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Environmental Assessment

HQ, Campini and Blacktail Range Allotment Analysis

Sierra Vista Ranger District, Coronado National Forest
Santa Cruz and Cochise Counties, Arizona

Township 23 South, Range 18 East, Section 36
Township 23 South, Range 19 East, Sections 30, 31, 32
Township 24 South, Range 18 East, Sections 1, 10-24
Township 24 South, Range 19 East, Sections 1 and 12
Township 23 South, Range 16 East, Sections 4-9, 16-20

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CHAPTER 1 – PURPOSE AND NEED

Background

The Forest Service has prepared this Environmental Assessment in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. This Environmental Assessment (EA) discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and alternatives. Supporting documentation, including more detailed analyses of project area resources, is on file in the project planning record in the Coronado National Forest Supervisor's Office in Tucson, Arizona. 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 linked to information contained in document No. 21 in the project record.

Purpose and Need for Action

The HQ, Campini and Blacktail allotments contain lands identified as suitable for domestic livestock grazing in the Coronado National Forest Land and Resource Management Plan (Forest Plan).Where consistent with the goals, objectives, standards and guidelines of Forest Plans, it is Forest Service policy to make forage from lands suitable for grazing available to qualified livestock operators[1]. The purpose of the proposed action is to authorize livestock grazing in a manner consistent with this policy and in a manner that maintains or improves project area resource conditions and achieves the objectives and desired conditions described in the Coronado National Forest Plan. This action is needed here and now because:

- The allotments currently lack sufficient environmental analysis to comply with the Rescission Act (*P.L. 104-19, 1995*).
- There is a need to incorporate additional flexibility into the management of the allotments in order to allow the Forest Service and individual grazing permit holders to be able to adapt management to changing resource conditions or management objectives.
- There is a need for change from current management on some of the allotments in order to maintain or move toward desired conditions. Specifically:
    - Additional waters and fences are needed to improve distribution.

[1] Authority to manage National Forest System (NFS) rangeland resources is derived from laws enacted by Congress that authorize the Secretary of Agriculture to administer NFS lands and issue necessary regulations. Summaries of these laws and regulations are found in the Forest Service Manual (FSM) Chapter 2201. Forest Service objectives and policies for rangeland management are found in FSM 2202 and 2203.

- Permitted use on some allotments exceeds what is considered sustainable. Forest Plan direction to balance permitted use with capacity is not being met.

In addition, historic activities on the HQ allotment have created head cuts that are impacting soil condition and require stabilization. The headcuts are decades old and their origin is unknown. They do not appear to be related to or exacerbated by current livestock management, but because of their size, may require intervention in order to prevent further soil loss.

Existing Conditions

Location and Setting. The allotments are adjacent to one another and are located on the east side of the San Rafael Valley southwest of the Huachuca Mountains and immediately north of the border with Mexico in portions of Townships 23 and 24 South, Ranges 18 and 19 East GSRM (Figures 1, 2). Elevations in the project area range from 4,800 to 5,500 feet. Vegetation is a mix of plains grassland and Madrean oak woodland (Figure 3). Topography is relatively flat, consisting of a number of broad mesas separated by a series of drainages running generally north to south. Major drainages include Parker, Sunnyside, Bodie and Blacktail Canyons. The allotments combined encompass approximately 12,350 acres, all of which is considered capable[2] (Table 1).

Resource Condition. Vegetation condition on all three allotments was assessed between 1999 and 2004 (PR#s 8, 9, 10, 22). Vegetation condition on the Blacktail allotment was also evaluated by private consultants in the summer of 2005 (PR# 24). Ecological condition on all allotments ranges from fair to excellent and shows marked improvement from conditions assessed in the 1950s and 1960s. The allotments all meet Forest Plan objectives for rangeland condition.

Soils on the allotments consist of Martinez and White House gravelly loams on the mesas and low benches, Grabe-Comoro complex in the floodplains and Hathaway gravelly sandy loams on the break between the other two. All of these soils are greater than 60 inches deep. Soil condition was evaluated at several sites in 2005 and determined to be satisfactory (PR# 33). The soils of Campini Mesa are some of the most productive on the Sierra Vista Ranger District. However, on some of the mesas in the project area, historic compaction and partial loss of the A-horizon have resulted in reduced productivity. On the HQ allotment, a series of erosion head cuts is threatening an otherwise functioning gentle drainage system. These erosion cuts will require stabilization with rock and wire in order to arrest their upstream movement.

Grazing Management. Information on recent livestock use is summarized in Table 1. All allotments are permitted for grazing year-round under a deferred rest rotation. Management and current conditions are described briefly below.

Blacktail Allotment. The allotment contains five pastures and two traps. A single herd is rotated through the primary pastures in a deferred-rest rotation. All pastures can be used at any time of the year, although the Menefee Pasture is better suited for winter use

[2] Capable rangelands are those areas under 40% slope and capable of producing 100 lb. dry forage per acre. Areas considered “not capable” are not used to calculate grazing capacity.

than the others. Ecological condition data show marked improvements from the 1960's and stable to slight downward trends in recent years (PR# 10). Most of the uplands are in good or high-fair ecological condition. Blacktail, Bodie, and Sunnyside Canyons run through the allotment. In 1999 a portion of Bodie Canyon was determined to be in fair condition with significant regeneration of riparian species. Traditionally, distribution problems have led to overuse in the riparian bottoms and under-use in the uplands.

Campini Allotment. The allotment contains five pastures. A single herd is rotated through four of the pastures in a deferred-rest rotation. The fifth pasture is reserved for heifers. All pastures can be used at any time of the year, although the Lower Pasture has traditionally been used during the winter months for both resource and livestock management considerations, and livestock are rotated through the other 3 pastures during the growing season. Greater growing season rest needs to be provided to the Mesa Pasture. Ecological condition data show marked improvements from the 1950's and stable trends in recent years (PR# 8). Most of the uplands are in good or high-fair ecological condition. Bodie, Sunnyside, and School Canyons run through the allotment. Sunnyside Canyon is almost entirely on deeded land. This stretch of Bodie Canyon is generally dry with mature walnuts, ashes and sycamores. There is on wet area at the lower end of Bodie that is showing significant riparian species recruitment. In 1999 a portion of School Canyon was determined to be in good condition hydrologically, but little riparian vegetation was evident.

HQ Allotment. The allotment contains two pastures and one trap. A single herd is rotated through the primary pastures in a deferred-rest rotation. All pastures can be used at any time of the year. Ecological condition data show marked improvements from the 1950's and stable to slight downward trends in recent years as a result of drought and annual plant infestations (PR# 9). Most of the uplands are in fair or good ecological condition, and are entirely plains grassland vegetation type. Parker Canyon runs through the allotment, although it is all on private land. This stretch of Parker Canyon is deep alluvial sand, and only flows on the surface during storms. Riparian vegetation is generally limited to desert willow, S*enecio*, desert broom, and the occasional mature sycamore and cottonwood.

Table 1. Allotment size, stocking and recent use: HQ, Campini and Blacktail Allotments.

		HQ	Campini	Blacktail
Total Acres[3]		1570	6,700	4,077
Capable Acres[4]		1570	6,700	4,077
Management System		2-pasture deferred rotation	4-pasture deferred rest rotation	5-pasture deferred rest rotation
Current permitted Use (CYL)[5]		28 CYL	215 CYL	130 CYL
Permitted use (AUM)[6]		444	3,406	2,059
Recent Actual Use	2000 2001	45 rested	149 150	97 120

[3] Acreage figures shown include private lands on the allotment managed under a private land permit.
[4] Capable acres are defined as areas under 40% slope and capable of producing 100 pounds of dry forage per acre. Areas considered "not capable" are not used to calculate grazing capacity.
[5] CYL: Cattle yearlong
[6] An AUM is the amount of *forage* required by one animal unit for a period of 30 days. One animal unit is considered to be a mature cow of approximately 1000 pounds. A cow with a calf is 1.32 AUM.

		HQ	Campini	Blacktail
	2002	25	144	96
	2003	18	132	44
	2004	16	62*	60

*Allotment rested during growing season (4/15-9/30).

Management Direction

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

Management Area (MA) 4 comprises a majority of the project area. These lands include 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)

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. Portions of Parker and Sunnyside Canyons are designated as MA7.

Desired Condition

The Coronado National Forest Plan identifies the following goals for the range, wildlife, soil, water and lands programs on the Forest.

Range

- 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.

Wildlife

- 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.

Soil and Water

- 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.

Lands

- Allow the use of available National Forest lands for appropriate public or private interests consistent with National Forest Policies.

