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Environmental Assessment

Rough Mountain, Willie Rose, West Whitetail, East Whitetail and Cochise Head Allotments

Douglas Ranger District, Coronado National Forest
Cochise County, Arizona

Township 15 South, Range 29 East, Sections 13-16, 22-27, 34-36
Township 15 South, Range 30 East, Sections 15-22, 27-35
Township 16 South, Range 29 East, Sections 1, 2, 11, 12, 13-15
Township 16 South, Range 30 East, Sections 2-11, 14-17, 20-23, 26-29, 32-36
Township 17 South, Range 30 East, Sections 1-4, 9-15, 22-23

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CHAPTER 1 – PURPOSE AND NEED

Background

This Environmental Assessment (EA) describes a Forest Service proposal to authorize grazing on the Rough Mountain, Willie Rose, West Whitetail, East Whitetail and Cochise Head allotments in the Chiricahua Mountains, Douglas Ranger District, Cochise County, Arizona. The EA discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and one alternative.

Federal actions such as the authorization of grazing must be analyzed to determine potential environmental consequences pursuant to the *National Environmental Policy Act of 1969* (NEPA) and the *Rescission Act (P.L. 104-19, 1995)*. The Council on Environmental Quality regulations define an environmental assessment as a “concise public document” that “shall include brief discussions” of the need for the proposal, alternatives to the proposal, discussion of environmental effects based on the substantive issues, and a listing of agencies and persons consulted (40 CFR 1508.9). In order to meet the intent of the regulations with respect to “concise” and “brief”, the text of this environmental assessment will contain references to the contents of the analysis record whenever possible. Throughout this EA, references to supporting documentation are shown in parentheses. For example, a reference “(PR 21)” would indicate that a specific passage in the EA is supported by information contained in document No. 21 in the project record. Supporting documentation is on file in the project planning record in the Coronado National Forest Supervisor’s Office in Tucson, Arizona.

Purpose and Need for Action

Where consistent with other multiple use goals and objectives, there is congressional intent to allow grazing on suitable National Forest System lands. (*Multiple Use and Sustained Yield Act of 1960, Wilderness Act of 1964, Forest and Rangeland Renewable Resources Planning Act of 1974, Federal Land Management and Policy Act of 1976, National Forest Management Act of 1976*). By regulation, forage-producing lands will be managed for livestock grazing where consistent with land management plans (36 CFR 222.2(c)). Where consistent with the goals and objectives of Land and Resource Management Plans, it is Forest Service policy to make forage from lands suitable for grazing available to qualified livestock operators (*FSM 2202.1, FSM 2203.1*).

The Rough Mountain, Willie Rose, West Whitetail, East Whitetail and Cochise Head allotments include land identified as suitable for grazing in the Coronado National Forest Land and Resource Management Plan (Forest Plan). The purpose of the proposed action is to authorize livestock grazing in a manner consistent with Forest Service policy and the Forest Plan. The purpose and need arose because:

- The allotments require environmental analysis necessary to comply with the *Rescission Act (P.L. 104, 1995)*.

- There is a need to incorporate additional management flexibility through an adaptive management strategy consistent with Forest Service policy (*FSH 2209.13, Chapter 90*).
- Additional watering facilities may be necessary to improve livestock distribution and improve the reliability of some pastures.

Existing Condition

Location and Setting. The grazing allotments are located on the north end of the Chiricahua Mountains (Figures 1 and 2). Vegetation and topography are quite diverse. Major drainages in the project area include Wood Canyon, Emigrant Canyon, East Whitetail Creek, West Whitetail Creek and their tributaries. Portions of these drainages contain riparian vegetation in the form of willows, cottonwood, sycamores, ash and Arizona cypress. None of these drainages support perennial flows; however surface water can be found for brief periods after precipitation events and in the spring. Elevations range from approximately 4,400 feet on the eastern edge of the project area to over 8,000 feet on Cochise Head. Most capable rangelands are found below 6,000 feet¹.

Vegetation and land form. The project area falls within the Mexican Oak – Pine Woodland and Oak Savannah land resource unit (41-1 AZ) as defined by the Natural Resource Conservation Service (PR 54). Lower elevations support a Desert Grassland community (Figure 4). Dominant native grasses include blue grama (*Bouteloua gracilis*), sideoats grama (*B. curtipendula*), tanglehead (*Heteropogon contortus*) and vine mesquite (*Panicum obtusum*). The exotic Lehmann lovegrass (*Eragrostis lehmanniana*) is the dominant grass species in lower flatter areas near the forest boundary.

Broadleaf Evergreen Woodlands are the most widely distributed plant community in the project area. The dominant native vegetation is Emory oak (*Quercus emoryi*), Arizona white oak (*Quercus grisea*) and mixed junipers dominated by alligator juniper (*Juniperus deppeana*). Understory species include beargrass, pointleaf manzanita (*Arctostaphylos pungens*), silk-tassel (*Garrya wrightii*) and agaves. Herbaceous plants include the grasses *Muhlenbergia*, beggartick grass (*Aristida orcuttiana*), plains lovegrass (*Eragrostis intermedia*) and others.

Coniferous forest communities are found at the highest elevations. Vegetation is a mix of oaks (*Quercus spp.*) alligator juniper, pinyon pine (*Pinus discolor*), ponderosa pine (*Pinus ponderosa*), southwestern white pine (*Pinus strobiformis*), Douglas fir (*pseudotsuga menziesii*), Gambel oak (*Quercus gambelii*) and Chihuahua pine (*Pinus leiophylla*). Little if any grazing use occurs in this type.

Evergreen and coniferous riparian vegetation is found in larger drainages. Dominant tree species include silverleaf oak (*Quercus hypoleucoides*), Emory oak (*Q. emoryii*) Arizona white oak (*Q. arizonica*), Sycamore (*Platanus wrightii*) and alligator juniper.

¹ Capable acres are defined as areas under 40% slope and capable of producing 100 lbs per acre of forage. Areas considered “not capable” primarily consist of steep slopes in upper elevations of the allotments. No grazing capacity is assigned to non-capable areas.

Over the past century, fire has been largely absent from the landscape in the project area due to such factors as heavy grazing and active fire suppression. As a result, woody plants, especially manzanita and juniper have become dominant on many sites within the oak woodland.

Grazing Management. Current permitted numbers and recent grazing use on the allotments is displayed in Table 1. Current management and existing resource conditions are described below.

Table 1. Season of use, permitted numbers and stocking levels for the past 5 years on the North Chiricahua allotments. Use is shown in animal-months (No. of cattle x No. of months grazed) because numbers vary throughout the grazing year. AUMs are defined on page 7 of this EA.

	Rough Mountain	Willie Rose	West Whitetail	East Whitetail	Cochise Head
Total Acres	19,830	1,572	3,842	12,830	6,975
Capable Acres²	10,744	565	2,478	11,337	3,198
Permitted No.	295 cow/calf	31 cows	72 cow/calf	100 cow/calf	126 cow/calf
Season of use	11/1-4/30	11/1-4/30	11/1-4/30	11/1-4/30	11/1-4/30
Permitted AUMs	2,336	186	570	792	998
2005-2006	1,303	non-use	47	110	79
2004-2005	1,677	non-use	51	149	197
2003-2004	non-use	non-use	non-use	117	101
2002-2003	1,922	non-use	184	257	68
2001-2002	2,088	180	139	237	134
2000-2001	1,722	180	142	353	68

The **Rough Mountain** allotment is a community allotment³. Two permittees hold permits for 147 and 148 cattle respectively. A large ridge between Rough Mountain and Wood Mountain divides the allotment approximately in half, and each permittee grazes one side of the allotment. Typically, cattle are pushed up into upper elevations in November and allowed to drift down throughout the season. As cattle drift down, they are separated and herded into lower pastures. Cattle are taken off of the allotment by April 30 and remain off throughout the summer growing season. This management requires active monitoring and herding on the part of the permittees in order to keep livestock from concentrating in drainages during warm or dry years. Vegetation monitoring indicates that upland vegetation is stable and improving. A small area (approximately 56 acres) of impaired soils has been identified in Fox Canyon on the eastern edge of the allotment. Issues on this allotment include inadequate fencing and steep terrain which combine to concentrate cattle in major drainages in some years. Concentrations of livestock in canyon bottoms can affect riparian and soil condition. Additionally, a Mexican Spotted Owl Protected Activity Center (PAC) is located within the grazed portion of the allotment.

The **West Whitetail** allotment is also a community allotment with two permittees, each of whom is permitted for 36 cow/calf pairs during the winter (11/1-4/30). The allotment

² Capable acres are defined as areas under 40% slope and capable of producing 100 lbs per acre of forage. Areas considered "not capable" primarily consist of steep slopes in upper elevations of the allotments. No grazing capacity is assigned to non-capable areas.

³ A community allotment is an allotment upon which two or more permittees graze livestock in common.

is divided into two portions, each containing two pastures. The northern portion (Sugarloaf) is grazed November through February and again from mid-May to mid-August. Entry into the allotment is often deferred until after several frosts in order to reduce the potential for hydrocyanic acid poisoning caused by browsing on Mountain-mahogany (*Cercocarpus breviflorus*) early in the fall. For the past few years, cattle have been taken off the Sugarloaf portion in mid-February and allowed back on to the allotment between May and August in order to avoid the period of Mountain-mahogany toxicity. This management change has been accomplished through yearly modification of the annual operating instructions. The southern portion (Crossed J) is managed under a deferred rotation, typically using one pasture each winter while resting the other. Vegetation monitoring indicates that conditions are good to excellent on both portions of the allotment, with increasing litter and decreasing bare soil. Soils are 100% satisfactory. Utilization averages 25-35% in most years (PR 16). The primary issue related to this allotment is the need to permit additional flexibility in order to avoid poisonous plants.

The **East Whitetail** allotment is permitted for 100 cattle during the winter dormant season (11/1-4/30). There are seven pastures, three pastures in Jhus Canyon and four pastures in Whitetail Canyon. Under the existing plan, cattle are to be pushed into higher elevation pastures at the beginning of the grazing season. As forage and water diminish, gates are opened and cattle are allowed to drift down through the allotment. In practice, the lack of dependable waters and fences has limited use in upper pastures; recent actual use has been light in most of the allotment due to the inability to keep cattle confined to pastures. Monitoring of permanent transects indicates that the allotment vegetation is in fair condition. Ground cover is increasing, but encroachment of woody species tends to suppress conditions. Soils are 100% satisfactory. Primary management issues on this allotment are the lack of developed waters contributing to poor distribution and poor fence conditions that make it difficult to keep cattle in the proper pastures. In addition, the presence of private inholdings in Whitetail Canyon makes it difficult to cross-fence pastures in order to control livestock.

The **Willie Rose** allotment is a small one-pasture allotment managed in conjunction with adjacent state land. The allotment is permitted for 31 cow/calf pairs during the winter. The only source of water on the allotment is an intermittent spring that feeds three drinkers. During dry years, the spring goes dry and no water is available on the allotment. As a result, the allotment has not been used since 2003. Rangeland condition is considered fair, although there has been a noticeable increase in woody vegetation over the past several decades. Soil conditions are 100% satisfactory. The lack of reliable water is the primary issue affecting management on this allotment.

The **Cochise Head** allotment is a five pasture community allotment with two permittees. Two southern pastures are permitted for grazing by 34 cattle, and three larger, northern pastures are permitted for grazing by 92 cattle. At the beginning of the grazing season, cattle are distributed throughout the pastures on the allotment according to water availability. As is the case with other allotments in this group, cattle are pushed into the higher elevations at the beginning of the winter grazing season and allowed to drift down throughout the season. Rangeland condition data collected at two monitoring locations indicate conditions are fair to good, however, there has been an evident increase in mesquite and a corresponding reduction in perennial grasses at lower elevation sites. The

main issue affecting management on this allotment is the poor condition of many fences and water developments, which makes it difficult to properly distribute cattle and decreases the reliability of some pastures. In Holding pasture, a large infestation of *opuntia* is affecting range condition. Unauthorized cattle have been observed on the allotment and the permittees are in the process of removing them.

Management Direction

The allotments fall within Forest Plan management areas 1, 4, and 7 (Figure 5). Management emphasis for these areas is described below.

Management Area (MA) 1 includes steep, rugged lands that are managed for visual resources and semi-primitive dispersed recreation (Forest Plan p. 47). Slopes are generally in excess of 40% and sites included in this management area are generally considered unsuited for livestock grazing. Range management standards and guidelines call for no assigned permitted use for livestock. Cattle may occasionally use these areas (they are not physically excluded), but they are not used to calculate grazing capacity.

Management Area (MA) 4 includes a variety of vegetation types on lands under 40% slope. They are generally considered capable and suitable for livestock grazing. Management emphasis is on a “sustained harvest of livestock forage and fuelwood while maintaining or improving game animal habitat” (Forest Plan p. 62). The majority of the project area falls within MA4.

