

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 Roskrige 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 (PM₁₀) 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 PM₁₀, 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 Roskrige 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 PM₁₀ concentrations, which could contribute to continued PM₁₀ 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.