Desired Condition

The following specific objectives constitute the desired condition in the analysis area. They are intended to achieve the goals of the Forest Plan consistent with the management emphasis for each Management Area and site-specific resource conditions in the project area:

- Soil erosion is arrested and activities contributing to impaired soil quality are corrected through improved distribution.
- Ecological condition as expressed by the number of acres in fair or better condition is maintained or improved.
- Range production and movement toward site potential for each soil/vegetation site is maintained or increased.
- All grazing improvements on all allotments are in proper working order.
- Livestock use is balance with existing capacity.

Range Suitability and Capability

Determination of rangeland capability and suitability is a two-step process. The first step involves the determination of those areas that can support domestic livestock grazing (capability). Capable rangelands are defined as rangelands under 40% slope and capable of producing 100 pounds per acre of dry forage. The second step refers to the appropriateness (suitability) of livestock grazing in an area relative to all other competing resource values and management objectives. Suitability is determined both during the Forest planning process (e.g. MA1 areas) and at the project level. For example, analysis at the project level may identify additional areas (e.g. campgrounds, wetlands, etc.) considered unsuitable for grazing because other resource values are emphasized.

The project area consists of relatively flat open grassland and woodlands. The entire area has been determined to be capable for grazing. Of the areas considered capable, none have been classified as unsuitable in the Forest Plan or at the project level.

Proposed Action

The Sierra Vista Ranger District proposes to authorize grazing on and develop allotment management plans for the HQ, Campini and Blacktail allotments. Allotment management will be designed to achieve light to moderate utilization[7] and to provide periodic growing season rest or deferment for grazed plant recovery, increases in herbage production and retention of herbaceous litter to protect soils and provide wildlife habitat. Range improvements would be constructed to the degree necessary to achieve management

[7] Generally defined as 30-45% of current year's growth. See Chapter 2 for additional discussion.

objectives and move the project area toward desired condition. Impacts to sensitive resources will be avoided through the development of resource-specific mitigation measures. Implementation and effectiveness of management will be monitored over the life of the project. The proposed action is described in greater detail in Chapter 2.

Decision Framework

The Sierra Vista District Ranger is the official responsible for decisions regarding management of the HQ, Campini and Blacktail 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 AMPs, including permitted number of animals, season of use, allowable utilization standards and the term of the permits. These 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.

Public Involvement

The proposal has been listed in the Forest's Schedule of Proposed Actions continuously since September 2004. On October 29, 2004, a Forest interdisciplinary team met to develop proposed actions and to identify preliminary issues, concerns and measures to carry forward into the analysis. The proposal was provided to the public and other agencies for comment during scoping on February 3, 2005 (PR# 12). Four comment letters were received in response to scoping (PR#s 13-16). Using the comments from the public and other agencies, the interdisciplinary team developed a list of issues and concerns to address.

In February 2006, a draft of this EA was provided to parties who had expressed interest through scoping (PR# 44). The public was also notified of the opportunity to comment through a legal notice published in the *Sierra Vista Herald/Bisbee Daily Review* on February 3, 2006 (PR# 45). Two responses were received during the 30-day comment period that ended on March 6, 2006 (PR# 51, 52). These comments have been considered and included as appropriate into the analysis.

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 in Chapter 3 is built around the

identified issues and concerns. 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[8]. An analysis of the issues and scoping responses is included in the project record as PR# 18.

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, sensitive and management indicator species and their habitats. Effects could include modification of the structure and composition of plant communities that provide habitat through selective removal of forage, disturbance during critical periods, and changes in the availability of water. Effects can be both positive and negative, depending on the timing, intensity, frequency and duration of grazing.

Soil and watershed condition – continued grazing in the project area could impair soil condition and impact riparian areas. Water developments for livestock may affect hydrological function in watersheds and may take water away from wildlife or vegetation.

Upland vegetation – Continued grazing on the allotment could lead to changes in the composition, structure and vigor of upland vegetation and could affect the condition and trend of rangeland resources.

International boundary effects – The proximity of the border with Mexico contributes management challenges because illegal border crossers can cut fences, leave gates open and vandalize water sources, making it difficult to keep livestock in pastures or on the allotments. While these issues are largely outside of the control of the Forest Service or permittees, they do affect the ability to implement successful management actions.

Utilization. Several comments received on the proposal identified annual forage utilization standards as an issue. Some comments indicated a concern that proposed 45% utilization limits exceed currently accepted guidelines for utilization (often citing summaries such as Holechek 1988, 1999, 2004 and Galt, et al 2000, PR#s 42-45). Other comments indicated that permitted numbers identified in the proposed action were contrary to direction provided in the "Principles of Obtaining and Interpreting Utilization Data on Southwest Rangelands" (PR# 17, 32).

Proposed utilization (30-45%) is set to meet the physiological needs of forage plants. It is further refined to meet specific management objectives (e.g. plant production and vigor,

[8] 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)…"

soil protection, litter increases, maintenance of wildlife cover). Utilization measurements will be used to evaluate the short-term effectiveness of management and to monitor achievement of specific resource objectives (see proposed action, Chapter 2). However, attainment of desired rangeland condition will be based on assessment of ecological condition and trend. Permit numbers are based on production and utilization studies and knowledge of actual use in recent years.

The Forest is not proposing changes in utilization on the allotments. Use levels will be set to meet the physiological needs of the plants and to meet the site specific objectives identified for each allotment. Therefore, utilization was not identified as a separate issue for the analysis.

CHAPTER 2 - ALTERNATIVES, INCLUDING THE PROPOSED ACTION

This chapter describes and compares the alternatives considered for the management of the HQ, Campini and Blacktail 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 Eliminated From Detailed Study

No additional alternatives were considered. One comment (PR# 13) proposed reducing stocking rates (harvest coefficient) to 25% on the allotments, but gave no site-specific resource information in support of the recommendation. The issue of utilization was discussed in the previous section.

Alternatives Considered in Detail

Alternative 1

No Action

Since the proposed action would authorize grazing, under the No Action alternative grazing would not be authorized and use of the allotments by domestic livestock would be discontinued. Permittees would be given one year from the date of the decision to remove livestock from the allotment(s). 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.

Alternative 2

Continue Current Management

Livestock grazing would continue on all allotments as currently permitted. New permits would be issued for the classes and numbers of livestock currently allowed. Authorized use would continue to be controlled through annual operating provisions (AOP). Existing fences, water developments and other range improvements would be maintained, but no new infrastructure would be proposed or developed. Erosion control structures described under the proposed action would be authorized, since the need for this action would remain regardless of the presence of livestock. Allotment management plans would include mitigation and monitoring features described under the proposed action.

Alternative 3

The Proposed Action

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

Duration and timing of grazing. Use on the allotments will be authorized year-round using rotational grazing. Periodic growing season rest or deferment will be used to provide for grazed plant recovery. The sequence and timing of pasture moves will be based on monitoring of range readiness, ecological condition, and utilization.

Frequency and intensity of grazing. Forage utilization will be managed at a level corresponding to light to moderate intensity[9] in order to provide for grazed plant recovery, increased herbage production and retention of herbaceous litter to protect soils.

Grazing authorizations will be accomplished through the issuance of new 10-year term grazing permits in accordance with Forest Service policy (FSH 2209.13), (Table 2). New allotment management plans (AMPs) will be developed for each allotment and will become part of Part 3 of any grazing permits issued under the proposed action. The AMPs would incorporate an adaptive management strategy (see below). Using adaptive management, specific numbers of livestock would be set each year based on resource conditions and management objectives for the allotments. Pasture rotations will be planned at the beginning of each grazing year and will be continually modified in response to changing resource conditions with the objective of not grazing any one pasture during consecutive growing seasons. Management systems identified in Table 2 are those in effect on the allotments at present. Over time these may be modified to adapt to changing resource conditions or management objectives.

Proposed permitted use (Table 2) is based on knowledge of actual use on the allotments over the past 10 years, the average amount of forage available on the allotments based on production and utilization studies conducted in 1999 and 2000 (PR# 11, 22, 23). It reflects the estimated average annual forage production (AUMs) available for livestock on the allotments considering the duration, timing, frequency and intensity of grazing proposed, and assumes proper livestock distribution as a result of proposed improvements.

Proposed improvements for each allotment are shown in Table 3. Not all of the projects shown in Table 3 would be implemented immediately; funding constraints may require the projects to be completed over a period of years, or monitoring may indicate that the projects are no longer necessary. In the absence of completed developments to promote

[9] Based on review of numerous grazing intensity studies, Holechek (2004) (PR# 44) 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 30%-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.).

proper distribution and/or intensive management, actual use on the allotments may be less than the maximums shown in Table 3.

Table 2. Proposed Grazing Management and Authorization

Allotment	Grazing System	Animal Unit Months Permitted	Change from Current Management
HQ	2 pasture deferred rest rotation	317-586 AUM (20-37 cow/calf yearlong)	Change from 444 AUM.
Campini	5 pasture deferred rest rotation	1584-2376 AUM (100-150 cow/calf yearlong)	Change from 3406 AUM. One new pasture.
Blacktail	5 pasture deferred rest rotation	1272-1742 AUM (80-110 cow/calf yearlong)	Change from 2059 AUM.

Table 3. Proposed Range Improvements

Allotment	Proposed Action	Purpose/Objective
All	Continue to authorize grazing. Develop Allotment Management Plans	Balance permitted use with capacity and provide long-term management to achieve desired conditions.
HQ	Develop upland waters in the two primary pastures by piping water from an existing well.	The allotment is reliant on dirt tanks, which requires the permittee to haul water in some years. Permanent waters would improve distribution and reduce overuse of some areas.
Campini	Cross fence the large Mesa pasture to create 2 pastures. Construct a water lot around George Tank to water both pastures.	An additional pasture would increase deferment time for all pastures and create 3 pastures of approximately equal capacity. This would reduce the duration of grazing in any given pasture, promote plant vigor and increase management flexibility.
Campini	Realign the fence separating Heifer and Lower pastures.	This would increase capacity and improve distribution in the Heifer pasture by allowing the use of forage that is not used by cattle in Lower pasture and reducing grazing intensity in other areas.
Blacktail	Fence an existing spring in Sundown Canyon and pipe water to a nearby location.	This would protect aquatic and riparian resources at the spring site and provide reliable water for livestock.

The proposed action also includes the placement of erosion control structures in five active head cuts on the HQ allotment (PR# 6). This activity would require the placement of approximately 190 cubic yards of rock, held in place with woven wire fencing, within the active cuts in order to stabilize soils and would involve the temporary disturbance of less than 5 acres.

Mitigation and Monitoring

The proposed action includes mitigation and monitoring features intended to preclude or avoid significant impacts (mitigation) and to assure that management is being properly implemented and management objectives are being met (monitoring).

Mitigation measures

To mitigate resource impacts, the following measures will be implemented under all action alternatives. These measures have been used on previous projects and are

considered to be effective at reducing environmental impacts. They are consistent with applicable Forest Plan standards and guidelines and the terms and conditions and conservation measures of existing biological opinions. Implementation of the mitigation measures, in combination with project design criteria, should preclude the occurrence of potentially significant environmental impacts.

Soil, Water and Vegetation – the objective is to mitigate effects of livestock grazing management and to assure that management is responsive to changing resource conditions. The objective will be accomplished through the use of Best Management Practices (FSH 2509.22, PR# 40 Attachment C) 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, provide herbaceous residue for soil protection and to increase herbage producing ability of forage plants. A utilization guideline of 45% use of key species in key areas will be used to achieve this objective.
- The Forest and permittees will jointly prepare annual operating plans that consider current conditions and management goals. Periodic field checks including stock counts, range readiness and utilization monitoring will be used to identify needed management adjustments. The objective is to assure achievement of resource and management objectives.
- Necessary techniques 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. No hay or bulk feed will be placed on Forest lands.

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

- All new or reconstructed water developments will include wildlife access and escape ramps.
- All new 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.
- All proposed range facilities will be surveyed for 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.
- 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.
- 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 (PR# 19). The objective is to provide herbaceous vegetation as cover for quail and other wildlife.

- Stockpond maintenance activities will be conducted in compliance with the Forest's stockpond management and maintenance guidelines for the Sonoran Tiger Salamander and the Chiricahua leopard frog (PR# 29, 39) in order to reduce effects to these species as a result of stockpond maintenance activities. The objective is to maintain occupied habitats for the species

Heritage Resources – the objective is to protect heritage resources (historic and prehistoric sites) from impacts caused by range construction projects or livestock concentration.

- All proposed range facilities will be surveyed for heritage resources prior to any ground-disturbing activities. Facilities will be built or modified to avoid impacts to sites. If unrecorded sites are discovered during the course of project implementation, activities will cease and the forest 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.

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.

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 reference[10] and the Region 3 Rangeland Analysis and Training Guide.[11] 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 a minimum of five-year intervals, 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 Reference[12] and with consideration of the Principles of Obtaining and Interpreting Utilization Data on Southwest Rangelands (PR# 32).

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

[11] Rangeland Analysis and Management Training Guide. 1997. USDA Forest Service, Southwestern Region.

[12] 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.

Utilization will be monitored on key forage species, which are native perennial grasses that are palatable to livestock. At a minimum monitoring will include use in key areas[13], but may include monitoring outside of key areas. The Sierra Vista District Range Staff Officer and the permittees will be responsible for monitoring livestock grazing utilization. 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 permittee(s).

Permittees will be encouraged to participate in monitoring activities. Records of livestock numbers, movement dates and shipping records will be kept by the permittees and will be provided to the District Range Staff annually.

Adaptive Management

The proposed action is intended to provide sufficient flexibility to adapt management to changing circumstances. If monitoring indicates that desired conditions are not being achieved, management will be modified in cooperation with the permittees. Changes may include administrative decisions such as the specific number of livestock authorized annually, specific dates for grazing, class of animal or modifications in pasture rotations, but such changes will not exceed the limits for timing, intensity, duration and frequency defined for the proposed action and analyzed herein. For example, an authorized use of 120 AUM may occur as twenty cows for six months or sixty cows for two months, but in either case, would not exceed the 120 AUM authorized on an annual basis.

In the case that changing circumstances require physical improvements not disclosed or analyzed herein, 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 Ranger will determine whether correction, supplementation or revision of the EA is necessary in accordance with Forest Service Handbook direction at 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 will be allowed to continue. If monitoring demonstrates that management options beyond the scope of the analysis are warranted, or if new information demonstrates significant effects not previously considered, further analysis under NEPA will occur.

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[13] 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.

Comparison of Alternatives

This section provides a summary of the effects of implementing each alternative. Information in the table is focused on activities and effects where different levels of effects or outputs can be distinguished quantitatively or qualitatively among alternatives. Table 5 summarizes the more detailed effects analysis contained in Section 3.

Table 5. Comparison of the Alternatives

Attribute	Alternative 1	Alternative 2	Alternative 3
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.	Consistent with Forest Plan and policy.
Meets Purpose and Need	Yes. Eliminates effects of grazing. Capacity issue becomes moot.	No. Does not resolve distribution issues; permitted use is not balanced with capacity.	Yes. Resolves distribution issues and balances use with capacity. Provides management flexibility.
Effect on Wildlife and Plants	No Effects.	Effects mitigated, but poor distribution may impair achievement of desired conditions.	Effects mitigated. Improved distribution reduces localized effects to habitats.
Effects on soil and watershed condition	No effects.	Continued livestock concentration in some areas contributes to less than desirable watershed and soil condition.	Additional waters and pastures increase management flexibility and contribute to improved distribution.
Effects on upland vegetation	No effects.	Continued livestock concentration in bottoms and flat areas, resulting in localized heavy use.	Additional waters and pastures increase management flexibility and contribute to improved distribution. Increased use in uplands.

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. The section is organized by resource. Within each section, the affected environment is briefly described, followed by the environmental consequences (direct and indirect effects) of implementing each alternative. The cumulative effects of the alternatives are considered at the end of the section.

Wildlife

Affected Environment

The three allotments are located within Arizona Game Management Units 35A. Broadleaf woodland, chaparral, plains grassland and riparian vegetation provide habitat for a variety of native wildlife. Larger species found in the area include white-tailed deer, javelina, mountain lion and black bear. Avian fauna include Mearns' quail, mourning dove, band-tailed pigeon, a variety of raptors and songbirds. Portions of the area provide suitable habitat for Gould's turkey. Other smaller species that may occur within the project area include coyote, gray fox, bobcat, coati, striped, hooded and spotted skunks, raccoon, badger, and ringtail. The area may be used for foraging and roosting by a variety of bat species including cave myotis, Mexican free-tailed bat, the endangered Lesser long-nosed bat and several other species. Aquatic habitats are limited to stock ponds, some of which provide occupied habitat for Sonora tiger salamander, and a few springs.

Threatened, Endangered and Sensitive Species. Listed or proposed threatened or endangered species that potentially occur in the project area are shown in Table 5.

Table 5. Threatened or Endangered Species Considered for Analysis.

Common Name	Status	Comments
Mammals		
Lesser long-nosed bat *Leptonycteris curasoae yerbabuenae*	LE	Foraging habitat on all allotments (low densities of agaves).
Amphibians		
Chiricahua leopard frog *Rana chiricahuensis*	LT	1995 record from Campini Mesa. Considered extirpated in the project area.
Sonora tiger salamander *Ambystoma tigrinum stebbensii*	LE	Occupied habitats (stock ponds) in the project area.