Management Area (MA) 7 includes lands that have been “identified as supporting flora and fauna associations that are unique enough to require special management practices... Includes riparian ecotypes.” Management emphasis is to manage these areas to benefit riparian dependant resources (Forest Plan p. 67). Riparian bottoms in Wood Canyon and its tributaries on the Rough Mountain Allotment and Jhus and East Whitetail Canyon in the East Whitetail allotment are designated as MA7. Additional unmapped riparian areas are known from the project area and are managed under this emphasis.

Desired Condition

The Coronado National Forest Plan identifies the following goals for the range, wildlife, soil, water and lands, wilderness and recreation programs on the Forest (Forest Plan pp. 9-11).

- To restore rangeland to at least moderately high ecological condition (70% to 75% of potential production, fair range condition) with stable soil and a static to upward trend.
- Produce livestock products consistent with other resources and uses.
- Eliminate grazing from areas not capable of supporting livestock without significant detriment to range or other resources.
- Balance permitted grazing use with grazing capacity.
- Provide habitat for wildlife populations consistent with the goals outlined in the Arizona and New Mexico Department of Game and Fish Comprehensive Plans and consistent with other resource values.

- Provide for ecosystem diversity by at least maintaining viable populations of all native and non-native wildlife, fish and plant species through improved habitat management.
- Improve the habitat of and protection for local populations of Threatened and Endangered species to meet the goals of the Endangered Species Act.
- Provide a favorable flow of water in quantity and quality for off-forest users by improving or maintaining all watersheds to a satisfactory or higher level.
- Allow the use of available National Forest lands for appropriate public or private interests consistent with National Forest Policies.
- Protect significant cultural resources from damage by project activities or vandalism.

Based on Forest Plan goals and site-specific knowledge of the allotments described above, the following objectives constitute the desired condition for the analysis area.

- Livestock stocking is consistent with annual forage production and use is monitored annually. Management controls livestock use and distribution so that sufficient herbaceous vegetation is retained to protect soils and provide herbaceous wildlife cover; zones of heavy use are minimized.
- Management plans provide sufficient flexibility to allow management to adapt to changing resource conditions.
- Ecological sites have stable soils, functional hydrology and support functional biotic communities. All sites are at or moving toward high similarity with their potential natural community.
- Lower elevation sites are dominated by warm season native perennial grasses and are increasing in diversity of grasses, forbs and shrubs. Encroachment of Lehmann lovegrass and woody shrubs is controlled through management.
- Native vegetation in riparian bottoms is a diverse mix of perennial grasses, forbs, shrubs and trees. Trees and shrubs show no evidence of high-lining or hedging and a range of age classes is present.
- Areas with impaired soil condition have increasing ground cover and litter and little erosion.
- Occupied habitats for threatened, endangered, sensitive and management indicator species are maintained or improved and recovery objectives are being met.
- All grazing improvements necessary for management on all allotments are in proper working order and are contributing toward improved livestock distribution and pasture reliability.

Proposed Action

The Forest's proposed action is to authorize continued livestock grazing on the Rough Mountain, Willie Rose, West Whitetail, East Whitetail and Cochise Head allotments under an adaptive management strategy. Light to moderate grazing intensities and regular

growing season rest will be used to provide for grazed plant recovery, increased plant vigor and retention of sufficient herbaceous vegetation to protect soils and to provide herbaceous cover for wildlife. Existing structural range improvements would be maintained and new improvements would be built to the degree necessary to maintain or achieve management objectives. The proposed action is described in detail as Alternative 2 in Chapter 2.

Decision Framework

The Douglas District Ranger is the official responsible for decisions regarding management of the Rough Mountain, Willie Rose, West Whitetail, East Whitetail and Cochise Head allotments. Based on the results of the NEPA analysis, the Ranger will issue a decision document or documents that include(s) a determination of the significance of the environmental effects and whether an environmental impact statement will be prepared. The decision(s) will also include a determination of consistency with the Forest Plan, National Forest Management Act, National Environmental Policy Act and applicable laws, regulations and executive orders.

If the District Ranger determines it is not necessary to prepare an environmental impact statement, the Ranger will decide whether or not livestock grazing will continue to be authorized. If grazing continues to be authorized, the Ranger would determine which management actions, mitigation measures and monitoring requirements would be prescribed in the Allotment Management Plans. These would include permitted number of animals, season of use, allowable utilization standards and the term of the permits. Decisions may be made separately for each allotment. That is, the District Ranger may decide to authorize grazing on one or more allotments, and not on others, or may select different alternatives for different allotments.

Public Involvement

The proposal was listed in the Schedule of Proposed Actions in June 2007. The proposal was provided to the public and other agencies for comment during scoping in September 2007 (PR 33). Four comment letters were received in response to scoping (PRs 34-37). In addition, the agency has met several times with the permittees on the allotments to identify management objectives and strategies. Using the comments from the public and other agencies, the interdisciplinary team developed a list of issues to address.

In April 2008, a draft of the EA was provided to parties who had expressed interest in the project. The public was also notified of an opportunity to comment through a legal notice published in the Douglas *Daily Dispatch* on March 28, 2008. Four comment letters were received in response to this notice (PR 71-74). These comments have been considered by the responsible official and incorporated into the analysis as appropriate. A summary of comments received and a Forest Service response is contained in the project record at PR 75.

Issues

The Forest Service categorized and sorted comments received into issues and non-issues. Issues are defined as a concern or debate about the effects of the proposal. Issues were

further categorized as key issues (significant issues used to develop alternatives to the proposed action and other issues (concerns that are addressed through mitigation measures or project design). The effects analysis is built around the identified issues. Comments not considered issues to analyze in this EA were identified as those that were: 1) outside the scope of the proposed action and thus irrelevant to the decision being made; 2) already decided by law, regulation, Forest Plan, or other higher level decision; 3) conjectural and not supported by scientific or factual evidence.⁴ An analysis of the issues and scoping responses is included in the Record as PR .

Key Issues

No issues were identified that could not be addressed through mitigation or project design modifications.

Other Issues

Other issues and concerns are identified below. Project design features and mitigation measures have been developed to address these other issues.

Wildlife – Continued grazing in the project area could result in effects to wildlife, including listed and sensitive species and their habitats. Effects could be either positive or negative depending on the timing, intensity, frequency and duration of grazing and other management activities.

Soil and watershed condition – Continued grazing on the allotments could affect soil condition. Effects could be either positive or negative depending on the timing, intensity, frequency and duration of grazing and other management activities.

Upland vegetation – Continued grazing on the allotments could lead to changes in the composition, structure and vigor of upland vegetation and could affect the condition and trend of rangeland resources. Effects could be either positive or negative depending on the timing, intensity, frequency and duration of grazing and other management activities.

Heritage Resources – Concentrations of livestock and construction of range improvements may affect historic and prehistoric sites located within the project area.

Additional considerations in this EA include potential effects to **air quality, water quality and quantity and social resources** including **economics**. Effects on these resources are evaluated through specialist's reports and consultation with tribes and regulatory agencies.

⁴ The Council on Environmental Quality (CEQ) NEPA regulations require this delineation in Sec. 1501.7, "...identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (Sec. 1506.3)..."

CHAPTER 2 - ALTERNATIVES, INCLUDING THE PROPOSED ACTION

This chapter describes and compares the alternatives considered for the management of the Rough Mountain, Willie Rose, West Whitetail, East Whitetail and Cochise Head allotments. This section presents the alternatives in comparative form, in order to define the differences between each alternative and providing a clear basis for choice among options by the decision maker and the public. Mitigation and monitoring measures incorporated into the alternatives are also described.

Alternatives

Alternatives Eliminated From Detailed Study

Continue Current Management. Under this alternative, there would be no change in allotment management. As permits expire, new permits would be issued for the classes and numbers of livestock currently permitted. Annual authorized use would continue to be controlled through annual operating instructions. None of the proposed improvements would be implemented, but existing improvements would be maintained. This alternative assumes management intensity, utilization and distribution patterns similar to the past five years. This alternative was not carried forward because it would not address the need to improve pasture reliability and increase management flexibility, nor would it result in significant improvements in livestock distribution.

Alternative 1

No Action

Under this alternative, grazing would not be authorized and use of the allotments by domestic livestock would be discontinued. Permittees would be given up to one year from the date of the NEPA-based decision to remove livestock from the allotments. Existing structural improvements would remain in place but would not be maintained. Improvements contributing to resource protection or enhancement, such as water developments important for wildlife, would be maintained where feasible using other program funds. Periodic inspection of structural improvements would be used to determine whether maintenance or removal is needed. Removal or maintenance of improvements would be authorized by a separate decision. Where necessary, maintenance of allotment boundary fences would be reassigned to adjacent permittees with the understanding that livestock are to be kept off of the allotments. Woody vegetation treatments would not be authorized, but may be authorized under a future decision. The need for such treatments would remain independent of any grazing authorization.

Alternative 2

The Proposed Action

The Forest's proposed action is to authorize continued livestock grazing on the Rough Mountain, Willie Rose, West Whitetail, East Whitetail and Cochise Head allotments. The proposed action consists of four components - **authorization, improvements, management practices and monitoring** – implemented using an adaptive management strategy. The four components are described below.

1. Authorization

Grazing would be authorized on the allotments under the following terms and conditions.

- **Duration and timing of grazing.** The season of use on the **Rough Mountain, East Whitetail, Willie Rose** and **Cochise Head** allotments would be winter seasonal (11/1-4/30) to allow for annual summer growing season rest. The **West Whitetail** allotment would be authorized for yearlong use in order to enhance management flexibility and avoid periods when livestock poisoning occurs. Pastures grazed during the growing season (July –October) will receive rest or deferment the following year. On all allotments, the sequence and timing of pasture moves and the timing of entry and exit from the allotments will be based on monitoring of range readiness, ecological condition, water availability and utilization.
- **Intensity of grazing** - Forage utilization will be managed at a level corresponding to light to moderate intensity⁵ in order to provide for grazed plant recovery, increased plant vigor, and retention of herbaceous litter to protect soils and provide forage and herbaceous cover for wildlife. Consistent patterns of annual utilization in excess of 45% of key species in key areas would be used as a basis to modify management practices or take administrative actions necessary to reduce utilization in subsequent grazing seasons.

Administrative actions necessary to implement the decision. The following administrative actions would occur in order to implement the NEPA-based decision to authorize grazing.

- **Permit issuance.** New 10-year term grazing permits⁶ would be issued for each allotment for the following numbers and terms. The term grazing permit will identify the number, kind and class of livestock authorized and the season of use as required by Forest Service policy (FSM 2231.11). Permits will also identify the total animal

⁵ Based on review of numerous grazing intensity studies, Holechek (2004) identifies light to moderate grazing as 32-43% average use of primary forage species. These averages are based on pasture-wide utilization averaged over time. The Forest Service monitors utilization based on the use of key forage species in key areas. Key areas are selected to be representative of management effectiveness over the entire pasture. For the purposes of monitoring, an annual use guideline of 35%-45% of key species in key areas will be used to monitor use in all pastures, which, combined with growing season rest or deferment, should insure pasture-wide *average* use of less than 45%. (Holechek, J.L., T.T Baker and J.C. Boren. 2004. Impacts of controlled grazing verses grazing exclusion: What we have learned. Range Improvement Task Force Report # 57. New Mexico State University, Las Cruces, NM.)

⁶ Forest Service policy (FSM 2231.03) generally requires term grazing permits to be issued for a period of ten years.

unit months (AUMs⁷) authorized for each permit. The number and class of livestock and period of use would be allowed to vary depending on management objectives and resource conditions, provided that annual use does not exceed the total AUMs authorized or the season of use identified for the allotment. Such changes will be authorized and documented in annual operating instructions.

- **Rough Mountain. Emigrant Canyon portion:** 147 mature cows or equivalent for 6 months, 11/1-4/30 (up to 882 AUMs). **Wood Canyon portion:** 148 mature cows or equivalent for six months, 11/1-4/30 (up to 888 AUMs). The allotment would remain a community allotment with two separate permits.
- **Willie Rose.** 31 cow/calf pairs or equivalent, 11/1-4/30; up to 245 AUMs.
- **West Whitetail. Crossed J portion:** 36 cow/calf pairs or equivalent (up to 283 AUMs). **Sugarloaf portion:** 36 cow/calf pairs or equivalent (up to 283 AUMs). The allotment would remain a community allotment with two separate permits. The permits would authorize use during any month, but cattle would not be on the allotment for more than six months in the aggregate in any year.
- **East Whitetail.** 100 cow/calf pairs or equivalent 11/1-4-30 (up to 792 AUMs).
- **Cochise Head. Northern portion:** 92 cow/calf pairs or equivalent 11/1-4/30 (up to 729 AUMs). **Southern portion:** 34 cow/calf pairs or equivalent 11/1-4/30 (up to 269 AUMs). The allotment would remain a community allotment with two separate permits. This allotment would be rested for the first two years, or until all water developments and fences are made functional and unauthorized livestock are removed from the allotment.
- **Allotment Management Plans.** New allotment management plans (AMPs) would be developed for each allotment and would be incorporated into any term grazing permits issued. The AMPs will specify the goals and objectives of management, management strategies, range improvements and monitoring requirements and will incorporate an adaptive management strategy described below. The use of Coordinated Resource Management Plans (CRMPs) will be encouraged where the presence of intermingled ownership is conducive to more flexible management.

