United States Department of the Interior
Bureau of Land Management

Arizona Strip Field Office

Environmental Assessment

Hacks, Kanab Gulch, and Gulch Allotments Grazing Permit Renewals

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EA-AZ-110-2008-003

I. PURPOSE AND NEED

Introduction

This Environmental Assessment (EA) has been prepared to disclose and analyze the environmental consequences of the proposed grazing permit renewals for the Hacks, Kanab Gulch, and Gulch Allotments. The action culminates an evaluation conducted on the allotments under the Arizona Bureau of Land Management (BLM) *Standards for Rangeland Health and Guidelines for Grazing Management* (S&Gs). In addition, this EA determines if current grazing management practices would maintain desirable conditions and continue to allow improvement of public land resources, or whether changes in grazing management for the allotments are necessary. This EA is intended to evaluate the findings of the S&G evaluations as they relate to vegetation conditions and resource values in the allotments. This is done in an effort to balance demands placed on the resources by various authorized uses within the allotments.

Analysis of existing allotment data indicates that the majority of ecological condition trends and pace-frequency trends are static or improving (see detailed discussion on page 13 of this EA). It was determined by the Interdisciplinary Assessment Team, during the assessment process, that resource conditions on the Hacks, Kanab Gulch, and Gulch Allotments are meeting all applicable Standards for Rangeland Health.

Purpose and Need

The purpose of the Federal action is to renew the existing grazing permits and thus continue to authorize livestock grazing on public lands, an accepted and valid use of public lands under the Taylor Grazing Act, the Federal Land Policy and Management Act (FLPMA), and the Public Rangelands Improvement Act (PRIA).

Livestock grazing on public lands is managed according to grazing regulations found in the *Code of Federal Regulations* (at 43 CFR Part 4100). The BLM is responsible for determining the appropriate levels and management strategies for livestock grazing in these allotments. Term grazing permits issued must be in compliance with the multiple use and sustained yield concepts of FLPMA and implementing regulations that establish the Fundamentals of Rangeland Health

(43 CFR 4180) and Arizona's Standards for Rangeland Health.

Since 2000, Federal livestock grazing permits have been renewed through provisions contained in Congressional legislation (Public Law 106-113, Sect.123 of the Consolidated Appropriations Act, H.R.3423, Title 1). A legislative "rider" to the Appropriations Act authorized the BLM to issue new grazing permits for expiring permits, with the same terms and conditions contained in the expired permits, pending processing of such permits in compliance with all applicable laws and regulations. Agency policy was that "compliance with all applicable laws and regulations" included consultation, coordination and cooperation with affected individuals, interested publics, States, and Indian Tribes; completion of the applicable level of National Environmental Policy Act (NEPA) review; and consultation with the United States Fish and Wildlife Service (USFWS) under Section 7 of the Endangered Species Act. Grazing permits renewed under the authority of Public Law 106-113 would be modified (i.e., cancelled and new permits issued) if the above analysis and consultation processes indicated a change was warranted. This legislative "rider" has subsequently been renewed by Congress and the permit renewal authority remains in force until 2009.

The need for action is derived from the legal requirement under NEPA that Federal agencies disclose to the public information about those projects or activities authorized by the agencies that have the potential to impact the human environment. Livestock grazing on public lands is a federally authorized activity with potential for environmental consequences; the issuance or renewal of a term grazing permit would normally trigger the requirements for analysis and disclosure of those consequences, in compliance with NEPA.

Conformance with Land Use Plan

The proposed action described in Chapter II is in conformance with the *Arizona Strip Field Office Resource Management Plan* (RMP), approved January 29, 2008. The goals and objectives (Desired Future Conditions) for management of livestock grazing that are identified in this RMP are:

- Healthy, sustainable rangeland ecosystems will be maintained or improved to meet Arizona's Standards for Rangeland Health (1997), and produce a wide range of public values such as wildlife habitat, livestock forage, recreation opportunities, clean water, and functional watersheds. *(Decision #DFC-GM-01)*

- Livestock use and associated management practices will be conducted in a manner consistent with other resource needs and objectives to ensure that the health of rangeland resources is preserved or improved so that they are productive for all rangeland values. Where needed, public rangeland ecosystems will be improved to meet objectives. *(Decision #DFC-GM-02)*

The land use allocation for management of livestock grazing contained in the RMP is:

- All allotments will continue to be classified as available for grazing by livestock under the

principle of multiple use and sustained yield, except where specifically noted.[1] *(Decision #LA-GM-01)*

The proposed action is in conformance with the following management decisions in the RMP:

- Implementing the Arizona Standards for Rangeland Health will continue on all grazing allotments in accordance with established schedules and congressional requirements. The Arizona Standards for Rangeland Health and guidelines for grazing management will apply to all livestock grazing activities. These guidelines address management practices at the grazing AMP-level and are intended to maintain desirable conditions or improve undesirable rangeland conditions within reasonable time frames. *(Decision #MA-GM-02)*