The **lesser long-nosed bat** feeds on the nectar and pollen of paniculate agaves during late summer on the Forest. Suitable foraging habitat in the form of mixed grasslands and woodlands with stands of agave is present throughout the three allotments. Mine adits

and caves in nearby Huachuca and Patagonia Mountains represent potential roost sites, but roosts are not found on the allotments.

There is a single 1995 record of **Chiricahua leopard frog from** School Canyon adjacent to Campini Mesa. Stock tanks and at least one spring in the project area provide potential habitat. However, aquatic habitats in and around allotments been invaded by bullfrogs. As a result, leopard frogs are now absent from these sites.

All but 3 records for the **Sonora tiger salamander** are from the upper Santa Cruz and San Pedro watershed found in the San Rafael Valley and nearby mountains. On the HQ, Campini and Blacktail Allotments, the species has been recorded from at least 7 sites, all of which are ponds maintained for livestock. Sites are generally less than 45% slope and between 5200 feet 6200 feet in elevation. All stock ponds within this range of elevation represent potential habitat.

A total of 13 Forest Service sensitive species[14] have been identified as occurring in the project area or for which suitable habitats may be present (Table 6). Many species have been listed as sensitive because their distribution and habitat requirements are poorly known. Not all species have been documented in the project area and their presence or absence may not be detected within the time frame of the analysis. In the absence of definitive surveys for all species, their presence is assumed based on the availability of suitable habitat.

Table 6. Forest Service Sensitive Species included in the analysis

Species	Evaluation for Analysis
Gould's turkey *Meleagris gallopavo mexicana*	The indigenous population of this subspecies is thought to have been extirpated from suitable habitats on the Forest by the early 1900's. A re-introduced population is well-established in the Huachuca Mountains and birds are regularly seen and reported from drainages in the project area. Suitable habitats are available in the form of riparian corridors in oak woodlands on the allotments.
Western yellow-billed cuckoo *Coccyzus americanus occidentalis*	Federal Candidate species. There are no known observations of the species from the allotments and no cottonwood/willow stands sufficient to provide habitat.
Mexican garter snake *Thamnophis eques megalops*	This species is usually found in densely vegetated habitat surrounding cienegas and springs. It generally requires good riparian conditions with sufficient cover. Documented from San Rafael Valley downstream from project area. Potential habitat present.
Arizona ridgenosed rattlesnake *Crotalus willardi willardi*	The species is found leaf litter, rock crevices and bunchgrasses in broadleaf evergreen woodland, deciduous and evergreen riparian and mixed coniferous forest. There are records from near the allotments and potential habitat occurs throughout the project area.
A tiger beetle *Amblycheila baroni*	Found throughout the Coronado National Forest in oak, juniper and mixed grasses at elevations of 3,500 to 5,500 feet. The species is active during the late summer after the onset of summer rains. Suitable habitat present; within range of the species.

[14] USDA Forest Service Region 3. Regional Forester's Sensitive Species List. July 21, 1999.

Species	Evaluation for Analysis
Arizona giant skipper *Agathymus aryxna*	These species occur throughout the Coronado National Forest in suitable habitats containing their preferred food plants: *Agave palmeri* for *A. aryxna, Agave shottii* for *A. polingi* and various species of *Yucca* for *A. ursus*. Adults fly from early September to mid-November and adult males are attracted to mud. Eggs are laid on the food plant and the larvae live and hibernate on the agave leaves.
Ursine giant skipper *Agathymus ursus ursus*	
Poling's giant skipper *Agathymus polingi*	
Arizona metalmark *Calephelis arizonensis*	This species is known year-round from throughout southeastern Arizona where it is found near the bases of the mountains up off of the desert floor and in riparian bottoms where the host plant, *Bidens* sp. (beggarticks), is found. Limited suitable habitat in the project area.
Mexican meadowfly *Sympetrum signiferum*	Preferred habitat includes slow flowing creeks and vegetated stream pools. These habitats are not known from the allotments. There is a single record of this species north of the project area.
Huachuca springsnail *Pyrgolopsis thompsoni*	This aquatic snail occurs in spring-fed pools, outflows and cienegas in the vicinity of the Huachuca Mountains. The species occurs in Sheehy Spring in the San Rafael Valley, which is a perched spring outside of the watershed affected by the proposal.
Huachuca Golden Aster *Heterotheca rutteri*	This species grows in grasslands and oak savannahs, road cuts and disturbed sites at elevations between 4,500-6,500 feet. There are HDMS records for the species on the San Rafael Valley (AGFD 2000), but not from the project area.
Woolly Fleabane *Laennecia eriophylla*	Grows on gravelly soil of rocky slopes and ridges in semi-desert grassland and oak woodland between 4,200 and 5,600 feet. A population occurs nearby, but there are no records from the project area.

Management Indicator Species. Forest Plan direction for Management Indicator Species (MIS) is to maintain or improve occupied habitat. Of the 33 MIS identified in the Forest Plan, 3 species and one group (cavity nesters) were selected for analysis as management indicators at the project level based on their known occurrence within or near the project area or presence of suitable habitats (Table 7). The remaining species were eliminated from consideration in this analysis because their known distributions are well outside of the project area or the area does not provide suitable habitat. Forest-wide trends of all MIS have been assessed and are reported in the Forest-wide Status Report for Management Indicator Species (PR# 30). The background information and conclusions of this reported are incorporated by reference.

Table 7. Management Indicator Species considered for the analysis.

Species	Evaluation for Analysis
White-tailed deer	Occurs within analysis area; widespread suitable habitat. Monitored annually by AGFD.
Mearns' quail	Occurs within analysis area; suitable habitat available. Population trends and recruitment monitored through harvest data.

Species	Evaluation for Analysis
Baird's sparrow	Limited suitable habitat present in plains grassland habitats. Recorded nearby. Surveys in mid 1990s and annually through Christmas bird counts.
Primary and secondary cavity nesters	Occur within analysis area; suitable habitat available. Monitored through breeding bird survey routes.

Environmental Consequences

Threatened or Endangered Species.

Effects of the ongoing grazing activities on the three allotments have been evaluated in Biological Assessments (BA) of Ongoing and Long-term Grazing on the Coronado National Forest (USFS 1998, USFS 2002) and in the associated Biological Opinions from the U.S. Fish and Wildlife Service (USFWS 1999, USFWS 2002) (PR# 27). 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 2005 (PR#s 26, 34).

For species likely to be affected by the proposed action or alternatives, effects are disclosed below. More extensive discussions, including determinations for species not affected, can be found in the wildlife specialist's reports included in the project record (PR#s 26, 27, 34). These reports are incorporated by reference.

Lesser long-nosed bat. Grazing potentially affects this species through removal of food plants either as a result of ground-disturbing livestock management activities or herbivory by livestock on agaves. No quantitative measurements of agave density or estimates of the extent of livestock herbivory have been made on the allotments. However, field reconnaissance indicates that agave densities are very low on the allotments.

Alternative 1 would have no effect on lesser long-nosed bat as grazing will not occur on any of the allotments. Alternative 2 (current management) and 3 (proposed action) would result in livestock grazing in pastures containing agaves during the time agaves are blooming (April 1-June 15), although on any given year, more than half of the pastures will be deferred during the April-June agave bolting season. Although adverse effects to the LLNB are considered remote, not enough is know of the species' distribution on the allotments or the extent of livestock herbivory on agaves to consider the effects insignificant or discountable. Pasture deferments and mitigation measures that avoid destruction of agaves will minimize effects, but it is likely that some level of herbivory on agaves will occur under alternatives 2 and 3. Based on this, the Forest determined that grazing on all three allotments *may affect, likely to adversely* affect the bat (PR# 27). Mitigation measures described in Chapter 2 should minimize the effects of construction activities.

Chiricahua leopard frog. There are numerous historic records of Chiricahua leopard frog (CLF) from the Huachuca Mountains and San Rafael Valley vicinity. However, bullfrogs have invaded many of these sites and there are currently no known extant populations of CLF in the area. The 2002 biological assessment of ongoing livestock

grazing on the allotments arrived at a determination that grazing *may affect, likely to adversely affect* the Chiricahua leopard frog on all three allotments based on historic occurrence of the species, the presence of suitable habitats and the presumed effects of livestock use on the species (PR# 27).

The presence of bullfrogs likely renders potential sites unsuitable for CLF and it is unlikely that leopard frogs would be able to reestablish in the project area, notwithstanding changes in grazing management. Nevertheless, the Forest will continue to implement the terms and conditions of the existing BO, along with the recently adopted Chiricahua leopard frog management guidelines (PR# 39), which should insure detection of any extant frogs and maintenance of suitable habitats.

Sonora tiger salamander. The proposed livestock operation on the HQ, Campini and Blacktail Allotments *may affect, likely to adversely affect* the Sonora tiger salamander. This determination is consistent with that given in an analysis of range management activities at the Forest level (U.S. Forest Service 1997, U. S. Fish and Wildlife Service 1998, 2002, PR# 27). The proposed action incorporates the terms and conditions of the 2002 opinion. Stock pond management and maintenance guidelines (PR# 29) are being implemented on the allotments and will continue to be implemented through the term of the proposal.

Sensitive Species

All of the sensitive species identified in Table 6 may occur within or near the proposed project area. Occurrence has not been confirmed for several species, but the species are included in the analysis because 1) potentially suitable habitat exists, 2) the analysis area is within the range of the species, or 3) it is currently unclear what composes their preferred habitats. The impacts may be positive, neutral or negative. Possible negative effects are confined to trampling and herbivory by livestock (for plants) or minor disturbance by grazing cattle (for animals). Where negative impacts are anticipated, these are expected to be short term and minor, limited mainly to disturbance or damage to individuals. The proposed management includes several measures that are intended to improve soil, watershed, vegetation and riparian condition over the term of the project. These include light to moderate grazing utilization intended to increase litter, increased pasture rest and fencing of a spring. Implementation of these measures should maintain or improve habitats for sensitive species, resulting in positive or neutral impacts. A more detailed analysis is found in the Biological Evaluation (PR# 28) and is summarized below.

Gould's turkey (*Meleagris gallopavo mexicana*) Livestock grazing as proposed should result in the retention of sufficient herbaceous forage for turkeys across the landscape, although areas of livestock concentration may impact forage resources on a local scale. The development of additional water sources is part of the proposed action, although these waters would be in uplands away from riparian bottoms that provide the best habitat. Effects are expected to be limited to disturbance as a result of minor construction or livestock management activities. None of the project alternatives will affect the quantity or quality of roost trees. Based on this, the proposed action *may impact individuals, but is not likely to result in a trend toward federal listing or a loss of viability*.

Western Yellow-billed cuckoo (*Coccyzus americanus occidentalis*). There are no known observations of the species from the allotments and no cottonwood/willow stands sufficient to provide habitat. Deciduous riparian vegetation is limited to sycamore and Arizona walnut in the form of individual trees or small stands. Since suitable nesting habitat is lacking on the project area, the proposed action will have *no impact* on yellow-billed cuckoo.

Arizona ridgenosed rattlesnake (*Crotalus willardi willardi*). Heavy grazing could affect the species and potentially its prey base through the removal of cover; however proposed grazing intensities are unlikely to significantly reduce cover. Direct effects potentially include disturbance of individuals during range construction projects or trampling by livestock, which is considered unlikely. Based on the above, the proposal *may impact individuals* of the Arizona ridge-nosed rattlesnake, *but is unlikely to result in a trend toward federal listing or a loss of viability.*

Mexican garter snake (*Thamnophis eques megalops*). Threats to the species include habitat degradation from overgrazing and water diversions, predation and competition from introduced exotic species, particularly bullfrogs. The species has not been documented on the allotments. Potential habitats in the form of stock tanks and seeps are found in the project area. Measures proposed to protect Sonora tiger salamander and Chiricahua leopard frog should benefit potential habitats by providing cover in the vicinity of selected stock tanks. The proposed action is expected to have *no impact* on Mexican garter snake.

Huachuca golden aster (*Heterotheca rutteri*). The species may be susceptible to trampling or herbivory by livestock. However, the species appears to tolerate some disturbance as it grows adjacent to State Route 82 near Sonoita. It is also found in areas that historically have burned at a high frequency or have been grazed. Based on this the proposed action *may impact individuals* of Huachuca golden aster, *but is not likely to result in a trend toward federal listing or loss of viability.*

Wooly fleabane (*Laennecia eriophylla*). Populations are typically small and restricted almost entirely to portions of the Forest within the Atascosa Mountains in Santa Cruz County. Dense perennial grass cover appears to be important in creating suitable site conditions for this species. If the species occurs in the area, individual plants may be grazed by livestock or grass cover may be modified. However, the species appears to be persisting in the presence of managed grazing elsewhere. Based on this the proposed action *may impact individuals, but is not likely to result in a trend toward federal listing or a loss of viability*.

Arizona Giant Skipper (*Agathymus aryxna*), Poling's giant skipper (*Agathymus polingi*) and Ursine giant skipper (*Agathymus ursus ursus*)

Possible effects from livestock grazing include the removal or disturbance of food plants (agaves) or the trampling of adults in muddy areas. The butterflies and their host plant are widespread in southeastern Arizona. Based on this, the proposed action *may impact individuals* of these three species *but is not likely to result in a trend toward federal listing or loss of viability.*

A tiger beetle (*Amblycheila baroni*). This is a nocturnal tiger beetle that feeds on a variety of insects and other arthropods. By day it burrows in under the bases of rocks. The species is described as widespread and abundant where it is found. Effects from livestock grazing are limited to accidental trampling of individuals. The proposed action *may impact individuals, but is not likely to result in a trend toward federal listing or loss of viability.*

Arizona metalmark (*Calephelis arizonensis*). The host plant *Bidens* is a plant of riparian affinity and most suitable Arizona metalmark habitats have a source of permanent or semi-permanent water nearby. It is not known whether *Bidens* occurs within the analysis area; and permanent water other than stock tanks is limited. Possible effects to the species would involve removal of the host plant through grazing. Based on the limited suitable habitat within the analysis area, implementation of the proposed action *may impact individuals* of Arizona metalmark, *but is not likely to result in a trend toward federal listing or loss of viability.*

Mexican meadowfly (*Sympetrum signiferum*) Suitable habitats are not known from the project area. The spring in Sundown Canyon may provide limited suitable habitat, but this spring will be fenced to exclude livestock under the proposed action. Based on this, the proposed action will have *no impact* on the Mexican meadowfly.

Huachuca springsnail (*Pyrgolopsis thompsoni*) No suitable habitats for the species are known from the project area, but extensive surveys have not been conducted. The spring in Sundown canyon may provide suitable habitat for the species. Under the proposed action, this spring would be fenced to exclude cattle. Based on this, implementation of the proposed action will have *no impact* on Huachuca springsnail.

Management Indicator Species.

Effects of the proposed action and alternatives are evaluated in the project-level analysis (PR# 31) and are summarized below. For all Management Indicator Species considered, the proposed action and alternatives are not expected to cause a detectable change in species population trends or a loss of occupied habitat.

Cavity Nesters. Habitat for cavity nesters (mature trees and snags) is widespread across the Forest and is estimated to be increasing as a result of several large fires and insect infestations that have killed thousands of trees over the past decade. Grazing-related activities in the project area 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 involve the removal of trees or change the distribution and abundance of cavity bearing trees.

White-tailed deer. Coues white-tailed deer is included in the Species Needing Diversity, Species Needing Herbaceous Cover, and Game Species indicator groups. The species seems to favor rugged and steep slopes of the mountains but are also found in lower drainages in the project area. White-tailed deer tend to use mixed-oak habitats more than other types, and tend to avoid open, grassy areas used by cattle. The entire project area (approximately 12,000 acres) is considered suitable habitat, and represents less than one percent of the total occupied habitat on the Forest. Habitat and population trends are considered stable, based on AGFD survey data (PR# 31). Heavy grazing prior to and

during the fawning period reduces hiding cover and may reduce fawn survival and recruitment. Overgrazing by livestock may reduce available grass forage and lead to increased livestock use of browse plants and forbs used by deer. However, grazing as proposed under either of the action alternatives would not be of sufficient intensity or duration to affect large scale reductions in cover or result in competition. Selection of the no action alternative may result in a slight reduction of available waters because livestock waters would no longer be maintained. This may affect white-tailed deer distribution, but is unlikely to affect deer populations or result in a loss of occupied habitat.

Montezuma (Mearns') Quail. Montezuma quail is included in the Species Needing Herbaceous Cover, Game Species, and Special Interest Species indicator groups. The 1986 Forest Plan identified 225,410 acres of occupied habitat within several vegetation types. This species is identified as a priority bird species in the Arizona Partners in Flight Bird Conservation Plan. Overgrazing, especially during the growing season has been shown to be deleterious to Montezuma quail due to its effects on cover. The maintenance of grass height over 6" is necessary to provide sufficient cover for the birds to hide from predators. The project area provides approximately 7,000 acres of high density Mearns' quail habitat in the form of broadleaf evergreen woodland, deciduous and evergreen riparian forest (PR# 18). Forest-wide, the amount of potential habitat has not changed significantly since 1986, but habitat suitability has likely improved as a result of improved livestock management over the past two decades.