⁷ An animal unit month (AUM) is a measure of the amount of *forage* required by a 1000 lb cow or its equivalent for one month based on a daily allowance of 26 lbs. dry forage per day (Society for Range Management 1998, USFS 1997). It is not synonymous with animal month (or head-month), which is an expression of one month's *occupancy* of the range by an animal. The amount of forage consumed varies based on the size and class of livestock consuming the forage. In general, forage consumption increases with increasing size of the animal using the forage. A cow/calf pair will typically consume more forage than a cow without a calf; a yearling will consume less. Thus an area of rangeland with the capacity to support a certain number of mature cows will likely support relatively fewer cow/calf pairs (or bulls) or relatively more yearlings over the same period of time. The concept of animal unit conversion factors is incorporated into production and utilization studies accomplished by the Forest and is useful for comparing initial capacities on allotments for different classes of livestock. With the forage requirement of a mature cow as the base (1 AUM), a cow/ calf pair is 1.32 AUM and a yearling is 0.7 AUM (FSH 2209.15(28)). Ultimately, however, range capacity can be variable and stocking is determined on an annual basis in response to actual use monitoring.

- **Annual Operating Plans.** On an annual basis, the Forest and permittees will jointly prepare annual plans, referred to as Annual Operating Instructions (AOI), prior to each grazing year. The AOI will set forth:
 - The grazing use authorized on the allotment for the current grazing season and the numbers, class, type of livestock, and timing and duration of use.
 - The planned sequence of grazing or management prescriptions in pastures on the allotment and criteria that will be used to make changes.
 - Structural and non-structural improvements to be constructed, reconstructed, or maintained and who is responsible for these activities.
 - Allowable use or other guidelines to be applied and followed by the permittee to properly manage livestock.
 - Monitoring for the current season that may include, among other things, documentation demonstrating compliance with the terms and conditions in the grazing permit, AMP and AOI.

2. Improvements

Several structural improvements are proposed in order to improve livestock distribution and pasture reliability. Water developments are primarily extensions of pipelines from existing water sources, increasing the storage capacity of existing systems and installation of new drinkers. Three new spring developments are proposed in the Rough Mountain allotment. Short fences are needed to control cattle movements.

Rough Mountain

- Install a pipeline and trough at a spring in lower Wood pasture.
- Install 500 feet of pipeline, 5,000 gallon storage and trough at a spring above Comet Spring in upper Emigrant pasture.
- Install 1,000 feet of pipeline, 3,000 gallon storage and a trough at a spring in lower Emigrant pasture.
- Extend a pipeline .75 mile from a private land well to a 5,000 gallon storage and drinker on State land in lower Emigrant pasture.
- Extend a drift fence .25 mile between South Fork and Lower Wood pastures.

Willie Rose

- Extend a pipeline from a well on deeded land to an existing pipeline on the Forest to supply storage and troughs on the allotment.

West Whitetail

- Fence $\frac{1}{4}$ mile of the boundary between Niagara pasture and the Chiricahua National Monument.
- Construct a 0.5 mile drift fence between Buckhorn and West Whitetail pastures.
- Install a 300 foot wing fence in Whitetail Canyon to facilitate livestock handling.

East Whitetail

- Construct 0.5 mile of drift fence in upper East Whitetail Canyon to keep cattle in Indian Creek pasture.
- Re-establish a pipeline from Jhus Spring by constructing a new spring box, re-fitting storage and adding a new trough.

Cochise Head

- Construct a water lot⁸ around Holding Pasture tank.

These improvements are proposed in the context of adaptive management, meaning that they have been identified as possible practices to assist in the achievement of desired conditions if management alone is not sufficient. Future monitoring may indicate that the projects are not necessary or desirable, in which case they will not be constructed. Monitoring may also indicate the need for additional improvements. In this case, the need for, and site-specific effects of, each additional improvement will be evaluated as described under *Adaptive Management*, below.

The responsibility for maintenance of range improvements is assigned to the permittee(s) in the terms and conditions of each grazing permit (FSM 2244.03). Maintenance activities include the repair of fences and water facilities, cleaning of stock ponds and other actions necessary to maintain the improvement in serviceable condition necessary to serve the purpose intended. On an annual basis, responsibilities for repair and maintenance of existing improvements will be identified in the AOI(s).

3. Management Practices.

To mitigate resource impacts, the following measures will be implemented. These practices have been demonstrated to be successful when used on similar projects and are considered effective at reducing environmental impacts. They are consistent with applicable Forest Plan standards and guidelines, Best Management Practices and the terms and conditions and conservation measures of applicable U.S. Fish and Wildlife Service Biological Opinions. Implementation of the mitigation measures and design criteria is intended to preclude the occurrence of potentially significant environmental impacts.

Soil, Water and Vegetation – the objective is to mitigate effects of livestock grazing and facility construction through the use of Best Management Practices (FSH 2509.22) and adaptive management. Practices include, but are not limited to the following.

- Utilization of key upland herbaceous forage species in key areas will be managed to achieve the goal of light to moderate grazing as a pasture average. The objective is to protect plant vigor, increase herbaceous residue needed for soil protection and to increase herbage producing ability of forage plants. A utilization guideline of 30-45% use of key species in key areas will be used to achieve this objective.

⁸ A water lot is a small fence constructed around a water source to control access to the water by livestock.

- Management practices will be used to achieve proper distribution or lessen the impact on sensitive areas. Practices include herding, salting and controlling access to waters. Salt will be placed on good feed, one quarter to one half mile from waters and salting locations will be moved annually. Placement of liquid or bulk supplements will require prior approval of the District Ranger.
- No hay will be placed on Forest lands in order to minimize the introduction of weed seeds.

Wildlife – the objective is to mitigate impacts to wildlife from livestock grazing and from disturbance associated with maintenance and construction of range facilities.

- All water developments will include wildlife access and escape ramps. Waters will be kept available to wildlife year round.
- All new and reconstructed fencing will be built to Forest Plan standards (Forest Plan, p. 35) to provide for wildlife passage through the fence. At a minimum, this will be a 4-strand fence with smooth bottom wire 16 inches off of the ground and a total height of 42 inches or less.
- Range construction projects will be designed to avoid the destruction of agaves. If impacts to agaves are unavoidable, the Forest will insure that no more than 1% of agaves within 800 meters of a project are impacted. The objective is to avoid impacts to lesser long-nosed bat food resources.
- All proposed range facilities will be evaluated by a qualified wildlife biologist for effects to threatened, endangered or sensitive species prior to any ground-disturbing activities. Facilities will be designed and constructed to have no adverse effect on listed species.
- Within areas meeting the definition of high quality Mearns' quail habitat, herbaceous vegetation will be managed to maintain a minimum of 6 inches of herbaceous stubble height, which is generally interpreted as less than 45% utilization of key herbaceous species. The objective is to provide herbaceous vegetation as cover for quail and other wildlife.
- Range improvement projects within Mexican Spotted Owl PACs or Goshawk post-fledging family areas (PFAs) will be constructed outside of the breeding season for these species (March 1-September 30), or after a forest wildlife biologist has determined that nest sites or territories are not occupied.

Heritage Resources – The objective is to protect heritage resources (historic and prehistoric sites) from direct or indirect impacts caused by ground-disturbing activities associated with the construction of range facilities and to monitor the effects of cattle grazing on sites to ensure that adverse effects are not occurring. In general, these measures include the following:

- All structural range facilities will be surveyed by qualified personnel for heritage resources prior to any ground-disturbing activities. Facilities will be built or modified to avoid impacts to heritage sites. If unrecorded sites are discovered during the course of project implementation, activities will cease and the Forest or District Archeologist will be notified.

- Range facilities, if needed, will be located so as to avoid concentrations of livestock on identified heritage resource sites.
- No salting will occur within or adjacent to identified heritage sites.
- If impacts from grazing (e.g. excessive trampling, cattle rubbing against and knocking down standing features) are occurring to heritage sites, measures will be taken (e.g. fencing) to protect them.

4. Monitoring

The objective of monitoring is to determine whether management is being properly implemented and whether the actions are effective at achieving or moving toward desired conditions. Monitoring is necessary under the adaptive management strategy proposed in order to implement timely and effective management changes. The Douglas District Range Staff Officer will be responsible for monitoring. Active cooperation and participation by the permittees will be encouraged.

Effectiveness monitoring includes measurements to track condition and trend of upland and riparian vegetation, soil, and watersheds. Monitoring will be done following procedures described in the interagency technical reference⁹ and the Region 3 Rangeland Analysis and Training Guide.¹⁰ These data are interpreted to determine whether management is achieving desired resource conditions, whether changes in resource condition are related to management, and to determine whether modifications in management are necessary. Effectiveness monitoring will occur at least once over the ten-year term of the grazing authorization, or more frequently if deemed necessary.

Implementation monitoring will occur yearly and will include such things as inspection reports, forage utilization measurements in key areas, livestock counts and facilities inspections. Utilization measurements are made following procedures found in the Interagency Technical Reference¹¹ and with consideration of the Principles of Obtaining and Interpreting Utilization Data on Southwest Rangelands (PR 45).

Utilization will be monitored on key forage species, which are perennial grasses that are palatable to livestock. At a minimum monitoring will include use in key areas¹², but may include monitoring outside of key areas. Utilization on non-grass species (forbs, shrubs

⁹ Sampling Vegetation Attributes, Interagency Technical Reference. 1996. Cooperative Extension Service, USDA Forest Service and Natural Resources Conservation Service, and USDI Bureau of Land Management.

¹⁰ Rangeland Analysis and Management Training Guide. 1997. USDA Forest Service, Southwestern Region.

¹¹ Utilization Studies and Residual Measurements. Interagency Technical Reference. 1996. Cooperative Extension Service, USDA Forest Service and Natural Resources Conservation Service, and USDI Bureau of Land Management. Revised 1999.

¹² A key area is a portion of rangeland selected because of its location, use or grazing value as a monitoring location for grazing use, range condition and trend. Key areas are usually ¼ to 1 mile from water, located on productive soils on level to intermediate slopes where prescribed use will occur first. They are 5 acres or more in size. Properly selected key areas will reflect the overall acceptability of current management.

and trees) may also be measured if appropriate for the site. Over time, changes in resource conditions or management may result in changes in livestock use patterns. As livestock use patterns change, new key areas may be established and existing key areas may be modified or abandoned in cooperation with the permittees.

Adaptive Management

Adaptive management involves monitoring the results of management actions and using the information to continually modify management in order to achieve specific objectives, which are identified under *Desired Condition* in Chapter 1. Adaptive management provides the flexibility to adjust livestock numbers and the timing of grazing so that use is consistent with current productivity. Under the adaptive management strategy proposed, the specific number of livestock authorized, specific dates for grazing, class of animal and modifications in pasture rotations may be administratively modified as determined to be necessary and appropriate, based on implementation and effectiveness monitoring. However, such changes will not exceed the limits for timing, intensity, duration and frequency authorized in the NEPA-based analysis and decision. Administrative changes will be documented and implemented in the AOI, AMP and/or the term grazing permit.

In the case that changing circumstances require physical improvements not disclosed or analyzed herein or modification of previously identified improvements, further interdisciplinary review would occur. The review will consider the changed circumstances and site-specific environmental effects of the improvements in the context of the overall project. Based on the results of the interdisciplinary review, the District Ranger may determine whether correction, supplementation or revision of the EA is necessary, in accordance with Forest Service Handbook (FSH) 1909.15(18) and FSH 2209.13(96.1).

Future Review of the Decision

In accordance with Forest Service Handbook direction [FSH 1909.15(18) and 2209.13(96)], an interdisciplinary review of the decision will occur within 10 years, or sooner if conditions warrant. If this review indicates that management is meeting standards and achieving desired condition, the initial management activities would be allowed to continue. If monitoring demonstrates that objectives are not being met and management options beyond the scope of the analysis are warranted, or if new information demonstrates significant effects not previously considered, a new proposed action would be developed and further analysis under NEPA will occur.

Comparison of Alternatives

Table 2 provides a summary of the attributes of each alternative. Information in the table is focused on design features and how well they meet the purpose and need. Detailed comparisons of the effects of each alternative are discussed in Chapter 3.

Table 2. Comparison of the Alternatives.

Attribute	Alternative 1	Alternative 2
National Forest Policy and Forest Plan Consistency	Consistent with Forest Plan. Not consistent with policy (FSM 2202.1, 2203.1)	Consistent with Forest Plan and policy.
Meets purpose and need	N/A	Yes. Resolves distribution issues and balances use with capacity. Provides management flexibility.
Effect on Wildlife and Plants	No Effects from grazing.	Effects mitigated. Improved distribution reduces localized effects to habitats.
Effects on soil and watershed condition	No effects from grazing. Improvement in soil and watershed cover over time.	Additional waters increase management flexibility and contribute to improved distribution. Moderate use contributes to watershed stability. Concentrations of cattle contribute to localized soil impairment.
Effects on upland vegetation	No effects from grazing. Increasing plant cover and litter over time.	Additional waters increase management flexibility and contribute to improved distribution. Increased use in uplands and localized effects around waters. Moderate use levels minimize effects.

CHAPTER 3 - ENVIRONMENTAL CONSEQUENCES

This section summarizes the physical, biological, social and economic environments of the affected project area and the potential changes to those environments due to implementation of the alternatives. It also presents the scientific and analytical basis for comparison of alternatives presented in the chart above.

Wildlife

The Chiricahua Mountains are part of an archipelago of “sky islands” connecting the Rocky Mountains to the north with the Sierra Madre Occidental of Mexico. The location, combined with the topographic relief found in the Chiricahua Mountains contribute to high structural and plant species diversity and a corresponding high diversity of wildlife species, including many Mexican species rarely seen in the U.S. The area is especially important for migratory birds. The entire Chiricahua Mountain range is identified by the National Audubon Society as an Important Bird Area.

Affected Environment – Threatened and Endangered Species

Effects of the ongoing grazing activities on the allotments have been evaluated in Biological Assessments (BA) of Ongoing and Long-term Grazing on the Coronado National Forest in 1998 and again in 2002 (USFS 1998, 2002, PR 41). The effects of continued implementation of the Forest Plan, including livestock grazing, were evaluated in 2005 (USFS 2005, USDI-FWS 2005, PR 42). Livestock grazing is currently managed to comply with the 2002 and 2005 Biological Opinions from the U.S. Fish and Wildlife Service (PR 41, 42). Based on minor changes in proposed management, updated information on resource conditions and the need to extend the term of the consultation to coincide with the term of the proposed grazing permits, project level consultation was reinitiated for the proposal in 2007 (PR 47, 55, 57-60). Species potentially affected by the proposed action or alternatives are disclosed below. More extensive discussions, including “no effect” determinations, can be found in the project BA (PR 47).

Lesser long-nosed bat (*Leptonycteris curasoae yerbabuena*). The lesser long-nosed bat (LLNB) was listed as Endangered without critical habitat on September 30, 1988 (53 FR 38456). The species feeds on the nectar and pollen of paniculate agaves (*Agave palmeri*, *A. parry*, and *A. deserti*) and the nectar, pollen and fruit of columnar cactus. Paniculate agaves are found on all of the allotments and the LLNB is known to roost and forage throughout the Chiricahua Mountains between July and September each year. Five roosts are located within the project area or within foraging distance of the project area.

Jaguar (*Panthera onca*). The Jaguar is listed as endangered without critical habitat (62 FR 39147, 1997). Jaguars are found in habitats ranging from Sonoran desert scrub to subalpine coniferous forest. Since 1996, jaguars have been photographed twice in the Peloncillo Mountains, approximately 30 miles southeast of the project area. Documented occurrences within the Chiricahua Mountain complex include a confirmed kill in 1986 in

the Dos Cabezas Mountains and reports dating back to the early 20th century. No jaguars are currently known to inhabit the Chiricahua Mountains; however, given the relative orientation to historic and recent jaguar observations, the rugged characteristics of the allotments and the wide-ranging habits of jaguars, all five allotments are considered to have some potential as travel corridors or hunting areas. Based on recent occurrences, a jaguar or jaguars may be reasonably expected to occur in the project area in the next ten years.

Mexican Spotted Owl (*Strix occidentalis lucida*). The Mexican Spotted Owl (MSO) was listed as threatened in 1993 (58 FR 14248) and critical habitat was designated in 2003 (FR 68 65020). There are two MSO Protected Activity Centers (PACs) within this area of the Chiricahua Mountains: Indian Springs and Wood Canyon Park. These PACs are located in upper headwaters of Wood Canyon and Indian Creek, and overlap upper elevation portions of the Rough Mountain, Cochise Head and East Whitetail allotments. There have been no recent surveys for MSO within these PACs, so occupancy status is unknown. Nearly the entire project area is within designated critical habitat. Suitable spotted owl nesting and foraging habitat associated with the Indian Springs PAC is located almost entirely outside of capable range and topographical features generally restrict access to these habitat areas by cattle. Grazing occurs in a portion of the Wood Canyon PAC prior to the MSO nesting season (March 1 to August 31), but cattle are moved into lower pastures usually by the end of February. Utilization in the Upper Wood pasture approaches 45% in some years.

Chiricahua Leopard Frog (*Rana chiricahuensis*). The Chiricahua leopard frog (CLF) was listed as threatened, without critical habitat in 2002 (67 FR 40790). The CLF appears to be extirpated from the Chiricahua Mountains (Larry Jones, USFS, personal communication). The apparent extirpation of CLF from the mountain range is consistent with the extensively documented range-wide decline of the species over the past decade (Clarkson and Rorabaugh 1989, Sredl and Howland 1994, Rosen *et al.* 1994, Sredl *et al.* 1997 cited in PR 47). The CLF requires permanent or nearly permanent pools and ponds for breeding. There are no records of the species from the project area, nor are there perennial streams or wetlands that would provide more than limited suitable habitat.

Environmental Consequences – Threatened and Endangered Species

Lesser long-nosed bat. In 2002 the Forest determined that grazing as practiced on the five allotments *may adversely affect* the LLNB (PR 41). Take was not assessed and no terms and conditions were issued. This determination was based on the following rationale: The LLNB feeds on flowering agaves on the Forest between July and September. Agave stalks, as they begin to bolt are particularly palatable to domestic livestock. If pastures are grazed during April and May when agave stalks are accessible, livestock may feed on young agave stalks, precluding the plant from flowering and potentially reducing forage resources for LLNB. However; it has not been established that grazing by livestock significantly increases herbivory on agaves compared to ungrazed areas. Because deer and other wildlife also feed on the plants, levels of herbivory on agaves have been found to be similar in both grazed and ungrazed pastures. (Widmer 2002, Bowers and McLaughlin 2001). In addition, livestock herbivory on

agaves diminishes significantly at distances greater than 0.75 mile (1.21 km) from water (Widmer 2002).

No surveys of agave density or estimates of the extent of livestock herbivory have been made on the allotments; however, ocular estimates of the allotments indicate that agaves are well distributed throughout the project area, with highest densities in the desert grassland communities at lower elevations.

Under *Alternative 1*, no effects are anticipated as livestock will be removed from the allotments and agaves will not be exposed to grazing. Under *Alternative 2*, management practices described under the proposed action will be used to avoid the destruction of agaves as a result of construction activities. Grazing may occur early in the flowering period (April 1-30) in selected pastures in each allotment. Since cattle will be removed by April 30 each year, no exposure is anticipated during the balance of the agave bolting season. Further, approximately 37% of the project area is non-capable range and is not grazed due to steep slopes and rough topography. Thus, the exposure of bolting agaves to livestock will be limited by both the timing and location of grazing. The Sugarloaf portion of the West Whitetail allotment is scheduled to be used from mid-May to mid-August; therefore this portion of the allotment would be used during the agave bolting season and the potential for livestock herbivory would be somewhat greater.

The proposed action does not include modification of any bat roost on Forest Service land. No disturbance of roosts from authorized grazing activities is anticipated because grazing occurs outside of the period (July-September) when the bats are present in the area.

There is no information to indicate that the proposed action will result in effects in a manner or to an extent not considered previously. Bolting agaves will continue to be exposed to grazing livestock at the beginning of the bolting season. This exposure will be of limited duration and extent, but the amount of herbivory has not been quantified. In the absence of quantifiable data, effects cannot be considered insignificant or discountable. The proposed action *may affect, likely to adversely affect* the lesser long-nosed bat.

Jaguar. In 2002, the Forest determined that ongoing grazing is *not likely to adversely affect* the jaguar based on the conclusion that grazing does not affect movement corridors for the species (PR 41). The decline of the jaguar in Arizona was concurrent with predator control activities associated with land settlement and the development of the livestock industry in the early 20th century. Predator control activities aimed at jaguar no longer occur. Activities that potentially affect jaguars are those that result in fragmentation of habitats or disruption of movement corridors that allow dispersal into unoccupied habitat. Excessive removal of woody or herbaceous vegetation, particularly within riparian corridors, could affect cover for jaguars and/or their prey; however, jaguars are not dependent solely on dense vegetation for escape or protective cover. Habitat remoteness and steep topographic relief appear to provide the majority of cover available to this species in the southwest.

Under *Alternative 1*, livestock would be removed. There would be no effects on woody cover, although herbaceous cover may increase in areas that were historically grazed. Assuming that jaguars opportunistically prey on cattle, some reduction in prey availability may occur. However, native deer are abundant in the project area, so this

effect would not be significant. Under *Alternative 2*, livestock grazing and facility development may result in short term disturbance, but will not permanently disrupt connectivity corridors within the U.S. and between the U.S. and Mexico. Livestock grazing within the project area is not predicted to reduce woody cover in bottoms or uplands. Removal of herbaceous cover by grazing livestock would continue, but this would not significantly affect cover for jaguars. Jaguars may prey on livestock, but such predation has not been documented in the project area. Based on this, the Forest concludes that the proposed action will not affect Jaguars in a manner or to an extent not considered previously. The proposed action *may affect, but is not likely to adversely affect* the Jaguar on all five allotments.

Mexican Spotted Owl. In 2002 the Forest determined that ongoing livestock grazing is *not likely to adversely affect* the MSO on all five allotments. Under *Alternative 1* no effects are anticipated. Under *Alternative 2*, grazing in the Cochise Head, East Whitetail, and Rough Mountain Allotments (the allotments with PAC's) would be authorized November through April, prior to and during the MSO breeding season (March 1-August 31). Most of the Indian Spring PAC area is unsuitable range as receives less than 5% utilization. Most of the Wood Canyon Park PAC also is not capable range or receives utilization of 6-15%. There is a portion of Wood Canyon Park PAC in the bottom of Wood Canyon that receives up to 45% utilization. As the grazing season progresses, the cattle drift or are herded into lower elevation pastures by the end of February. All maintenance of existing range improvements and construction of new range improvements will be done outside the spotted owl breeding season (March 1 through August 31). Livestock grazing and management activities will be managed for levels (45% or less) that provide herbaceous and woody vegetation necessary for rodent prey cover. The Forest concluded that the proposed action will not affect MSO in a manner or to an extent not considered previously. The proposed action *may affect, but is not likely to adversely affect* the MSO and MSO critical habitat on all five allotments.

Affected Environment - Forest Service Sensitive Species

Sensitive species are those species that have been identified by the Regional Forester as of concern for reduction in population viability as evidenced by 1) significant current or predicted downward trends in population numbers or density, or 2) significant current or predicted downward trends in habitat capability that would reduce a species' distribution. (Forest Service Manual 2670.5). The Regional Forester's list of sensitive plant and animal species was revised and updated in September 2007, and was the basis for the analysis. Sensitive species considered in the analysis are shown in Table 3. These species were selected because suitable habitats occur in the project area, but many of the species have not been documented in the area.

Table 3. Sensitive wildlife and plant species considered in the analysis.

Species	Comments
Birds	
Gould's Wild Turkey <i>Meleagris gallpavo mexicana</i>	Well-established population in Chiricahua Mtns. Suitable habitat in upper elevations. Not documented, but likely to occur as population expands.
American Peregrine Falcon <i>Falco peregrinus anatum</i>	Nests and forages widely in the mountain range. Suitable nesting cliffs on Cochise Head.
Apache Northern Goshawk <i>Accipiter gentilis apache</i>	Suitable habitats (Apache, Chihuahua and Ponderosa pine forests) in Upper Price Canyon.
Invertebrates	
Four Spotted Skipperling <i>Piruna polingii</i>	Found in moist woodlands from central Arizona south to Mexico. Not documented from the project area, but suitable habitats exist.
Mammals	
Arizona Shrew <i>Sorex arizonae</i>	Found in mist canyon bottoms with dense vegetation and woody debris. Occurs in Chiricahua Mountains but not known from project area. Suitable habitats in upper Indian Spring and Jhus Canyon..
Allen's Lappet-browed Bat <i>Idionycteris phyllotis</i>	Records from several locations in the Chiricahua Mountains. Roosts in caves, mines and trees.
Chiricahua Fox Squirrel <i>Sciurus nayaritensis chiricahuae</i>	Population well distributed throughout mountain range. Suitable habitats in canyons in project area.
White-nosed Coati <i>Nasua narica</i>	Found in riparian and woodland habitats throughout the range.
Reptiles	
Twin Spotted Rattlesnake <i>Crotalus pricei</i>	Occurs throughout Chiricahua Mountains, Suitable habitats in project area.
Plants	
Chiricahua Rock Cress <i>Aribis tricornuta</i>	Found in upper elevations (above 6,000 feet) in Chiricahua Mountains. Potentially occurs in upper Wood and Whitetail canyons.
<i>Asclepias lemmonii</i> Lemmon milkweed	Found in pine-oak woodlands in the Chiricahua Mountains. not documented from project area.
<i>Astragalus cobrensis</i> var. <i>maguiri</i> Coppermine milk-vetch	This plant is found in the Chiricahua National Monument near East Whitetail and West Whitetail allotments. This plant would generally be found associated with canyon bottoms/drainages
<i>Carex chihuahuensis</i> Chihuahuan sedge	Occurs in moist canyon bottoms. Suitable habitats limited.
<i>Carex ultra</i> Arizona giant sedge	Occurs in moist canyon bottoms. Suitable habitats limited.
<i>Castilleja nervata</i> Trans-Pecos Indian Paint Brush	Grows on rocky, south facing, grassy slopes on rhyolitic soils at elevation between 4,200 to 9,640 feet. Plants are part of a tall bunch grass community in open sun with a scattering of small trees.
<i>Erigeron arisolius</i> Arid throne fleabane	Wide distribution. Moist rocky soils in grasslands or openings in woodlands. No records, but suitable habitat present

Species	Comments
Chiricahua fleabane <i>Erigeron kuschei</i>	This species occurs in Madrean conifer forest communities on rock outcrops and cliffs. It is found at high elevation (6,800-9,300 feet), moist, shaded sites.
<i>Gentianella wislizeni</i> Wislizeni Gentian	Open meadows, roadsides, and steep unstable slopes in pine-oak and mixed-conifer forests. High-elevation clearings, usually with open sunlight appear to be best habitat; elevations between 6,880 to 9,600 feet. Confined to higher elevations.
<i>Graptopetalum bartramii</i> Bartram's Stonecrop	Grows in cracks in rocky outcrops in shrub live oak-grassland on sides of rugged canyons. Usually grows in heavy litter and shade associated with water, but sometimes occurs in hot dry slopes.
Arizona Alum Root <i>Huechera glomerata</i>	This herbaceous perennial forb is found on shaded rocky slopes in humus soil, near seeps and streams in riparian areas in pine-oak woodland. It occurs from 4,000 to 9,000 feet.
<i>Hexalectris warnockii</i> Texas purple spike	Grows on shaded slopes and dry, rocky creek beds in canyons within oak-juniper-pinyon pine woodlands. It's found in heavy leaf litter beneath oaks along streambeds. Occurs in Chiricahua Monument.
<i>Lupinus lemmonii</i> Lemmon's lupine	Occurs in open grassland, juniper and oak communities. No records from project area.
<i>Perityle cochisensis</i> Chiricahua Rock Daisy	Occurs in crevices and ledges in Chiricahua EMA, no known locations in project/analysis area.
<i>Polemonium pauciflorum</i> ssp. <i>hinckleyi</i> Davis Mountain Jacob's Ladder	Occurs in Chiricahua EMA in pine-oak forests and higher, no known locations in project/analysis area.
<i>Sisyrinchium cernuum</i> Nodding blue-eyed grass	Found in wet soils along streams. Occurs in Chiricahua EMA, no known locations in project/analysis area.
<i>Stellaria porsildii</i> Porsild's Starwort	Found in partially shaded understory of pine, Douglas fir and oak at elevations from 7,000 to 9,200 feet. It has been found in open meadows at 7,000-8,000 feet. In Arizona it's found in open parkland type habitat and at the edge of meadows in Madrean Montane Conifer Forest communities.
<i>Viola umbraticola</i> Shade Violet	Shady areas in canyon bottoms, usually within riparian ponderosa pine forest in Arizona, and pine-oak in Mexico. In Arizona it has been collected in Ponderosa pine-juniper-oak. 5,200 to 7,500 feet in elevation.

Environmental Consequences – Sensitive Species

The effects of the proposed action have been evaluated in a separate report (PR 46) and are summarized below. For the following species, a biologist has determined that the proposed action would have *no impact*.

Peregrine Falcon. Nesting cliffs in the vicinity of Cochise Head are located on non-capable rangeland. Prey species habitats are expected to be adequate at the utilization levels proposed. No significant disturbance is proposed and grazing will not occur during the nesting season.

Apache Fox Squirrel. Large, mature conifers, oaks, and riparian trees that the Apache fox squirrel uses are not generally affected by livestock grazing.

Allen's Lappet-browed Bat. Grazing activities will not affect roosts.

Twin-spotted Rattlesnake. Preferred habitats in rocky high elevation coniferous forests are almost entirely in non-capable range. Grazing in suitable habitats limited to winter months when snake is not active.

Chiricahua Rockcress. The steep rocky slopes on which this plant grows makes it unlikely that livestock grazing during winter to moderate levels would impact this plant.

Chiricahua Fleabane. This plant grows in areas (cliffs and rock faces) not accessible to livestock.

Purple-spike coralroot. Spikes of this plant are not above ground during season when livestock are grazed.

Trumpet Morning Glory. Habitat (gravelly soils and bedrock terraces) is unsuitable or inaccessible to livestock. Grazing occurs during the plant's dormant period.

Lemmon's lupine. Not likely to occur in analysis area. One location occurs on private land west of National Forest land in the Chiricahua Mountains (vicinity of West Whitetail Creek) at lower elevations.

Chiricahua Rock Daisy. This plant grows in habitat (cliffs and rock ledges) not accessible to livestock.

Lemmon Lily. Population in Chiricahua Mountains was washed out in 1994 after the Rattlesnake Fire. Habitat for this plant likely does not occur in the analysis area.

Thurber Hoarypea. This plant grows during the summer when livestock are not present on the allotments.

For the following species a biologist has determined that the proposed action *may impact individuals, but is not likely to result in a trend toward federal listing or a loss of viability*. Possible effects are confined to trampling and herbivory by livestock (for plants) or disturbance by grazing cattle or management activities (for animals). Impacts are anticipated to be limited to individuals and are not expected to result in effects to populations. The species-by-species analysis found in the Biological Evaluation (PR) is summarized below.

Apache Goshawk. Goshawks nest throughout the Chiricahua Mountains, but there are no known nest sites or post-fledging family areas (PFAs) within the analysis area. There are two goshawk sites in the adjacent Chiricahua National Monument and suitable nesting habitat and foraging habitat likely occurs at higher elevations in the analysis area. Mitigation features included in the proposed action will limit disturbance during the Goshawk breeding season. Under the proposed action the combination of winter grazing and moderate (<45%) utilization proposed should maintain vegetative diversity and would not be expected to affect prey species abundance. Effects would be limited to minor disturbance related to grazing and movement of livestock in the spring. Suitable habitats would not be grazed during the majority of the breeding season.

Gould's Wild Turkey. The species appears to be able to coexist with well-managed livestock grazing. Limiting factors appear to be the presence of roost trees of sufficient size and the availability of free water. Mature grass seed heads are a source of forage for

turkeys as well as green herbaceous plants, insects, and mast (acorns and juniper/manzanita berries). The proposed action is expected to retain sufficient herbaceous forage for turkeys across the landscape, although areas of livestock concentration may impact forage resources on a local scale during the late winter and spring. The winter grazing proposed will allow plant vigor and re-growth during the monsoon season. The development of additional water sources is part of the proposed action. Input by the biologist during the planning phases should suggest ways to modify the range development to provide for wildlife access to the water, fencing livestock away from the spring area(s) to enhance green forage, protect potential roost trees, and reduce brush and small trees to enhance the spring. Effects are expected to be limited to disturbance as a result of minor construction or livestock management activities and localized removal of grass cover and forage. None of the project alternatives will affect the quantity or quality of roost trees.

Arizona shrew. The Arizona shrew is found near perennial or seasonal surface water sources. Dense leaf litter and forest debris, such as downed logs are important as cover for foraging shrews. The species has not been documented in the project area, and habitat appears limited. Effects from livestock grazing would only occur if livestock were allowed to concentrate in narrow wet canyons preferred by the shrew; and if this use resulted in the degradation of leaf litter and herbaceous cover that provide habitat. Moderate utilization should prevent this occurrence. The proposed winter grazing (Nov-April) should help reduce the potential impact in narrow canyons.

White-nosed coati. The species occurs throughout the Chiricahua Mountains in woodland and riparian habitats. Impacts would be limited to disturbance of individuals by grazing livestock or as a result of management activities.

Lemmon Milkweed. Suitable habitats are found in the area. Individual plants may be grazed or trampled, but grazing will occur during the plant's dormant season.

Coppermine milk-vetch. This plant is found in the Chiricahua National Monument near East Whitetail and West Whitetail allotments and suitable habitats are found in canyon bottoms/drainages. Taking care not to exceed the proposed level of grazing especially in riparian/wet areas would help maintain this plant.

Chihuahuan Sedge and Arizona Giant Sedge. These species grow in wet soil, usually with yearlong water. Suitable habitats are limited. If the plants occur, they would be grazed, especially during late winter when temperatures rise and water supplies dwindle. Rest during the monsoon season and moderate utilization would allow for re-growth and plant vigor to be restored.

Trans-Pecos Indian Paint Brush. This plant is known from private land near the Chiricahua EMA, south of the North Chiricahua analysis area. If present, this plant could be grazed because it occurs on south facing grassy slopes where cattle would graze during winter. Impacts would be limited to individual plants.

Arid Throne Fleabane. Effects would be limited to grazing on individuals. Grazing will occur largely outside the May-November growing season.

Wislizeni Gentian. High-elevation clearings between 6,880 to 9,600 feet appear to be best habitat. This plant is generally found above the majority of suitable range, steep unstable slopes would be inaccessible to livestock, but meadows would be grazed.

Bartram Stonecrop. This plant grows in habitat not generally used by livestock. Nevertheless it sometimes grows in situations where trampling or limited grazing on individual plants may occur.

Arizona Mountain Alumroot. This plant occurs in the Chiricahua Mountains, but known locations are south of the analysis area. Given the wide elevational range that this plant grows and that it grows in association with seeps, springs and riparian area, individual plants may be grazed. Moderate utilization and summer deferment should minimize impacts.

Davis Mountain Jacob's Ladder. This plant would generally be found at elevations above the majority of suitable range. The steep rubble habitats that are associated with some locations of this plant would not be grazed by livestock. Other areas in which this plant is known to occur i.e., canyon bottoms, open shade would be expected to be impacted by grazing.

Nodding blue-eyed grass. This small plant is found in moist soils and stream margins in the Chiricahua Mountains; but there are no known locations in analysis area. It could be impacted through trampling in seeps, springs, and wet areas when livestock concentrate around dwindling water. Moderate utilization and summer deferment should restrict impacts to individuals.

Porsild's Starwort. Known locations are south of the project area and at higher elevations. Limited suitable sites would be grazed for a brief period during the winter when the plant is dormant.

Shade Violet. The only known location in the mountains is south of the project area, but suitable habitats are present. If present, it may be affected by grazing since it grows in shady canyon bottoms and riparian forests. Limited suitable sites would be grazed for a brief period during the winter when the plant is dormant.

Affected Environment - Management Indicator Species

Forest Plan direction for Management Indicator Species (MIS) is to maintain or improve occupied habitat (PR 1). Forest-wide trends of all MIS have been assessed and are reported in the Forest-wide Status Report for Management Indicator Species (PR 44). The background information and conclusions of this report are incorporated by reference. Six species and the group of cavity nesters are known to occur or potentially occur within the project area. A description of the selection criteria and in-depth evaluations of project-level impacts are contained in a separate report (PR 48).

White-tailed deer (*Odocoileus virginianus couesi*). White-tailed deer are indicators of herbaceous cover and diversity in the Forest Plan. The entire project area (approximately 45,000 acres) is considered suitable habitat, and represents approximately three percent of the total occupied habitat on the Forest. Habitat trends are considered stable, but harvest trends in the Chiricahua Mountains have been below average for two years, possibly reflecting the effects of drought on fawn survival (PR 48). White-tailed deer

tend to use hilly, mixed-oak habitats with a grass understory more than other types and tend to avoid open areas (Ockenfels et al. 1991). Bedding areas are often dependent on adequate thermal (canopy) and security cover. The presence of freestanding water is important for suitable whitetail habitat and they likely benefit from the presence of permanent livestock waters in the allotments.