- The interdisciplinary allotment evaluation process will continue to be used to provide specific guidance and actions for managing livestock grazing. Existing AMPs and other activity plans will be consistent with achieving the DFCs and standards for rangeland health. They will contain the site-specific management objectives, as well as actions, methods, tools, and appropriate monitoring protocols. *(Decision #MA-GM-03)*

- Existing management practices and levels of use on grazing allotments will be reviewed and evaluated on a priority basis to determine if they meet or are making progress toward meeting the Arizona Standards for Rangeland Health. Appropriate and timely actions will be implemented to deal with those areas not meeting the standards. *(Decision #MA-GM-04)*

- The allotment management categorization process will continue to be used to define the level of management needed to properly administer livestock grazing according to management needs, resource conflicts, potential for improvement, and BLM funding/staffing constraints. The allotment categories are Custodial, managed custodially to protect resource conditions and values; Maintain, managed to maintain current satisfactory resource conditions and are actively managed to ensure that the condition of resource values do not decline; and Improve, actively managed to improve unsatisfactory resource conditions. *(Decision #MA-GM-05)*

- Allowable use on key forage species is 50% on allotments with rotational grazing systems, except in tortoise habitat. On allotments in desert tortoise habitat or being less intensively managed, utilization is set at 45%. *(Decision #MA-GM-07)*

- Any hay or other feed used in administering the livestock operation will be certified weed-free. *(Decision #MA-GM-08)*

The allotments analyzed in this EA are classified as available for grazing under the RMP, with

[1] No restrictions are associated with Hacks, Kanab Gulch, or Gulch Allotment.

no seasonal restrictions. The proposed action would meet these land use plan decisions. It has also been determined that the proposed action would not conflict with other decisions throughout the RMP.

Relationships to Statutes, Regulations, or other Plans

Grazing permit renewals are provided for in 43 CFR 4100 where the objectives of the regulations are "....to promote healthy, sustainable rangeland ecosystems; to accelerate restoration and improvement of public rangelands to properly functioning conditions; to promote the orderly use, improvement and development of the public lands; to establish efficient and effective administration of grazing of public rangelands; and to provide for the sustainability of the western livestock industry and communities that are dependent upon productive, healthy public rangelands" (43 CFR 4100.0-2).

The proposed action complies with 43 CFR 4100.0-8 which states, in part, "The authorized officer shall manage livestock grazing on public lands under the principle of multiple use and sustained yield, and in accordance with applicable land use plans." The proposed action also complies with 43 CFR 4130.2(a) which states, in part, "Grazing permits or leases shall be issued to qualified applicants to authorize use on the public lands and other lands under the administration of the Bureau of Land Management that are designated as available for livestock grazing through land use plans".

The proposed action is consistent with the Fundamentals of Rangeland Health (43 CFR 4180.1) and Arizona's Standards and Guidelines, which were developed through a collaborative process involving the Arizona Resource Advisory Council and the BLM State Standards and Guidelines team. The Secretary of the Interior approved the Standards and Guidelines in April 1997. These standards and guidelines address watersheds, ecological condition, water quality, and habitat for special status species. These resources are addressed later in this document.

The proposed action conforms to the President's National Energy Policy and would not have adverse energy impacts. The proposed action would not deny energy projects, withdraw lands, close roads, or in any other way deny or limit access to mineral materials to support energy actions.

The regulations at 43 CFR Part 10 specifically require land use authorizations, including leases and permits, to include a requirement for the holder of the authorization to notify the appropriate Federal official immediately upon the discovery of human remains and other items covered by the Native American Graves Protection and Repatriation Act (see 43 CFR 10.4(g); the actual requirement for persons to notify the Federal agency official and protect the discovery is in 43 CFR 10.4(b) and (c)).

Executive Order 13186 requires the BLM and other Federal agencies to work with the USFWS to provide protection for migratory birds. Implementation of the proposed action is not likely to adversely affect any species of migratory bird known or suspected to occur on the allotments. No take of any such species is anticipated**.**

The subject allotments are located in Mohave County, Arizona. The proposed action is consistent with the Mohave County General Plan (revised December 5, 2005). While livestock grazing is not specifically addressed in the Mohave County General Plan, this action does not conflict with decisions contained within the Plan.

In addition, the proposed action would comply with the following laws and/or agency regulations, other plans and are consistent with applicable Federal, state and local laws, regulations, and plans to the maximum extent possible.

- Taylor Grazing Act (TGA) of 1934
- Federal Land Policy and Management Act (FLPMA) of 1976 (43 U.S.C. 1701 et seq.)
- Public Rangelands Improvement Act (PRIA) of 1978
- Endangered Species Act of 1973, as amended
- 43 CFR 4100 Grazing Administration - Exclusive of Alaska
- Arizona Water Quality Standards, Revised Statute Title 49, Chapter II
- Section 106 of the National Historic Preservation Act of 1966, as amended
- Native American Graves Protection and Repatriation Act of 1990 (25 U.S.C. 3001-3013; 104 Stat. 3048-3058)
- National Environmental Policy Act (NEPA) of 1969
- Executive Order 13186 – *Responsibilities of Federal Agencies to Protect Migratory Birds*

Identification of Issues

Identification of issues for this assessment was accomplished by considering the resources that could be affected by implementation of the proposed action. These issues were identified by the Rangeland Resources Team, Interdisciplinary Assessment Team, and livestock permittees during the Hacks Allotment scoping meeting on March 14, 2001, and on October 22, 2003 for the Kanab Gulch and Gulch Allotments (see *Standards for Rangeland Health and Guidelines for Grazing Administration Implementation Project: Allotment Assessment for Hacks* and *Standards for Rangeland Health and Guidelines for Grazing Administration Implementation Project: Allotment Assessment for Kanab Gulch and Gulch*)[2]. The issues identified through the process described above are:

- Livestock grazing – permit renewal is required in order to allow continued livestock use on these allotments.

- Vegetation – the potential exists for deterioration in ecological condition in the allotments if proper livestock grazing practices are not followed.

[2] Hacks, Kanab Gulch, and Gulch Allotment S&G Assessments are available at the Bureau of Land Management's Arizona Strip Field Office, 345 E. Riverside Drive, St. George, Utah 84790.

- Wildlife (including sensitive species and migratory birds) – habitat for these species may be impacted if proper livestock grazing practices are not followed.

- Soils – the potential exists for impacts to soil quality or health in the allotments if proper livestock grazing practices are not followed.

II. DESCRIPTION OF THE ALTERNATIVES

The development of the alternatives for this EA was based on the results of interdisciplinary rangeland health assessments conducted by the BLM in July 2004 (Hacks Allotment) and January 2007 (Kanab Gulch and Gulch Allotments). The field assessments indicated that the allotments are being managed effectively and meet rangeland health objectives and standards, as defined by the *Arizona Public Lands Standards for Rangeland Health and Guidelines for Grazing Management* (BLM 1997). The assessments did not indicate the need for changes in authorized uses or for new range improvements.

Alternative A - Proposed Action (Issue New 10-Year Grazing Permits)

The livestock grazing management practices proposed under this alternative (i.e., season of use; utilization levels; and ecological condition and desired plant community objectives) were designed to manage the overall rangeland resources present, provide for a diversity of wildlife and plant species, maintain functioning ecosystems, and maintain and/or improve ecological condition. Specifically, under this alternative the BLM would:

- Issue new grazing permits for the Hacks, Kanab Gulch, and Gulch Allotments for a period of ten years. There are no proposed changes in number of livestock or season of use for any of the allotments. Livestock grazing would occur during the seasons of use, and with the number of Animal Unit Months (AUMs) limited to the current active preference (Table 1).

- Continue to follow the grazing system established in the Hacks Allotment grazing AMP (see "Grazing Systems" section on page 7).

- Manage these allotments for the following utilization levels (based on current year's growth, by weight, during the grazing season):
  - up to 50% on key forage species (see Chapter III for a list of key species for these allotments) for Hacks Allotment;
  - up to 45% on key forage species for Gulch and Kanab Gulch Allotments (which are less intensively managed allotments).

  The BLM would assess resource conditions through field inspections and determine, in consultation with the permittee, whether management changes (e.g., changes in livestock numbers, adjustment of move date, or other changes or use within the parameters identified under this alternative) may be implemented prior to reaching maximum utilization. Move

dates may be adjusted as needed when monitoring indicates maximum utilization has been reached, or due to unusual climatic conditions, fire, flood, or other acts of nature. If maximum utilization is reached on key species/areas in an allotment before a scheduled move, the use of salt, herding, or other management options may be used to distribute livestock away from an area where maximum utilization has been reached, or livestock may be removed from the use area or allotment (after consultation with the permittee), as deemed necessary by the BLM.

- Manage these allotments to achieve the following objectives, as described in the *Arizona Standards for Rangeland Health*:

    1) Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site).
    2) Riparian and wetland areas are in properly functioning condition.
    3) Productive and diverse upland and riparian-wetland plant communities of native species exist and are maintained.

- Manage these allotments to achieve the Desired Plant Community (DPC) objectives listed on pages 8 and 9).

Table 1. Grazing Preference and Current Use

Allotment Name	Livestock			Active AUMs	Suspended AUMs	Public Land (PL) (acres)	% Federal Range
	No.	Kind	Season of Use				
Hacks	36	Cattle	11/16 - 05/31	247	176	4,522	100
	2	Horses	11/16 - 05/31				
Kanab Gulch	26	Horses	11/16 - 04/30	143	67	4,260	100
Gulch	16	Horses	11/1 - 04/30	96	80	3,400	100

Grazing Systems

The three allotments associated with this assessment are grazed separately from each other (Table 1). The Hack Allotment would continue to follow the grazing system identified in its AMP. This allotment is grazed by 36 cattle and 2 horses from November 16 to May 31. Active grazing use in the Hacks Allotment is 247 AUMs, and there are 176 suspended non-use AUMs (total AUMs is 423). The Kanab Gulch Allotment is grazed by 26 horses from November 16 to April 30. Active grazing use on the Kanab Gulch Allotment is 143 AUMs, with 67 suspended non-use AUMs (total AUMs is 210). The Gulch Allotment is grazed by 16 horses from November 1 to April 30. Active grazing use on the Gulch Allotment is 96 AUMs, and there are 80 suspended non-use AUMs (total AUMs is 176).

Terms and Conditions of Grazing Permits

Billing for grazing use on these allotments would be based on the actual use report which is due on or before June 1 each year for Hacks Allotment, and advance billing for Kanab Gulch due November 15 and Gulch due November 1, each year. Livestock may be moved 15 days before or after scheduled move dates. Any hay or other feed used in administering the livestock operation would be certified weed-free.

If any human remains, funerary objects, sacred objects or objects of cultural patrimony as defined in the Native American Graves Protection and Repatriation Act (P.L. 101-601; 104 Stat. 3048; 25 U.S.C. 3001) are discovered in connection with allotment operations under the grazing permits, the permittee would be required to stop operations in the immediate area of the discovery, protect the remains and objects, and immediately notify the BLM authorized officer. The permittee would be required to protect the immediate area of the discovery until notified by the authorized officer that operations may resume.

Desired Plant Community

These allotments would be managed to achieve the DPC objectives included in the *Standards for Rangeland Health and Guidelines for Grazing Administration Implementation Project: Allotment Assessment for Hacks* and *Standards for Rangeland Health and Guidelines for Grazing Administration Implementation Project: Allotment Assessment for Kanab Gulch and Gulch*. The allotment assessments list and evaluate achievement of the allotments' DPC objectives. These objectives are expressed in species composition by weight (CBW) and are listed below.

Hacks

Key Area #1 (Sandy loam Upland 7"-11" p.z.*)

*p.z. = precipitation zone

- Maintain the shrub/browse composition between 20-40% through 2030
- Maintain the grass composition between 40-65% through 2030
- Maintain the forb composition between 1-10% through 2030

Key Area #2 (Limy Slopes 7"-11" p.z.)

- Maintain the shrub/browse composition between 20-40% through 2030
- Maintain the grass composition between 40-65% through 2030
- Maintain the forb composition between 1-10% through 2030

Kanab Gulch

Key Area #1 (Breaks 10"-14" p.z.)

- Maintain the perennial grass composition between 15-40% through 2030 by:
  - Maintaining galleta grass CBW at 5 to 10%
  - Maintaining sand dropseed CBW at 1 to 5%
  - Maintaining black grama CBW at 5 to 15%
  - Maintaining needle-and-thread grass CBW at 1 to 5%

– Maintaining sideoats grama CBW at Tr. to 5%
- Maintain the shrub/browse composition between 25-45% through 2030
- Maintain the forb composition between 1-10% through 2030

Key Area#2 (Breaks 10"-14" p.z.)
- Maintain the perennial grass composition between 15-40% through 2030 by:
  – Maintaining sand dropseed CBW at 1 to 5%
  – Maintaining black grama CBW at 5 to 15%
  – Maintaining bush muhly CBW at Tr. to 5%
- Maintain the shrub/browse composition between 25-45% through 2030
- Maintain the forb composition between 1-10% through 2030

Gulch

Key Area#1 (Breaks 10"-14" p.z.)
- Maintain the perennial grass composition between 15-40% through 2030 by:
  – Maintaining galleta grass CBW at 1 to 10%
  – Maintaining sand dropseed CBW at 1 to 6%
  – Maintaining Poa sandbergii bluegrass CBW at 5 to 15%
  – Maintaining needle-and-thread grass CBW at Trace to 5%
- Maintain the shrub/browse composition between 25-45% through 2030
- Maintain the forb composition between 1-10% through 2030

Range Improvements

The rangeland health assessments for these allotments did not indicate the need for new range improvements. Thus, no range improvements are proposed under this alternative. Existing range improvements would be maintained as currently required. Any new range improvements proposed in the future to assist in grazing practices and promote rangeland health would be considered through a separate NEPA process.

Monitoring

BLM resource specialists would periodically monitor the allotments over the 10-year term of the grazing permits to ensure that the fundamentals or conditions of rangeland health are being met within the allotments, in accordance with 43 CFR 4180. If monitoring indicates current livestock grazing practices are causing non-attainment of resource objectives, the BLM could modify the terms and conditions of a grazing permit (i.e., number of cattle, turn out dates, removal dates, etc.) temporarily or on a more long-term basis, as deemed necessary, after consultation with the livestock permittee. However, if a permittee disagrees with the BLM's assessment of the resource conditions or the necessary modifications, the BLM may nevertheless issue a Full Force and Effect Grazing Decision to protect resources.

Alternatives Considered But Eliminated From Further Analysis

- **Elimination of Livestock Grazing.** Under this alternative, livestock grazing would not be authorized for these allotments. This alternative was eliminated from further analysis because it does not represent multiple use as mandated by FLPMA, would be inconsistent with the intent of the Taylor Grazing Act, and would not be in conformance with the decisions and analysis in the *Arizona Strip Field Office RMP* (which states that "All allotments will continue to be classified as available for grazing under the principle of multiple use and sustained yield" (Decision #LA-GM-01)). This alternative is therefore not considered further in this analysis.

- **No Action – Not Renewing Grazing Permits.** Under this alternative, the current permits which were renewed under the provisions of Public Law 106-113, pending full processing of new permits (as described on page 2 of this EA), and their terms and conditions would continue for all allotments identified in this EA. Grazing permits would not be renewed at this time. The permits could be renewed in the future, but if not, the current permits would expire as shown below:

Hacks	February 28, 2012
Kanab Gulch	June 25, 2010
Gulch	February 28, 2010

  In the interim period (before expiration of the permits), livestock grazing on these allotments would continue the same as outlined under the proposed action. Potential impacts to elements of the environment would therefore be the same as those described for the proposed action, so a separate analysis of the No Action alternative is not required (BLM Handbook H-1790-1).

  If, in the future, the grazing permits were not renewed by their current expiration date, this would not meet the purpose of and need for action by failing to continue a valid and accepted use of public lands under the multiple use and sustained yield mandates of FLPMA and other Federal laws. In addition, this alternative would not be in conformance with the *Arizona Strip Field Office RMP*. Thus, this alternative is not considered further in this analysis.

III. AFFECTED ENVIRONMENT

This chapter provides information to assist the reader in understanding the existing situation and current grazing management on the Hacks, Kanab Gulch, and Gulch Allotments. The affected environment is tiered to the *Arizona Strip Proposed RMP/Final EIS* (2007). This EA also incorporates by reference the *Standards for Rangeland Health and Guidelines for Grazing Administration Implementation Project: Allotment Assessment for Hacks* and *Standards for Rangeland Health and Guidelines for Grazing Administration Implementation Project: Allotment Assessment for Kanab Gulch and Gulch*. These assessments describe the resources and issues applicable to the allotment areas.

The affected environment of this EA was considered and analyzed by an interdisciplinary team. Table 4 (found later in this chapter) addresses the critical elements and resources of concern considered in the development of this EA; this table indicates whether the element/resource is not present in the project area, present but not impacted to a degree that requires detailed analysis, or present and potentially impacted. The resources identified below include the relevant physical and biological conditions that may be impacted with implementation of the proposed action, and provides the baseline for comparison of impacts described in Chapter IV.

General Setting

The Arizona Strip is comprised of 2.8 million acres of BLM-administered land in the northwestern portion of Arizona. The topography of the area is semiarid range with sloping, rolling, or flat terrain to steep canyon walls. The Hacks, Kanab Gulch, and Gulch Allotments are located in Mohave County, Arizona on lands managed by the BLM's Arizona Strip Field Office. The Hacks Allotment is approximately 30 miles south of Fredonia, Arizona; Kanab Gulch and Gulch Allotments are about 40 miles south of Fredonia. These allotments lie outside of Grand Canyon-Parashant and Vermilion Cliffs National Monuments.

Climate

Precipitation on the Hacks Allotment is similar to that recorded by the Sunset rain gauge which is located adjacent to the allotment. Precipitation on the Kanab Gulch and Gulch Allotments is similar to that recorded by the Big Jackson rain gauge. Table 2 presents a summary of the annual average precipitation for each rain gauge.

Table 2. **Average Precipitation Data (inches)**

Station	Fall	Winter	Spring	Summer	Annual
Sunset	1.60	2.30	2.30	3.85	10.05
Big Jackson	1.77	2.84	2.53	4.69	11.84

Fall precipitation has been below normal over much of the last 20 years, while winter precipitation has been above normal for much of this same time period. Spring precipitation was above normal from 1991 through 1995, then below from 1996 through 1999. Summer precipitation was below normal from 1992 through 1996, and has been above normal since then. Overall annual precipitation tends to be above normal one year and below normal the next; one exception to this was from 1996-1999 when annual precipitation stayed above normal for three consecutive years.

Rangeland Health Assessments

Rangeland landscapes are divided into ecological sites for the purposes of inventory, evaluation, and management. An ecological site is a distinctive kind of land with specific physical characteristics that differs from other kinds of land in its ability to produce a distinctive kind and amount of vegetation. It is the product of all the environmental factors responsible for its development.

Ecological sites have developed a characteristic kind and amount of vegetation. The natural plant community on an ecological site is typified by an association of species that differs from that of other ecological sites in the kind and/or proportion of species or in annual production (*Ecological Site Inventory*, BLM, 2001). While the natural plant community of a particular ecological site is recognized by characteristic *patterns* of species associations and community structure, the *specific species* present from one location to another may exhibit natural variability - the natural plant community is not a precise assemblage of species for which the proportions are the same from place to place, or even in the same place from year to year. Variability is the rule rather than the exception. The distinctive plant communities associated with each ecological site (including the variability which frequently occurs) can be identified and described, and are called ecological site descriptions.

The BLM measures range condition, or ecological condition, by the degree to which the existing vegetation of a site is different from the Potential Natural Community (PNC) for the respective ecological site, as identified in the ecological site description. A potential natural community is "the biotic community that would become established if all successful sequences were completed without interferences by humans under the present environmental conditions. It may include naturalized non-native species" (*Rangeland Health*, BLM, 2005 and *Ecological Site Inventory*, BLM, 2001). This differs from "historic climax plant community" in that an historic climax plant community is "the plant community that existed before European immigration and settlement (*Ecological Site Inventory*, 2001). The BLM uses "potential natural community" terminology rather than "historic climax plant community" because PNC recognizes past influences by man. Knowing the PNC of the area, and using the ecological site descriptions as a guide, DPC objectives can be developed. The DPC then becomes the objectives by which management actions would be measured (see Chapter II of this EA for the DPC objectives for these allotments).

Ecological condition expresses the relative degree to which the kinds, proportions, and amounts of plants in a plant community resemble that of the potential natural plant community for the site. Ecological condition for most of the sites in this area change slowly. Ecological condition is reported in the following four classes, or seral stages, which are the developmental stages of ecological succession:

- **Early Seral:** 0-25% of the expected potential natural community exists.
- **Mid Seral:** 26-50% of the expected potential natural community exists.
- **Late Seral:** 51-75% of the expected potential natural community exists.
- **Potential Natural Community or PNC:** 76-100% of the expected potential natural community exists.

The BLM regularly conducts inventories and assessments of natural resource conditions on public lands. The need for natural resource inventories was established in 1976 by Congress in Section 201(a) of FLPMA and reaffirmed in 1978 in Section 4 of PRIA. These Acts mandate that Federal agencies develop and maintain inventories of range conditions and trends on public rangelands and update inventories on a regular basis.

In 2001 and 2003, rangeland health assessments and professional judgment ecological condition surveys were conducted on these allotments. These assessments were made in accordance with the *Arizona Standards and Guidelines for the Fundamentals of Rangeland Health* and standard BLM methods for estimating ecological condition and current trend. Evaluation sites, or key areas as defined in Technical Reference 1734-4, *Sampling Vegetation Attributes* (1999), were selected (location and amount) using professional judgment based upon terrain, past uses of the area, and location of waters. Specific locations of key areas are available in the project file. Existing trend studies, ecological condition data, actual use, and utilization studies for these allotments were analyzed.

The trend identified in the rangeland health assessment surveys assessed erosion status, vegetative cover, vigor, species diversity, location of the most palatable plants in relation to access to a grazing animal, and general age classes. The rangeland health assessment identified trend over a wider area within each ecological site or sites surveyed than the 3- foot x 3-foot and 5-foot x 5-foot areas the monitoring studies represent.

The majority of the public lands within the Hacks and Kanab Gulch Allotments is in late seral ecological condition and upward trend. The 2008 pace-frequency study on the Gulch Allotment showed a downward trend. This is mainly due to the recent precipitation patterns which are half what was received in the three years preceding the base data, or original trend reading, in 1982. The Gulch Allotment has shown an increase in some species such as blackbrush and fourwing saltbush which have a strong and deep tap root that will help the plant maintain or increase under a dry climate regime. A solid grass component does exist on the site where the trend study was established; however, because there have been only 6-7 inches of moisture over the last three years (compared to the 10-11 inch average and the 12-16 inches in the early 1980s when this key area was established), the frequency of grasses has decreased. Thus, the downward trend appears to be a result of the recent drought, and not due to livestock grazing.

Table 3 lists key areas, ecological site of each key area, and current ecological status. Also listed is the current trend of the vegetation based on pace-frequency studies.

Table 3. Vegetation Characteristics within the Allotments

Allotment (Pasture)	Key Area	Ecological Site	Ecological Status	Trend
Hacks	1 (bottoms)	Sandy Loam Upland 7”-11” p.z.	Late seral	Upward
Hacks	2 (ridges)	Limy Slope 7”-11” p.z.	Late seral	Upward
Kanab Gulch	1	Breaks 10”-14” p.z.	Late seral	Upward
Kanab Gulch	2	Breaks 10”-14” p.z.	Late seral	Downward
Gulch	1	Breaks 10-14” p.z.	Late seral	Downward

Based on analyses of the allotments’ monitoring data and supporting documentation contained in the assessment reports (including achievement of DPC objectives), resource conditions on the allotments meet all applicable standards for rangeland health.

Critical Elements and Other Resources/Concerns

Critical elements of the human environment are those elements that are subject to the requirements specified in statute, regulation, or executive order, and must be considered in all EAs. BLM resource specialists considered each of the critical elements to determine whether it would be potentially affected by the proposed action. These elements are identified in Table 4 (below) along with the rationale for determination. If any element was determined to be potentially impacted, it is carried forward for detailed analysis in this EA; if an element is not present or would not be affected, it is not carried forward for analysis. Table 4 also contains other resources/concerns that have been considered in this EA. As with the critical elements, if these resources were determined to be potentially affected, they are carried forward for detailed analysis in this document.

Table 4: Critical Elements of the Human Environment and Other Resources/Concerns

NP = not present in the area impacted by the proposed action
NI = present, but not affected to a degree that detailed analysis is required
PI = present with potential for impact – analyzed in detail in the EA

Resource	Determination	Rationale for Determination
Critical Elements of the Human Environment		
Air Quality	NI	The proposed action would not measurably impact air quality standards. Moving livestock could produce small amounts of fugitive dust in the short term, but this would cause negligible and localized impacts on air quality.
Areas of Critical Environmental Concern	NP	There are no Areas of Critical Environmental Concern within these grazing allotments.
Cultural Resources	NI	Livestock grazing has continued as an historic use of the public land in these allotments. The BLM would manage it to ensure that livestock grazing would continue to be in compliance with Section 106 of the National Historic Preservation Act (36 CFR 800.3). Cultural resources project files – AZ-BLM-010-2001-40 (Hacks),

Resource	Determination	Rationale for Determination
		AZ-BLM-010-2004-10 (Kanab Gulch), and AZ-BLM-010-2004-05 (Gulch)– contain documentation of compliance with Section 106 of the National Historic Preservation Act. New range improvement actions, including fences, water facilities, and vegetation treatments, are subject to a Class III inventory and consultation with the Arizona State Historic Preservation Office. No Class II or III intensive inventories have occurred on the Hacks or Kanab Gulch Allotments, although it is believed that the Hacks Allotment contains rock art and rockshelter sites. Four previous Class II or III intensive inventories have occurred on the Gulch Allotment. Sites have been recorded in all three allotments but no known impacts to significant resources resulting from grazing have been identified. In the event that significant archaeological resources (standing walled historic or prehistoric structures, rock art, or other sites potentially eligible to the National Register of Historic Places) are found to be adversely impacted by cattle, preventative and mitigation measures will be implemented including but not limited to fencing, recordation, data collection, and monitoring as is standard operating procedure under the National Historic Preservation Act. The renewal of grazing permits, in the absence of any construction of new range improvements, therefore does not constitute a potential adverse effect to cultural resources.
Environmental Justice	NI	The proposed action would have no disproportionately high or adverse human health or other environmental effects on minority or low income segments of the population. Also, continued livestock grazing would have no effect on low income and minority populations.
Farmlands (Prime or Unique)	NP	There are no prime or unique farmlands within these allotments.
Floodplains	NI	No actions are proposed that result in permanent fills or diversions, or placement of permanent facilities, in floodplains or special flood hazard areas. Continued properly managed livestock grazing use would not affect the function of the floodplains within these allotments.
Invasive, Non-native Species	NI	No invasive non-native species have been identified within Kanab Gulch or Gulch Allotments. The Hacks Allotment contains cocklebur and a few tamarisk near Willow Spring. The S&G Assessment Report for this allotment recommended treating and controlling these species with herbicides during the growing season. Cheatgrass is present in areas across these allotments. Cheatgrass is not on the Arizona Noxious Weed List, however it can be a very invasive non-native grass species. Research by Douglas et al. (1990) and Hunter, Richard (1991) shows that cheatgrass readily invades areas that have not been disturbed and do not have

Resource	Determination	Rationale for Determination
		livestock influence. Young and Evans (1978) speculated that removal of livestock would actually accelerate conversion to cheatgrass because of increased fuel accumulations and more frequent wildfires. Proper range practices can help prevent the spread of undesirable plant species (Sheley, 1995). Proper grazing use which maintains the DPC, as proposed in this EA, should minimize or have no effect on the spread of invasive non-native species as currently all allotments meet applicable standards for rangeland health. Monitoring and treatment of cocklebur and tamarisk in Hacks Allotment would be conducted in accordance with the current ASFO Weed Management Plan. Successful treatment would enhance rangeland health and facilitate the achievement of management objectives. The renewal of the grazing permits is therefore not anticipated to increase the rate at which noxious weeds or other invasive species are spread throughout the area, nor would it hinder the current rate or method of treatment being implemented to control the spread of invasive species within the allotments.
Native American Religious Concerns	NP	During consultations with the American Indian Tribes that claim cultural affiliation to northern Arizona, no Native American religious concerns have been identified in relation to livestock grazing within these specific allotments.
Threatened, Endangered or Candidate Plant Species	NP	No Threatened, Endangered, or Candidate plant species occur in these allotments.
Threatened, Endangered or Candidate Animal Species	NI	The California condor may occasionally fly over or feed in these allotments at any time of year. California condors are federally listed as endangered and a population of these condors was reintroduced on the Arizona Strip in 1996. This population is designated as experimental non-essential under Section 10(j) of the Endangered Species Act. Condors are strictly scavengers and prefer to eat large, dead animals such as mule deer, elk, pronghorn, bighorn sheep, cattle, and horses. Condors range widely, easily covering over 100 miles in a day, and their current range includes the entire Arizona Strip. Although condors may either fly over or feed within these allotments, they have not been observed doing so. There is no evidence that rangeland health on these allotments is limiting or restricting condor population growth. Thus, no effect to this species is expected from the proposed action. The Mexican spotted owl (*Strix occidentalis lucida*) is federally listed as threatened. Surveys conducted since 1992 have not detected any spotted owls on these allotments, nor have any ever been found on these allotments. This area is not considered to be suitable habitat because the primary constituent elements of habitat are not present. The USFWS (2005) describes "primary constituent elements" for canyon habitat as follows (forested habitat is not

Resource	Determination	Rationale for Determination
		considered in this area; only steep-walled canyons are known to support nesting owls): • Cooler and often more humid conditions than the surrounding area; • Clumps or stringers of trees and/or canyon wall containing crevices, ledges, or caves; • Higher percent of ground litter and woody debris; • Riparian or woody vegetation (although not at all sites). Prior to September 2004, 3,659 acres in the Kanab Gulch Allotment and 1,361 acres in the Gulch Allotment had been designated as Critical Habitat by USFWS, together with 242 acres in the Hacks Allotment. However, as of August 31, 2004, the designated acres on these allotments were removed from Critical Habitat designation in a new Final Rule. Renewal of the grazing permits would therefore have no impact on critical habitat, or on spotted owls. Southwestern willow flycatchers (SWIFL) (*Empidonax traillii extimus*), federally listed as threatened, are neotropical migrants that breed in the southwestern U.S. and migrate to Mexico and Central America during the winter. SWIFL are a riparian obligate species. According to the habitat description in the final rule listing SWIFL as endangered (USFWS, 2005), this species occurs in riparian habitats along rivers, streams, or other wetlands where dense growths of willows (*salix* sp.), *Baccharis,* arrowweed (*Pluchea* sp.), button bush (*Cephalanthus* sp.), tamarisk (*tamarisk* sp.), Russian olive (*Eleagnus* sp.), or other plants are present, often with a scattered overstory of cottonwood (*Populus* sp.). There is no known suitable habitat for SWIFL within these allotments. Thus, renewal of grazing permits would have no impact on SWIFL.
Wastes (hazardous or solid)	NP	No known hazardous or solid waste issues occur in these allotments.
Water Quality (drinking / ground)	NI	Willow Spring (Hacks Allotment) was monitored for baseline data required by the Arizona Department of Environmental Quality for the Pinenut Mine's Aquifer Protection Permit. Laboratory tests of water samples from this spring indicate the water is very high in Total Dissolved Solids (TDS), with a value over 3,000 mg/L. Laboratory analysis also indicates Gross Alpha values of 70.4 (+/-) 21 pCi/L. Willow Spring exceeds the human health public drinking water standards for TDS and Gross Alpha particles. Federal regulations and standards for drinking water apply only to public water systems, not ground water unless that water is used as a public water system. A sign was placed at Willow Spring to inform the public that the water is not fit for human consumption. Site visits to the allotments (during rangeland health evaluations) did not indicate that current livestock use is altering water quality (no surface water is used for domestic drinking water). Thus,

Resource	Determination	Rationale for Determination
		renewal of grazing permits would have no impact on water quality.
Wetlands / Riparian Zones	NP	The Hacks Allotment contains Willow Spring (also called Black Willow Spring). The spring consists of a fenced area containing a cement box to collect water – this spring is the primary water source for the allotment, and the associated water rights belong to the permittee. The grazing permittee constructed the water collection area – the Arizona S&Gs provide an exemption to Standard 2 (Riparian/Wetland Sites) for "water facilities constructed or placed at a location for the purpose of providing water for livestock … and which have not been determined through local planning efforts to provide for riparian or wetland habitat." Although there are a few cattails and tamarisk at the spring, this area is not by definition a wetland/riparian area. Bessie Spring is located within the Kanab Gulch Allotment, and Daves Waterhole is located in the Gulch Allotment. Bessie Spring flows out of sandstone and has no associated riparian-obligate vegetation; Davis Waterhole is a slick rock pool that collects water from winter precipitation and also has no associated riparian-obligate vegetation. