on or on behalf of the agency, those carried out with Federal financial assistance, those requiring a Federal permit license or approval, and

those subject to state or local regulation administered pursuant to a delegation or approval by a Federal agency.

**Fire Frequency:** A general term referring to the recurrence of fire in a given area over time. It is sometimes stated as number of fires per unit time in a designated area. It is also used to refer to the probability of an element burning per unit time

**Fire Intensity:** derived from the energy content of the fuel, the mass of fuel consumed, and the rate of spread of the fire. The units of fireline intensity reflect energy release (kW) per unit length (m) of the fireline: energy release along a linear front. The length of the flames of a fire can be related to its intensity.

**Fire Regime:** 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 Classes:** Fire Regime Condition Classes are a qualitative measure describing the degree of departure from historical fire regimes, possibly resulting in alterations of key ecosystem components such as species composition, structural stage, stand age, canopy closure, and fuel loadings. One or more of the following activities may have caused this departure: fire exclusion, timber harvesting, livestock grazing, introduction and establishment of exotic plant species, introduced insects and disease, or other management activities.

**Fluid Minerals:** Oil, gas, geothermal resources, carbon dioxide, and coalbed methane.

**Forage:** All browse and herbaceous growth available and acceptable to grazing animals or that may be harvested for feeding purposes. Forage includes pasture, rangelands, and crop aftermath. Feed includes forage, hay and grains.

**Forb:** An herbaceous plant that is not a grass, sedge, or bush.

**Form:** The mass or shape of an object or objects which appear unified.

# G

**Game Species:** Any species of wildlife or fish that is managed for hunters.

**Goal:** The desired state or condition that a resource management policy or program is designed to achieve. Broader and less specific than objectives, goals are usually not measurable and may not have specific dates by which they must be reached. Objectives are developed by first understanding and defining goals.

**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 public land but may include parcels of private or state-owned land.

**Grazing Fee:** A charge, usually on a monthly basis, for grazing a specific kind of livestock.

**Grazing Lease:** A document authorizing use of public lands outside an established grazing district. Grazing leases specify all authorized use including livestock grazing, suspended use, and conservation use. Leases specify the total number of AUMs 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.

**Groundwater:** Water below the ground surface in a zone of saturation.

**Guidelines:** Management approaches, methods, and practices that are intended to achieve a standard. Guidelines typically (1) 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.

# H

**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 Management Plan:** 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 wastes are defined as wastes or combination of wastes that, because of quantity, concentration, or physical, chemical, or infectious characteristics, may either cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible illness, or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed. Hazardous wastes are products or by-products of hazardous materials. In order to be classified as hazardous, wastes must either appear on a series of lists compiled by the U.S. Environmental Protection Agency or demonstrate the characteristics of ignitability, corrosivity, reactivity, or toxicity.

**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 exhibits characteristics of ignitability, corrosivity, reactivity, and/or toxicity.

**Haze:** An atmospheric aerosol of sufficient concentration to be visible. The particles are so small that they cannot be seen individually, but are still effective in scene distortion and visual range restriction.

**Historic Fire Regime:** A classification of the effects of ecosystem disturbance caused by fire over time and space. Generally encompasses the period between 1500 to late 1800, before extensive settlement by European-Americans in many parts of North America, before intense conversion of wildlands for agricultural and other purposes, and before fire suppression effectively reduced fire frequency in many areas. Sometimes referred to as “presettlement” fire regimes.

# I

**Infiltration:** The downward entry of water into soil or other material.

**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.

# J

**Jurisdiction:** The legal right to control or regulate use of land or a facility. Jurisdiction requires authority, but not necessarily ownership.

# K

# L

**Land Use Plan:** Any document developed to define the kinds of use, goals and objectives, management practices, and activities that will be allowed to occur on an individual parcel or group of land parcels.

**Landform:** A discernible natural landscape that exists as a result of geological activity, such as a plateau, plain, basin, or mountain.

**Landscape:** An aggregate of different but interacting landforms, sometimes united by a cultural attribute (e.g., a mosaic of farmland, including tilled fields, woodlots, stock ponds, swales, and fencerows). Landscape ecology generally operates at a scale of at least many acres/hectares or, more often, several square miles/square kilometers.

**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.

**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.

**Line:** The path, real or imagined, that the eye follows when perceiving abrupt differences in form, color, or texture or when objects are aligned in a one-dimensional sequence. Usually evident as the edge of shapes or masses in the landscape.

**Locatable Mineral:** Any valuable mineral that is not saleable or leasable including gold, silver, copper, uranium, etc., that may be developed under the General Mining Law of 1872.

**Low-income populations:** Defined in terms of Bureau of the Census annual statistical poverty levels (Current Population Reports, Series P-60 on Income and Poverty), may consist of groups or individuals who live in geographic proximity to one another or who are geographically dispersed or transient (such as migrant workers or Native Americans), where either type of group experiences common conditions of environmental exposure or effect.

# M

**Management Actions/Practices:** Actions or practices that improve or maintain basic soil and vegetation resources. Rangeland practices typically consist of watershed treatments (planting, seeding, burning, rest, vegetation manipulation, grazing management) in an attempt to establish desired vegetation species or communities.

**Maintenance Intensity Definitions:**

> **Level 0 Maintenance Description:** Existing routes that will no longer be maintained or declared as routes. Routes identified as Level 0 are identified for removal from the Transportation System entirely.
>
> **Level 1 Maintenance Description:** Routes where minimal (low-intensity) maintenance is required to protect adjacent lands and resource values. These roads may be impassable for extended periods of time.
>
> **Level 3 Maintenance Description:** Routes requiring moderate maintenance because of low-volume use (e.g., seasonally or year-round for commercial, recreational, or administrative access). Maintenance Intensities may not provide year-round access, but are intended to generally provide resources appropriate for keeping the route in use for the majority of the year.
>
> **Level 5 Maintenance Description:** Routes for high (Maximum) maintenance because of year-round needs, high-volume traffic, or significant use. Also may include routes identified through management objectives as requiring high intensities of maintenance or to be maintained open year-round

**Minimum Impact Suppression Techniques:** A set of strategies utilized by wildland firefighters to suppressing wildfire while causing the fewest possible impacts to natural and/ or cultural resources in the vicinity.

**Minority Populations:** Minority populations exist where either (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than in the general population or other appropriate unit of geographic analysis (such as a governing body's jurisdiction, a neighborhood, census tract, or other similar unit). “Minority” refers to individuals who are members of the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. Minority populations include either a single minority group or the total of all minority persons in the affected area. They may consist of groups of individuals living in geographic proximity to one another or a geographically dispersed / transient set of individuals (such as migrant workers or Native Americans), where either type of group experiences common conditions of environmental exposure or effect.

**Minimum Impact Suppression Techniques (MIST):** A Set of strategies utilized by wildland firefighters to suppressing wildfire while causing the fewest possible impacts to natural and/or cultural resources in the vicinity.

**Multiple Use:** Multiple use as defined by the Multiple Use – Sustained Yield Act 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.

# N

**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):** The official list of the Nation's cultural resources that are worthy of preservation. The National Park Service maintains the list under direction of the Secretary of the Interior. Buildings, structures, objects, sites, and districts are included in the National Register for their importance in American history, architecture, archeology, culture, or engineering. Properties included on the National Register range from large-scale, monumentally proportioned buildings to smaller scale, regionally distinctive buildings. The listed properties are not just of nationwide importance; most are significant primarily at the State or local level.

**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.

**Naturalness:** A characteristic of lands where the imprint of human activity is substantially unnoticeable. Imprints of human activity typically include travel routes or trails, fences, and other landscape modifications.

**Nonattainment Area:** An area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) any of the Federal primary or secondary ambient air quality standards for the pollutant.

**Noxious Weeds:** Plant species that have been legally designated as unwanted or undesirable. This includes national, State and county or local designations. According to the Federal Noxious Weed Law, native plant species are not designated "noxious." Native plant species that may be of a management concern, such as poisonous plants or desert shrub and subshrub species, are not considered priorities for noxious weed work or funding.

**Nutrient Cycle:** The process of use, release, and reuse of elements by plants and animals through uptake by incorporation into and decomposition of organisms. Elements involved in nutrient cycling remain in the vicinity of the earth's surface.

# O

**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) or Off-Road Vehicle:** 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; (4) vehicles in official use; and (5) any combat or combat support vehicle when used in times of national defense emergencies.

**Off-Highway Vehicle (OHV) Designations:**

> **Open:** An area where all types of vehicle use is permitted at all times, anywhere in the area subject to the operating regulations and vehicle standards set forth in 43 CFR Subparts 8341 and 8342.
>
> **Limited Area:** An area restricted at certain times, in certain areas, and/or to certain vehicular use. These restrictions may be of any type, but can generally be accommodated within the following type of categories: Numbers of vehicles; types of vehicles; time or season of vehicle use; permitted or licensed use only; use on existing roads and trails; use on designated roads and trails; and other restrictions. In areas limited to designated routes, motorized uses are allowed on the designated routes, with reasonable use of the shoulder and immediate roadside, allowing for vehicle passage, emergency stopping, or parking, unless otherwise posted.
>
> **Closed:** An area where off-road vehicle use is prohibited. Use of off-road vehicles in closed areas may be allowed for certain reasons; however, such use shall be made only with the approval of the authorized officer.

**Ozone ($O_3$):** A gas that is a variety of oxygen. The oxygen gas found in the air consists of two oxygen atoms stuck together; this is molecular oxygen. Ozone consists of three oxygen atoms stuck together into an ozone molecule. Ozone occurs in nature; it produces the sharp smell you notice near a lightning strike. High concentrations of ozone gas are found in a layer of the atmosphere—the stratosphere—high above the earth. Stratospheric ozone shields the earth against harmful rays from the sun, particularly ultraviolet B. Smog's main component is ozone; this ground-level ozone is a product of reactions among chemicals produced by burning coal, gasoline, and other fuels, and chemicals found in products including solvents, paints, hairsprays, etc.

# P

**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.

**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.

**pH:** A number used by chemists to express the acidity of solutions, including water. A pH value lower than 7 indicates an acidic solution, a value of 7 is neutral, and a value of higher than 7 indicates an alkaline solution. Most groundwater in the United States has pH values ranging from about 6.0 to 8.5.

**Planning Area:** As used in this document, includes all land within the planning area boundaries regardless of jurisdiction or ownership.

**Preference:** Grazing preference or preference means a superior or priority position against others for the purpose of receiving a grazing permit or lease. This priority is attached to base property owned or controlled by the permitee or lessee.

**Prevention of Significant Deterioration (air):** 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.

**Primitive Recreation:** Includes non-motorized, nonmechanical forms of recreation, such as hiking or bird watching, in areas without or with minimal developed recreation facilities.

**Primitive Road:** A linear route managed for four-wheel drive or high-clearance vehicles. Primitive roads do not normally meet any BLM road design standards.

# Q

# R

**Range Improvement:** An authorized physical modification or treatment designed to improve production of forage; change vegetation composition; control patterns of use; provide water; stabilize soil and water conditions; and restore, protect and improve the condition of rangeland ecosystems to benefit livestock, wild horses, burros, fish and wildlife. The term includes, but is not limited to, the structure, treatment projects, and use of mechanical devices, or modifications achieved through mechanical means.

**Rangeland:** A type of land on which the native vegetation or natural potential consists predominantly of grasses, grass-like plants, forbs, or shrubs. Rangeland includes lands revegetated naturally or artificially to provide a plant cover that is managed like native vegetation. Rangelands may consist of natural grasslands, savannas, shrub lands, most deserts, tundra, alpine communities, coastal marshes, and wet meadows.

**Reclamation**: Rehabilitation of a disturbed area to make it acceptable for designated use. This normally involves regrading, replacement of topsoil, revegetation and other work necessary to restore it for use.

**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.

**Restore/Restoration:** The process of returning an ecosystem as closely as possible to the pre-disturbance condition and function. Note: restoration involves restoring a site to a specific point in time.

**Revegetate:** The replacement of vegetation into a disturbed area with little or no concern for ecological conditions or functions.

**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:** Situated on or pertaining to the bank of a river, stream, or other body of water, including areas of 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. However, in Arizona 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.

**Roads:** Linear route declared a road by the owner, managed for use by low-clearance vehicles having four or more wheels, and maintained for regular and continuous use.

# S

**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.

**Scale:** The proportionate size relationship between an object and the surroundings in which it is placed.

**Scenic Quality:** The relative worth of a landscape from a visual perception point of view. Seven factors (landform, vegetation, water, color, adjacent scenery, scarcity, and cultural modifications) are examined to evaluate the scenic quality of a landscape. The relative scenic quality (A, B, or C) assigned a landscape by applying the scenic quality evaluation key factors; scenic quality A being the highest rating, B a moderate rating, and C the lowest rating. The scenic quality-rating unit is defined as a portion of the landscape, which displays primarily homogenous visual characteristics of the basic landscape features (land and water form, vegetation, and structures).

**Scoping:** An early and open process for determining the scope of issues to be addressed in an environmental impact statement and for identifying the significant issues related to a proposed action.

**Sensitive Species:** Species not yet officially listed but that are undergoing status review for listing on the U.S. Fish and Wildlife Service's 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.

**Solitude:** Occurs in areas where the sights, sounds, and evidence of human activity are rare or infrequent and where visitors can be isolated, alone, or secluded from others.

**Special Status Species:** Plant or animal species listed as threatened, endangered, candidate, or sensitive by State governments or the Federal government.

**Standards:** Goals for the desired condition of the biological and physical components and characteristics of rangelands. Standards (1) are measurable and attainable; and (2) comply with various Federal and State statutes, policies, and directives applicable to BLM rangelands.

**Structural Diversity:** The diversity of the composition, abundance, spacing, and other attributes of plants in a community.

**Sulfur Dioxide ($SO_2$):** A gas produced by burning coal, most notably in power plants. Some industrial processes, such as production of paper and smelting of metals, produce sulfur dioxide. Sulfur dioxide is closely related to sulfuric acid, a strong acid. Sulfur dioxide plays an important role in the production of acid rain.

**Surface Disturbance:** The physical disturbance, which alters the structure and composition of vegetation and topsoil/ subsoil.

**Surface Water:** All bodies of water on the surface of the earth and open to the atmosphere, such as rivers, lakes, reservoirs, ponds, seas, and estuaries.

**Sustained Yield:** The concept of steady-state management of timber, wildlife, and many other natural resources. Consumption is matched by production.

# T

**Texture:** The aggregation of small forms or color mixtures into a continuous surface pattern; the aggregated parts are enough that they do not appear as discrete objects in the composition of the scene.

**Total Dissolved Solids:** The total quantity (reported in milligrams per liter) of dissolved materials in water.

**Toxicity:** A characteristic defining a hazardous waste. Toxicity refers to the ability of a material to produce injury or disease on exposure, ingestion, inhalation, and assimilation by a living organism.

**Trail:** Linear route managed for human powered, stock, or off-highway vehicle forms of recreation or for historic or heritage values. Trails are not generally managed for use by four-wheel drive or high-clearance vehicles.

**Trend:** The direction of change over time, either toward or away from desired management objectives.

# U

**Uplands:** Land at a higher elevation than the alluvial plain or low stream terrace; all lands outside the riparian-wetland and aquatic zones.

# V

**Viable:** A [wildlife] population that has the estimated numbers and distribution of reproductive individuals to ensure 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.

# W

**Watershed:** The land area that drains water to a particular stream, river, or lake. It is a land feature that can be identified by tracing a line along the highest elevations between two areas on a map, often a ridge.

**Water Quality**: The chemical, physical, and biological characteristics of water in respect to its suitability for a particular purpose.

**Weed:** A non-native plant that disrupts or has the potential to disrupt or alter the natural ecosystem function, composition, and diversity of the site it occupies. Its presence deteriorates the health of the site, it makes efficient use of natural resources difficult, and it may interfere with management objectives for that site.

**Wetlands:** Those areas that are inundated by surface or groundwater with a frequency sufficient to support, and under normal circumstances do or would support, a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas (e.g., sloughs, potholes, wet meadows, river overflow areas, mudflats, natural ponds).

**Wildland Urban Interface:** The area where developed and undeveloped lands meet.

# X

**Xeroriparian Habitat:** The distinct plant and animal communities that concentrate around dry washes and are sustained by desert storms.

# Y

# Z

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# APPENDIX A
# PRESIDENTIAL PROCLAMATION 7320

Monday, June 12, 2000

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Proclamation 7320--Establishment of the Ironwood Forest National Monument

William J Clinton

June 9, 2000

By the President of the United States of America

**A Proclamation**

The landscape of the Ironwood Forest National Monument is swathed with the rich, drought-adapted vegetation of the Sonoran Desert. The monument contains objects of scientific interest throughout its desert environment. Stands of ironwood, palo verde, and saguaro blanket the monument floor beneath the rugged mountain ranges, including the Silver Bell Mountains. Ragged Top Mountain is a biological and geological crown jewel amid the depositional plains in the monument.

The monument presents a quintessential view of the Sonoran Desert with ancient legume and cactus forests. The geologic and topographic variability of the monument contributes to the area's high biological diversity. Ironwoods, which can live in excess of 800 years, generate a chain of influences on associated understory plants, affecting their dispersal, germination, establishment, and rates of growth. Ironwood is the dominant nurse plant in this region, and the Silver Bell Mountains support the highest density of ironwood trees recorded in the Sonoran Desert. Ironwood trees provide, among other things, roosting sites for hawks and owls, forage for desert bighorn sheep, protection for saguaro against freezing, burrows for tortoises, flowers for native bees, dense canopy for nesting of white-winged doves and other birds, and protection against sunburn for night blooming cereus.

The ironwood-bursage habitat in the Silver Bell Mountains is associated with more than 674 species, including 64 mammalian and 57 bird species. Within the Sonoran Desert, Ragged Top Mountain contains the greatest richness of species. The monument is home to species federally listed as threatened or endangered, including the Nichols turk's head cactus and the lesser long-nosed bat, and contains historic and potential habitat for the cactus ferruginous pygmy-owl. The desert bighorn sheep in the monument may be the last viable population indigenous to the Tucson basin.

In addition to the biological and geological resources, the area holds abundant rock art sites and other archeological objects of scientific interest. Humans have inhabited the area for more than 5,000 years. More than 200 sites from the prehistoric Hohokam period (600 A.D. to 1450 A.D.) have been recorded in the area. Two areas within the monument have been listed on the National Register of Historic Places, the Los Robles Archeological District and the Cocoraque Butte Archeological District. The archeological artifacts include rhyolite and brown chert chipped stone, plain and decorated ceramics, and worked shell from the Gulf of California. The area also contains the remnants of the Mission Santa Ana, the last mission constructed in Pimeria Alta.

Section 2 of the Act of June 8, 1906 (34 Stat. 225, 16 U.S.C. 431), authorizes the President, in his discretion, to declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States to be national monuments, and to reserve as a part thereof parcels of land, the limits of which in all cases shall be confined to the smallest area compatible with the proper care and management of the objects to be protected. Whereas it appears that it would be in the public interest to reserve such lands as a national monument to be known as the Ironwood Forest National Monument:

Now, Therefore, I, William J. Clinton, President of the United States of America, by the authority vested in me by section 2 of the Act of June 8, 1906 (34 Stat. 225, 16 U.S.C. 431), do proclaim that there are hereby set apart and reserved as the Ironwood Forest National Monument, for the purpose of protecting the objects identified above, all lands and interests in lands owned or controlled by the United States within the boundaries of the area described on the map entitled "Ironwood Forest National Monument" attached to and forming a part of this proclamation. The Federal land and interests in land reserved consist of approximately 128,917 acres, which is the smallest area compatible with the proper care and management of the objects to be protected.

All Federal lands and interests in lands within the boundaries of this monument are hereby appropriated and withdrawn from all forms of entry, location, selection, sale, or leasing or other disposition under the public land laws, including but not limited to withdrawal from location, entry, and patent under the mining laws, and from disposition under all laws relating to mineral and geothermal leasing, other than by exchange that furthers the protective purposes of the monument.

For the purpose of protecting the objects identified above, the Secretary of the Interior shall prohibit all motorized and mechanized vehicle use off road, except for emergency or authorized administrative purposes.

Lands and interests in lands within the proposed monument not owned by the United States shall be reserved as a part of the monument upon acquisition of title thereto by the United States. The Secretary of the Interior shall manage the monument through the Bureau of Land Management, pursuant to applicable legal authorities, to implement the purposes of this proclamation. The Secretary of the Interior shall prepare a transportation plan that addresses the actions including road closures or travel restrictions, necessary to protect the objects identified in this proclamation.

The establishment of this monument is subject to valid existing rights. Nothing in this proclamation shall be deemed to enlarge or diminish the jurisdiction of the State of Arizona with respect to fish and wildlife management.

This proclamation does not reserve water as a matter of Federal law. Nothing in this reservation shall be construed as a relinquishment or reduction of any water use or rights reserved or appropriated by the United States on or before the date of this proclamation. The Bureau of Land Management shall work with appropriate State authorities to ensure that any water resources needed for monument purposes are available. Nothing in this proclamation shall be deemed to enlarge or diminish the rights of any Indian tribe.

Laws, regulations, and policies followed by the Bureau of Land Management in issuing and administering grazing permits or leases on all lands under its jurisdiction shall continue to apply with regard to the lands in the monument.

Nothing in this proclamation shall be deemed to revoke any existing withdrawal, reservation, or appropriation; however, the national monument shall be the dominant reservation.

Warning is hereby given to all unauthorized persons not to appropriate, injure, destroy, or remove any feature of this monument and not to locate or settle upon any of the lands thereof.

In Witness Whereof, I have hereunto set my hand this ninth day of June, in the year of our Lord two thousand, and of the Independence of the United States of America the two hundred and twenty-fourth.

William J. Clinton

[Filed with the Office of the Federal Register, 10:47 a.m., June 12, 2000]

NOTE: This proclamation will be published in the Federal Register on June 13.

# APPENDIX B

# PLANNING CRITERIA

Bureau of Land Management (BLM) planning regulations (Title 43, Code of Federal Regulations, Section 1610 [43 CFR 1610]) require preparation of planning criteria to guide development of all plans. Planning criteria ensure that plans are tailored to the identified issues and ensure that unnecessary data collection and analysis are avoided. Planning criteria are based on applicable law, agency guidance, public comment, and coordination with other Federal, State, and local governments, and Native American Indian tribes. Specific laws and regulations related to development of the Ironwood Forest National Monument (IFNM) Resource Management Plan (RMP) are listed in the table below.

| Law/Regulation | Applies to: |
|---|---|
| **LAWS** | |
| Act of March 3, 1909, as amended and Act of May 11, 1938 | Minerals on Indian lands |
| Administrative Procedures Act of 1946, Title 5, United States Code, Section 551 (5 U.S.C. 551 et seq.) | Procedures |
| American Indian Religious Freedom Act of 1978, 42 U.S.C. 1996 | Native American religious places and access |
| Antiquities Act of 1906 | Cultural resources, national monuments, special areas |
| Archeological Resources Protection Act, 16 U.S.C. 470 | Archaeological resources |
| Arizona Desert Wilderness Act of 1990 | Established 39 wilderness areas on BLM land in Arizona |
| Clean Air Act of 1970, as amended 1990, 42 U.S.C. 7401 et seq. | Air quality |
| Clean Water Act of 1987, as amended, 33 U.S.C 1251 et seq. | Surface water quality |
| Comprehensive Environmental Response, Compensation, and Liability Act of 1980 as amended by the Superfund Amendments and Reauthorization Act of 1986 | Hazardous sites |
| Electronic Freedom of Information Act of 1996, Public Law (PL) 104-231 | Information available in electronic format |
| Endangered Species Act of 1973, as amended, 16 U.S.C, 1531 et seq. | Threatened and endangered species |
| Energy Policy Act of 1992, 42 U.S.C. 13201 | Energy |
| Federal Advisory Committee Act of 1972 | Public meetings, committees, information |
| Federal Cave Resource Protection Act of 1988 | Caves |
| Federal Land Exchange Facilitation Act of 1988, 43 U.S.C. 1716, 1740 | Federal land exchanges |
| Federal Land Policy and Management Act of 1976, 43 U.S.C. 1701 | Federal lands, special management areas, planning |
| Federal Noxious Weed Act of 1974, as amended | Noxious weeds |
| Federal Onshore Oil and Gas Leasing Reform Act of 1987 | Oil and gas |
| Federal Pollution Control Act, as amended 1972 | Watersheds |
| Freedom of Information Act of 1966 and Electronic Freedom of Information Act, as amended 1996, 5 U.S.C. 552 | Public access to information |
| Government Performance Results Act of 1993 | Strategic goals, program efficiencies |

| Law/Regulation | Applies to: |
|---|---|
| Historic Sites Act of 1935 | Historic sites |
| Information Technology Management Reform Act of 1996 | Use of information technology |
| Land and Water Conservation Fund Act of 1965 | Outdoor recreation |
| Materials Act of 1947, as amended | Mineral materials |
| Migratory Bird Conservation Act of 1929, as amended | Migratory birds |
| Migratory Bird Treaty Act of 1918, as amended | Migratory birds |
| Mineral Leasing Act of 1920, as amended, and Mineral Leasing Act for Acquired Lands of 1947 | Leaseable minerals |
| Mining and Minerals Policy Act of 1970 | Mining |
| Mining in the Parks Act of 1912 | Mining |
| Mining Law of 1872, as amended | Mining claims |
| National American Graves Protection and Repatriation Act of 1990 | Native American human remains, cultural objects, and sacred objects |
| National Environmental Policy Act of 1969 (NEPA), as amended, 42 U.S.C. 4321 et seq. | Federal undertakings |
| National Historic Preservation Act of 1966 | Archaeological and historic properties |
| National Management Strategy for Motorized Off-Highway Vehicle Use on Public Lands | Vehicle travel |
| National Mountain Bicycling Strategic Action Plan | Recreation |
| National Materials and Minerals Policy Research Development Act of 1980 | Mineral resources |
| National Park Service Organic Act of 1916, National Parks and Recreation Act of 1978, National Historic Trails, National Trails System Act of 1968, as amended | National trails |
| Public Rangelands Improvements Act of 1978 | Rangeland and wildlife management |
| Privacy Act of 1974, 5 U.S.C. 552a | Privacy of information |
| Recreation and Public Purposes (R&PP) Act of 1926, as amended and R&PP Amendment Act of 1988 | Land disposal for public purposes |
| Reorganization Plan No. 3 of 1946 | Establishes the BLM |
| Resource Conservation and Recovery Act of 1986, as amended | Hazardous or solid waste |
| Sikes Act of 1974, 16 U.S.C. 1170 | Fish and wildlife management |
| Soil Conservation and Domestic Allotment Act of 1935 | Watersheds |
| Soil and Water Resources Conservation Act of 1977 | Conservation, protection, and enhancement of soil, water, and related resources |
| Taylor Grazing Act of 1934 | Livestock grazing |
| Treasury and General Government Appropriations Act of 2001 (PL 106-554; HR 5658) Sec. 515 | Information Quality Act for quality, objectivity, utility, and integrity of information |
| Timber on the Public Lands, 16 U.S.C. 594 | Protection of timber |
| Water Quality Act of 1987 | Riparian areas, wetlands |
| Watershed Protection and Flood Control Act of 1954 | Watersheds |
| Wild and Scenic Rivers Act of 1968,16 U.S.C. 1271 et seq. | Wild and scenic rivers |
| Wild Free Roaming Horse and Burro Act of 1971, as amended 1978 | Wild horse and burro |
| Wilderness Act of 1964 | Wilderness |
| **ORDERS & MEMORANDA** | |
| Secretary of the Interior Order 3175 (2 DM 512) | Indian trust assets |

| Law/Regulation | Applies to: |
|---|---|
| Executive Order 11514 | Protection and enhancement of environmental quality |
| Executive Order 11593 | Preservation of the cultural environment |
| Executive Orders 11644 and 11989 | Off-road vehicles |
| Executive Order 11988 | Floodplain management |
| Executive Order 11990 | Wetlands, riparian zones |
| Executive Order 12088 | Pollution control |
| Executive Order 12898 | Environmental justice |
| Executive Order 12906 | Data standards |
| Executive Order 12962 | Recreational fishing |
| Executive Order 13007 | Indian sacred sites |
| Executive Order 13112 | Invasive species |
| Executive Order 13175 | Tribal consultation and coordination |
| Executive Order 13186 | Migratory birds |
| Executive Order 13212 | Energy policy |
| Executive Order 13287 | Preserve America |
| Presidential Proclamation 7320 of June 9, 2000 | Established Ironwood Forest National Monument |
| Council on Environmental Quality (CEQ) memo on Cooperating Agency Status, January 30, 2002 | Cooperating agency status for federal agencies |
| CEQ memo on identifying non-Federal cooperating agencies, September 25, 2000; CEQ memo on designating non-Federal cooperating agencies, July 28, 2999 | Cooperating agency status for non-Federal agencies |
| CEQ memo on environmental justice, December 10, 1999 | Environmental justice |
| CEQ memo regarding pollution prevention, January 12, 1993 | Pollution prevention and NEPA |
| CEQ memo on scoping, April 30, 1981 | Scoping |
| CEQ memo on agricultural lands, August 11, 1980, and analysis of impacts related to agricultural lands, August 11, 1980 | Agricultural lands and NEPA |
| CEQ memo on wild and scenic rivers and national historic trails, August 2, 1979, and consultation to mitigate effects on rivers, August 10, 1980 | Wild and scenic rivers and national historic trails |
| CEQ memo on implementing CEQ NEPA regulations, January 19, 1979 | NEPA |
| CEQ guidance on NEPA regulations, 1983 | NEPA |
| CEQ guidance on Section 404(r) of Clean Water Act involving dredging and fill, January 17, 1980 | Clean Water Act |
| CEQ 40 most asked questions for NEPA, March 23, 1981 | NEPA |
| CEQ explanation on implementing Executive Order 11988 and Executive Order 11990, March 21, 1978 | Floodplain management and wetlands |
| CEQ environmental review related to Section 1424(e) of the Safe Drinking Water Act of 1974 | Water |

In addition to the planning criteria provided by the above laws and regulations, the Tucson Field Office established the following planning criteria specific to the IFNM RMP:

- The IFNM RMP will establish the guidance upon which the BLM will manage the IFNM, and will supersede all other BLM RMPs for the lands covered by the IFNM RMP.

- The RMP will be completed in compliance with Federal Land Policy and Management Act of 1976, Endangered Species Act, NEPA, and all other relevant Federal law and Executive orders (including wilderness legislation) and management policies of the BLM. The RMP also will meet the requirements of the Presidential proclamation to protect the objects of biological, archaeological, historical, and geological value within the IFNM.

- Where planning decisions have previously been made that still apply, they will be reevaluated to determine if they are compatible with the Presidential proclamation, and then those decisions will be carried forward into the RMP. They also will use information developed and management alternatives proposed in previous studies of the planning area.

- The planning team will work collaboratively with the State of Arizona; Pinal and Pima Counties; tribal governments; municipal governments; other Federal agencies; the Resource Advisory Council; and all other interested groups, agencies, and individuals. Decisions in the RMP will strive to be compatible with existing plans and policies of adjacent Federal, State, local, and tribal agencies, consistent with Federal law and regulations.

- American Indian tribal consultations will be conducted in accordance with policy, and tribal concerns will be given due consideration. The planning process will include the consideration of any impacts on Indian trust assets.

- Consultation with the U.S. Fish and Wildlife Service (USFWS) will take place throughout the planning process in accordance with the National Memorandum of Agreement to identify conservation actions and measures for inclusion in the plan.

- Coordination with the Arizona State Historic Preservation Office will be conducted throughout the planning process.

- The RMP will recognize the State of Arizona's authority to manage wildlife and regulate hunting and fishing activities within the planning area.

- The RMP will establish whether visitor facilities will be located within the monument, while recognizing the desire to maintain the existing natural and cultural landscapes.

- The RMP will set forth a framework for managing recreational and commercial activities in order to maintain existing natural landscapes and provide for the enjoyment and safety of the visiting public.

- The lifestyles of area residents, including activities of grazing, hunting, and back country motorized use and recreation, will be considered in the RMP.

- Any lands or interests located within the IFNM boundary, which are acquired by BLM, will be managed consistently with the RMP, subject to any constraints associated with the acquisition.

- The RMP will address transportation and access for all public lands. Within the IFNM, motorized and mechanized routes will be designated.

- The RMP will recognize all existing rights.

- Federal Geographic Data Committee standards and other applicable BLM standards will be followed.

# APPENDIX C

# ARIZONA GUIDELINES FOR GRAZING ADMINISTRATION

The Arizona Guidelines for Grazing Administration are a series of management practices used to ensure that grazing activities meet the Land Health Standards. These guidelines apply to management of all public lands, and are therefore common to all alternatives presented in this document.

1-1. Management activities will maintain or promote ground cover that will provide for infiltration, permeability, soil moisture storage, and soil stability appropriate for the ecological sites within management units. The ground cover should maintain soil organisms and plants and animals to support the hydrologic and nutrient cycles, and energy flow. Ground cover and signs of erosion are surrogate measures for hydrologic and nutrient cycles and energy flow.

1-2. When grazing practices alone are not likely to restore areas of low infiltration or permeability, land management treatments may be designed and implemented to attain improvement.

2-1. Management practices maintain or promote sufficient vegetation to maintain, improve or restore riparian-wetland functions of energy dissipation, sediment capture, groundwater recharge and stream bank stability, thus promoting stream channel morphology (e.g., gradient, width/depth ratio, channel roughness and sinuosity) and functions appropriate to climate and landform.

2-2. New facilities are located away from riparian-wetland areas if they conflict with achieving or maintaining riparian-wetland function. Existing facilities are used in a way that does not conflict with riparian-wetland functions or are relocated or modified when incompatible with riparian-wetland functions.

2-3. The development of springs and seeps or other projects affecting water and associated resources shall be designed to protect ecological functions and processes.

3-1. The use and perpetuation of native species will be emphasized. However, when restoring or rehabilitating disturbed or degraded rangelands, non-intrusive, nonnative plant species are appropriate for use where native species (a) are not available, (b) are not economically feasible, (c) cannot achieve ecological objectives as well as nonnative species, and/or (d) cannot compete with already established nonnative species.

3-2. Conservation of Federal threatened or endangered, proposed, candidate, and other special status species is promoted by the maintenance or restoration of their habitats.

3-3. Management practices maintain, restore, or enhance water quality in conformance with State or Federal standards.

3-4. Intensity, season and frequency of use, and distribution of grazing use should provide for growth and reproduction of those plant species needed to reach desired plant community objectives.

3-5. Grazing on designated ephemeral (annual and perennial) rangeland may be authorized if the following conditions are met:

- ephemeral vegetation is present in draws, washes, and under shrubs and has grown to
- useable levels at the time grazing begins;

- sufficient surface and subsurface soil moisture exists for continued plant growth;
- serviceable waters are capable of providing for proper grazing distribution;
- sufficient annual vegetation will remain on site to satisfy other resource concerns, (i.e.,
- watershed, wildlife, wild horses and burros); and
- monitoring is conducted during grazing to determine if objectives are being met.

3-6. Management practices will target those populations of noxious weeds which can be controlled or eliminated by approved methods.

3-7. Management practices to achieve desired plant communities will consider protection and conservation of known cultural resources, including historical sites, and prehistoric sites and plants of significance to Native American peoples.

# APPENDIX D
# ADMINISTRATIVE ACTIONS BY RESOURCE

## AIR QUALITY

Regardless of the alternative selected, the Bureau of Land Management (BLM) may conduct the following administrative actions for air quality management:

- Work with local businesses that have non-major permits within 6 miles (10 kilometers) of the Ironwood Forest National Monument (IFNM) to establish an understanding of the potential impacts their operations may have on the monument.
- Attend work group meetings pertaining to new or revised regulations that will impact the IFNM, with fugitive-dust regulations being a priority, and provide comments as necessary and appropriate.
- Establish interpretive displays in recreationally used portions of the monument with themes based on the importance of improving or maintaining the existing visibility and air quality conditions in the monument.
- Promote the study of air quality conditions at the monument, including the effects of ozone, acid deposition, and other related pollutants on plants and the supporting ecosystems, with academic institutions and other interested parties.
- Enlist volunteers and partners to assist with environmental education and public awareness campaigns related to air quality.
- Work with permitting authorities to ensure that the IFNM is treated as a pseudo "affected state" for the purposes of major-source air quality permitting for facilities within 100 kilometers of the IFNM. This would allow BLM to review applications for major source permits, in conjunction with the permitting agency, to determine the potential air quality impacts a proposed major source could have on the IFNM.
- Work with permitting authorities to ensure BLM has an opportunity to review non-major-source permits within 6 miles (10 kilometers) of the IFNM to determine their effects on air quality and monument resources.
- Work with Federal, State, and local agencies to install air quality and/or meteorological monitors in the IFNM. Recommended air quality monitors include those that measure visibility, particulate matter, ozone, and acid deposition. Use the data collected to identify air quality trends that could impact the IFNM.
- Keep informed of the compliance status of minor and major sources near the IFNM, and inform the applicable permitting agency of potential violations if necessary.
- Coordinate with adjoining land managers and county or municipal authorities for specific measures to mitigate air quality effects on the IFNM (e.g., controlling fugitive-dust emissions from unpaved roads, construction sites, or other activities within the vicinity of the IFNM).
- Include stipulations for controlling dust in right-of-way grants.

## GEOLOGY AND CAVE RESOURCES

Regardless of the alternative selected, BLM may conduct the following administrative actions related to geologic resources, including caves:

- Interpret unique geologic features for their scientific and educational value and for protection of those features.
- Establish liaison with local and regional scientific and academic communities to promote opportunities to study the unique geologic features found in the monument.
- Provide administrative and logistical support for detailed scientific studies of unique geologic features in the monument.
- Identify and inventory unique geologic features, assess potential impact from human visits, and evaluate impact from uses of other resources.
- Conduct field surveys for cave locations on IFNM lands prior to any ground-disturbing activities, and to develop an inventory of cave locations within the monument.
- Conduct surveys where, based on geology, caves may occur. If a cave is located, evaluate the discovery for cultural, scientific, biological, geological, hydrological, educational, and recreational values and management related to primary cave values.
- Establish a database for the inventory of caves on the monument, including information to assess the quality of the caves. This may include locations that should remain confidential (adequate protection must be developed for these data entries) until a time, as determined by the BLM Director, from advisement of resource staff that the cave has been evaluated and methods of protection from human entry established, if suitable.
- Establish memorandums of understanding (MOUs) for cooperative agreements with appropriate scientific organizations, caving groups, and other Federal and State agencies to allow for discovery and inventory of cave locations, and assessment of cave condition.
- Establish criteria to assess the quality of the cave, including cultural, geological, biological, hydrological, educational, and recreational values.

**SOIL AND WATER RESOURCES**

Regardless of the alternative selected, BLM may conduct the following administrative actions:

- Work with appropriate State authorities to ensure that any water resources needed for monument purposes are available.
- Address erosion, and consider soil types and measurable factors that compare conditions to Rangeland Health Standards when making land management decisions.
- Use best management practices (BMPs) for road maintenance and other allowed and authorized surface disturbances to limit soil loss and erosion.
- Determine the current existence, location, and condition of desert pavement and biological soil crusts.
- Identify and evaluate sensitive areas that may require special management to prevent soil loss, soil destruction, and excessive erosion.
- Work with the U.S. Geological Survey (USGS) and Arizona Department of Environmental Quality (ADEQ) to identify the groundwater and surface water quality parameters most likely to be impacted by the current and forecast public land uses in the monument.
- Identify locations where groundwater and surface water can be sampled for analysis under the ADEQ ambient monitoring program.

- Develop an MOU, or an amendment of the existing State non-point-source monitoring program MOU, to support ADEQ monitoring of groundwater and surface water at selected locations in the monument.
- Identify locations within the monument where groundwater levels can be monitored. Begin to develop cooperative agreements with the USGS to compare and analyze groundwater data on the public land.
- Develop a water quantity database to assess the current and forecast water needs of the monument and to evaluate impairments to public land water resources from other water users.
- Identify, quantify, and secure legal entitlement for existing and future water sources on public lands within the monument by acquiring surface water rights/well permits, when possible, to ensure water availability to meet the purposes of the monument.
- Ensure that land management practices and policies protect the water supply by exercising existing land management authorities under the National Environmental Policy Act (NEPA) to protect and maintain all available water and natural flows in the monument.
- Determine BLM interests and needs for a surface and groundwater protection agreement with the State of Arizona.
- Begin a dialog with appropriate State of Arizona policy, legal, and water resources staff on the development of a cooperative agreement on the protection of water resources within the monument. Conclude this process with a formal agreement between the State and BLM that supports the objectives and preserves the resources listed in the IFNM enabling proclamation.
- Develop, with range conservation staff, a data collection protocol for specific watershed metrics that can be routinely collected during watershed health assessments.
- Develop and maintain an electronic database of watershed health metrics that is useful for rapidly identifying trends and prescribing management corrections when problems are apparent.
- Increase public awareness and appreciation of water resources and healthy watersheds through interpretive displays as part of the public outreach program and visitor facilities planning for the monument.
- Work with ADEQ to apply the non-point-source pollution MOU within the guidance for public land health (both grazed and ungrazed). Use this cooperative approach to evaluate water quality impacts to impaired waters of the United States (303d List) and pollutant load reductions to any future listed streams. Use rangeland health BMPs, as suggested in the Arizona Standards and Guidelines and any new land health guidance developed by BLM.
- Track data from the existing state water quality database that could indicate impairment to resources of the planning area.
- Review regional water level data on an annual basis to determine if a monitoring program is needed.
- Review Pima County Flood Control District surface-water monitoring stations and suggest a new site close to the planning area.
- Develop a historical database of water quality data from the planning area and adjacent regions.
- Develop a database from watershed assessments information. Maintain with data as problems are addressed.

- Work with existing research programs to identify and map desert pavement and biological soil crusts, and develop a conservation strategy for these areas.
- Develop and require implementation of BMPs for road maintenance and other allowed and/or authorized surface disturbances to limit soil loss from erosion and minimize impacts on natural water flow patterns.

**VEGETATION**

Regardless of the alternative selected, BLM may conduct the following administrative actions related to vegetation:

- Monitor the Ragged Top vegetation assemblage and Nichol Turk's head cactus population within the IFNM.
- Monitor vegetation and progress toward achieving desired outcomes with an emphasis on invasive species and noxious weed treatment areas and reclaimed and restored areas.
- Identify and monitor areas of invasion by nonnative, invasive species and noxious weeds.
- Support and/or implement public education programs addressing management of invasive species and noxious weeds by developing a volunteer or docent program to control these species and interpret related issues to visitors, providing literature on nonnative, invasive species and noxious weed issues to visitors, and constructing permanent graphics at selected points along the roadways of the monument.
- Monitor the effects of fire suppression activities on the spread of nonnative species.
- Develop monitoring plans for establishing sample plots within each of the unique or important vegetation associations. The monitoring plan will identify key areas within each community where monitoring would be conducted. Permanent photo points will be established for long-term monitoring.
- Collect monitoring information on one-half of the sample plots within vegetation associations or key areas every year, ensuring that all vegetation associations or key areas are monitored every 2 years.
- Implement a long-term monitoring program that includes rainfall and temperature gauges, permanent photo points, plant plots, mammal trapping transects, bird call points, and wildlife/plant community surveys (emphasis on herpetofauna).
- Give priority treatment to priority species and habitats when potentially incompatible uses or actions are entertained; aim at totally offsetting or avoiding impacts to the priority species or habitats.

**WILDLIFE AND WILDLIFE HABITAT**

Regardless of the alternative selected, BLM may conduct the following administrative actions related to wildlife and wildlife habitat:

- Develop, implement, and update wildlife habitat management through the use of wildlife habitat management plans, developed in cooperation with Arizona Game and Fish Department (AGFD).
- Coordinate with AGFD for species-specific management to achieve desired outcomes (e.g., coordinate during development of any habitat management plans).

- Coordinate with AGFD to conduct population monitoring and movement studies on bighorn sheep, javelina, and mule deer.
- Identify and describe disturbed and degraded areas throughout the monument, and describe their potential for restoration.
- Support research by qualified biologists from other agencies, and academic and private groups.
- Coordinate with outside entities to identify and protect wildlife corridors that extend beyond the boundaries of the monument.
- Compile observation data on roadkills from monument employees, visitors, residents, and other volunteers.
- Support and/or implement public education program(s) addressing management of wildlife and wildlife habitat.
- Develop and implement a cooperative program with agency, academic, and private groups to assist with research and monitoring of wildlife habitats.
- Conduct extensive literature review of past and present studies (wildlife movements), and compile in a summary format, updating, as appropriate.
- Conduct movement studies on bighorn sheep, javelina, and mule deer in cooperation and coordination with AGFD.
- Give priority treatment to priority species and habitats when potentially incompatible uses or actions are entertained; aim at totally offsetting or avoiding impacts to the priority species or habitats.
- Mitigate for wildlife habitat degradation, loss, and fragmentation if and when such effects are unavoidable.

**SPECIAL STATUS SPECIES**

Regardless of the alternative selected, BLM may conduct the following administrative actions related to special status species:

- For the Nichol Turk's head cactus, coordinate with U.S. Fish and Wildlife Service (USFWS) and the State of Arizona to enforce existing regulations under the Endangered Species Act (ESA), Convention on International Trade in Endangered Species of Wild Fauna and Flora, Lacey Act, and Arizona Native Plant Law.
- Continue to actively participate in regional planning efforts, such as Pima County's Sonoran Desert Conservation Plan and the Town of Marana's Habitat Conservation Plan, and other conservation efforts.
- Monitor the effectiveness of conservation measures associated with issuance of BLM authorizations, including rights-of-way, easements, and special use permits.
- Actively participate in the recovery of, and any revision of the recovery plan for, listed plant species on BLM lands.
- Monitor the effects of fire suppression activities on all populations of listed plants.
- Fund, aid, or establish research or study projects regarding fire ecology and conservation listed plant species on BLM lands.
- Educate employees and public users about listed plant species.

- Support and/or implement public education programs addressing management of special status species by developing a volunteer or docent program to interpret information on such species to visitors, providing literature on special status species issues to visitors, and constructing permanent graphics at selected points along the roadways of the monument.
- Support research by qualified biologists from other agencies, universities, or private organizations.
- Develop increased awareness of tortoises on the public lands.
- Develop and maintain effective coordination and cooperation with outside agencies and BLM constituents concerning tortoise population and habitat management.
- Provide training by BLM and cooperators on data gathering according to protocols and methods.
- Refine data on distribution and densities of Nichol Turk's head cactus in or near the habitat management plan area.
- Continue to assist USFWS and other organizations to gather biological data and meet objectives and goals of species recovery plans.
- Monitor populations of Nichol Turk's head cactus occurring on BLM land for at least 10 years.
- Develop a resource monitoring and evaluation plan for special status species to evaluate population stability and habitat condition in habitat area-wide annually using field surveys and site inspection of habitat.
- Implement a monitoring program for federally listed species, Arizona Wildlife of Special Concern, and BLM Sensitive Species.
- Continue support of conservation efforts (including monitoring) of species occurring within the monument and designated by other agencies (Pima County, Arizona Department of Agriculture) as rare, sensitive, protected, vulnerable, or other special status, and consider each for addition to the BLM Sensitive Species list.
- Evaluate species for addition to BLM Sensitive Species list every fourth year beginning in the fourth year after the completion of the baseline inventory.

**FIRE ECOLOGY AND MANAGEMENT**

Regardless of the alternative selected, BLM may conduct the following administrative action related to fire management:

- Undertake education, enforcement, and administrative fire prevention mitigation measures.

**CULTURAL RESOURCES**

Regardless of the alternative selected, BLM may conduct the following administrative actions related to cultural resources:

- Continue to participate in Arizona Archaeology Awareness Month events and other educational outreach, to highlight the values of cultural resources and the need to protect these resources.
- Promote use of volunteers to enhance cultural resource values, including site documentation, research, protection, and educational projects.
- Promote and increase patrol and monitoring of sites by site stewards, BLM staff, cooperating organizations, and agencies, to the extent possible and practicable.

- Plan and conduct future inventories, focusing efforts in areas important for understanding the cultural history of the monument or where significant resources could be degraded by uses of the monument or erosion.
- Provide pamphlets and brochures containing information about sites allocated to public use.
- Consider management practices to achieve desired plant communities protection and conservation of known cultural resources, including historical sites, and prehistoric sites and plants of significance to Native American peoples.
- Coordinate with tribal groups and other interested groups to inventory any traditional cultural resources.
- Continue the program of monitoring archaeological and historical sites, and implement adaptive management responses to identified threats, including but not limited to, signing, fencing, trash removal, road closures, erosion control measures, backfilling, stabilization, restrictions on other land uses, and law enforcement if warranted.
- Provide educational and interpretive opportunities to enhance public understanding and appreciation of the cultures that created the archaeological and historical resources within the monument (discretionary). Topics could include (1) prehistoric adaptations to the Sonoran Desert, (2) Tohono O'odham interactions with past, present, and future landscapes, and (3) historic mining and ranching.
- Provide opportunities for the public to actively participate in volunteer programs that protect, preserve, conserve, and interpret cultural resources on the monument.
- Promote public interpretation of selected cultural resources (those allocated to public use) in partnership with other organizations pursuing heritage tourism.
- Promote cultural resource research through partnerships and cooperative programs.
- Develop cultural resource project plans for special status resources. These could include (1) portions of Los Robles Archaeological District within IFNM, (2) Cocoraque Butte Archaeological District, and (3) Santa Ana de Cuiquiburitac Mission Site (discretionary).
- Coordinate with the agencies, tribes, and private landowners that manage cultural resources on adjacent lands.
- Manage access and transportation to support cultural resource management goals, objectives, and activities to protect resources.
- Identify and evaluate opportunities to acquire non-Federal lands with significant cultural resources in the planning area. Potential acquisitions could include lands within the Los Robles Archaeological District (discretionary).
- Complete Class II (sample) and Class III (intensive) field inventories to identify cultural resources and evaluate the condition of sites, in accordance with the National Historic Preservation Act. Priorities for inventory will be determined based on resource use and protection priority areas and sites.
- Develop a monitoring scheme to evaluate the condition of cultural resources. Where adverse effects are occurring, implement protection measures to stop, limit, or repair damage to sites.

## PALEONTOLOGICAL RESOURCES

Regardless of the alternative selected, BLM may conduct the following administrative actions related to paleontological resources:

- Establish Memoranda of Understanding for Cooperative Agreements with a museum(s), university(ies), or other appropriate scientific organizations to allow for evaluation, collection, mitigation, curation, and protection of paleontological resources discovered on the monument and surrounding BLM lands.
- Evaluate paleontological resources, as they are discovered, considering their scientific, educational and recreational values. Adjust the appropriate paleontological sensitivity class and determine appropriate management and monitoring.
- Develop, maintain, and/or contribute information to a database for known and discovered paleontological sites within the monument and BLM administered lands.

## SCENIC AND VISUAL RESOURCES

Regardless of the alternative selected, BLM may conduct the following administrative actions related to scenic and visual resources:

- Coordinate with adjacent jurisdictions and planning authorities to manage visual resources consistently on lands adjacent to the monument lands.
- Conduct visual resource contrast ratings in accordance with Bureau VRM Handbook H-8321 for all projects. Require measures to mitigate visual impact exceeding VRM Class tolerances.

## ENERGY AND MINERAL RESOURCES

Regardless of the alternative selected, BLM may conduct the following administrative actions related to energy and mineral resources:

- Consider use of mineral materials from existing mineral sites and other identified areas on BLM lands for administrative purposes only, and for use only within the monument, provided the use would be consistent with plan objectives and protection of monument objects.

## LIVESTOCK GRAZING

Regardless of the alternative selected, BLM may conduct the following administrative actions related to livestock grazing:

- Remedy non-compliance with Standards and/or allotment plans in accordance with existing policy.
- Enforce against trespass grazing.
- Inventory and monitoring data will be collected on a regular basis as needed to determine achievement of Land Health Standards, or progress toward achieving standards.
- Include information on the role of ranching in interpretive materials generated for the monument.
- Evaluate existing exclosures, and as needed, establish new livestock/wildlife and livestock-only exclosures in each vegetation association in each allotment found within the Monument.
- Integrate into existing educational materials information explaining cultural, economic, and ecological role and impacts of ranching and proper grazing management.

- Form a team of land and resource management agencies, and BLM staff to develop a monitoring plan based on best available methodologies.
- Coordinate with AGFD, USFWS, SHPO, and others to remove range improvements if they are not necessary for management or conservation of other resources (e.g., cultural and wildlife resources, recreation, etc.). If removed, the owner shall be compensated at fair market value. Land Health Assessments, evaluations and re-evaluations will be tied to lease renewal schedules.
- Range improvement standards and design will meet specifications in BLM Manual 1740 or be designed to provide the maximum benefit and minimum adverse impact to wildlife and special status species.
- The extent, location and timing of range improvements will be based on allotment-specific management objectives adopted through the evaluation process, interdisciplinary development and analysis of proposed actions, and funding.
- BLM will consult with Arizona Game and Fish Department on the design and location of new fences.
- Existing fences that create wildlife movement problems would be modified.
- Stock pond sites would be selected based on available watershed and hydrologic information. All applicable state laws and regulations would be followed.
- Well sites would be selected based on geologic reports that predict the depth to reliable aquifers. All applicable state laws and regulations that apply to ground water would be observed.

**RECREATION**

Regardless of the alternative selected, BLM may conduct the following administrative actions related to recreation management:

- Manage for camping activities in accordance with the following regulations (1) prohibit camping within ¼ mile of wildlife waters as required by State law, (2) maintain the 14-day camping limit on dispersed camping within a 25-mile radius of one location on public lands, (3) allow camping on all lands open to public in accordance with standard operating procedures, (4) ensure compliance with 43 CFR §8360, Visitor Services, and §8365, Rules of Conduct for the protection of public lands and resources, and for the protection, comfort and well-being of the public in its use of recreation areas, sites and facilities on public lands, (5) ensure that recreation services, programs, and facilities are Americans with Disabilities Act compliant except where substantial harm to the cultural or natural features might occur or they might be compromised; compliance would alter the nature of the setting; or where compliance would not be feasible due to terrain or prevailing construction practices, and (6) close areas to camping per 43 CFR §8364.1.
- Manage for the use and discharge of firearms in accordance with applicable Arizona Game and Commission Rules 17-301, 309, 312, and 12-4-303 (relating to hunting), and in accordance with 43 CFR §8364.1 relating to order issuance for land closures to protect persons, property, public lands and resources.
- Visitor center establishment is in accordance with 43 CFR §8360, Visitor Services, and §8365, Rules of Conduct for the protection of public lands and resources, and for the protection, comfort and well-being of the public in its use of recreation areas, sites and facilities on public lands.

- Management of sight seeing, driving for pleasure, vehicle touring, and OHV recreation are in accordance with the existing route network and BLM's National Management Strategy for Motorized Off-Highway Vehicle Use on Public Lands.
- Manage non-motorized, mechanized recreational activities according to the BLM's National Mountain Biking Strategic Action Plan.
- Use limits of acceptable change monitoring and adaptive management methods to minimize potential impacts to sensitive natural and cultural resources.
- Develop a multi-faceted adaptive management process.
- Identify standards for achieving and maintaining the desired recreational resource settings, social settings, managerial conditions, accessibility, visitor services and facilities.
- Promote public safety by taking physical management actions where practicable and by providing the public with adequate information regarding potential risks.
- Manage special recreation use permits to accommodate a variety of recreation opportunities.
- Manage commercial/group vehicle touring opportunities in accordance with special recreation use permits (SRPs).
- Manage SRPs in accordance with 43 CFR §2930 Special Recreation Permits requirements for: (1) commercial, (2) competitive, (3) vending, (4) individual or group use in special areas, and (5) organized group activity and event use, and on a case-by-case basis, and to achieve recreation management objectives.
- Limit issuance of SRPs based on the potential for resource damage and conflicts with other uses.
- Provide maintenance and minimal improvement to prevent resource damage at large group campsites.
- Ensure recreation tours remain on existing routes that currently provide vehicle access into the transportation system.
- Coordinate with the BLM State Office for managing emerging recreation issues.
- Enlist volunteers to assist in monitoring, maintenance and education, thereby potentially lessening recreation use conflicts.

Under Alternatives B, C, or D, BLM may conduct the following administrative actions related to recreation:

- Provide minimal improvements and maintenance to accommodate allowable uses in accordance with RMZ objectives.
- Establish restrictions pursuant 43 CFR 8340 and 8366, as appropriate, to limit motorized vehicle use, non-motorized use, non-motorized mechanized use to designated routes, and limit recreation use to designated sites in accordance with RMZ objectives and prescriptions.
- Install regulatory, informational, identification, and interpretive signing as needed.
- Install visitor and traffic control devices.
- Provide regular or periodic visitor contact and law enforcement patrols, with frequency depending on RMZ and or time of year.
- Provide litter and trash clean up as needed.

- Coordinate recreation management with the ASLD and other adjacent land owners.
- Establish or develop partnerships or local volunteer resources to assist in implementing monitoring, maintenance and improvement projects to achieve recreation management objectives.

**TRAVEL MANAGEMENT**

Regardless of the alternative selected, BLM may conduct the following administrative actions related to travel management:

- Take corrective action to remedy significant safety hazards along the designated transportation system routes.
- Enlist volunteers and partners to assist in fieldwork and other stewardship functions, such as monitoring and maintaining routes.
- Maintain an ongoing monitoring system and database to track and measure motorized and non-motorized use and prescribe route maintenance.
- Provide signing, mapping, and travel information to visitors that reinforces protection of monument resources.
- Expand and pursue partnerships for sources of funding for travel and transportation management.
- Enforce route designation restrictions for all users, including permittees (e.g., hunters, wood gatherers, livestock operators) and authorize exceptions for motorized vehicle travel on a case-by-case basis.
- Allow AGFD the use of motorized and mechanized equipment off designated routes in suitable locations (as agreed to by AGFD and BLM) for such purposes including, but not limited to the following: law enforcement activities, wildlife water supplementation, collar retrieval, capture and release of wildlife, telemetry, surveys, habitat evaluation, and research activities.
- Establish supplementary rules pursuant to 43 CFR 8340 and 43 CFR 8365 as needed to implement OHV area and travel route designations.
- Motorized administrative use is permitted on non-motorized routes subject to physical condition of the route, and on a case-by-case basis.

# APPENDIX E

# CONSERVATION MEASURES FOR SPECIAL STATUS SPECIES

## Conservation measures from the Lesser Long-nosed Bat Recovery Plan

BLM will manage public land within the IFNM in accordance with the following conservation measures for the lesser long-nosed bat:

1. Continue protecting roost sites and evaluate the need for and implement protection for food plants.
2. Monitor all major roosts in Arizona, New Mexico, and Mexico once a year.
3. Continue surveying for additional roosts in the U.S. and Mexico
4. Develop and conduct a public education and information campaign in Arizona, New Mexico, and Mexico on the beneficial aspects of bats in general and the lesser long-nosed bat specifically.
5. Conduct critical research on population census techniques, physical requirements for roosts, foraging ranges of roosts, reproduction and mating systems and other life history and habitat questions.

## Conservation Measures from Desert Tortoise Habitat Management on the Public Lands: A Rangewide Plan

The following management objectives were developed to help BLM meet its overall goal for preserving and managing tortoises and their habitats.

Objective 1. Develop increased awareness of tortoise resources on the public land.

Objective 2. Complete and maintain on a continuing basis an inventory and monitoring program for tortoise populations and habitats to assist in making management decisions on the public lands.

Objective 3. Develop and maintain a monitoring program specifically for land—use activities that adversely affect tortoise habitats. This program will, be used in the analysis of and response to the cumulative impacts of land—use decisions on tortoise habitats.

Objective 4. Comply fully with the Endangered Species Act of 1973, as amended, as it relates to tortoise population and habitat management on the public lands.

Objective 5. Develop and maintain effective coordination and cooperation with outside agencies and Bureau constituents concerning tortoise population and habitat management.

Objective 6. Conduct research and studies sufficient to develop and document the knowledge and techniques needed to ensure the viability of tortoise populations and habitats in perpetuity.

Objective 7. Manage the public lands, on a continuing basis, to protect the scientific, ecological, and environmental quality of tortoise habitats consistent with the category goals and other objectives of the Rangewide Plan. This implies management for the existence of an adequate number of healthy and vigorous tortoise populations of sufficient size and resilience to withstand the most severe environmental impacts, and with appropriate sex and age ratios and recruitment rates to maintain viable populations in perpetuity.

Objective 8. When the need is identified through the BLM planning system, acquire and/or consolidate, under BLM administration, management units with high tortoise habitat values, and mitigate the effects of issuing rights—of—way across public lands.

Objective 9. Ensure that off-highway vehicle use in desert tortoise habitats is consistent with the category goals, objectives, and management actions of the Rangewide Plan.

Objective 10. Ensure that livestock use is consistent with the category goals, objectives, and management actions of the Rangewide Plan. This may include limiting, precluding, or deterring livestock use as documented in site-specific plans.

Objective 11. Provide for herd management for wild horses and burros which is consistent with the category goals, objectives, and management actions of the Rangewide Plan. This may include limiting or precluding wild horse and/or burro use, as appropriate.

Objective 12. Provide for management of wildlife other than desert tortoises on the public lands consistent with the category goals, objectives, and management actions of the Rangewide Plan.

Objective 13. Cooperate with state wildlife agencies and the Animal and Plant Health Inspection Service to effect appropriate types and levels of predator control, to meet the category goals, objectives, and management actions of the Rangewide Plan. This will be considered only where predation is interfering with maintaining viable tortoise populations.

Objective 14. Manage the BLM's energy and minerals program in a manner consistent with the category goals, objectives, and management actions of the Rangewide Plan.

**Conservation Measures from the Arizona Statewide Land Use Plan Amendment for Fire, Fuels, and Air Quality Management**

The following conservation measures for fire management activities are common to all alternatives and will be implemented for all authorized management activities. These conservation measures are intended to provide State-wide consistency in reducing or eliminating the effects of management actions on Federally endangered, threatened, proposed, and candidate species, as well as species included on the Wildlife Species of Concern in Arizona and BLM Arizona Sensitive Species lists.

**Wildland Fire Suppression**

The following conservation measures will be implemented during fire suppression operations unless firefighter or public safety, or the protection of property, improvements, or natural resources, render them infeasible during a particular operation. Each conservation measure has been given an alphanumerical designation for organizational purposes (*e.g.*, FS-1). Necessary modifications of the conservation measures or impacts to Federally protected species and habitat during fire suppression operations will be documented by the Resource Advisor, and coordinated with the USFWS.

- **FS-1** Protect known locations of habitat occupied by Federally listed species. Minimum Impact Suppression Tactics (M.I.S.T.) will be followed in all areas with known Federally protected species or habitat [*Interagency Standards for Fire and Aviation Operations 2003*, or updates].

- **FS-2** Resource Advisors will be designated to coordinate natural resource concerns, including Federally protected species. They will also serve as a field contact representative (FCR) responsible for coordination with the USFWS. Duties will include identifying protective measures endorsed by the Field Office Manager, and delivering these measures to the Incident Commander; surveying prospective campsites, aircraft landing and fueling sites; and performing other duties necessary to ensure adverse effects to Federally protected species and their habitats are minimized. On-the-ground monitors will be designated and used when fire suppression activities occur within identified occupied or suitable habitat for Federally protected species.

- **FS-3** All personnel on the fire (firefighters and support personnel) will be briefed and educated by Resource Advisors or designated supervisors about listed species and the importance of minimizing impacts to individuals and their habitats. All personnel will be informed of the conservation measures designed to minimize or eliminate take of the species present. This information is best identified in the incident objectives.

- **FS-4** Permanent road construction will not be permitted during fire suppression activities in habitat occupied by Federally protected species. Construction of temporary roads is approved only if necessary for safety or the protection of property or resources, including Federally protected species habitat. Temporary road construction should be coordinated with the USFWS, through the Resource Advisor.

- **FS-5** Crew camps, equipment staging areas, and aircraft landing and fueling areas should be located outside of listed species habitats, and preferably in locations that are disturbed. If camps must be located in listed species habitat, the Resource Advisor will be consulted to ensure habitat damage and other effects to listed species are minimized and documented. The Resource Advisor should also consider the potential for indirect effects to listed species or their habitat from the siting of camps and staging areas (*e.g.,* if an area is within the water flow pattern, there may be indirect effects to aquatic habitat or species located off-site).

**Species Specific Conservation Measures**

The following species-specific conservation measures will be applied during wildfire suppression to the extent possible, and will be required during fuels treatment activities. Necessary modifications of the conservation measures or impacts to Federally protected species and habitat during fire suppression operations will be documented by the Resource Advisor, and coordinated with the USFWS.

***Cactus ferruginous pygmy-owl***

- **FP-1** Treatment of riparian habitat, Sonoran desert/desertscrub, or mesquite-invaded grasslands under 4,000 feet in elevation that may support nesting cactus ferruginous pygmy owls will only occur during the non-nesting season of August 1 to January 31, unless pre-project surveys indicate the area does not support pygmy-owls or mitigation plans approved by the USFWS have alleviated negative consequences.

- **FP-2** Develop mitigation plans in coordination with the USFWS for fuels treatment projects (mechanical, chemical, or biological treatments) that may adversely affect cactus ferruginous pygmy-owls or their habitat. Mitigation plans will be approved by the USFWS.

- **FP-3 (Recommended)** To the extent possible, maintain habitat features necessary to support breeding populations of the pygmy-owl within their historic range and review ongoing fire management activities for effects on essential habitat features needed by cactus ferruginous pygmy-owls. Modify activities, where necessary, to sustain the overall suitability of the habitat for the owls. Priority will be given to activities in or near occupied or recently (w/in the last 10 years) occupied habitat.

***Flowering Plants***

The following conservation measures for known locations and unsurveyed habitat of all Federally protected plant species within the planning area will be implemented during fire suppression to the extent possible, and are mandatory for fuel treatment activities:

- **PL-1** Known locations and potential habitat for plant populations will be mapped to facilitate planning for vegetation treatments, and to ensure protection of these populations during fire suppression.

- **PL-2** BLM will coordinate with FWS to delineate buffer areas around plant populations prior to vegetation treatment activities. BLM will coordinate with USFWS during any emergency response to ensure protection of plant populations from fire and fire suppression activities.

- **PL-3** During fire suppression, in habitat occupied by federally protected plant species, no staging of equipment or personnel will be permitted within 100 meters of identified individuals or populations, nor will off-road vehicles be allowed within the 100- meter buffer area, unless necessary for firefighter or public safety or the protection of property, improvements, or other resources (see **FS-7**). One of the primary threats to many of these plant species is trampling/crushing from personnel and vehicles.

***Lesser long-nosed bat***

- **LB-1** Instruct all crew bosses (wildfire suppression and mechanical, chemical, biological treatments) in the identification of agave and columnar cacti and the importance of their protection.

- **LB-2** Prior to implementing any fuels treatment activities (mechanical, chemical, biological treatments), preproject surveys will be conducted for paniculate agaves and saguaros that may be directly affected by fuels management activities.

- **LB-3** Protect long-nosed bat forage plants -- saguaros and high concentrations of agaves – from wildfire and fire suppression activities, and from modification by fuels treatment activities (mechanical, chemical, biological treatments), to the greatest extent possible. Agave concentrations are contiguous stands or concentrations of more than 20 plants per acre. Avoid driving over plants, piling slash on top of plants, and burning on or near plants. Staging areas for fire crews or helicopters will be located in disturbed sites, if possible.

- **LB-4** No seeding/planting of nonnative plants will occur in any wildfire rehabilitation site or fuels treatment site with paniculate agaves or saguaros.

- **LB-5** A mitigation plan will be developed by the Bureau in coordination with the USFWS for fuels management projects (mechanical, chemical, biological treatments) within 0.5 mi of bat roosts or in areas that support paniculate agaves or saguaros. The mitigation plan will ensure that effects to bat roosts and forage plants are minimized and will include monitoring of effects to forage plants. The plan will be approved by the USFWS.

- **LB-6 (Recommended)** BLM personnel should examine concentrations of agaves (including shindagger (*A. schottii*) within each proposed fuels treatment area, and protect from treatments any significant concentrations of agaves that appear to be amidst fuel loads that could result in mortality greater than 20 percent (>50% for *A. schottii).* BLM personnel should use their best judgment, based on biological and fire expertise, to determine which significant agave stands are prone to mortality greater than 20 percent (>50% for *A. schottii*).

***Desert tortoise, Sonoran population***

Implement the conservation measures for desert tortoise, Mojave population (listed below), as appropriate, for fire suppression and fuels treatment activities (mechanical, chemical, biological treatments), excluding requirements for notification to USFWS.

**Conservation Measures for Desert tortoise, Mojave population**

- **DT-1** Take appropriate action to suppress all wildfires in desert tortoise habitat, based on preplanned analysis and consistent with land management objectives, including threats to life and property. Full suppression activities will be initiated within key desert tortoise habitat areas identified in site-specific Fire Management Plans.

- **DT-2** Suppress all wildfires in desert tortoise habitat with minimum surface disturbance, in accordance with the guidelines in Duck et al. (1995) and the 1995 programmatic biological opinion on fire suppression on the Arizona Strip (2-21-95-F-379).

- **DT-3** Pre-position suppression forces in critical areas during periods of high fire dangers.

- **DT-4** As soon as practical, all personnel involved in wildfire suppression (firefighters and support personnel) will be briefed and educated about desert tortoises and the importance of protecting habitat and minimizing take, particularly due to vehicle use. Fire crews will be briefed on the desert tortoise in accordance with Appendix II of Duck et al. (1995).

- **DT-5** If wildfire or suppression activities cannot avoid disturbing a tortoise, the Resource Advisor or monitor will relocate the tortoise, if safety permits. The tortoise will be moved into the closest suitable habitat within two miles of the collection site that will ensure the animal is reasonably safe from death, injury, or collection associated with the wildfire or suppression activities. The qualified biologist will be allowed some discretion to ensure that survival of each relocated tortoise is likely. If the extent or direction of movement of a fire makes sites within two miles of the collection site unsuitable or hazardous to the tortoise or biologists attempting to access the area, the tortoise may be held until a suitable site can be found or habitat is safe to access and not in immediate danger of burning. The Resource Advisor will contact the USFWS Arizona Ecological Services Field Office (AESFO) as soon as possible concerning disposition of any animals held for future release. Desert tortoises will not be placed on lands outside the administration of the Federal government without the written permission of the landowner. Handling procedures for tortoises, including temporary holding facilities and procedures, will adhere to protocols outlined in Desert Tortoise Council (1994).

- **DT-6** Upon locating a dead, injured, or sick desert tortoise, initial notification must be made to the appropriate USFWS Law Enforcement Office within three working days of its finding. Written notification must be made within five calendar days and include the date, time, and location of the animal, a photograph, and any other pertinent information. The notification will be sent to the Law Enforcement Office with a copy to the AESFO.

- **DT-7** Care must be taken in handling sick or injured animals to ensure effective treatment and care, and in handling dead specimens to preserve biological material in the best possible state. If possible, the remains of intact desert tortoises will be placed with educational or research institutions holding appropriate State and Federal permits. If such institutions are not available, the information noted above will be obtained and the carcass left in place. Arrangements regarding proper disposition of potential museum specimens will be made with the institution

prior to implementing the action. Injured animals should be transported to a qualified veterinarian by an authorized biologist. Should any treated desert tortoise survive, the USFWS should be contacted regarding final disposition of the animal.

- **DT-8** The Resource Advisor or monitor(s) will maintain a record of all desert tortoises encountered during fire suppression activities. This information will include for each desert tortoise: 1) locations and dates of observation; 2) general condition and health, including injuries and state of healing, and whether animals voided their bladders; 3) location moved from and to; and 4) diagnostic markings (i.e., identification numbers of marked lateral scutes). No notching of scutes or replacement of fluids with a syringe is authorized.

- **DT-9** Prior to moving a vehicle, personnel will inspect under the vehicle for tortoises. If a tortoise is found under the vehicle, the tortoise will be allowed to move away from the vehicle on its own accord, if possible. Otherwise an individual will move the tortoise to a safe locality in accordance with **FS-2** and **DT-5**.

- **DT-10** Off-road vehicle activity will be restricted to the minimum necessary to suppress wildfires. Vehicles will be parked as close to roads as possible, and vehicles will use wide spots in roads or disturbed areas to turn around. Whenever possible, a biologist or crewperson trained to recognize tortoises and their shelter sites will precede any vehicle traveling off-road to direct the driver around tortoises and tortoise burrows. Whenever possible, local fire-fighting units should provide direction and leadership during off-road travel because of their expertise and knowledge of area sensitivities.

- **DT-11** Fire-related vehicles will drive slow enough to ensure that tortoises on roads can be identified and avoided.

- **DT-12** Fire crews or rehabilitation crews will, to the extent possible, obliterate off-road vehicle tracks made during fire suppression in tortoise habitat, especially those of tracked vehicles, to reduce future use.

- **DT-13** To the maximum extent practical, campsites, aircraft landing/fueling sites, and equipment staging areas will be located outside of desert tortoise habitat or in previously disturbed areas. If such facilities are located in desert tortoise habitat, 100 percent of the site will be surveyed for desert tortoises by a qualified biologist approved by BLM, whenever feasible. Any tortoises found will be moved to a safe location in accordance with **FS-2** and **DT-5**. All personnel located at these facilities will avoid disturbing active tortoise shelter sites.

- **DT-14** Elevated predation by common ravens or other predators attributable to fire suppression activities will be reduced to the maximum extent possible. Work areas, including campsites, landing/fueling sites, staging areas, etc. will be maintained in a sanitary condition at all times. Waste materials at those sites will be contained in a manner that will avoid attracting predators of desert tortoises. Waste materials will be disposed of at an appropriate waste disposal site. "Waste" means all discarded matter including, but not limited to, human waste, trash, garbage, refuse, oil drums, petroleum products, ashes, and equipment.

- **DT-15** Backfiring operations are permitted where necessary in desert tortoise habitat. Burning out patches of identified habitat within or adjacent to burned areas is not permitted as a standard fire suppression measure unless necessary for firefighter or public safety or to protect property, improvements, or natural resources.

- **DT-16** Use of foam or retardant is authorized within desert tortoise habitat.

- **DT-17** Rehabilitation of vegetation in tortoise habitat will be considered, including seeding, planting of perennial species, etc.

- **DT-18** Recovery of vegetation will be monitored, including establishing and monitoring paired plots, inside and outside burned areas in tortoise habitat. Recovery plans will be coordinated with the USFWS and AGFD.

- **DT-19** The effectiveness of wildfire suppression activities and desert tortoise conservation measures will be evaluated after a wildfire. Procedures will be revised as needed.

# APPENDIX F
# PERENNIAL, EPHEMERAL, AND PERENNIAL-EPHEMERAL ALLOTMENT CLASSIFICATIONS

In Arizona, BLM grazing allotments are classified as Perennial, Ephemeral, or Perennial-Ephemeral. These classifications correspond to the following types of designated rangelands:

- Perennial Rangeland: consistently produces perennial forage to support a year round livestock operation.
- Ephemeral Rangeland: does not consistently produce enough forage to sustain a year round livestock operation but may briefly produce unusual volumes of forage to accommodate livestock grazing. There is a Special Rule for Ephemeral Range.
- Perennial-Ephemeral Rangeland: produces perennial forage each year and also periodically provides additional ephemeral vegetation. In a year of abundant moisture and favorable climatic conditions, annual forbs and grasses add materially to the total grazing capacity.

**Criteria for Classifying Allotments as Ephemeral**

Allotments may be classified as Ephemeral through Rangeland Health Assessments in accordance with the Special Ephemeral Rule, published December 7, 1968. BLM has established criteria based upon the Special Rule through which allotments can be classified as ephemeral. These criteria include:

1. Rangelands are within the hot desert biome.
2. Average annual precipitation is less than 8 inches.
3. Rangelands produce less than 25 pounds per acre of desirable forage grasses.
4. The vegetative community is composed of less than 5% desirable forage species.
5. The rangelands are generally below 3,500 feet in elevation.
6. Annual production is highly unpredictable and forage availability is of a short duration.
7. Usable forage production depends on abundant moisture and other favorable climatic conditions.
8. Rangelands lack potential to improve existing ecological status and produce a dependable supply of forage through intensive rangeland management practices.

**IFNM Allotment Classifications**

The two allotments classified as ephemeral under the No Action Alternative (Alternative A) no longer meet the criteria for classification as ephemeral. The allotments produce more that 25 pounds per acre of desirable grass species, and the community is composed of more than five percent desirable forage species. Most of the rangelands are in a high or better ecological status. Those few areas that may be in medium or low ecological status have the potential to improve and produce a dependable supply of forage through intensive rangeland management practices.

The nine allotments classified as perennial/ephemeral under the No Action Alternative A are reclassified as perennial under Alternatives C and D. These allotments are reclassified based on the potential adverse effects that increased numbers of livestock utilizing the ephemeral forage under a perennial/ephemeral classification would have on objects of the IFNM as described in the Proclamation.

# APPENDIX G
# ROUTE INVENTORY AND EVALUATION

## Route Inventory Process

As directed by the Presidential Proclamation and consistent with Bureau of Land Management policy, BLM is developing a IFNM Travel Management Plan (TMP) for the long-term monitoring, maintenance, and management of the designated route system to accommodate motorized and non-motorized use for administrative purposes and public use. An inventory of existing travel routes within the IFNM, which serves as the foundation of the TMP, was competed in 2003 under a cooperative project between the School of Renewable Natural Resources at the University of Arizona and the BLM (Gimblett 2004). The inventory consisted of mapping the existing road and trail networks, route conditions, and facilities, improvements and public use areas accessed by the routes (range improvements, wildlife improvements, recreation activity areas, gates, fences, trailheads, and other features). Inventory procedures were designed to collect information necessary for planning and management for the IFNM. The following tools and procedures were used to complete the inventory: route identification using aerial photography; on the ground verification and data collection with global positioning system (GPS) equipment, and documentation of route conditions. The routes identified in the inventory were later evaluated to identify route designation alternatives for developing the comprehensive travel management plan. The route evaluation process is described below.

## Description of the Route Evaluation Tree Process©

The Bureau of Land Management in Arizona has adapted the Route Evaluation Tree Process©, designed by Advanced Resource Solutions, Inc., for evaluating and designating routes. The Route Evaluation Tree Process© applies a standard analytical method to existing routes to assist in determining route designations, and was used to evaluate routes on the IFNM. This appendix describes this process in detail, lists the criteria that were applied to each route during evaluation, and explains how route designations in this RMP were derived from the route evaluation process.

The Route Evaluation Tree Process© is a tool designed to assist agency staff with the systematic collection and compilation of data necessary for the thorough evaluation, analysis and/or designation of both motorized and non-motorized routes. It builds upon the history of past efforts of route designation, assists with addressing various issues and concerns raised by both private and public entities (e.g., planning policy, sensitive resource protection, commercial access needs, recreational access preferences) and helps to assess compliance with state and federal statutory requirements that need to be considered in this type of planning effort. The Route Evaluation Tree Process© helps to build into the land use planning process a means by which to achieve desired outcomes that are specifically tailored to the needs and issues unique to a planning area. It is not a replacement for NEPA process, documents, or analysis, but rather is a tool designed to assist with the systematic collection of sensitive resource and route-use information that can then be subsequently used to evaluate and designate routes. The Route Evaluation Tree Process© or its software does not make any final decisions regarding route designation. Route designation recommendations are made by agency staff utilizing both data collected during the Route Evaluation Tree Process© and from other agency data sources. Ultimately, any decisions made regarding route designation are made by BLM managers as part of the Record of Decision.

In order to address the many facets of route evaluation and transportation planning, the Route Evaluation Tree Process© is divided into a number of smaller steps which fine-tune the information needed to successfully evaluate and designate routes. The process is illustrated on the "Route Evaluation Tree Process© for Travel Management Planning" at the end of this appendix.

The Route Evaluation Tree©[1] is only one step within the overall Route Evaluation Tree Process©. The process takes a systematic approach to collect data and evaluate routes individually, as well as collectively, based upon statutory requirements and issues raised by the public, and plan alternative themes developed by the BLM. The result of this process is the creation of different potential designated route networks that address identified issues and constraints (see "Route Evaluation Tree©" diagram at the end of this appendix). The data collected through this route evaluation process may assist agency planners is making potential decisions within the environmental impact analysis process required by the National Environmental Policy Act (NEPA). The Route Evaluation Tree Process© has been extensively used by the BLM and other land management agencies. The process meets or exceeds the needs of the BLM Land Use Planning Handbook.

**Route Evaluation Criteria**

During the route evaluation process, BLM used detailed variables or criteria to evaluate each route. Route evaluations were then applied to the themes governing each alternative to produce a range of alternatives and route designations, as presented in Chapter 2.

The following overarching criteria, developed by the BLM, were applied to the route evaluation process on the IFNM (they are listed in no particular order):

1. Provide access to meet management objectives and other administrative requirements (including Border Patrol use and access needs for fire management activities and vehicle types).
2. Provide access to inholdings and for valid, existing rights through easement acquisition or right-of-way grants.
3. Retain reasonable access that appropriately accommodates current recreational activities.
4. Minimize the number of routes by closing duplicative routes.
5. Designate routes to support protection, enhancement, and restoration of sensitive resources.
6. Accommodate universal access needs by designating access points and routes for both motorized and non-motorized uses to provide a range of sightseeing opportunities (e.g., landscape /visual, ecological, cultural/historic, wildlife) along the Avra Valley - Silverbell - Sasco Road loop route.
7. Close/limit public use where there is a high risk of damage to sensitive resource values from public access.
8. Watershed (Air, Soil, Water Resources):
    - Minimize designation of motorized and non-motorized routes as open on/across dust-prone soils.
    - Unsurfaced (i.e., unpaved) routes designated as open in silty-clay soils may be closed during wet soil conditions to prevent damage.

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1 The process has previously been referred to as the "Route Evaluation/Designation Decision Tree Process" or "Decision Tree". A "decision tree" is a technique or tool for assisting in the decision making process by leading one through a series of yes/no questions based upon input received (flowchart). A "decision" in the context of NEPA has a more legalistic meaning specifically relating to the NEPA process. The name "Decision Tree" was used to indicate it was created in a style, however to avoid the potential for misunderstanding of the meaning of the word "decision", it has been removed from the title of the process.

- Minimize designation of routes as open to motorized or non-motorized use that cross or includes a segment that follows a wash; where possible, close those routes where the purpose or presence of the route contributes to the deteriorating condition of the wash, soil loss, damage to the plant community, cultural damage, or other resource damage.

9. Biological Resources

   - Minimize designation of routes as open to motorized use or non-motorized mechanized use in or across vegetative communities identified as unique or important; blocks of undisturbed habitat; special management areas identified for bighorn sheep; Nichol Turk's Head cactus habitat; xeroriparian areas used as movement corridors by mule deer and javelina; and (for desert tortoise protection) across incised washes between Samaniego Hills, Waterman, Roskruge, and Pan Quemado Mountains.
   - Minimize designation of routes as open to motorized use or non-motorized mechanized use within Nichol Turk's Head cactus habitat and desert tortoise habitat.

10. Cultural Resources

   - Provide adequate access to cultural sites allocated for public use.
   - Minimize selection of routes as open to motorized use or non-motorized mechanized use on/across significant cultural sites.
   - Close existing vehicle route spurs that end at significant cultural sites.

11. Paleontological Resources and Caves: close to motorized use existing vehicle route spurs that end at significant caves with significant resource values.

12. Lands and Realty: close access roads to public use on routes to sensitive facilities.

13. Recreation

   - In order to meet recreation objectives, retain existing routes that provide for a key sightseeing, driving for pleasure, and vehicle touring opportunities (including watchable wildlife) as open to public access; close/limit public access in favor of natural/cultural resource protection even if opportunities for high value for this recreation activity are compromised.
   - Close overgrown routes. Vegetation treatment (clearing/trimming) may be authorized to provide access on overgrown access routes to existing utilities. Allow use of these routes for emergency purposes and administrative purposes, provided vegetation cover is protected.
   - Routes identified for closure to motorized vehicles would be either (1) closed to all travel, obliterated, and revegetated, or (2) remain open for non-motorized use, based on recreation management and natural/cultural resource objectives.
   - Identify and address proper management of historic routes, including those that may be abandoned and reclaiming and those that may be associated with the Juan Bautista de Anza National Historic Trail. Consider designation of Sasco Road trails project that would provide interpretation along the historic railroad route.

14. Visual: provide access to identified scenic overlooks.

The following is a sample of additional specific data that was collected to assist agency staff with recommending route designations for each alternative:

1. **Resource Issues**:

**Association or Proximity of Route to**:

- Known Cultural Site
- Site or Area of Tribal Significance
- Sites on National Register of Historic Places
- Vegetation Habitat Management Area
- Area of Critical Environmental Concern
- Portal Access to National Monument
- Wilderness Charateristics
- Wildife Habitat Management Area
- Emergency Closure Areas
- Exemplary Plant Communities
- Sensitive Plant Species Area
- Special Status Plant Species
- Sensitive Wildlife Species Area

**Other Resource Considerations**:

- Air Quality
- Desert Wash
- Dumping
- High Density Route Area
- Route Proliferation
- Soils
- Critical Habitat Designations
- Recreation Opportunity Spectrum
- Visual Resource Management
- Hazards

2. **Public Uses**

**Existing Public Uses**:

- ATV Use
- Birding
- Camping - Developed
- Camping - Primitive
- Equestrian
- Firewood Gathering - Illegal
- Firewood Gathering - Legal
- Geocaching
- Hiking
- Hunting
- Motorcycle Trials
- Motorcycle Use
- Mountain Biking
- New Age Visitors
- OHV Touring
- Paintball
- Parking Area - Improved
- Parking Area – Unimproved

- Public Use Site Access / Interpretative Panel
- Rockhounding
- Shooting
- SUV Touring
- Vistas, Sightseeing, Photography
- Wildlife Watching

**Other Public Use Considerations**:

- Route Contributes to Public Safety
- Route Contributes to User Conflicts
- Route Helps Minimize User Conflicts
- Route is a Concern for Public Safety
- Commercial Recreation Permit
- Special Recreation Use Permit

3. **Commercial, Administrative, Property Access, and Economic Issues**:

**Commercial Ranching Facilities**

- Active Allotment
- Allotment Boundary Fenceline
- Cattleguard
- Corral
- Fence Line (not Allotment Boundary Fenceline)
- Gate
- Pipeline
- Ranch
- Ranch HQ
- Tank, Trough
- Water Catchment
- Well
- Windmill

**Administrative Uses**

- Administrative Gate
- Compliance/Enforcement Monitoring
- Fire Suppression
- Monitoring Site
- Resource Treatment
- Weed Abatement
- Wildlife Agency Monitoring
- Wildlife Catchment
- Wildlife Water / Guzzler

**Utilities**

- Gate
- Utility Corridor
- Cell Site
- Communication Site
- Gas Pipeline
- Electrical Transmission / Powerline
- Telephone

**Land Access**

- City Gate
- City Land Access
- County Land Access
- Private Property Access
- State Land
- Tribal Land Access

**Other**

- Active/Inactive Mines
- Apiary Site
- Cemetery
- Desert Plant Sales (from Private Land)
- Dude Ranch
- Landing Strip
- Military Facility
- Mining Claims
- Officially recognized in Federal Planning Document and Maintained
- Route is recognized as contributing to the local economy
- Route is recognized in a local plan

**Adaptation of Route Evaluation Process to IFNM Travel Management**

The route evaluation concluded in a variety of route specific management designations, which vary by alternative (as each alternative has a different management theme). These designations are identified in the list below as "designation codes." Each of the 28 designation codes that resulted from the route evaluation process was then grouped under one of the following three route designations for this RMP: motorized use, non-motorized use, or reclamation. These resulting designations are identified below as "route designations."

The development of a travel management plan for the long-term monitoring, maintenance and management of the designated access point and route system for both motorized and non-motorized uses of public lands is proposed in Alternatives B, C, and D (see Table 2-16 in the Draft Resource Management Plan and Environmental Impact Statement). A travel management plan will elaborate on the designations below and discuss how each will be implemented. The travel management objectives and definitions for each designation also are listed below:

| Designation Code: | C01 |
|---|---|
| Objective: | Route will be closed and not maintained as a trail. |
| Definition: | Closed to all motorized travel year-round. Revegetate and stabilize erosion. |
| Route Designation: | None. Route would be reclaimed. |

| Designation Code: | C07 |
|---|---|
| Objective: | Route will be closed and not maintained as a trail. |
| Definition: | Closed to all motorized travel year-round. Revegetate and stabilize erosion. |
| Route Designation: | None. Route would be reclaimed. |

| Designation Code: | C08 |
|---|---|
| Objective: | Route will be closed and not maintained as a trail. |

| | |
|---|---|
| Definition: | Closed to all motorized travel year-round. No maintenance work will be performed to accommodate non-motorized public use. Open to non-motorized public use subject to route conditions. |
| Route Designation: | Non-motorized use. |

| Designation Code: | C26 |
|---|---|
| Objective: | Route will be closed and not maintained as a trail. |
| Definition: | Closed to all motorized travel year-round. Revegetate and stabilize erosion. |
| Route Designation: | None. Route would be reclaimed. |

| Designation Code: | ML02-TransAllNM |
|---|---|
| Objective: | Route will be maintained as a non-motorized trail. |
| Definition: | Closed to all public motorized use year-round. Maintain to accommodate non-motorized public use. |
| Route Designation: | Non-motorized use. |

| Designation Code: | ML02-UserAdminMtrPermitteeMtr |
|---|---|
| Objective: | Route is available for authorized motorized use only year-round, which at a minimum will be for motorized administrative use and right-of-way holder only. Future authorizations may be granted on a case by case basis such as to other permittees, lessees, etc. |
| Definition: | Open to motorized vehicle use year-round by right-of-way or permit holder and for official administrative purposes or authorized private property access. Open to non-motorized public use year-round. Closed to motorized public use year-round. |
| Route Designation: | Non-motorized use. |

| Designation Code: | ML02-UserAdminMtrPermitteeMtrPvtPropMtr |
|---|---|
| Objective: | Route is available for authorized motorized use only year-round, which at a minimum will be for motorized administrative use, right-of-way holder, and authorized private property access only. Future authorizations may be granted on a case by case basis such as to permittees, lessees, etc. |
| Definition: | Open to motorized vehicle use year-round by right-of-way or permit holder and official administrative purposes. Open to non-motorized public use year-round. Closed to motorized public use year-round. |
| Route Designation: | Non-motorized use. |

| Designation Code: | ML02-UserAdminMtrPermitteeMtr-TransPublicNM |
|---|---|
| Objective: | Route is available for authorized motorized use only year-round, which at a minimum will be for motorized administrative use and right-of-way holder only. Future authorizations may be granted on a case by case basis such as to other permittees, lessees, etc. Route will also be identified as and maintained for a non-motorized trail. |
| Definition: | Open to motorized vehicle use year-round by right-of-way or permit holder and official administrative purposes. Maintain to accommodate non-motorized public use. Closed to motorized public use year-round. |
| Route Designation: | Non-motorized use. |

| Designation Code: | ML02-UserAdminMtrPvtPropMtr |
|---|---|
| Objective: | Route is available for authorized motorized use only year-round, which at a minimum will be for motorized administrative use and authorized private property access only. Future authorizations may be granted on a case by case basis such as to permittees, lessees, etc. |
| Definition: | Open to motorized vehicle use year-round by right-of-way or permit holder and official administrative purposes. Open to non-motorized public use year-round. Closed to motorized public use year-round. |
| Route Designation: | Non-motorized use. |

| Designation Code: | ML05-UserAdminMtrPermitteeMtr |
|---|---|
| Objective: | Route is available for authorized motorized use only year-round, which at a minimum will be for motorized administrative use and permittees only. Future authorizations may be granted on a case by case basis such as to other permittees, lessees, etc. |
| Definition: | Open to motorized vehicle use year-round by right-of-way or permit holder and official administrative purposes. Open to non-motorized public use year-round. Closed to motorized public use year-round. |
| Route Designation: | Non-motorized use. |

| Designation Code: | ML06-SeasonOther___Day Use Only - no overnight camping |
|---|---|
| Objective: | Day use only; no overnight camping allowed. |
| Definition: | Open to motorized public use year-round. Open to non-motorized public use year-round. |
| Route Designation: | Motorized use. |

| Designation Code: | ML06-TransAllNM |
|---|---|
| Objective: | Route will be maintained as a non-motorized trail. |
| Definition: | Open to non-motorized public use year-round. Closed to all motorized public use year-round. |
| Route Designation: | Non-motorized use. |

| Designation Code: | ML06-TransAllNMM |
|---|---|
| Objective: | Route will be maintained as a non-motorized and non-mechanized trail. |
| Definition: | Open to non-motorized and non-mechanized public use year-round. Closed to all public motorized and mechanized use year-round. |
| Route Designation: | Non-motorized use. |

| Designation Code: | ML06-TransAllNM-SeasonOther___Day Use Only - no overnight camping. |
|---|---|
| Objective: | Route will be maintained as a non-motorized trail. Day use only; no overnight camping allowed. |
| Definition: | Open to non-motorized public use year-round during day time. Closed to all motorized vehicle use year-round. |
| Route Designation: | Non-motorized use. |

| Designation Code: | ML06-TransAllNM-SeasonSPC_January 1_April 1_ |
|---|---|
| Objective: | Route will be maintained as a non-motorized trail. The route is closed to all public uses (motorized, non-motorized, and non-mechanized, including hiking and equestrian) from January 1 to April 1. |
| Definition: | Open to non-motorized public use April 1 to December 30. Closed to all public entry and use January 1 to April 1. |
| Route Designation: | Non-motorized use. |

| Designation Code: | ML06-UserAdminMtrPermiteeMtr |
|---|---|
| Objective: | Route is available for authorized motorized use only year-round, which at a minimum will be for motorized administrative use and permittees only. Future authorizations may be granted on a case by case basis such as to other permittees, lessees, etc. |
| Definition: | Open to motorized vehicle use year-round by right-of-way or permit holder and official administrative purposes. Open to non-motorized public use year-round. Closed to motorized public use year-round. |
| Route Designation: | Non-motorized use. |

| Designation Code: | ML06-UserAdminMtrPermitteeMtrPvtPropMtr |
|---|---|
| Objective: | Route is available for authorized motorized use only year-round, which at a minimum will be for motorized administrative use, permittees, and authorized private property access only. Future authorizations may be granted on a case by case basis such as to permittees, lessees, etc. |
| Definition: | Open to motorized vehicle use year-round by right-of-way or permit holder and official administrative purposes. Open to non-motorized public use year-round. Closed to motorized public use year-round. |
| Route Designation: | Non-motorized use. |

| Designation Code: | ML06-UserAdminMtrPermitteeMtr-TransPublicNM |
|---|---|
| Objective: | Route is available for authorized motorized use only year-round, which at a minimum will be for motorized administrative use and permittees only. Future authorizations may be granted on a case by case basis such as to other permittees, lessees, etc. Route will also be identified as and maintained for a non-motorized trail. |
| Definition: | Open to motorized vehicle use year-round by right-of-way or permit holder and official administrative purposes. Maintain to accommodate non-motorized public use. Closed to motorized public use year-round. |
| Route Designation: | Non-motorized use. |

| Designation Code: | ML06-UserAdminMtrPermitteeMtr-TransPublicNMM |
|---|---|
| Objective: | Route is available for authorized motorized use only year-round, which at a minimum will be for motorized administrative use and permittees only. Future authorizations may be granted on a case by case basis such as to other permittees, lessees, etc. Route will also be identified as and maintained for a non-motorized and non-mechanized trail. |
| Definition: | Open to motorized vehicle use year-round by right-of-way or permit holder and official administrative purposes. Maintain to accommodate non-motorized and non-mechanized use. Closed to motorized public use year-round. |
| Route Designation: | Non-motorized use. |

| Designation Code: | ML06-UserAdminMtrPvtPropMtr |
|---|---|
| Objective: | Route is available for authorized motorized use only year-round, which at a minimum will be for motorized administrative use and authorized private property access only. Future authorizations may be granted on a case by case basis such as to permittees, lessees, etc. |
| Definition: | Open to motorized vehicle use year-round by right-of-way or permit holder and official administrative purposes. Open to non-motorized public use year-round. Closed to motorized public use year-round. |
| Route Designation: | Non-motorized use. |

| Designation Code: | ML06-UserAdminOnlyATV |
|---|---|
| Objective: | Route is available for authorized ATV use only, which at a minimum will be for ATV administrative use only. Future authorizations may be granted on a case by case basis such as to permittees, lessees, etc. |
| Definition: | Open to motorized vehicle under 42 inch width use year-round by right-of-way or permit holder and official administrative purposes. |
| Route Designation: | Motorized use. |

| Designation Code: | ML06-UserAdminOnlyMtr |
|---|---|
| Objective: | Route is available for authorized motorized use only year-round, which at a minimum will be for motorized administrative use only. Future authorizations may be granted on a case by case basis such as to permittees, lessees, etc. |
| Definition: | Open to motorized vehicle use year-round by right-of-way or permit holder and official administrative purposes. Open to non-motorized public use year-round. Closed to motorized public use year-round. |
| Route Designation: | Non-motorized use. |

| Designation Code: | ML06-UserAdminOnlyMtr-TransPublicNM |
|---|---|
| Objective: | Route is available for authorized motorized use only year-round, which at a minimum will be for motorized administrative use only. Future authorizations may be granted on a case by case basis such as to permittees, lessees, etc. Route will also be identified as and maintained for a non-motorized trail. |
| Definition: | Open to motorized vehicle use year-round by right-of-way or permit holder and official administrative purposes. Open to non-motorized public use year-round. Closed to motorized public use year-round |
| Route Designation: | Non-motorized use. |

| Designation Code: | ML16-UserAdminMtrPermitteeMtr |
|---|---|
| Objective: | Route is available for authorized motorized use only year-round, which at a minimum will be for motorized administrative use and permittees only. Future authorizations may be granted on a case by case basis such as to other permittees, lessees, etc. |
| Definition: | Open to motorized vehicle use year-round by right-of-way or permit holder and official administrative purposes. Open to non-motorized public use year-round. Closed to motorized public use year-round. |
| Route Designation: | Non-motorized use. |

| Designation Code: | ML16-UserAdminOnlyMtr |
|---|---|
| Objective: | Route is available for authorized motorized use only year-round, which at a minimum will be for motorized administrative use only. Future authorizations may be granted on a case by case basis such as to permittees, lessees, etc. |
| Definition: | Open to motorized vehicle use year-round by right-of-way or permit holder and official administrative purposes. Open to non-motorized public use year-round. Closed to motorized public use year-round. |
| Route Designation: | Non-motorized use. |

| Designation Code: | MO01 |
|---|---|
| Objective: | Route will be open to all vehicles which are legal for the type of route. |
| Definition: | Open to all motorized public use year-round. Open to all non-motorized public use year-round. |
| Route Designation: | Motorized use. |

| Designation Code: | MO03 |
|---|---|
| Objective: | Route will be open to all vehicles which are legal for the type of route. |
| Definition: | Open to all motorized vehicle use year-round. Open to all non-motorized public use year-round. |
| Route Designation: | Motorized use. |

| Designation Code: | O04 |
|---|---|
| Objective: | Route will be open to all vehicles which are legal for the type of route. |
| Definition: | Open to all motorized vehicle use year-round. Open to all non-motorized public use year-round. |
| Route Designation: | Motorized use. |

**Other Route Attributes and Prescriptions**

Route designations, as proposed in Table 2-16 and depicted on Maps 2-20 through 2-22, are the basic elements of the transportation management plan being developed for the IFNM. Other transportation plan prescriptions, including route functional class, maintenance intensity level, and access standard are assigned to each route, in accordance with BLM policy, so that BLM can better identify the needs associated with each route and define its intended use for the public and other users. To facilitate public review of the proposed transportation plan, the table below lists each route on BLM-administered lands within the IFNM and identifies the following attributes:

1. Route Number
2. Land Owner
3. Length: Length of route in feet
4. Miles: Length of route in miles
5. **Alt B Code**: Route designation code derived from the route evaluation process, alternative B.
6. **Alt C Code**: Route designation code derived from the route evaluation process, alternative C
7. **Alt D Code**: Route designation code derived from the route evaluation process, alternative D (NOTE: For items 5-7, see table above for the definitions and objectives associated with each route designation code.)

8. **Route Designation**: Proposed designation of each route for alternative C (preferred alternative). Designations include motorized, non-motorized, and closed for reclamation. Proposed route designations for alternatives B, C, and D are found in Table 2-16 and depicted on Maps 2-20 through 2-22.
9. **Asset Type**: BLM transportation system asset type code, as defined below. The following codes are used in the table:
    - **RD = Road**: A linear route declared a road by the owner, managed for use by low-clearance vehicles having four or more wheels, and maintained for regular and continuous use.
    - **RDP = Primitive Road**: A linear route managed for use by four-wheel drive or high clearance vehicles. Primitive roads do not normally meet any BLM road design standards.
    - **TM = Trail, motorized (under 48-inch)**: A linear route managed for human-powered, stock, or off-highway vehicle forms of transportation or for historical or heritage values. Trails are not generally managed for use by four-wheel drive or high-clearance vehicles.
    - **TNM = Trail, non-motorized**: A linear route managed for human-powered, stock, or off-highway vehicle forms of transportation or for historical or heritage values. Trails are not generally managed for use by four-wheel drive or high-clearance vehicles.
    - LF = Linear feature: Not a transportation route (such as fencelines).
10. **FC**: Functional class, as defined in BLM transportation planning guidance. The following codes are used in the table:
    - **C = Collector road**: These Bureau roads normally provide primary access to large blocks of land, and connect with or are extensions of a public road system. Collector roads accommodate mixed traffic and serve many uses. They generally receive the highest volume of traffic of all the roads in the Bureau road system. User cost, safety, comfort, and travel time are primary road management considerations. Collector roads usually require application of the highest standards used by the Bureau. As a result, they have the potential for creating substantial environmental impacts and often require complex mitigation procedures.
    - **L = Local road**: These Bureau roads normally serve a smaller area than collectors, and connect to collectors or public road systems. Local roads receive lower volumes, carry fewer traffic types, and generally serve fewer uses. User cost, comfort, and travel time are secondary to construction and maintenance cost considerations. Low volume local roads in mountainous terrain, where operating speed is reduced by effort of terrain, may be single lane roads with turnouts. Environmental impacts are reduced as steeper grades, sharper curves, and lower design speeds than would be permissible on collector roads are allowable.
    - **R = Resource road**: These Bureau roads normally are spur roads that provide point access and connect to local or collector roads. They carry very low volume and accommodate only one or two types of use. Use restrictions are applied to prevent conflicts between users needing the road and users attracted to the road. The location and design of these roads are governed by environmental compatibility and minimizing Bureau costs, with minimal consideration for user cost, comfort, or travel time.
    - **NA** = Not applicable

11. **MI**: Maintenance intensity, as defined in the BLM Roads and Trails Terminology Report (reference this); definitions of maintenance intensity levels listed below are also found in the RMP glossary. The following codes are used in the table:
    - **L0 = Level 0**: remove from travel route inventory.
    - **L1 = Level 1**: minimum maintenance.
    - **L3 = Level 3**: moderate maintenance.
    - **L5 = Level 5**: high maintenance
12. **DSTD**: Typical design vehicle or criteria for route. The following codes are used in the table:
    - P = Passenger car
    - PT = Passenger car and camper trailer (equivalent: truck and stock trailer)
    - MH = Motor home, recreational vehicle
    - WB-50 = Semi trailer
    - 4WD = Passenger can with 4WD or high clearance
    - ATV = All terrain vehicle, under 48"
    - MX = Motorcycle
    - EQ = Equestrian
    - H = Hiking
    - MB = Mountain bike
    - NES = Natural ecological site potential (route closed for reclamation)

Maps depicting route numbers can be reviewed online at http://www.blm.gov/az/LUP/ironwood/reports.htm or at the Tucson Field Office at 12661 E. Broadway, Tucson, AZ.

| Route Number | Land Owner | Length | Miles | Alt B Code | Alt C Code | Alt D Code | Route Designation | Asset Type | FC | MI | DSTD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | BLM | 12835.5 | 2.4 | MO01 | MO01 | MO01 | Motorized | RD | C | L5 | MH |
| 2A | BLM | 3005.6 | 0.6 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 2A1 | BLM | 658.9 | 0.1 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 2A2 | BLM | 1981.8 | 0.4 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 2B | BLM | 5252.3 | 1 | ML02-UserAdminMtrPermitteeMtr | ML02-UserAdminMtrPermitteeMtr | ML02-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 2C | BLM | 2265.5 | 0.4 | C08 | C08 | ML06-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 2D | BLM | 807 | 0.2 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 2E | BLM | 5204.1 | 1 | ML06-UserAdminOnlyMtr | ML06-UserAdminOnlyMtr | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 2E1 | BLM | 1317.2 | 0.3 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 2F | BLM | 5357.2 | 1 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 2H | BLM | 2930.7 | 0.6 | C08 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 2H1 | BLM | 3152.3 | 0.6 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 2J | BLM | 7020.6 | 1.3 | C08 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 2J1 | BLM | 594.7 | 0.1 | C08 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 2J2 | BLM | 3973.8 | 0.8 | C08 | C08 | ML06-TransAllNM | Non-Motorized | TNM | R | L1 | EQ |
| 2J3 | BLM | 13220.6 | 2.5 | MO03 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 2X | BLM | 17297.5 | 3.3 | MO03 | MO03 | MO03 | Motorized | RD | C | L5 | MH |
| 2Z | BLM | 5277 | 1 | C08 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 600 | BLM | 14917.3 | 2.8 | MO03 | MO03 | MO03 | Motorized | RD | L | L3 | P |
| 600A1 | BLM | 16658.8 | 3.2 | ML06-TransAllNM | ML06-UserAdminMtrPermitteeMtr | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 600A1A | BLM | 8813.8 | 1.7 | ML06-TransAllNM | ML06-TransAllNM | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 600A2 | BLM | 499.8 | 0.1 | C26 | C26 | C26 | Closed | LF | NA | L0 | NES |
| 600C | BLM | 2274.3 | 0.4 | C08 | ML06-UserAdminMtrPermitteeMtr | ML06-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 600D | BLM | 5781.3 | 1.1 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 600D1 | BLM | 751.7 | 0.1 | MO03 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 600D2 | BLM | 822.5 | 0.2 | C08 | ML06-UserAdminMtrPvtPropMtr | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 600D3 | BLM | 321.1 | 0.1 | C08 | ML06-UserAdminMtrPvtPropMtr | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 600D9 | BLM | 1647.9 | 0.3 | C08 | ML06-UserAdminMtrPermitteeMtr | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 600G | BLM | 1706 | 0.3 | ML06-UserAdminOnlyMtr | ML06-UserAdminMtrPermitteeMtr | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 600G1 | BLM | 2861.5 | 0.5 | ML06-UserAdminOnlyMtr | ML06-UserAdminOnlyMtr | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 600H | BLM | 2346.5 | 0.5 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 600I | BLM | 200 | 0 | ML06-UserAdminMtrPermitteeMtr | ML06-UserAdminMtrPermitteeMtr | ML06-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 600J | BLM | 985.2 | 0.2 | C08 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 600K | BLM | 1185.5 | 0.2 | MO03 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 600L | BLM | 2000.3 | 0.4 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 600M | BLM | 1308.1 | 0.3 | C08 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 600N | BLM | 1746.1 | 0.3 | ML06-TransAllNM | ML06-TransAllNM | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 600N1 | BLM | 1753.6 | 0.3 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 601 | BLM | 5113 | 1 | ML02-UserAdminMtrPermitteeMtr | ML02-UserAdminMtrPermitteeMtr | ML02-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 601A | BLM | 1580.4 | 0.3 | ML06-UserAdminMtrPermitteeMtr | ML06-UserAdminMtrPermitteeMtr-SeasonSPC_Sept 1_ | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 601A1 | BLM | 921.9 | 0.2 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 601B | BLM | 15172.3 | 2.9 | ML06-UserAdminOnlyATV | ML06-UserAdminOnlyATV | ML06-UserAdminOnlyATV | Non-Motorized | TNM | R | L1 | EQ |
| 601BC | BLM | 10555.5 | 2 | ML02-UserAdminMtrPermitteeMtr | ML02-UserAdminMtrPermitteeMtr | ML02-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 601D | BLM | 5256.4 | 1 | ML06-UserAdminMtrPermitteeMtr | MO03 | MO03 | Motorized | RD | R | L1 | PT |
| 601E | BLM | 5918.4 | 1.1 | ML06-UserAdminMtrPermitteeMtr | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 601X | BLM | 5027.2 | 1 | ML02-UserAdminMtrPermitteeMtr | ML02-UserAdminMtrPermitteeMtr | ML02-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 602 | BLM | 5695.1 | 1.1 | MO03 | MO03 | MO03 | Motorized | RD | L | L1 | P |
| 606A | BLM | 5344.8 | 1 | ML06-UserAdminMtrPermitteeMtr | MO03 | MO03 | Motorized | RD | R | L1 | P |
| 606A1 | BLM | 6796.5 | 1.3 | C08 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 606B | BLM | 1547.2 | 0.3 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 606C | BLM | 685.3 | 0.1 | ML06-UserAdminMtrPermitteeMtr | ML06-UserAdminMtrPermitteeMtr | ML06-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 606C1 | BLM | 192.1 | 0 | ML06-UserAdminMtrPermitteeMtr | ML06-UserAdminMtrPermitteeMtr | ML06-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 606F | BLM | 3159.9 | 0.6 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |

| Route Number | Land Owner | Length | Miles | Alt B Code | Alt C Code | Alt D Code | Route Designation | Asset Type | FC | MI | DSTD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 606F1 | BLM | 5228.1 | 1 | ML06-UserAdminMtrPermitteeMtr | ML06-UserAdminMtrPermitteeMtr | ML06-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 607A | BLM | 254.6 | 0.1 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 608 | BLM | 10338.4 | 2 | ML06-UserAdminOnlyMtr | ML06-SeasonOther___Day Use Only - no overnight | MO03 | Motorized | RDP | R | L1 | 4WD |
| 608.5 | BLM | 3093.2 | 0.6 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 608.6 | BLM | 130.6 | 0 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 608B | BLM | 212.7 | 0 | ML06-UserAdminOnlyMtr | ML06-SeasonOther___Day Use Only - no overnight | MO03 | Motorized | RDP | R | L1 | 4WD |
| 609A | BLM | 488.9 | 0.1 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 609B | BLM | 177.3 | 0 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 610 | BLM | 20182.7 | 3.8 | MO03 | MO03 | MO03 | Motorized | RD | L | L3 | P |
| 610.5 | BLM | 133.9 | 0 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 610.9 | BLM | 794.7 | 0.2 | ML06-UserAdminOnlyMtr | ML06-UserAdminOnlyMtr | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 610C | BLM | 28951.8 | 5.5 | MO03 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 610C1 | BLM | 4002.1 | 0.8 | ML06-UserAdminMtrPermitteeMtrPvtPropMtr | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 610D | BLM | 10363.1 | 2 | C08 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 610D1 | BLM | 2075 | 0.4 | C08 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 610D2 | BLM | 425.4 | 0.1 | C08 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 610E | BLM | 5737.2 | 1.1 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 610E2 | BLM | 11075.2 | 2.1 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 611A | BLM | 7107 | 1.4 | C08 | ML06-UserAdminMtrPermitteeMtr | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 612A | BLM | 5712.5 | 1.1 | C08 | ML06-UserAdminMtrPermitteeMtr | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 613A | BLM | 6757.9 | 1.3 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 614 | BLM | 23857.1 | 4.5 | MO01 | MO01 | MO01 | Motorized | RD | L | L3 | P |
| 614A | BLM | 5287.5 | 1 | ML02-UserAdminMtrPermitteeMtr | ML02-UserAdminMtrPermitteeMtr | ML02-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 614A1 | BLM | 3896 | 0.7 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 614B | BLM | 4990.1 | 0.9 | ML06-UserAdminMtrPermitteeMtr-TransPublicNM | ML06-UserAdminMtrPermitteeMtr-TransPublicNM | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 614B1 | BLM | 1017.8 | 0.2 | ML06-UserAdminMtrPermitteeMtr | ML06-UserAdminMtrPermitteeMtr | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 614B1A | BLM | 1697.2 | 0.3 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 614B2 | BLM | 2537.2 | 0.5 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 614B2A | BLM | 588.8 | 0.1 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 614B2B | BLM | 415.4 | 0.1 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 614B3 | BLM | 1252.6 | 0.2 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 614B4 | BLM | 9048 | 1.7 | ML06-TransAllNM | ML06-UserAdminMtrPermitteeMtr-TransPublicNM | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 614C | BLM | 5720.9 | 1.1 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 614C1 | BLM | 6827 | 1.3 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 614C1A | BLM | 116.5 | 0 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 614I | BLM | 123.9 | 0 | MO03 | MO03 | MO03 | Motorized | RD | L | L3 | 4WD |
| 614J | BLM | 830.6 | 0.2 | MO03 | MO03 | MO03 | Motorized | RD | R | L3 | P |
| 614K | BLM | 819.5 | 0.2 | MO03 | MO03 | MO03 | Motorized | RD | R | L3 | P |
| 614L | BLM | 13388.4 | 2.5 | MO03 | MO03 | MO03 | Motorized | RD | L | L3 | 4WD |
| 615A | BLM | 5698.1 | 1.1 | C08 | ML06-UserAdminMtrPermitteeMtr | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 616.5 | BLM | 3385.4 | 0.6 | C08 | ML06-SeasonOther___Day Use Only - no overnight | MO03 | Motorized | RDP | R | L1 | 4WD |
| 616A | BLM | 5401.6 | 1 | C08 | ML06-UserAdminMtrPermitteeMtr | ML06-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 617A | BLM | 9532.4 | 1.8 | ML06-UserAdminMtrPermitteeMtr | ML06-UserAdminMtrPermitteeMtr | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 617A1 | BLM | 1601.7 | 0.3 | C07 | C07 | C07 | Closed | LF | NA | L0 | NES |
| 617A2 | BLM | 6788.2 | 1.3 | C08 | ML06-UserAdminMtrPermitteeMtr | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 617B | BLM | 1586.3 | 0.3 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 617C | BLM | 4240.1 | 0.8 | ML06-UserAdminMtrPermitteeMtr | ML06-UserAdminMtrPermitteeMtr | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 617C1 | BLM | 1008 | 0.2 | C08 | ML06-UserAdminMtrPermitteeMtr | MO03 | Non-Motorized | TNM | R | L1 | EQ |

| Route Number | Land Owner | Length | Miles | Alt B Code | Alt C Code | Alt D Code | Route Designation | Asset Type | FC | MI | DSTD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 617D | BLM | 11263.2 | 2.1 | ML06-UserAdminMtrPermitteeMtr | ML06-UserAdminMtrPermitteeMtr | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 617D1 | BLM | 358.9 | 0.1 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 617D4 | BLM | 4095.8 | 0.8 | ML02-UserAdminMtrPermitteeMtr | ML02-UserAdminMtrPermitteeMtr | ML02-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 617D4A | BLM | 5350.1 | 1 | ML02-UserAdminMtrPermitteeMtr-TransPublicNM | ML02-UserAdminMtrPermitteeMtr-TransPublicNM | MO01 | Non-Motorized | TNM | R | L1 | EQ |
| 617D5 | BLM | 9064.1 | 1.7 | ML06-TransAllNM | ML06-TransAllNM | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 617D9 | BLM | 7713.4 | 1.5 | C08 | ML06-UserAdminMtrPermitteeMtr | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 617E | BLM | 4373.6 | 0.8 | C08 | ML06-TransAllNM | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 618A | BLM | 11488.8 | 2.2 | MO03 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 618A1 | BLM | 11460.5 | 2.2 | MO03 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 618B | BLM | 2252.2 | 0.4 | C08 | ML06-SeasonOther___Day Use Only - no overnight | MO03 | Motorized | RDP | R | L1 | 4WD |
| 618B1 | BLM | 5183.2 | 1 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 618B2 | BLM | 3552.9 | 0.7 | C08 | ML06-TransAllNM | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 618C | BLM | 4035.9 | 0.8 | MO03 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 618C1 | BLM | 1941.6 | 0.4 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 618D | BLM | 3595.5 | 0.7 | C08 | ML06-UserAdminMtrPermitteeMtrPvtPropMtr | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 618D1 | BLM | 3093.3 | 0.6 | ML06-TransAllNM-SeasonOther___Day Use Only - no overn | ML06-TransAllNM | ML06-TransAllNM | Non-Motorized | TNM | R | L1 | EQ |
| 618E | BLM | 1700.8 | 0.3 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 618G | BLM | 715.7 | 0.1 | C08 | ML06-TransAllNM | ML06-TransAllNM | Non-Motorized | TNM | R | L1 | EQ |
| 618Y | BLM | 2377 | 0.5 | ML06-UserAdminMtrPermitteeMtr | ML06-UserAdminMtrPermitteeMtr | ML06-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 618Y1 | BLM | 1827.4 | 0.4 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 618Y10 | BLM | 4595.9 | 0.9 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 618Y11 | BLM | 6154.9 | 1.2 | ML02-UserAdminMtrPermitteeMtr | ML02-UserAdminMtrPermitteeMtr | ML02-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 618Y11A | BLM | 391.3 | 0.1 | ML06-UserAdminMtrPermitteeMtr | ML06-UserAdminMtrPermitteeMtr | ML06-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 618Y12 | BLM | 928.7 | 0.2 | C08 | ML06-UserAdminMtrPermitteeMtr | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 618Y13 | BLM | 163.3 | 0 | C08 | ML06-UserAdminMtrPermitteeMtr | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 618Y14 | BLM | 308 | 0.1 | C08 | ML06-UserAdminMtrPermitteeMtr | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 618Y15 | BLM | 919.6 | 0.2 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 618Y16 | BLM | 6928.7 | 1.3 | ML02-TransAllNM | ML02-UserAdminMtrPvtPropMtr | MO01 | Non-Motorized | TNM | R | L1 | EQ |
| 618Y16A | BLM | 812.5 | 0.2 | C08 | ML06-UserAdminMtrPvtPropMtr | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 618Y16B | BLM | 658.9 | 0.1 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 618Y17D | BLM | 617.1 | 0.1 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 618Y2 | BLM | 239.6 | 0.1 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 618Y20 | BLM | 115.9 | 0 | ML06-UserAdminOnlyMtr | ML06-UserAdminOnlyMtr | ML06-UserAdminOnlyMtr | Non-Motorized | TNM | R | L1 | EQ |
| 618Y3 | BLM | 7950.2 | 1.5 | MO03 | MO03 | MO03 | Motorized | RD | R | L5 | WB-50 |
| 618Y4 | BLM | 449.8 | 0.1 | C01 | C01 | C01 | Closed | LF | NA | L0 | NES |
| 618Y5 | BLM | 406.3 | 0.1 | C08 | ML06-UserAdminMtrPermitteeMtr | ML06-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 618Y6 | BLM | 911.2 | 0.2 | C08 | ML06-UserAdminMtrPermitteeMtr | ML06-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 618Y7 | BLM | 1482.2 | 0.3 | C08 | ML06-UserAdminMtrPermitteeMtr | ML06-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 618Y8 | BLM | 2022.5 | 0.4 | C08 | ML06-UserAdminMtrPermitteeMtr | ML06-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 619A | BLM | 6039.8 | 1.2 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 619A1 | BLM | 4520.7 | 0.9 | C08 | ML06-UserAdminMtrPermitteeMtr | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 619C | BLM | 278.9 | 0.1 | C08 | C08 | ML06-TransAllNM | Non-Motorized | TNM | R | L1 | EQ |
| 619G | BLM | 1414.7 | 0.3 | ML06-TransAllNM-SeasonOther___Day Use Only - no overn | ML06-TransAllNM | ML06-TransAllNM | Non-Motorized | TNM | R | L1 | EQ |
| 619I | BLM | 185.2 | 0 | ML06-UserAdminMtrPermitteeMtr | ML06-UserAdminMtrPermitteeMtr | ML06-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 620 | BLM | 47506.6 | 9 | MO01 | MO01 | MO01 | Motorized | RD | C | L5 | MH |
| 620A | BLM | 1436.5 | 0.3 | C08 | ML06-UserAdminMtrPermitteeMtr | ML06-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |

| Route Number | Land Owner | Length | Miles | Alt B Code | Alt C Code | Alt D Code | Route Designation | Asset Type | FC | MI | DSTD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 620AX | BLM | 3706.7 | 0.7 | C08 | ML06-SeasonOther___Day Use Only - no overnight | ML06-SeasonOther___Day Use Only - no overni | Motorized | RDP | R | L1 | 4WD |
| 620B | BLM | 7624.7 | 1.4 | ML06-TransAllNMM | ML06-SeasonOther___Day Use Only - no overnight | MO03 | Motorized | RDP | R | L1 | 4WD |
| 620BX | BLM | 5268.8 | 1 | ML02-UserAdminMtrPermitteeMtr | ML02-UserAdminMtrPermitteeMtr | ML02-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 620C | BLM | 2517.6 | 0.5 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 620C1 | BLM | 2093.7 | 0.4 | C08 | C08 | ML06-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 620C2 | BLM | 1328.2 | 0.3 | C08 | C08 | ML06-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 620D | BLM | 3521 | 0.7 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 620DX1 | BLM | 653.1 | 0.1 | MO03 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 620DX2 | BLM | 412.1 | 0.1 | MO03 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 620DX3 | BLM | 243.1 | 0.1 | MO03 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 620E | BLM | 1300.5 | 0.3 | MO03 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 620E1 | BLM | 3268.9 | 0.6 | C08 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 620F | BLM | 11277.6 | 2.1 | ML06-UserAdminMtrPermitteeMtr | ML06-SeasonOther___Day Use Only - no overnight | MO03 | Motorized | RDP | R | L1 | 4WD |
| 620F1 | BLM | 1349.1 | 0.3 | C08 | ML06-UserAdminOnlyMtr | ML06-UserAdminOnlyMtr | Non-Motorized | TNM | R | L1 | EQ |
| 620F1A | BLM | 2683.1 | 0.5 | C08 | ML06-UserAdminOnlyMtr | ML06-UserAdminOnlyMtr | Non-Motorized | TNM | R | L1 | EQ |
| 620F2 | BLM | 262.3 | 0.1 | C08 | ML06-SeasonOther___Day Use Only - no overnight | MO03 | Motorized | RDP | R | L1 | 4WD |
| 620F2A | BLM | 2335.4 | 0.4 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 620F3 | BLM | 1365.1 | 0.3 | ML06-UserAdminMtrPermitteeMtr | ML06-SeasonOther___Day Use Only - no overnight | MO03 | Motorized | RDP | R | L1 | 4WD |
| 620F4 | BLM | 453.2 | 0.1 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 620H | BLM | 810.4 | 0.2 | MO03 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 620H1 | BLM | 2403.8 | 0.5 | C08 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 620J | BLM | 3270.8 | 0.6 | C08 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 620K | BLM | 4304.7 | 0.8 | C08 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 620K1 | BLM | 772.6 | 0.2 | C08 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 620K2 | BLM | 1571.6 | 0.3 | C08 | ML06-SeasonOther___Day Use Only - no overnight | MO03 | Motorized | RDP | R | L1 | 4WD |
| 620K2A | BLM | 3952.5 | 0.7 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 620N | BLM | 780.5 | 0.2 | C08 | ML06-UserAdminMtrPermitteeMtr | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 620O | BLM | 9924.1 | 1.9 | ML02-UserAdminMtrPermitteeMtr | ML02-UserAdminMtrPermitteeMtr | ML02-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 620O1 | BLM | 2237.3 | 0.4 | ML16-UserAdminMtrPermitteeMtr | ML16-UserAdminMtrPermitteeMtr | ML16-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 620P | BLM | 10920.5 | 2.1 | ML06-UserAdminMtrPermitteeMtr | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 620P1 | BLM | 2246.8 | 0.4 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 620P2 | BLM | 1091.6 | 0.2 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 620P3 | BLM | 2451.2 | 0.5 | ML06-TransAllNM | ML06-UserAdminOnlyMtr-TransPublicNM | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 620P4 | BLM | 4540.9 | 0.9 | ML06-TransAllNM | ML06-UserAdminOnlyMtr-TransPublicNM | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 620P4A | BLM | 4277.1 | 0.8 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 620Q | BLM | 10.9 | 0 | C07 | ML05-UserAdminMtrPermitteeMtr | ML05-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 620S | BLM | 1302.7 | 0.3 | C08 | ML06-UserAdminMtrPermitteeMtr | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 620S1 | BLM | 370.4 | 0.1 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 620T | BLM | 1401.3 | 0.3 | C08 | MO03 | MO03 | Motorized | RD | R | L1 | WB-50 |
| 620X | BLM | 19161.6 | 3.6 | ML02-UserAdminMtrPermitteeMtr | ML02-UserAdminMtrPermitteeMtr | ML02-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 620Z | BLM | 1722.4 | 0.3 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 621 | BLM | 15311.2 | 2.9 | ML06-UserAdminMtrPermitteeMtr-TransPublicNM | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 621-1 | BLM | 8898.7 | 1.7 | ML06-UserAdminMtrPermitteeMtr | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 621B1 | BLM | 7338.3 | 1.4 | C07 | C07 | C07 | Closed | LF | NA | L0 | NES |

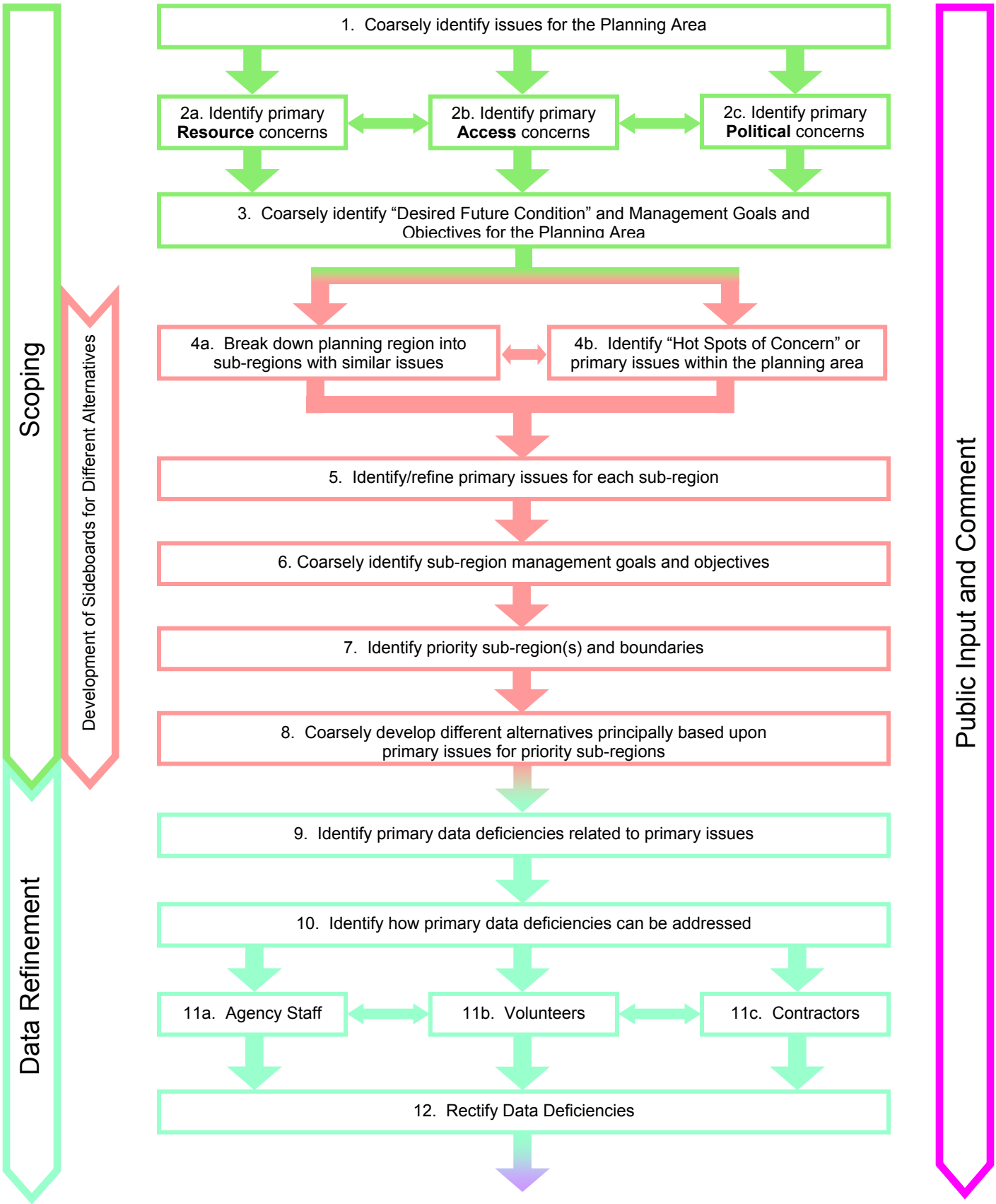
| Route Number | Land Owner | Length | Miles | Alt B Code | Alt C Code | Alt D Code | Route Designation | Asset Type | FC | MI | DSTD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 621B2 | BLM | 4450.9 | 0.8 | ML06-TransAllNM-SeasonSPC_January 1_April 1_ | ML06-TransAllNM-SeasonSPC_January 1_April 1_ | ML06-TransAllNM-SeasonSPC_January 1_April 1 | Non-Motorized | TNM | R | L1 | EQ |
| 621B3 | BLM | 1011.8 | 0.2 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 621E | BLM | 8969.2 | 1.7 | C08 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 621F | BLM | 14701.7 | 2.8 | ML06-UserAdminOnlyMtr | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 621F1 | BLM | 438.6 | 0.1 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 621F2 | BLM | 805.3 | 0.2 | C08 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 621G | BLM | 1675.5 | 0.3 | C08 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 621G2 | BLM | 625.1 | 0.1 | C08 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 621H | BLM | 14025.9 | 2.7 | ML02-UserAdminMtrPermitteeMtr | ML02-UserAdminMtrPermitteeMtr | ML02-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 621H1 | BLM | 985.4 | 0.2 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 621H2 | BLM | 538.6 | 0.1 | C08 | MO03 | MO03 | Motorized | RD | R | L3 | PT |
| 621K | BLM | 1890.9 | 0.4 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 622 | BLM | 36670.8 | 7 | ML02-UserAdminMtrPermitteeMtr | ML02-UserAdminMtrPermitteeMtr | ML02-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 622A | BLM | 1016.7 | 0.2 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 622B | BLM | 6272.3 | 1.2 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 622C | BLM | 6328.4 | 1.2 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 622C1 | BLM | 1949.5 | 0.4 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 622C1.1 | BLM | 294.2 | 0.1 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 622E | BLM | 5435.7 | 1 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 622E10 | BLM | 4366.5 | 0.8 | C08 | C08 | ML06-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 622E11 | BLM | 297.6 | 0.1 | C08 | C08 | ML06-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 622E12 | BLM | 119.1 | 0 | C08 | C08 | ML06-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 622E13 | BLM | 187.7 | 0 | C08 | C08 | ML06-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 622E14 | BLM | 390.9 | 0.1 | C08 | C08 | ML06-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 622E5 | BLM | 2240.2 | 0.4 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 622E6 | BLM | 789.5 | 0.2 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 622E61 | BLM | 198.4 | 0 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 622E7 | BLM | 441 | 0.1 | C08 | C08 | ML06-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 622E8 | BLM | 2337.1 | 0.4 | C08 | C08 | ML06-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 622E9 | BLM | 827 | 0.2 | C08 | C08 | ML06-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 622F | BLM | 6865.7 | 1.3 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 622F1 | BLM | 6461.4 | 1.2 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 622F12 | BLM | 2313.3 | 0.4 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 622F13 | BLM | 717.1 | 0.1 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 622F14 | BLM | 482.7 | 0.1 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 622G | BLM | 1289.6 | 0.2 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 622I | BLM | 577.4 | 0.1 | C08 | C08 | ML06-UserAdminOnlyMtr | Non-Motorized | TNM | R | L1 | EQ |
| 622I1 | BLM | 5938.5 | 1.1 | C08 | C08 | ML06-UserAdminOnlyMtr | Non-Motorized | TNM | R | L1 | EQ |
| 622I2 | BLM | 5431.1 | 1 | C08 | C08 | ML06-UserAdminOnlyMtr | Non-Motorized | TNM | R | L1 | EQ |
| 622I3 | BLM | 803.3 | 0.2 | C08 | C08 | ML06-UserAdminOnlyMtr | Non-Motorized | TNM | R | L1 | EQ |
| 622I4 | BLM | 2689.1 | 0.5 | C26 | C26 | ML16-UserAdminOnlyMtr | Closed | LF | NA | L0 | NES |
| 622J | BLM | 5762 | 1.1 | C08 | ML06-UserAdminOnlyMtr | ML06-UserAdminOnlyMtr | Non-Motorized | TNM | R | L1 | EQ |
| 622J1 | BLM | 687.3 | 0.1 | C08 | ML06-UserAdminOnlyMtr | ML06-UserAdminOnlyMtr | Non-Motorized | TNM | R | L1 | EQ |
| 622K1 | BLM | 46.3 | 0 | C08 | C08 | ML06-UserAdminOnlyMtr | Non-Motorized | TNM | R | L1 | EQ |
| 622M1 | BLM | 12525.6 | 2.4 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 622N | BLM | 2211.4 | 0.4 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 622P | BLM | 345.4 | 0.1 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 623 | BLM | 12376.4 | 2.3 | MO01 | MO01 | MO01 | Motorized | RD | R | L3 | PT |
| 623A | BLM | 16333.5 | 3.1 | ML02-UserAdminMtrPermitteeMtr | ML02-UserAdminMtrPermitteeMtr | ML02-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 623B | BLM | 3837.2 | 0.7 | C08 | ML06-UserAdminMtrPermitteeMtrPvtPropMtr | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 623D | BLM | 9339.4 | 1.8 | C26 | C26 | C26 | Closed | LF | NA | L0 | NES |
| 623E | BLM | 4946.1 | 0.9 | ML06-UserAdminOnlyMtr | ML06-UserAdminOnlyMtr | ML06-UserAdminOnlyMtr | Non-Motorized | TNM | R | L1 | EQ |

| Route Number | Land Owner | Length | Miles | Alt B Code | Alt C Code | Alt D Code | Route Designation | Asset Type | FC | MI | DSTD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 623F | BLM | 18127 | 3.4 | ML02-UserAdminMtrPermitteeMtr | ML02-UserAdminMtrPermitteeMtr | ML02-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 623G | BLM | 4072.2 | 0.8 | ML02-UserAdminMtrPermitteeMtr | ML02-UserAdminMtrPermitteeMtr | ML02-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 624 | BLM | 22674.9 | 4.3 | MO01 | MO01 | O04 | Motorized | RD | C | L5 | MH |
| 624C1 | BLM | 71.5 | 0 | C08 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 624D | BLM | 81.1 | 0 | C08 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 624F | BLM | 507.1 | 0.1 | C26 | C26 | C26 | Closed | LF | NA | L0 | NES |
| 624G | BLM | 120.3 | 0 | ML06-UserAdminMtrPermitteeMtr | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 624H | BLM | 6398.9 | 1.2 | C08 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 624J | BLM | 10.4 | 0 | ML06-UserAdminMtrPermitteeMtr | MO03 | MO03 | Motorized | RD | R | L3 | WB-50 |
| 624J1 | BLM | 2572.1 | 0.5 | ML06-UserAdminMtrPermitteeMtr | ML06-UserAdminMtrPermitteeMtr | ML06-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 624K1 | BLM | 7797.4 | 1.5 | C08 | ML06-UserAdminMtrPermitteeMtr | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 624K2 | BLM | 7264.7 | 1.4 | C08 | ML06-UserAdminMtrPermitteeMtr | ML06-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 624KA | BLM | 2882.9 | 0.6 | C08 | C08 | ML06-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 624KB | BLM | 501.3 | 0.1 | C08 | C08 | ML06-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 624L | BLM | 827.2 | 0.2 | ML06-UserAdminMtrPermitteeMtr | MO03 | MO03 | Motorized | RDP | R | L1 | PT |
| 624L1 | BLM | 1532.8 | 0.3 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 624M | BLM | 3633.7 | 0.7 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 624M1 | BLM | 2322.6 | 0.4 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 624M2 | BLM | 2220.7 | 0.4 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 624M3 | BLM | 1829.5 | 0.4 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 624P | BLM | 416.5 | 0.1 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 624Q | BLM | 9338.9 | 1.8 | ML02-UserAdminMtrPermitteeMtr | ML02-UserAdminMtrPermitteeMtr | ML02-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 624R | BLM | 1147.7 | 0.2 | C26 | C26 | C26 | Closed | LF | NA | L0 | NES |
| 624S | BLM | 507.3 | 0.1 | C26 | C26 | C26 | Closed | LF | NA | L0 | NES |
| 624T | BLM | 715.9 | 0.1 | C26 | C26 | C26 | Closed | LF | NA | L0 | NES |
| 625 | BLM | 599.9 | 0.1 | ML06-TransAllNMM | ML06-TransAllNM | ML06-TransAllNM | Non-Motorized | TNM | R | L1 | EQ |
| 625A | BLM | 8518.8 | 1.6 | C08 | ML06-SeasonOther___Day Use Only - no overnight | MO03 | Motorized | RDP | R | L1 | 4WD |
| 625A1 | BLM | 1274.7 | 0.2 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 625B | BLM | 444.6 | 0.1 | C08 | ML06-SeasonOther___Day Use Only - no overnight | MO03 | Motorized | RDP | R | L1 | 4WD |
| 625C | BLM | 187.2 | 0 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 625D | BLM | 7592.5 | 1.4 | ML06-TransAllNMM | ML06-TransAllNM | ML06-TransAllNM | Non-Motorized | TNM | R | L1 | EQ |
| 625E | BLM | 1618.2 | 0.3 | ML06-TransAllNMM | ML06-TransAllNM | ML06-TransAllNM | Non-Motorized | TNM | R | L1 | EQ |
| 626 | BLM | 2280.6 | 0.4 | ML06-UserAdminMtrPermitteeMtr | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 626A | BLM | 8048.4 | 1.5 | ML06-UserAdminMtrPermitteeMtr | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 626B | BLM | 12375.8 | 2.3 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 626C | BLM | 6578.4 | 1.3 | C08 | ML06-UserAdminMtrPermitteeMtr | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 626D | BLM | 346.3 | 0.1 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 627 | BLM | 3070.2 | 0.6 | ML06-UserAdminMtrPermitteeMtr | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 627C | BLM | 7220.3 | 1.4 | C08 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 627C1 | BLM | 4082.9 | 0.8 | C08 | ML06-UserAdminMtrPermitteeMtr | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 627F | BLM | 9501.6 | 1.8 | ML06-UserAdminMtrPermitteeMtr | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 627G | BLM | 4631.6 | 0.9 | ML06-UserAdminMtrPermitteeMtr | ML06-UserAdminMtrPermitteeMtr | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 628 | BLM | 9302.7 | 1.8 | C08 | ML06-UserAdminMtrPermitteeMtr | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 628A | BLM | 1739.6 | 0.3 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 628B | BLM | 9772.2 | 1.9 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 629 | BLM | 18190.6 | 3.4 | MO03 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 629B1 | BLM | 4164.5 | 0.8 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 629B1A | BLM | 2915.3 | 0.6 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 629C | BLM | 4538.4 | 0.9 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 629C1 | BLM | 3692.9 | 0.7 | MO03 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 629C2 | BLM | 8993.1 | 1.7 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |

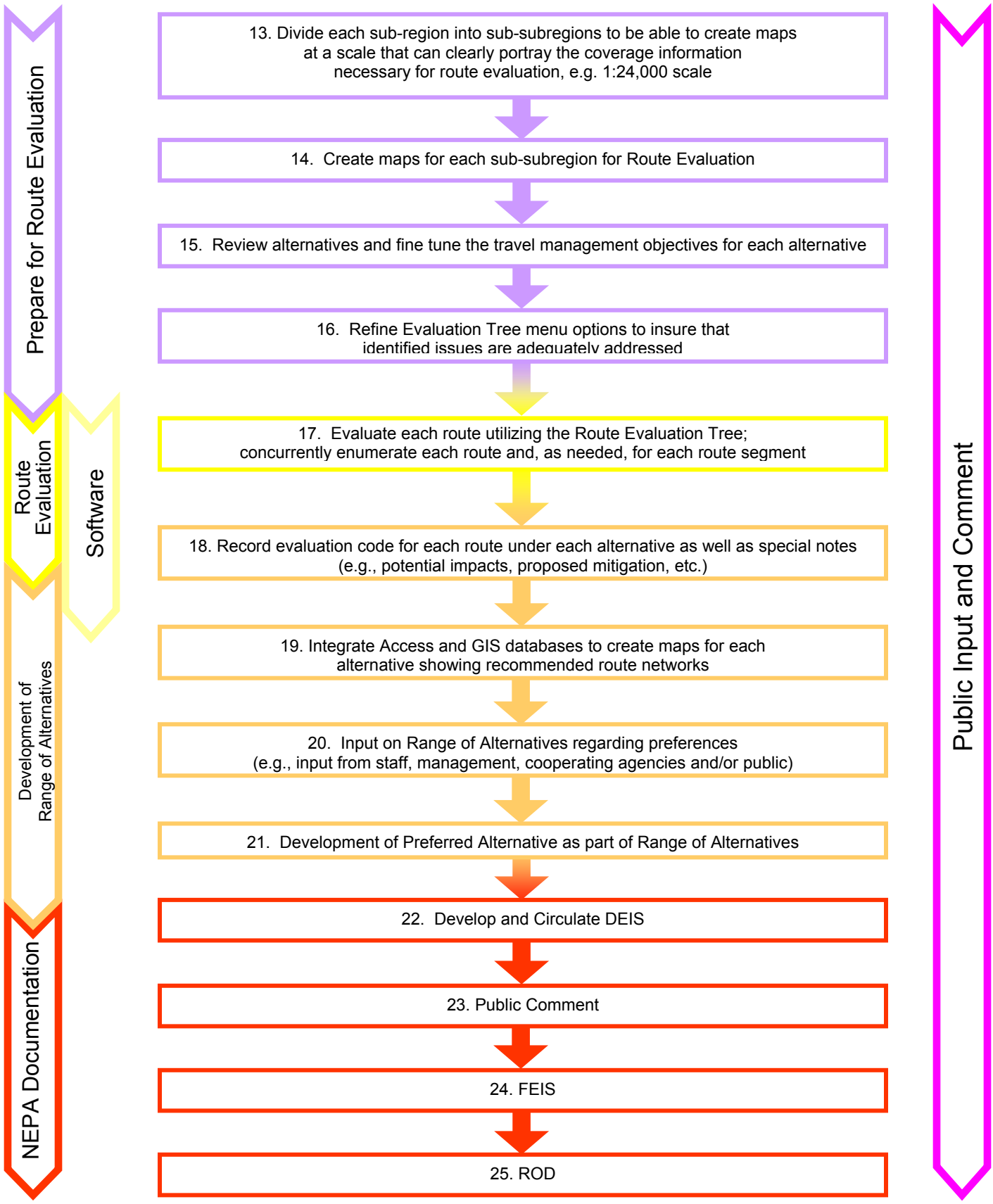
| Route Number | Land Owner | Length | Miles | Alt B Code | Alt C Code | Alt D Code | Route Designation | Asset Type | FC | MI | DSTD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 629D | BLM | 10659.6 | 2 | ML06-UserAdminOnlyMtr-TransPublicNM | ML06-UserAdminMtrPermitteeMtr-TransPublicNM | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 629E | BLM | 15085.4 | 2.9 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 629F | BLM | 4709.5 | 0.9 | C08 | ML06-UserAdminMtrPermitteeMtr | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 629G | BLM | 5367.7 | 1 | C08 | ML06-UserAdminOnlyMtr | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 629M1 | BLM | 3120.6 | 0.6 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 629M1A | BLM | 4588 | 0.9 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 630 | BLM | 9002.5 | 1.7 | ML06-UserAdminMtrPermitteeMtr | ML06-UserAdminMtrPermitteeMtr | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 631 | BLM | 6474.1 | 1.2 | MO03 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 631A | BLM | 330.3 | 0.1 | C08 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 631B | BLM | 13699.2 | 2.6 | C08 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 632 | BLM | 12574.3 | 2.4 | MO03 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 632A | BLM | 3427.4 | 0.7 | ML06-UserAdminOnlyMtr | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 632A1 | BLM | 1344.5 | 0.3 | C08 | ML06-UserAdminMtrPermitteeMtr-TransPublicNM | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 632E | BLM | 5520.4 | 1.1 | C08 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 633 | BLM | 10645.1 | 2 | MO03 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 633B | BLM | 4865.7 | 0.9 | ML06-UserAdminMtrPermitteeMtr | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 634 | BLM | 10739.6 | 2 | ML06-UserAdminMtrPermitteeMtr | ML06-UserAdminMtrPermitteeMtr | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 634A | BLM | 1796.3 | 0.4 | ML06-UserAdminMtrPermitteeMtr | ML06-UserAdminMtrPermitteeMtr | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 634A1 | BLM | 3106.6 | 0.6 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 634A2 | BLM | 1671.3 | 0.3 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 634AX | BLM | 10444.4 | 2 | C07 | C07 | ML05-UserAdminMtrPermitteeMtr | Closed | LF | NA | L0 | NES |
| 635 | BLM | 34572 | 6.6 | ML02-UserAdminMtrPermitteeMtr | ML02-UserAdminMtrPermitteeMtr | ML02-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 635A | BLM | 233 | 0 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 636 | BLM | 10597.3 | 2 | C08 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 637 | BLM | 20382.6 | 3.9 | C08 | ML06-UserAdminMtrPermitteeMtrPvtPropMtr | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 638 | BLM | 4493.1 | 0.9 | ML06-UserAdminMtrPermitteeMtr | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 638A | BLM | 16426.7 | 3.1 | C26 | C26 | ML16-UserAdminMtrPermitteeMtr | Closed | LF | NA | L0 | NES |
| 638B | BLM | 479 | 0.1 | ML06-UserAdminMtrPermitteeMtr | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 638B1 | BLM | 17906.7 | 3.4 | C08 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 638C | BLM | 13580.2 | 2.6 | ML06-UserAdminMtrPermitteeMtr | MO03 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 638D | BLM | 4233 | 0.8 | C08 | ML06-UserAdminMtrPermitteeMtr | ML06-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 639 | BLM | 35574.2 | 6.8 | ML02-UserAdminMtrPermitteeMtr | ML02-UserAdminMtrPermitteeMtr | ML02-UserAdminMtrPermitteeMtr | Motorized | RDP | R | L1 | 4WD |
| 639A | BLM | 42764.4 | 8.1 | C26 | C26 | ML16-UserAdminMtrPermitteeMtr | Closed | LF | NA | L0 | NES |
| 639B | BLM | 3849.6 | 0.7 | ML06-UserAdminMtrPermitteeMtr | ML06-UserAdminMtrPermitteeMtr | ML06-UserAdminMtrPermitteeMtr | Motorized | RDP | R | L1 | 4WD |
| 639C | BLM | 1074.2 | 0.2 | ML02-UserAdminMtrPermitteeMtr | ML02-UserAdminMtrPermitteeMtr | ML02-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 641 | BLM | 7985.8 | 1.5 | MO03 | MO03 | MO03 | Motorized | RD | L | L3 | WB-50 |
| 647 | BLM | 2622 | 0.5 | ML06-UserAdminMtrPvtPropMtr | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 648 | BLM | 2632.8 | 0.5 | C08 | ML06-UserAdminMtrPermitteeMtr | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 648A | BLM | 5292.5 | 1 | ML02-UserAdminMtrPvtPropMtr | MO01 | MO01 | Motorized | RD | R | L3 | WB-50 |
| 650 | BLM | 26013.6 | 4.9 | ML06-UserAdminMtrPermitteeMtr | ML06-UserAdminMtrPermitteeMtr | ML06-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 650C | BLM | 1740.2 | 0.3 | ML06-UserAdminMtrPermitteeMtr | ML06-UserAdminMtrPermitteeMtr | ML06-UserAdminMtrPermitteeMtr | Non-Motorized | TNM | R | L1 | EQ |
| 652 | BLM | 44.7 | 0 | ML06-UserAdminOnlyMtr | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 652B | BLM | 11801.3 | 2.2 | ML06-UserAdminMtrPermitteeMtr-TransPublicNM | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 652B2 | BLM | 7790.9 | 1.5 | ML06-TransAllNM | ML06-UserAdminOnlyMtr-TransPublicNM | ML06-UserAdminOnlyMtr-TransPublicNM | Non-Motorized | TNM | R | L1 | EQ |
| 652F | BLM | 6572.8 | 1.3 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 652H | BLM | 2438.3 | 0.5 | ML06-TransAllNM | ML06-TransAllNM | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 652H1 | BLM | 258.1 | 0.1 | C08 | ML06-TransAllNM | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 652I | BLM | 2743.8 | 0.5 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 652I1 | BLM | 1131.5 | 0.2 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |

| Route Number | Land Owner | Length | Miles | Alt B Code | Alt C Code | Alt D Code | Route Designation | Asset Type | FC | MI | DSTD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 652J | BLM | 328.6 | 0.1 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 652M | BLM | 8049.6 | 1.5 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 654A | BLM | 2859.3 | 0.5 | ML06-TransAllNMM | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 654A1 | BLM | 7042 | 1.3 | ML06-TransAllNMM | ML06-UserAdminMtrPermitteeMtr | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 654A2 | BLM | 6902.2 | 1.3 | ML06-TransAllNMM | ML06-TransAllNM | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 654AA | BLM | 1311.8 | 0.3 | ML06-TransAllNMM | ML06-TransAllNM | ML06-TransAllNM | Non-Motorized | TNM | R | L1 | EQ |
| 654AB | BLM | 13930.5 | 2.6 | ML06-TransAllNMM | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 654AC | BLM | 187.2 | 0 | MO03 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 656 | BLM | 3471.8 | 0.7 | ML06-UserAdminMtrPermitteeMtr-TransPublicNMM | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 656A | BLM | 1933.2 | 0.4 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 656B | BLM | 2711.5 | 0.5 | ML06-UserAdminMtrPermitteeMtr-TransPublicNMM | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 656C | BLM | 15157.8 | 2.9 | ML06-TransAllNMM | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 658 | BLM | 7935.5 | 1.5 | ML06-TransAllNM | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 658B | BLM | 7939 | 1.5 | ML06-TransAllNMM | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 660 | BLM | 2204.2 | 0.4 | ML06-UserAdminOnlyMtr | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 660A | BLM | 4955.2 | 0.9 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |
| 662 | BLM | 10091.9 | 1.9 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 662I1 | BLM | 34.2 | 0 | C08 | C08 | ML06-UserAdminOnlyMtr | Non-Motorized | TNM | R | L1 | EQ |
| 662I2 | BLM | 61.1 | 0 | C08 | C08 | ML06-UserAdminOnlyMtr | Non-Motorized | TNM | R | L1 | EQ |
| 664 | BLM | 955.5 | 0.2 | C08 | C08 | C08 | Non-Motorized | TNM | R | L1 | EQ |
| 665 | BLM | 504.6 | 0.1 | C08 | MO03 | MO03 | Motorized | RDP | R | L1 | 4WD |
| 665A | BLM | 15549.3 | 2.9 | C08 | C08 | MO03 | Non-Motorized | TNM | R | L1 | EQ |

# Route Evaluation Process©
# for Travel Management Planning



# Route Evaluation Process©
# for Travel Management Planning



Version October 11, 2004

# Route Evaluation Tree©

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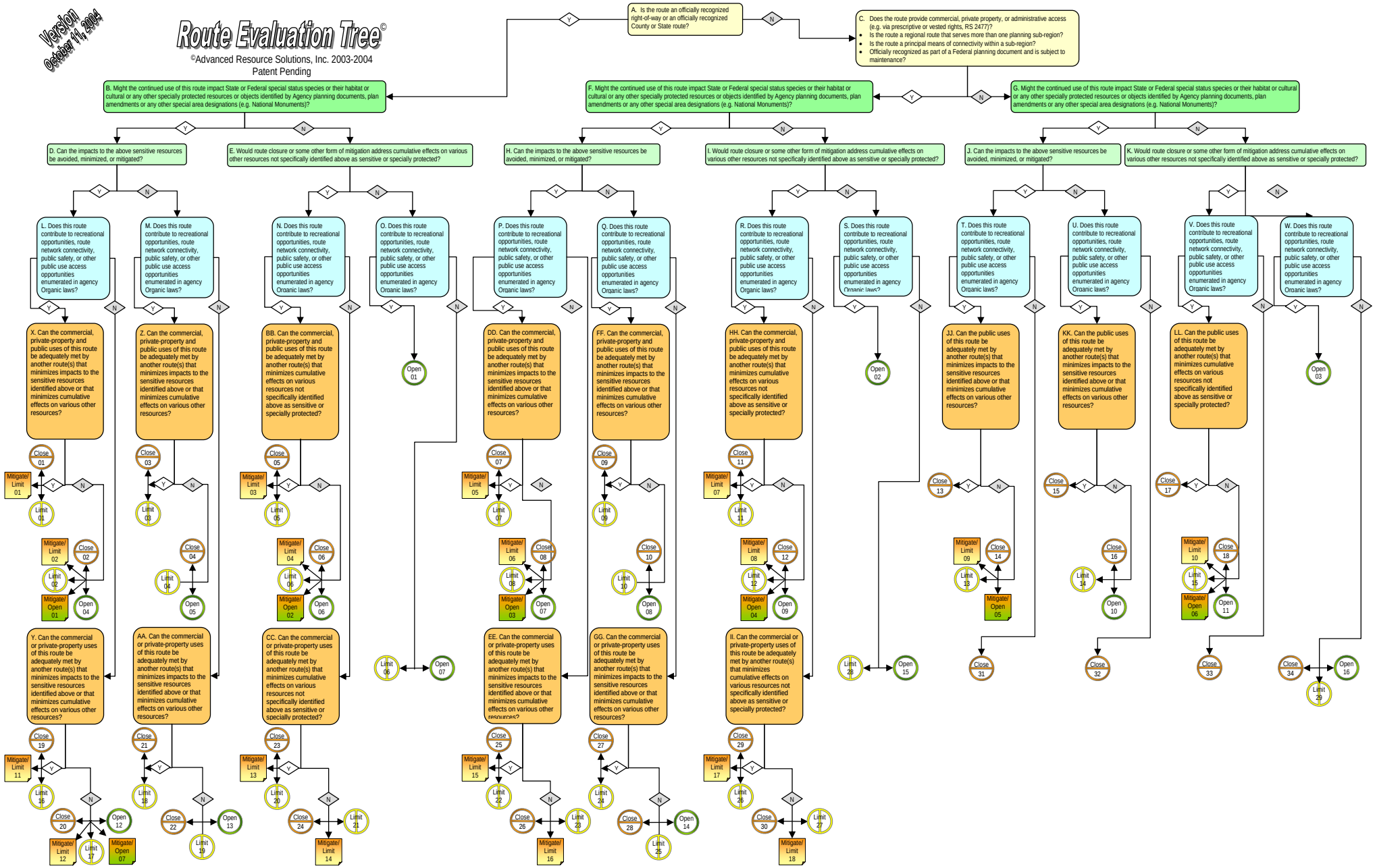

# APPENDIX H

# WATERMAN MOUNTAINS AREA OF CRITICAL ENVIRONMENTAL CONCERN

Section 202 of the Federal Land Policy and Management Act (FLPMA) requires BLM to give priority to designation and protection of Areas of Critical Environmental Concern (ACECs) during the land use planning process.

## DEFINITION OF AN ACEC

BLM regulations (43 CFR part 1610) define an ACEC as:

> *An area within the public lands where special management attention is required (when such areas are developed or used or where no development is required) 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 and safety from natural hazards.*

ACECs differ from other special management designations such as wilderness study areas in that the designation, by itself, does not automatically prohibit or restrict other uses in the area. The only regulatory requirement is that a Plan of Operation is necessary for any proposed locatable mineral exploration or development within an ACEC (which would apply only to valid existing mining claims within the Waterman Mountains). Private land and lands administered by other agencies are not included within the boundaries of ACECs. The ACEC designation is an administrative designation and is accomplished through the land use planning process.

## THE WATERMAN MOUNTAINS ACEC

The Bureau of Land Management (BLM) designated approximately 2,240 acres of BLM-administered land in the Waterman Mountains as an ACEC in the Phoenix Resource Management Plan. The area was designated to protect the federally endangered Nichol Turk's head cactus (*Echinocactus horizonthalonius* var. *nicholii*). As the Nichol Turk's head cactus remains endangered, the values for which this ACEC was designated have not changed. However, based on the establishment of the IFNM, which completely encompasses the ACEC, this area may no longer warrant special management, as the management of the IFNM could provide adequate protection of the resource values within the Waterman Mountains. As a result, BLM can and has considered removal of the ACEC designation from the area under the alternatives presented in the Draft Resource Management Plan and Environmental Impact Statement.

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# LIST OF ABBREVIATIONS AND ACRONYMS

| | |
|---|---|
| °F | degrees Fahrenheit |
| ACEC | area of critical environmental concern |
| ADEQ | Arizona Department of Environmental Quality |
| ADOC | Arizona Department of Commerce |
| ADWR | Arizona Department of Water Resources |
| AGFD | Arizona Game and Fish Department |
| AMA | active management area |
| ASLD | Arizona State Land Department |
| AUM | animal unit month |
| BLM | Bureau of Land Management |
| CEQ | Council on Environmental Quality |
| CFR | Code of Federal Regulations |
| CO | carbon monoxide |
| $CO_2$ | carbon dioxide |
| CRMA | Cultural Resource Management Area |
| EIS | environmental impact statement |
| EPA | Environmental Protection Agency |
| ERMA | extensive recreatioin management area |
| ESA | Endangered Species Act |
| FLPMA | Federal Land Policy Management Act |
| FRCC | Fire Regime Condition Class |
| FY | fiscal year |
| GIS | geographic information system |
| HCP | Habitat Conservation Plan |
| HMP | Habitat Management Plan |
| IFNM | Ironwood Forest National Monument |
| IMPROVE | Integrated Monitoring of Protected Visual Environments |
| lb/hr | pound per hour |
| LUP | Land Use Plan |
| MIST | minimum impact suppression technique |
| MOU | memorandum of understanding |
| NAA | nonattainment area |
| NAAQS | National Ambient Air Quality Standard |
| NEPA | National Environmental Policy Act |
| NHPA | National Historic Preservation Act |
| NLCS | National Landscape Conservation System |
| $NO_2$ | nitrogen dioxide |
| NRCS | National Resource Conservation Service |
| NRHP | National Register of Historic Places |
| $O_3$ | ozone |
| OHV | off-highway vehicle |
| Pb | lead |
| PILT | Payment in Lieu of Taxes |
| PL | Public Law |
| $PM_{10}$ | particulate matter less than or equal to 10 microns in diameter |
| $PM_{2.5}$ | particulate matter less than or equal to 2.5 microns in diameter |
| ppm | parts per million |
| R&PP | Recreation and Public Purposes |
| RAWS | remote automatic weather station |
| RCA | Resource Conservation Area |
| RMP | Resource Management Plan |
| RMZ | recreation management zone |
| ROS | recreation opportunity spectrum |
| SHPO | State Historic Preservation Office |
| $SO_2$ | sulfur dioxide |
| SRMA | Special Recreation Management Area |
| SRP | Special Recreation Permit |
| TMP | Travel Management Plan |
| USDA | U.S. Department of Agriculture |
| UDI | undocumented immigrant |
| U.S.C. | United States Code |
| USDI | U.S. Department of the Interior |
| USFWS | U.S. Fish and Wildlife Service |
| USGS | U.S. Geological Survey |
| UXO | unexploded ordnance |
| VHA | Vegetation Habitat Management Area |
| VRM | Visual Resource Management |
| WHA | Wildlife Habitat Management Area |
| WRCC | Western Regional Climate Center |
| WSA | wilderness study area |
| WUI | wildland urban interface |

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