Black bear (*Ursus americana*). Black bears are wide ranging habitat generalists that prefer areas of dense cover and high vegetative diversity. They are included in the Riparian Species, Species Needing Diversity and Game Species indicator groups in the Forest Plan. Steep, heavily wooded canyons throughout the area provide abundant habitat. Black bears occur throughout all of the allotments and the project area represents 7 percent of the occupied habitat on the Forest.

Mearns' (Montezuma) quail (*Cyrtonyx montezumae mearnsi*). This species is identified as a priority bird species in the Arizona Partners in Flight Bird Conservation Plan (Latta, et. al. 1999). Mearns' quail habitat is common throughout the Forest, encompassing approximately 225,000 acres. The amount of potential habitat has not changed significantly since 1986, but Forest-wide habitat suitability has likely improved as a result of improved livestock management over the past two decades. As with many small game species, harvest data provide an index to population levels from year to year. Harvests have fluctuated widely, but are currently near the same levels they were at in the early 1980's. The maintenance of grass height over 6" is necessary to provide sufficient cover for the birds to hide from predators. Forest Service Manual guidance (Forest Service Manual Supplement 2631.1, PR 64) restricts grazing in mapped high density Montezuma quail habitat to 45% by weight in order to meet this objective. Much of the project area is considered high density habitat and is mapped as primary range by the Arizona Game and Fish Department (PR 65).

Elegant Trogon (*Trogon elegans*). Elegant trogons are included in the Cavity Nesters, Riparian Species, Species Needing Diversity, Special Interest, and Threatened and Endangered Species indicator groups. Elegant trogons are found in riparian and oak-woodland canyons generally at elevations between 4,000 to 6,000 feet. Elegant trogons nest in secondary cavities, often in sycamores or oaks. Suitable habitats are located in larger drainages in the project area.

Sulphur-bellied Flycatcher (*Myiodynastes luteiventris*). Sulphur-bellied flycatchers are included in the Cavity Nesters, Riparian Species, Species Needing Diversity, Special Interest and Threatened and Endangered Species indicator groups. Sulphur-bellied flycatchers use deciduous or mixed woodlands in mountain canyons generally at elevations between 5,000 to 6,000 feet. They use cavities for nesting and eat insects and fruits. This bird generally uses mid-story to upper canopy of trees. It is found in the forest only during the June to September breeding season. Suitable habitats are located in larger drainages in the project area.

Blue-throated hummingbird (*Lampornis clemenciae*). Blue-throated hummingbirds are included in the Cavity Nesters, Riparian Species, Species Needing Diversity, Special Interest and Threatened and Endangered Species indicator groups. Blue-throated hummingbirds are found on the forest in spring and summer in wet pine-oak canyons near water. They forage on nectar and insects drawn to nectar. Suitable habitats are

limited due to the absence of perennial water. The species has not been documented in the project area, but is common in the summer in Cave Creek Canyon near Portal.

Primary and secondary cavity nesters. Primary and secondary cavity nesters potentially occur in all plant communities in the project area. In general, cavity nesters require large, older age class trees and snags to provide a suitable substrate for cavities. Broadleaf evergreen woodland, coniferous forest and evergreen riparian communities are common in the project area, all of which provide abundant mature trees for cavity nesters.

Environmental Consequences – Management Indicator Species

White-tailed Deer. Heavy grazing prior to and during the fawning period reduces hiding cover and may reduce fawn survival and recruitment (Ockenfels et al. 1991). Overgrazing by livestock may reduce available grass forage and lead to increased livestock use of browse plants and forbs used by deer. *Alternative 1* would maintain cover year-round. Under *Alternative 2*, grazing would occur prior to the fawning period and is expected to reduce cover in grazed pastures. Utilization limits should insure that grazing would not be of sufficient intensity or duration to affect large scale reductions in cover or result in competition. Steeper slopes and remote areas preferred by deer would continue to be grazed lightly or be ungrazed. Displacement or disturbance of deer would occur during times when cattle are actively grazing a pasture, but such disturbance would be short term and would not be expected to affect deer population trends. Grazing as proposed continues management practices that have been in place for several years and that have allowed white-tailed deer to persist. In consideration of the foregoing, grazing as proposed is unlikely to cause a detectable change in white-tailed deer populations or a loss of occupied habitat.

Black Bear. Black bear populations are highly correlated to annual precipitation and its effect on the production of preferred foods such as oak acorns and manzanita berries (mast). Manzanita, oak and other mast-producing plants are abundant throughout the project area. The proposed action does not include features that would affect mast production. Grass can be seasonally important in black bear diets, especially in the spring. Given the moderate use grazing levels and rest and deferment proposed, competition for forage would not be expected under the proposed action. There may be a slight potential for bear depredation on livestock during years of poor bear forage production, but this potential is considered small in light of the lack of records of past problems. Moreover, grazing on all but one of the allotments would be limited to winter use, so cattle would not be present when bears are active during the summer. In consideration of the foregoing, grazing as proposed is not expected to cause a detectable change in black bear populations or a loss of occupied habitat.

Mearns' Quail. *Alternative 1* would maximize the amount of residual herbaceous cover that provides Mearns' quail habitat within the analysis area and would be expected to meet Forest Plan standards and guidelines for the quail. However, light to moderate grazing that leaves adequate cover apparently benefits habitat quality when compared to ungrazed areas by increasing the availability of food resources (Brown 1982, Bristow and Ockenfels 2000, cited in PR 48). Therefore, the No Action alternative may not be optimum for Mearns' quail. In addition, Mearns' quail populations are highly correlated to the amount and timing of summer precipitation. In the absence of sufficient

precipitation, the effects of management changes alone on long-term trends for quail populations may not be discernable. *Alternative 2* will result in a slight increase in herbaceous cover compared to current conditions. Forest manual guidance will be implemented across the landscape through a utilization guideline of 30-45%. In consideration of the foregoing, grazing as proposed is unlikely to cause a detectable change in Mearns' quail populations or a loss of occupied habitat. Populations will continue to fluctuate in response to precipitation patterns, but are expected to persist under proposed management.

Elegant Trogon. Effects to species are likely limited to riparian areas and drainages with seasonal water. The timing and intensity of grazing is not likely to affect mature trees used for nesting. Grazing is proposed during winter (Nov. – April), a time when elegant trogons are largely absent and riparian vegetation is dormant. The impacts from all alternatives will be very similar. *Alternative 1* would result in more herbaceous vegetation being present because forage would not be consumed. Riparian condition may respond/improve faster under the no grazing alternative. Regardless of which alternative is implemented it is unlikely that a detectable change in elegant trogon population or a loss of occupied habitat will occur as a result within the analysis area.

Sulphur-bellied Flycatcher. Neither alternative is likely to cause a detectable change in Sulphur-bellied flycatcher populations or a loss of occupied habitat. No activities are proposed that would change the amount or distribution of cavity bearing trees and winter use should not affect the development of young trees. The allotments containing suitable habitat (Rough Mountain and East Whitetail) would be grazed only in the winter when flycatchers are not present.

Blue-throated hummingbird. The effects to Blue-throated hummingbird are expected to be limited to riparian or other wet areas at higher elevations. These areas are grazed briefly during the winter, if at all. Nectar producing plants that grow during the spring and summer would not be affected, and grazing would not occur during the months the species is potentially present.

Primary and Secondary Cavity Nesters. Cavity nesters generally benefit from conditions that promote uneven aged forests with older age trees for cavities and sufficient recruitment of younger trees. Grazing-related activities would affect cavity nesters only if they are of sufficient scale and intensity to change the rate of regeneration of cavity bearing trees. No activities are proposed that would change the amount or distribution of large trees in upland sites. In riparian areas, grazing potentially reduces the recruitment of trees through trampling or browsing on small trees by livestock. Dormant season use proposed for the allotments should allow for riparian tree growth and recruitment during the growing season. The proposed action is not anticipated to affect the amount or distribution of trees in the project area and is therefore unlikely to cause a detectable change in cavity-nester populations or a loss of occupied habitat.

Neotropical Migratory Birds and Important Bird Areas. Executive Order 13186, of January 10, 2001 directs Federal agencies to support migratory bird conservation and to “ensure that environmental analyses of Federal actions required by the NEPA or other established environmental review processes evaluate the effects of actions and agency plans on migratory birds, with emphasis on species of concern”. In compliance with this

direction, the effects of the proposed action were evaluated in the following manner: (1) effects to Species of Concern listed in the Arizona Partners in Flight Bird Conservation Plan; (2) effects to Important Bird Areas (IBAs) identified by the National Audubon Society; and (3) effects to important overwintering areas (PR 49).

- **Species of Concern.** Species of Concern are identified in the Arizona Partners in Flight Bird Conservation Plan (Latta 1999). Nine bird species representing three habitat types were selected for analysis. Under both alternatives, effects to migratory birds are anticipated to be positive or insignificant (PR 49).
- **IBAs.** The Chiricahua Mountains are identified as an Important Bird Area by the National Audubon Society. The proposed action is limited to the authorization of low intensity, seasonal livestock grazing and continues practices that have been in place for many years. The authorization is not expected to affect the designation of the IBA or to affect the characteristics that led to the designation of the IBA.
- **Overwintering Areas.** The Chiricahua Mountains are located in an intersection zone where Rocky Mountain forests, Sierra Madrean woodlands, Chihuahuan and Sonoran deserts and plains grasslands converge. The mountains are located in an important migratory corridor for numerous avian species. More than 300 species of birds nest in or migrate through the mountain range, and over 130 species of birds are regularly identified during the Portal Christmas Bird Counts in the vicinity of Cave Creek. The proposed action is limited to the authorization of low intensity, seasonal livestock grazing and continues practices that have been in place for many years. The proposal is not expected to affect the overall diversity of the area that provides habitat for wintering birds.

Vegetation Condition

Affected Environment

Grazing by domestic livestock may impact vegetation by changing the mix of species in the plant community being grazed (vegetation composition), by changing the density and frequency of perennial forage plants, and by changing the vigor of the grazed plants. Rangeland condition is an expression of the degree to which the composition, frequency and vigor of plants in a community resemble the climax plant community for that site. Measurements of these three vegetation parameters are used to place range sites into vegetation condition classes that reflect the relative effects of grazing on vegetation.

The project area falls within the Mexican Oak – Pine Woodland and Oak Savannah land resource unit (41-1 AZ) and Range Woodland (41-3 AZ) as defined by the Natural Resource Conservation Service (PR 54). The reference range sites used to describe the potential natural community for the purpose of determining rangeland condition include sandyloam uplands, clay loam uplands, loamy uplands, limy uplands and volcanic hills in the 12-16 inch and 16-20 inch precipitation zone (PR 54). Rangeland vegetation was assessed between 2005 and 2007 by the Forest Service using the dry weight rank methodology (PRs 22-26). These assessments indicate that the allotments are all meeting or moving toward Forest Plan standards for range condition. Monitoring results are summarized below.

Rough Mountain. Data collected at seven permanent monitoring sites indicates that uplands are in fair to good condition with stable or upward trends (PR 26). One site rated out in poor condition due to poor species composition. This site is located next to the main water for the pasture where cattle tend to concentrate. With the exception of this one site, the allotment is meeting Forest Plan standards for range condition.

Willie Rose. Monitoring data indicate uplands are in fair condition, but that woody species have increased since the late 1950s when monitoring began (PR 23). While the presence of woody invaders tends to suppress condition ratings, indicators of soil condition such as bare ground and litter show positive trends.

West Whitetail. Monitoring data indicate that uplands in the allotment are in good to excellent condition (PR 24), indicating the sites are near their ecological potential. Bare soil is decreasing and litter is increasing.

East Whitetail. Monitoring data collected in 2005 at two permanent monitoring transects indicated fair condition at one site and excellent condition at the second (PR 22). Indicators of soil stability are stable or improving.

Cochise Head. Monitoring data collected at two permanent transects indicate the allotment is in fair to good condition with upward trends (PR 25). Indicators of soil condition such as bare ground and litter show strong positive trends.

Environmental Consequences

Alternative 1 (No Action/No Grazing) would allow for vegetation recovery in the one site in poor condition on the Rough Mountain allotment. Indicators of soil protection would improve fairly rapidly, but changes in vegetative composition would require a longer term. On fair condition sites, woody species would likely continue to suppress condition, because a shift in species composition is needed for some areas to reach high condition. Thus many areas will probably remain in fair condition in the absence of more intensive management such as burning or mechanical treatment. Other parameters of range condition such as plant vigor and density are expected to improve more rapidly. This would result in increased accumulation of residual plant material, both standing and in the form of litter. Additional organic material is expected to provide soil protection, increase soil water holding capacity and decrease evaporation. In terms of indirect effects, additional herbaceous material in the understory will provide fine fuels that will allow fire to play a more natural role in the area. The re-establishment of a more natural fire regime may reduce the density of woody species such as mesquite and snakeweed that have invaded the desert grasslands.

Alternative 2 (Proposed Action) will provide flexibility to adjust to changing forage conditions. Proposed utilization objectives of 30-45% in uplands should result in increasing plant density and improved vigor over the term of the analysis. Moderate use proposed is expected to leave sufficient residual biomass to protect soils. Annual growing season rest on all of the allotments and regular rest or deferment on the West Whitetail allotment should allow for growth and reproduction of perennial grasses each summer. Additional upland waters proposed for Lower Emmigrant pasture in the Rough Mountain allotment are expected to draw cattle up out of the bottom where range condition is currently poor. Management alone may not be sufficient to result in significant changes,

since a shift in species composition would be necessary. Elsewhere, because of limited water distribution in some years and the tendency of cattle to concentrate in canyon bottoms, active management will be necessary to assure more even forage utilization. Provided management and monitoring are sufficient to achieve proper distribution, Alternative 2 should result in the attainment of desired conditions.

Riparian Condition

Affected Environment

Numerous named drainages are found in the analysis area and, with the exception of the Willie Rose allotment, all allotments support stands of riparian vegetation in some locations (Table 4). Perennial streams and wetlands do not occur in the project area, but several drainages flow seasonally after precipitation events. Riparian vegetation is sustained throughout much of the year by sub-surface flow. Permanent water is limited to a handful of springs and seeps.

The analysis of riparian area condition is based primarily on information gathered at established riparian area monitoring points using the Riparian Area Survey and Evaluation System (RASES). These areas were assessed in 1998 and 2001 for condition and to verify the accuracy of the vegetation classification (PR 53). Stream channels and canyon bottom vegetation are generally meeting the standards of the Forest Plan.

Table 4. Existing condition of riparian areas in the analysis area.

Allotment	Stream Name	Year Data Collected	<u>Tree Species Recruitment</u> (species in young age classes compared to total number of species found)	<u>Tree and Shrub Canopy</u> (Percent Shade)	Vigor
Cochise Head	Keating Canyon	2001	No reproduction observed	50	Good
	South Fork Keating	2001	3 of 3 (riparian)	70	Good
East Whitetail	East Whitetail Creek	2001	1 of 3 (riparian)	82	Good
	Indian Creek	2001	No reproduction observed	75	Good
	Jhus Canyon	2001	1 of 2 (riparian)	40	Fair
Rough Mountain	Emigrant Canyon	1998	2 of 3 (riparian)	70	Good
	Wood Canyon T1	1998	1 of 2 (riparian)	80	Good
	Wood Canyon T2	1998	No riparian trees observed	75	Fair
West Whitetail	Buckhorn Creek	1998	2 of 2 (riparian)	25	Good
	West Whitetail Creek	1998	No riparian trees observed	70	Good

Environmental Consequences

Livestock grazing may impact riparian area condition by compacting or altering the soil surface or by removing plant material, thereby affecting bank stability; or by grazing on individual plants, thereby changing the vegetation composition and affecting the vigor of the grazed plants.

Under *Alternative 1* (No Action/No Grazing), some increases in herbaceous cover would be anticipated as cattle would no longer graze in canyon bottoms. Bulk density and soil

structure would return to natural levels. Where trails and roads occur in drainage bottoms, traffic would continue to effect soils. No changes in long-term productivity would occur. A reduction in streambank alteration and increases in vegetative groundcover would contribute to bank stability. Elimination of browsing on riparian vegetation would be expected to increase riparian plant vigor and recruitment of young trees.

The effects of the proposed action (*Alternative 2*) are summarized below by allotment.

Cochise Head. The two years rest proposed may give Keating Canyon an opportunity for riparian tree reproduction, if favorable weather conditions are present. High canopy cover (shade) in this canyon may slow the growth of understory vegetation. South Keating will continue to flourish in the presence of small numbers of cattle. Continued winter use should promote riparian improvement.

East Whitetail. Winter use will continue to promote riparian tree reproduction. A maximum of 45% utilization will allow the growth of herbaceous vegetation along the banks of Jhus Canyon. Annual fluctuations in precipitation will continue to influence riparian plant growth.

Rough Mountain. Changes in management through new water developments designed specifically to take pressure off the riparian areas of Wood Canyon and Emigrant Canyon will allow development of channel bank protection and consequently more vigorous riparian areas.

West Whitetail. The change from winter only to yearlong use must be monitored closely. The gains apparently being made in Buckhorn Canyon conditions can be continued with summer use at less than 45% utilization. West Whitetail, as inventoried, can be maintained through occasional summer grazing with less than 45% utilization.

Willie Rose. There are no riparian area resources on this allotment. There will be no effects on riparian areas

Soil Condition

Affected Environment

The geology underlying the project area is generally rhyolite, limestone, granite, and andesite. There are some minor areas of alluvium along the gentle terrain in the largest canyons. In general, the soils are shallow to deep very cobbly to extremely cobbly sandy loams with numerous rock outcrops. Elevations range from 4508 feet above mean sea level in Wood Canyon at the Forest Boundary to 8109 feet at the top of Cochise Head.

Soil condition field monitoring has been ongoing for years and the latest information was collected in 2006 (PR 50). All five allotments were evaluated using protocols from *Forest Service Soil Management Handbook 2509.18-99-1 R3*. Soil condition was evaluated by using a combination of field inspections and information about slope, vegetation community and rangeland condition. Impaired soils are found on less than one percent (56 acres) of the Rough Mountain allotment. However, soil compaction was noted in many additional areas on this allotment. The satisfactory rating implies that the compacted soils have not lost productivity and can recover through natural processes. Soils on the other allotments are considered 100% satisfactory (Table 5), although

monitoring data indicate that some lower elevation locations are dominated by plant communities characteristic of drier than expected sites. These observations are corroborated by vegetation monitoring (see above).

Table 5. Existing condition of soils: North Chiricahua Mountains allotments.

Allotment	Acres in Satisfactory Soil Condition	Acres in Impaired Soil Condition	Acres in Unsatisfactory Soil Condition	Total	% Impaired and Unsatisfactory
Cochise Head	7070	0	0	7070	0%
East Whitetail	12809	0	0	12809	0%
Rough Mountain	20099	56	0	20155	0.30%
West Whitetail	3842	0	0	3842	0%
Willie Rose	1525	0	0	1525	0%

Environmental Consequences

Livestock grazing may impact soil function by compacting the soil surface (hydrologic function), removing plant material (stability), or changing the plant community composition (nutrient cycling). *Alternative 1* will lead to improved soil quality at a faster rate than the proposed action in some areas, specifically cattle bed grounds and around water sources where cattle tend to concentrate. Over time soil bulk density and structure would return to natural levels, but changes would be slow. Areas of impaired soils on the Rough Mountain allotment would persist for several years. Under *Alternative 2*, vegetation cover, soil bulk density and soil structure will continue to be altered by grazing livestock. Change in soil quality is a long-term process and no significant improvements would occur over the short term (5-10 years). Monitoring actions identified under the proposed action and adaptive management strategies will allow more flexibility in herd management. Moderate utilization is expected to promote sufficient vegetative groundcover, contributing to satisfactory nutrient cycling and soil structure. Observed changes in the vegetation community will be difficult to reverse in the absence of fire or more intensive vegetation treatments. Nutrient cycling and soil structure may continue to be impaired even under light grazing.

Air Quality

Affected Environment

The Forest Plan Standards and Guidelines for air resources specify “All management practices will be planned so that air quality will meet local, State and Federal standards.” The project area is located entirely within a Class II (generally rural) airshed. Air quality in and around the area is high due to the relative isolation from urban centers, limited access, good vegetative ground cover, and the large scale of the analysis area. None of the project area is within a non-attainment area. Currently, the air quality in the project area is within the standards and guidelines of the Forest Plan.

Environmental Consequences

Activities resulting from this project will not significantly affect the factors contributing to a high quality air shed. Selection of the No Action Alternative or the Proposed Action would not negatively affect air quality. No direct or indirect effects would occur to air quality from this project. Because there will be no direct or indirect effects, no cumulative effects are anticipated.

Water Quality and Quantity

Affected Environment

The allotments lie within the upper headwaters of the following four fifth code watersheds: East Whitetail Creek – San Simon River, Cave Creek – San Simon River, Happy Camp Wash and Willcox Playa (Figure 7). The watersheds are relatively large, and the analysis area comprises approximately 15% of the watersheds. Uses on Federal and State lands are primarily grazing and recreation. Uses on private land downstream from the Forest are those associated with agriculture, including livestock grazing and rural development.

Water quality is assessed by comparing existing conditions with desired conditions that are set by the states under the authority of the Clean Water Act. The Arizona Department of Environmental Quality (ADEQ) is the regulating authority for water quality in Arizona. Water quality has not been assessed in the area; however, there is no evidence in project monitoring records that that grazing is negatively affecting water quality in the area. Downstream from the analysis area, San Simon Creek was reported in the 2000 ADEQ 305(b) Report to be fully supporting of all uses. This would indicate that the analysis area is contributing to a high quality system.

Water quantity (surface water yield) is controlled by annual precipitation and by vegetation type and density on the watershed. Annual precipitation can be quite variable. Average precipitation at Portal is 20.95 inches, and 19.17 inches on the Chiricahua National Monument (PR 52).

There are no perennial streams or wetlands in the project area, nor are there surface water gauging stations. Drainages in the area flow intermittently for brief periods after precipitation. Thus, there is no base surface flow in streams. Subsurface (underground) flow in drainages is occasionally forced to the surface by geologic features, creating small springs or seeps that may run above ground for short distances. Several dirt stock tanks throughout the project area capture and retain overland water flow during heavy summer rains. Existing stock tanks have very limited capacity to capture and hold precipitation in the project area. Water captured in stock tanks is overland flow that would otherwise flow off of the watersheds and would not affect stream base flow. Wells in the project area tap into ground water, which does not contribute to base flow in streams. Spring developments capture subsurface and surface flows that could contribute to base flows.

Environmental Consequences

Water Quality. Surface water quality is affected by erosion of the soil surface. Adequate vegetation groundcover is necessary to slow the movement of water and trap and filter sediments. Under *Alternative 1*, adequate diversity and vegetation groundcover (VGC) would contribute to maintaining a satisfactory hydrological function and runoff would continue to be satisfactory. In areas with impaired soils, the potential increase of VGC and elimination of livestock-caused soil compaction would contribute to an incremental improvement in hydrological function resulting in less runoff, better infiltration and an improvement in water quality. Water quality would improve due to less sediment moving in the system and less turbidity. Under *Alternative 2*, areas of impaired soils would continue to contribute small amounts of sediment downstream and surface runoff would be expected to be slightly greater, relative to no grazing, due to poor VGC in some areas. Under the proposed action, the potential increase of VGC and slight reduction in compaction would contribute to an incremental improvement in hydrological function resulting in less peak runoff. However, the changes are unlikely to be measurable. Allowable use levels of 30-45% are expected to provide sufficient residual biomass to protect upland areas and drainage systems over time.

Water Quantity. Under *Alternative 1*, adequate vegetation groundcover would contribute to satisfactory hydrological function and runoff would continue to be satisfactory. Water currently consumed by or diverted and stored for livestock would be returned to the system, but this accounts for less than 1% of the total water yield on the analysis area and is unlikely to be significant. Under *Alternative 2*, light to moderate use should provide sufficient residual plant material to protect uplands and drainages and contribute to soil stability over time. Existing and proposed water developments would divert and store water that would otherwise percolate back into the ground and support sub-surface flow. However, this amount is unlikely to significantly affect total water yield.

Special Management Areas

Special management areas include designated wilderness areas, research natural areas, wild and scenic rivers, or zoological or botanical areas that have been identified for special management by law, regulation or the Forest Plan. There are no special management areas found within the analysis area.

Heritage Resources

Affected Environment

Heritage resources (also called “cultural resources”) include archaeological and historical sites and other properties important to maintaining the traditional beliefs and lifeways of local social groups (“traditional cultural properties”). Although only approximately 1% of the allotments have been surveyed for heritage resources, 10 heritage resource sites have been documented, and many more indubitably occur throughout the area. These sites reflect the depth and diversity of human presence throughout the Chiricahua Ecosystem

Management Area (EMA) and surrounding regions. To date, no specific Traditional Cultural Properties have been identified in the area.

Native American sites that pre-date European contact include artifact scatters that represent temporary campsites or resource processing locations, small villages consisting of the remains of buried pit structures, more expansive habitation sites with vestiges of adobe architecture, and rock shelters. Although site density within the allotments is less than has been documented within the surrounding valleys and private inholdings, especially in terms of larger habitation sites, it appears that the areas currently included within the grazing allotments were occupied at least sporadically throughout the last several thousand years.

At the time of European contact, various bands of Apaches, especially the Chiricahua, were the primary groups of Native Americans occupying the northern Chiricahua Mountains. They appear to have gained an increased presence in the area at some point near the end of the Precontact Period and remained a dominant force from the Spanish Colonial Period through the 1860s. Encounters with non-Native groups were often violent. Between 1872 and 1876, the northern Chiricahua Mountains were within the Chiricahua Indian Reservation. After termination of the Reservation in 1876, intermittent hostilities took place, until the ongoing military campaigns culminated in the surrender of Geronimo in 1886. Although, none of the previously documented heritage resources within the allotments appear to be directly associated with the protohistoric and/or historic Apache presence within the Chiricahua EMA, additional undocumented sites must be present.

The most important Historic period uses of the area have been, mining and grazing, which began in Spanish Colonial times. However, compared to most of southern Arizona, these developments were delayed by the presence of the Chiricahua Apaches. Mining (especially of lead and silver) became increasingly important following the end of the Apache Wars. Mining activity and associated settlement generally peaked during the first decade of the 20th century, although some settlements persisted until the 1950s. Grazing, on the other hand, has been ongoing and continues to be the predominant land use activity. The remains of some historic structures, range installations, and mining operations have been designated as heritage resources within the allotments.

Few of the heritage resources documented within the allotments have been formally evaluated for National Register eligibility, but all will be treated as eligible for management purposes.

Environmental Consequences

Construction of range improvements can directly damage artifacts or structures and alter their spatial relationships, while also encouraging concentration of livestock in the vicinity of the improvements. Concentration of livestock on archaeological and historical sites can also result in damage to artifacts and structures, and alteration of their spatial relationships. These impacts can compromise various aspects of the integrity of historic properties and diminish their research and interpretive potential.

Adoption of the No Grazing Alternative would result in no direct or indirect effects from livestock grazing on heritage. The proposed action would require implementation of the

mitigation measures identified as part of the proposed action in order to insure that there would be no adverse effects to heritage resources as the result of new range improvements. A heritage resources report was completed in 2008 and submitted to the Arizona State Historic Preservation Office (SHPO) with a No Adverse Effect determination. Concurrence from SHPO was received on April 15, 2008 (PR 66). Cultural resource mitigation features are included in the proposed action, which should preclude impacts to cultural resources and insure compliance with the Standard Consultation Protocol for Rangeland Management regarding historic property protection (PR 63).

Economics

Affected Environment

The allotments are located in Cochise County, Arizona. Tourism and financial services are a growing segment of the economy. Farm and ranch employment is considered an important segment of the economy, but total farm employment accounted for 3.3% of the economy in 2000¹³. Ranching operations in the area tend to be characterized by small profit margins with the need for off-ranch supplemental income to continue operations.

The economic effects of the proposal were not identified as a key issue for the analysis. Nevertheless, the economic considerations of the alternatives can be compared in terms of the costs of implementation, the costs and revenues to the permittees and the return to the Federal government through grazing permit receipts. Costs and benefits are incurred by both the Federal government and the permittees, and not all participants recover their costs. Specific operating costs and revenue estimates are not available for the allotments, and weather, market conditions and business and management decisions will affect net revenue on an annual basis.

Environmental Consequences

Decisions relative to livestock grazing on individual allotments primarily affect 1) the permittees, who pay grazing fees and receive economic returns on their investments in livestock grazing and who contribute funds for the construction of range improvements, and 2) the Forest Service, which collects grazing fees and expends grazing receipts and appropriated tax dollars to construct improvements and to administer the allotments. Local communities may also benefit indirectly from the sale of goods and services associated with ranch operations, but given the size and economic diversity of Cochise County, a decision to authorize or not authorize grazing on the allotments would not be expected to noticeably affect economic conditions in the region. The analysis does not include certain costs or benefits incurred by the alternatives, such as costs and benefits relating to recreation opportunities, environmental quality, etc. Data to analyze these costs and benefits are not available at the allotment level; analysis at the District or Forest level is beyond the scope of the decision.

Actual cost and return estimates for the individual ranches are not available, so the figures used are for the “average” ranch in southeastern Arizona, based on currently

¹³ Source: Socioeconomic Assessment of the Coronado National Forest, Final Report, 2005 (PR 77).

available literature (PRs 39, 40). The following discussion of costs and revenue is intended to place the economic consequences of the proposed action in the proper context, and to provide a comparison with the “no action” alternative.

Revenue. Net ranch income represents gross returns minus operating costs. Specific operating costs and revenue estimates are not available for the ranches, and weather, market conditions and management decisions will affect net revenue on an annual basis. However, various economic studies have calculated a net return of \$60-\$100 per animal unit per year for ranches in Arizona (Gao 1996 reported in Ruyle, et al 2000 (PR 40). Using the upper end of this range of estimates, annual return on the allotments would range from \$2,000 on the smallest allotment (Willie Rose) to \$14,600 on the largest (Rough Mountain). However, these figures may not be reflective of total ranch income because some ranches include non-forest acreage that is available for grazing. In addition, some allotments are community allotments, so net income would be split between two permittees. Estimates of ranch living expenses cited by Ruyle (PR 40) vary from \$11,500 to over \$20,000 depending on the size of the ranch, so it is likely that the permittees will be dependant on outside sources on income in order to cover living expenses. This is not uncommon; on average Arizona ranches derive about half of their income from outside (non-ranching) sources. The permittees have maintained their operations for several years and have not indicated that management is not economically viable.

Annual grazing receipts to the Forest Service would vary from zero under No Action to approximately \$3,900 under maximum allowable use on all allotments under Alternative 2¹⁴. Typically, 25% of these receipts are returned to the Forest in the form of Range Betterment Funds used to construct range improvements. These funds (approximately \$1,000/year) would, in theory, not be available under *Alternative 1*.

Costs. In general, *Alternative 1* would have the lowest cost as neither the Forest Service nor the permittees would expend money for new improvements and only limited maintenance would occur. There would, however, still be costs associated with management of the allotments. Maintenance of improvements is typically the responsibility of the permittee. In the absence of a permittee, maintenance or removal of existing structural improvements may become necessary and costs would be borne by the Forest Service. Under *Alternative 2*, some structural range improvements have been identified as possible practices to improve livestock distribution and optimize management. Although not all improvements may be constructed, the costs would clearly be greater than under *Alternative 1*. Forest Service funding levels would require these projects to be phased in over a number of years, unless permittees are willing to bear an additional share of the costs or pursue alternative funding such as grants.

Environmental Justice

Environmental justice is 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. Executive Order 12898 (February 11, 1994) directed all Federal agencies to evaluate their

¹⁴ Estimates based on the 2008 grazing fee of \$1.35/AM. Actual receipts would vary somewhat based on changes in the grazing fee.

proposed actions to determine the potential for disproportionate adverse impacts to minority and low-income populations. The memorandum from the President to heads of departments and agencies that accompanied the Executive Order states that “each Federal agency shall analyze the environmental effects, including human health, economic and social effects, of Federal actions, including effects on minority communities and low-income communities, when such analysis is required by [NEPA].”

The project area is located in rural Cochise County. The area is sparsely populated, primarily by ranchers and a few owners of private parcels adjacent to Forest Service lands. Selection of any of the alternatives would not result in adverse or disproportionate effects on low income or minority populations. The alternatives, including no grazing, are consistent with activities that have been implemented throughout the Coronado National Forest over many years. As such, the effects are predictable. There would be no displacement of minorities or increases in taxes or fees that would constitute an economic hardship to minorities under any of the alternatives. There would be no effects to public health. Therefore, disproportionate direct, indirect or cumulative adverse impacts on low income or minority populations would not occur.

Cumulative Effects

Cumulative effects are the past, present and reasonably foreseeable future actions that add to the direct and indirect effects considered in this EA. The following activities have been identified as potentially contributing to the effects analyzed herein. These activities and occurrences have contributed incrementally to changes in ecological conditions in the project area and may continue to influence conditions in the project area in the foreseeable future. Foreseeable future actions are those for which a proposed action has been approved or those proposed for NEPA analysis in the future. Other possible future actions are considered too speculative to include in this analysis.

Grazing. Grazing has occurred in the project area for over 100 years and historically at rates that resulted in effects to soils and vegetation. Grazing-related losses of herbaceous cover and litter early in the 20th century resulted in increased erosion, soil compaction and increases in woody vegetation throughout the southwest. The reduction in fine fuels (grasses), combined with active fire suppression beginning in the early 1900’s, contributed to a decreased fire frequency and subsequent invasion of many grasslands by woody plants. The effects of these actions are evident in portions of the project area in the form of compacted soils and increased woody vegetation. The proposed action has been designed to avoid practices that resulted in historic effects to soils and vegetation.

There are an additional 21 grazing allotments in the Chiricahua Mountains, all of which are grazed in some form of seasonal or rotational grazing. Many of these allotments will undergo analysis for grazing re-authorization during 2008. The allotments are outside of the North Chiricahua analysis area and are located in separate watersheds. Actions on these allotments are not expected to contribute additional direct or indirect effects to the action being contemplated.

Invasive Species. The only non-native invasive plant species in the project is Lehman lovegrass. There are no proposals to remove this species, but the presence of the species may affect the apparent condition of range vegetation, regardless of management actions.

Monitoring of rangeland by the Forest Service and the permittees should lead to early identification of other invasive exotic plant populations and necessary treatments would be conducted in accordance with the Forest Invasive Plant Program guidelines. No vegetation management is currently proposed in the analysis area.

Human Activities. Because of its location near the U.S.-Mexico border, portions of the area are used by undocumented aliens and/or drug traffickers as travel corridors. The effects of these activities include accumulations of trash, creation of wildcat foot and vehicle trails and vandalism of range improvements, especially fences. These activities result in localized disturbance within the project area, but may have a more severe impact on the permittees' ability to control livestock distribution and use. The effects of these activities are not as noticeable on these allotments as they are further south on the Forest. Other human activities in the project area include hiking, hunting, bird watching and vehicle use on unsurfaced roads. Impacts from these activities are short term and primarily consist of minor ground disturbance in popular camping areas. There are no developed campgrounds, nor are there plans for future development. Some roads are located in riparian areas and stream beds. Use of these roads may continue to impair full recovery of riparian vegetation and may affect streambed stability. This use would occur regardless of grazing alternative selected. Livestock grazing as proposed is not expected to result in significant direct or indirect effects, so cumulative effects would be precluded.

Private inholdings, especially within the East Whitetail allotment, may continue to be developed. The Portal area is becoming increasingly popular as a retirement community and a center for amateur astronomy. Continued development could result in increased runoff from roads and other disturbed areas, and may increase groundwater use. Private developments are located off of the analysis area and downstream, and are not expected to significantly affect project area watershed condition.

In summary, the direct and indirect effects of the proposed action and alternatives are expected to be minimal or beneficial as a result of project design and mitigation features. Past activities and occurrences have contributed incrementally to changes in ecological conditions in the project area and may continue to influence conditions in the project area over the term of the project. However, because no significant direct or indirect effects of the proposed action and alternative are anticipated, neither of the alternatives is expected to contribute cumulatively to the effects of past actions. Present and future actions that may affect area resources are limited to human activities such as dispersed recreation, driving on existing roads and illegal border traffic. It is not possible to predict whether these activities, especially those related to illegal border traffic, will change over current levels over the life of the project. However, since direct and indirect impacts related to the proposed action will be minimal, cumulative effects are not anticipated.

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The Forest Service consulted the following individuals, Federal, State, and local agencies, tribes and non-Forest Service persons during the development of this environmental assessment:

FEDERAL, STATE, AND LOCAL AGENCIES:

Arizona Game and Fish Department
 Arizona Department of Agriculture
 Arizona Department of Environmental Quality
 Arizona Cooperative Extension Service
 Arizona State Land Department
 USDA Natural Resource Conservation Service
 USDI Fish and Wildlife Service

TRIBES:

Fort Sill Apache Tribe	Hopi Tribe
Mescalero Apache Tribe	Pueblo of Zuni
San Carlos Apache Tribe	Tohono O'odham Nation
White Mountain Apache Tribe	Yavapai Apache Nation

OTHERS:

National Wild Turkey Federation	Sky Island Alliance
The Center for Biological Diversity	Arizona People for the USA
Forest Guardians	The Rewilding Institute
Arizona Cattlegrowers Association	

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