Alternative 1 (No Action/No Grazing) 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, so the No Action alternative may not be optimal for Mearns' quail. In addition, Mearns' quail populations are highly correlated to the amount and timing of summer precipitation. The elimination of grazing impacts is predicted to increase the amount of available cover, but in the absence of sufficient precipitation, the effects of management changes alone on long-term trends for quail populations are difficult to predict. Alternative 2 (Current Management) does not improve livestock distribution and provides less growing season rest than other alternatives. While manual guidance for Mearns' quail would be implemented, the task of retaining sufficient herbaceous cover across the landscape would be complicated by uneven livestock distribution. Current management appears to be achieving Forest Plan objectives for herbaceous cover in most areas, but livestock concentration areas would continue to result in heavier than desirable use in low, flat areas. Alternative 3 (Proposed Action) will result in improvement in herbaceous cover. Proposed changes in management that incorporate growing season rest should increase grass plant production. New waters and fences should reduce use in canyon bottoms, which should benefit Mearns' quail and other species found in these areas, but may also result in reduction in herbaceous vegetation in previously little-used areas adjacent to new water developments. For the most part, these increases in utilization will be in uplands, away from Mearns' quail habitats and the limits on grazing utilization should maintain occupied habitats.

Baird's sparrow. This sparrow breeds in the mixed grass prairies of the northern Great Plains and winters in the southwest grasslands including the San Rafael Valley. It is identified as a species needing herbaceous cover in the Forest MIS list. Suitable habitats occur on the open mesas within the project area. The majority of suitable habitat is found on private and State lands in the adjacent San Rafael Valley and not on the Forest. The species apparently avoids overgrazed rangeland and most agricultural land. The Forest Plan gives no data for acres of occupied habitat on the Forest; however, there is an estimated 49,379 acres of plains grassland on the Forest associated with the San Rafael Valley just west of the project area. Population information is not available for the allotment, although nearby grasslands are used by the species.

The proposed grazing management includes utilization of grass and forbs in potential habitat at levels at or less than 45% of annual growth. Pastures would also be regularly rested or deferred. Population trends for the species are primarily influenced by the quality and quantity of habitat where the species nests in the northern Great Plains. While all three alternatives should maintain occupied wintering habitats on the project area, herbaceous cover should be maximized under the no grazing alternative.

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". Birds of Conservation Concern are identified by the U.S. Fish and Wildlife Service by Bird Conservation Region (USFWS 2002. Birds of Conservation Concern. Div. of Migratory Bird Management http://migratorybirds.fws.gov/reports/bcc2002). The Project area lies within the Sierra Madre Occidental Region. Thirty-nine birds of conservation concern are identified for this region. Under all alternatives, effects to migratory birds are anticipated to be positive or insignificant as a result of herbaceous cover.

The closest Important Bird Area (IBA) identified by the National Audubon Society is the lower San Pedro River, approximately 15 miles from the project boundary. Activities within the project area are not expected to affect the San Pedro River IBA.

The installation of erosion control structures proposed under Alternatives 2 and 3 would require the short term use of heavy equipment to place rocks and gabions into the existing head cuts. This may result in the temporary displacement of wildlife. Sites will be surveyed for the presence of TES species prior to construction activities, so effects to these species should be avoided. Long term stabilization of watersheds should increase soil stability, increase ground cover and reduce the movement of soil into downstream habitats.

Soil and Watershed Condition

Soil Condition. Soil condition is the ability of the soil to infiltrate water, resist erosion and recycle nutrients. Previously reported soil condition on the allotments (e.g. the 2002 grazing biological opinion) was based on General Ecosystem Survey (GES) data published in 1991. GES data are based on a statistical analysis of soil properties such as soil type, slope and precipitation, which provide an estimate of risk, but actual soil

condition was not assessed on the ground. Based on GES interpretation, soils on the allotments were considered largely unsatisfactory.

In order to derive site specific estimates of soil condition, field monitoring was accomplished in 2005 using protocols from Forest Service Handbook 2509.18-99-1 R3 Supplement titled Soil Management Handbook. Field data collection consisted of visiting generally representative areas, key areas, and pace transect locations to physically inspect soil properties and watershed cover (PR# 33).

The soil condition rating procedure evaluates soil quality based on an interpretation of factors that affect three interrelated primary soil functions: soil stability, soil hydrology and nutrient cycling. Based on interpretation of these soil functions, soil condition is broken out into one of three condition classes:

- **Satisfactory**. Indicators signify that soil function is being sustained and soil is functioning properly and normally.
- **Impaired**. Indicators signify a reduction in soil function. The ability of the soil to function properly and normally has been reduced and/or there exists an increased vulnerability to degradation. Changes in land management practices or other preventative measures may be appropriate.
- **Unsatisfactory.** Indicators signify that a loss of soil function has occurred. Degradation of vital soil functions result in the inability of the soil to maintain resource values, sustain outputs or recover from impacts.

Satisfactory soil conditions are found on 99% of the three allotments. These soils are functioning properly and retain their inherent productivity. The impaired soil condition class covers less than 1% of all the allotments. Impaired soil condition areas are generally from gullys and headcuts that have contributed to soil loss. There are additional small areas where soil compaction is evident, but the soils retain their productivity and remain satisfactory.

Environmental Effects

Change in soil condition class is a long-term process with many influences and actual soil condition class is not expected to change significantly within the ten-year analysis period, even in the absence of grazing. The effects analysis reflects what would happen in the long term as it relates to potential recovery and provides a way to compare alternatives.

Under *Alternative 1*, there will be no direct or indirect effects from livestock grazing. Adequate vegetation groundcover (VGC) would contribute to maintaining a satisfactory nutrient cycling and soil structure. The hydrologic function and runoff would continue to be satisfactory. In the impaired soil condition area, erosion would likely continue to some degree without intervention and stabilization. Areas of compacted soils would benefit from the elimination of hoof impact and increases in VGC, but changes would be slow. The improved soil structure would contribute to the functional hydrologic condition.

Under *Alternative 2*, the range improvements identified in the proposed action would not occur, and livestock distribution would remain similar to current conditions. The lack of distribution would maintain areas of historical concentration. In the areas of satisfactory

soil condition, the soil conditions would probably continue to be satisfactory as they are inferred to be in a static trend (ocular). Under this alternative, areas of soil impairment would be stabilized by erosion control structures.

Alternative 3 (Proposed Action). Allowable use levels are expected to provide sufficient residual biomass to protect soils and not contribute to any decline in soil conditions. Rest and deferment will allow the vegetation to not be impacted by grazing for a complete growing season potentially causing positive gains in plant vigor, forage plant frequency, and recruitment. Flexible stocking rates built into the proposed action should allow management to respond proactively to changing resource conditions before problems occur. The proposed range improvements including fencing and additional watering locations are designed to improve livestock distribution which will help minimize impacts in historic concentration areas. However, it will increase use in historically underused areas and therefore potentially impact the soil conditions in these areas. The use of Best Management Practices (BMPs) is expected to minimize or mitigate any potential negative effects from this alternative. Under this alternative, areas of soil impairment would be stabilized by erosion control structures.

Upland Vegetation

Grazing by domestic livestock can impact vegetation by changing the mix of species in the plant community being grazed (vegetation composition), by changing the density and frequency of perennial herbaceous plants (plant frequency), and by changing the vigor of grazed plants. The combined attributes of plant composition, density and vigor are used to estimate the ecological condition and trend of rangeland plant communities. Ecological condition is an evaluation of the status of the vegetation and soil relative to their combined potential to produce a stable biotic community. For the purposes of determining rangeland condition, permanent vegetation transects were evaluated between 2001 and 2004 in the project area. Additional analysis was conducted in 2005 by a consultant for the Blacktail Allotment permittee (PR# 25).

The project area falls within the Mexican oak-pine woodland and oak savannah land resource unit (41-1AZ). The reference range sites used to describe the potential natural community include clayloam upland, loamy upland and loamy bottom, all in the 16-20 inch precipitation zone (PR#s 8, 9, 10).

HQ Allotment. Data collected on permanent monitoring transects in 2001, 2002 and 2003 indicate that most of the uplands are in fair or good condition (PR# 9). Uplands are entirely within the plains grassland type.

Campini Allotment. Ecological condition on the allotment has improved significantly since the 1950's when monitoring transects were established and has been stable in recent years. Most of the uplands are in good condition (PR# 8). On many of the mesas, historic compaction and soil loss has resulted in reduced productivity.

Blacktail Allotment. Permanent transects were monitored in 1999 and 2003. Most of the uplands are in good or high fair ecological condition (PR# 10). On many of the mesas, historic compaction and soil loss has resulted in reduced productivity. In 2005, transects were re-read by the permittees consultant. Results were similar to those obtained by the Forest.

Environmental Effects

Utilization by grazing animals affects vegetation composition and productivity. Defoliation on a repeated basis (frequency), in excessive amounts (intensity) or for extended periods without recovery (duration) can cause changes in the vigor of preferred forage plants. Numerous analyses of grazing intensity (PR#s 42, 43, 44, 45) have demonstrated that heavy grazing (>50-60% utilization) will negatively affect vegetation composition and productivity, but that light to moderate grazing (<45% utilization, see EA p. 10 and PR# 44) can maintain or improve these vegetation attributes. Vegetation condition can be improved through reductions in the frequency of utilization or by increasing the amount of rest to allow for grazed plant recovery.

Under *Alternative 1* (No Grazing), there would be no direct or indirect effects as a result of livestock utilization. Some light use by wildlife may occur, but there are no large wild grazing herbivores in the project area, so use would be negligible. Over the long term, the effects of this alternative would be increases in preferred forage plant frequency, plant density and plant vigor. Lehman lovegrass would continue to persist on some sites and would continue to suppress vegetation condition, even in the absence of grazing.

Under *Alternative 2* (Current Management) livestock distribution would be similar to current conditions, even with reduced stocking. The lack of distribution would maintain areas of historical concentration and would make it difficult to achieve light to moderate use across the landscape. Some areas would continue to be used relatively heavily, and others very little. Vegetation condition would remain static.

Alternative 3 would provide additional water sources in the uplands of all allotments. Improved livestock distribution would be expected to occur as new water sources are created, thereby reducing use in riparian bottoms and historical concentration areas. On the Campini allotment, the creation of an additional pasture would provide additional pasture rest and increase management flexibility. Over time, improved distribution and flexible stocking rates, combined with the mitigation features proposed should allow for increases in plant vigor and herbaceous production, especially in areas currently receiving heavier-than-desired use. Utilization guidelines would provide for light to moderate utilization, but use across the landscape would be more homogenous. Patterns of heavy use in some locations would be reduced while use in previously lightly used areas would increase. Adaptive management strategies combined with monitoring should allow management to respond proactively to changing conditions before problems occur.

Under both *Alternatives 2 and 3* the proposed erosion control structures should help to stabilize soils and allow herbaceous vegetation to establish in areas of active soil loss. Because these areas are relatively small, consisting of a few acres combined, they are not expected to contribute significantly to overall vegetation condition. Installation of erosion structures may result in some short term localized effects to vegetation, as construction will require equipment to travel off road to access the sites. Off road travel will be limited to a few hundred feet at most sites.

Other Environmental Components

Air

Affected Environment

The project area is in a Class II (rural) air quality management area. 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. Forest Plan Standards and Guidelines for air quality state: "All management practices will be planned so that air quality will meet local, State and Federal standards". Currently, the air quality in the project area is within the standards and guidelines of the Forest Plan.

Environmental Effects

Activities resulting from this grazing project will not significantly affect the factors contributing to a high quality air shed. Therefore, grazing will not have direct or indirect effects on the air resources in this Class II airshed. Because there are no measurable effects, there will be no cumulative effects to air quality as a result of any of the alternatives considered here (PR# 33).

Wild and Scenic Rivers

There are no rivers within the project area that have been determined to be potentially eligible for designation as Wild and Scenic Rivers. Therefore, the proposed action will have no effects to the eligibility or classification of Wild and Scenic Rivers.

Riparian Areas and Stream Channels

Affected Environment

Several named canyons and washes dissect the analysis area. None of the drainages sustain perennial flows; however, subsurface flow sustains small areas of deciduous riparian vegetation in some areas. There are no wetlands within the project area. Parker and Sunnyside Canyons are mapped as deciduous riparian (Figure 3) and support the most well developed riparian vegetation; however, these drainages are located on private land. A short stretch of Bodie Canyon between private land and the Mexican border is administered by the Forest. This stretch shows good riparian recruitment.

Environmental Effects

Livestock grazing would be discontinued under Alternative 1; however, this would not necessarily preclude livestock use in riparian areas. Under Alternatives 2 and 3, livestock use on private lands would be controlled using a private land permit. In the absence of Forest Service administration, grazing would likely continue on private lands, which include the majority of riparian habitats in the project area. Alternative 2 is expected to maintain existing conditions, based on no change in management. Under Alternative 3, management would provide for rest rotation grazing and maximum flexibility to allow recovery from grazing.

Water Quantity and Quality

Affected Environment

Water Quantity. The project analysis area is located within two Fifth Code Watersheds: San Rafael Valley-Upper Santa Cruz River (HUC 1505030101) and the Las Nutrias Headwaters-Upper San Pedro River (HUC 1505020201) (Figure 7 and Table 8). The two fifth-code watersheds are large in overall size totaling approximately 142,430 acres and the three allotments make up approximately only 8% of the total acres of the two watersheds. There are no water flow gauging stations in the vicinity of the project area. The closest gauging station in the Upper Santa Cruz watershed is located on the Santa Cruz River approximately 1.5 miles upstream of US-Mexico border. The data from this gauge indicate that surface water quantity is controlled by precipitation events. Interpreting this data is not practical to ascertain if current management on an allotment scale is impacting water quantity at a landscape scale.

Table 8. Allotment Acres by Fifth Code Watershed

ALLOTMENT	Las Nutrias Headwaters_Upper San Pedro River (1505020201)		San Rafael Valley-Upper Santa Cruz River (1505030101)		TOTAL
	Acres	Percent	Acres	Percent	Acres
Blacktail	7	0%	3776	100%	3,783
Campini	1729	30%	4049	70%	5,778
HQ	0	0%	1498	100%	1,498
TOTAL	1,736	16%	9323	84%	11,059

Note: Percents are rounded and may not add up to 100%

Water Quality. 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. The general classifications used for surface water quality by ADEQ are 1) attaining, 2) impaired and 3) not assessed. Water quality has not been assessed within portions of the project area. However, the Santa Cruz River headwaters downstream from the project area are attaining all uses[15]. The project area has not been designated as a Unique Water by the State of Arizona.

Environmental Effects

Surface water quality and quantity are affected by hydrologic function, which is the ability of soil to capture, hold and release water. As soil conditions degrade, the time that water sits on the land decreases, resulting in a reduction of the capability to filter soluble solids and sediments. Water quantity (runoff) increases due to a compromised hydrologic function and water quality decreases as more sediments are carried in runoff. In addition to these concerns, scoping comments (PR#s 13, 14) questioned whether existing and

[15] Source: "Status of Water Quality in Arizona: The Integrated 305(b) Assessment and 303(d) Listings Report" (Arizona Department of Environmental Quality, 2004).

proposed water diversions (stock tanks and wells) would remove water from the watershed that would otherwise be available for wildlife.

Under *Alternative 1* (No grazing) there would be no direct or indirect effects from livestock grazing on canyon bottoms or uplands on the Forest. The potential increase of vegetation groundcover (VGC) would contribute to maintaining an acceptable nutrient cycling and soil structure thereby promoting a satisfactory hydrologic function and reducing runoff potential. VGC also stabilizes the watershed promoting satisfactory water quality by minimizing soil loss and reducing turbidity. Under this alternative, permittees could chose to continue grazing on their private lands, which include much of the riparian bottoms in the project area. The effects of this activity, if any, would be dependant on the frequency, intensity, duration and timing of grazing, and would be outside of the control of the Forest Service.

Under *Alternative 2* (Current management) management would maintain the existing conditions of the stream channels and vegetation in the canyon bottoms, riparian areas, and uplands. Water quality appears to be satisfactory with current management, and that should continue. Upland waters would not be developed, so livestock would continue to concentrate in the canyon bottoms and around existing water sources. As a result, improvement in water quality would be limited. Grazing on private land in canyon bottoms would be managed under private land permits.

Under *Alternative 3* (Proposed Action), the proposed range improvements including new pasture fencing and additional upland watering locations are designed to improve livestock distribution which will help minimize impacts in historic concentration areas (canyon bottoms). Incremental improvements in water quality are expected. Water quality will increase from the proposed riparian exclosure fencing which will limit use in a sensitive area. Allowable use levels of 30-45% are expected to provide sufficient residual biomass in the uplands to protect and stabilize soils and therefore not contribute to any water quality problems. Stability contributes to satisfactory hydrologic functions and in turn good water quantity. The use of BMPs is expected to minimize or mitigate any potential negative effects from this alternative.

No new above-ground stock ponds are proposed. New upland waters will be supplied using water from existing wells. Typically, the drinkers and troughs will be filled directly from the well or from a storage tank. There may be short-term draw-down on localized aquifers during the filling of new large storage tanks due to the continuous draw from a well and aquifer, but water quantity in the aquifers should not be impacted over the long term. This conclusion is based on the relatively small quantity of water needed to fill and maintain drinkers compared to the overall size of the respective watersheds and the total volume of precipitation recharging the aquifer in the watersheds above each well (PR# 40).

Heritage Resources

Affected Environment

Heritage resources (also called “cultural resources”) include archaeological and historical sites, and properties important to maintaining the traditional beliefs and lifeways of local social groups (“traditional cultural properties”). The Huachuca Management Area (EMA)

has a long history. Pithouse villages, temporary campsites and petroglyph sites have been recorded in the Patagonia Mountains, Canelo Hills and Huachuca Mountains. Ceramics found on these sites include a variety of poorly known types from surrounding areas, and document the extent of prehistoric contacts with those areas. Historically, the EMA was within Sobaipuri territory, and was visited by Chiricahua and Western Apache. Only three previously recorded sites are located within the project area and none appear to have been impacted by grazing and associated activities.

Environmental Consequences

Concentration of livestock on archaeological and historical sites can result in damage to artifacts and structures, and alteration of the spatial relationships between artifacts. The latter impact can compromise the ability of the remains to provide historical information. Concentration of livestock generally occurs around range improvements. Construction of those improvements can itself damage artifacts or structures, and alter spatial relationships between artifacts.

A Forest Archeologist surveyed sites for proposed range improvements and did not identify any sites or occurrences that would be affected by the proposal. Concurrence on a "no adverse effect" determination was received from the State Historic Preservation Office (SHPO) on November 3, 2005 (PR# 38). Because direct and indirect effects will be avoided, cumulative effects are precluded.

Economics

The allotments are located in Santa Cruz and Cochise Counties. For Santa Cruz County, tourism, international trade, manufacturing and services are the foundation of the economy, and the entire county is an Enterprise Zone. In 2000, farm and ranch employment accounted for 1.3% of the total employment in the county. The economy of Cochise County tends to be dominated by Fort Huachuca and business associated with the growing community of Sierra Vista. 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 2000[16]. Ranching operations in the area tend to be characterized by small profit margins with the need for off-ranch supplemental income to continue operations.

Livestock grazing can potentially affect the following segments:

- The permittees, who contribute funds for the construction of range improvements, pay grazing fees and receive economic returns on their investments in livestock grazing.
- The Forest Service, which collects grazing fees and expends grazing receipts and appropriated tax dollars to construct improvements and to administer the allotments; and
- Counties, which receive 25% of the grazing fees collected by the Federal Government and benefit from goods and services purchased by ranch operators.

[16] Source: Socioeconomic Assessment of the Coronado National Forest, Final Report, 2005.

The economic considerations of the proposed action and alternatives can be compared in terms of the costs of implementation, the costs and revenues to the permittees and the return to the Federal and local government through grazing permit receipts.

Environmental Effects

In keeping with the scope of the proposed action, the grazing costs and benefits considered in this analysis are limited to the HQ, Campini and Blacktail Allotments. Costs and benefits are incurred by both public and private entities (Federal and State governments, counties, permittees) and not all participants recover their costs.

Costs of Improvements. Table 9 summarizes costs by allotment associated with implementation of the proposed action. Range improvement costs are based on data provided by District personnel and are for Alternative 3 only, since Alternatives 1 and 2 would not authorize new improvements. Placement of erosion control structures may be required regardless of the grazing alternative selected. Funding for this project is not currently available and would need to be secured before this project could proceed.

Table 9. Costs of planned improvements for the proposed action.

Allotment	Proposed improvement	Implementation Date	Cost
HQ	Develop upland waters in the two primary pastures by piping water from an existing well.	FY 2007	$6,000
HQ	Construct erosion control structures to arrest and rehabilitate head cuts.	FY 2008-2009	$114,000
Campini	Cross fence the large Mesa pasture to create 2 pastures. Construct a water lot around George Tank to water both pastures.	FY 2007	$8000
Campini	Realign the fence separating Heifer and Lower pastures.	FY 2008	$8,000
Blacktail	Fence an existing spring in Sundown Canyon and pipe water to a nearby location.	FY 2007	$3,000

Alternative 1 would have the lowest cost as no new improvements would be authorized and only limited maintenance would occur. There would, however, still be costs associated with management of the allotments. Maintenance or removal of existing structural improvements may become necessary and costs would be borne by the Forest Service. Allotment boundary fence maintenance would be shifted from the permittees to the Forest Service or adjacent permittees. In particular, maintenance of the international boundary fence would continue to be necessary in order to keep Mexican livestock from crossing into the U.S. Responsibility for this maintenance would fall on the Forest Service. Alternative 2 would involve no new improvements, but maintenance costs would occur in order to maintain existing structural improvements. These costs would likely be more than alternative 1, but significantly less than Alternative 3. Under both Alternatives 2 and 3, maintenance of the international boundary fence would be facilitated by the presence of permittees.

Revenue. Net ranch income represents gross returns minus operating costs. Specific operating costs and revenue estimates are not available for each ranch, 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 (Heitschmidt 1990, Gao 1996 reported in Ruyle, et al 2000 (PR# 36, 37)). Using this range of estimates, annual income on the allotments would be at or below $15,000 under all alternatives. Estimates of ranch living expenses cited by Ruyle (PR# 37) 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 many years and have not indicated that the action alternatives are not economically viable.

Payments to Governments. Annual grazing receipts to the Forest Service would vary from zero under no action to approximately $8,000 under maximum allowable use on all allotments under Alternative 2[17]. Of this, twenty five percent would go to Santa Cruz and Cochise Counties. The remaining 75% of fees (an estimated $40-60,000 over the ten year term of the permits) are returned to the Forest Service, but may not be sufficient to cover recurring administrative costs or the costs of proposed improvements.

Under the No Action Alternative, The counties would lose grazing fee payments and ranch revenue that could have been used to purchase goods and services. However, given the economic diversity of the counties and the relatively small contribution that these receipts make, the magnitude of this loss would be negligible on the overall county economic health.

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 proposed actions to determine the potential for disproportionate adverse impacts to minority and low-income populations. In the memorandum to heads of departments and agencies that accompanied the Executive Order, the President specifically recognized the importance of procedures under NEPA for identifying and addressing environmental justice concerns. The memorandum 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 on the border of rural Santa Cruz and Cochise Counties. The area is sparsely populated, primarily by ranchers and a few owners of private inholdings surrounded by Forest Service lands. Selection of any of the alternatives would not result in adverse or disproportionate effects on low income or minority populations. The

[17] Estimates based on the 2005 grazing fee of $1.79/AM. Actual receipts would vary somewhat based on changes in the grazing fee.

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. Past management activities have contributed to changes in ecological conditions in the project area and may continue to influence resource conditions over the term of the project. It is important to note that the proposed action is designed to address and correct the effects of past activities. 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.

Past grazing. Livestock grazing has occurred within the analysis area for over 100 years. Continuous yearlong livestock grazing, historically at higher numbers than currently permitted, during the early to mid 20th century likely resulted in soil erosion and the removal of much of the herbaceous fine fuels necessary to support fires. Grazing related reduction in fine fuels, 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. Evidence of woody plant invasion is not pronounced in the project area, but woody plants likely occur at somewhat higher densities that were found historically.

Vegetation management. Lehmann lovegrass and Johnson grass are found on the allotments. Lehmann lovegrass is locally common on some mesa tops and Johnson grass is found along roadsides and in disturbed areas, especially on the Campini Allotment. Both species are identified as invasive exotic plants in the Forest's Invasive Plant Management Program[18]. Removal of invasive plants is not currently proposed in the area and in the case of lovegrass would not be practicable. The continued presence of these species may continue to affect vegetation condition assessments regardless of grazing management practices. Monitoring of rangeland by the Forest Service and the permittee 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. Authorized 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. Portions of

[18] Coronado National Forest 2004. Invasive Exotic Plant Management Program Environmental Assessment.

the area show substantial evidence of trailing by undocumented aliens and/or drug traffickers. The effects of these activities include accumulations of trash, creation of wildcat foot and vehicle trails and vandalism of range improvements. In addition, the area has seen a substantial but unquantified increase in vehicle traffic related to interdiction efforts on the part of the U.S. Border Patrol and other enforcement agencies. 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 border crossing activities are largely outside of the control of the Forest Service and the permittees, but they are likely to require additional efforts to maintain improvements and keep to a rotation schedule.

Since direct and indirect impacts under all alternatives will be insignificant or beneficial, significant cumulative effects are not anticipated.

CONSULTATION AND COORDINATION

The Forest Service consulted the following Federal, State, and local agencies and non-Forest Service groups during the development of this environmental assessment. Complete mailing lists of individuals and groups consulted with are contained in the project record.

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
Arizona State Historic Preservation Office
USDA Natural Resource Conservation Service
USDI Fish and Wildlife Service

OTHERS:

Sky Island Alliance
Chiricahua-Dragoon Conservation Alliance
The Center for Biological Diversity
Forest Guardians
Arizona People for the USA
National Wild Turkey Federation
Huachuca Audubon

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LIST OF FIGURES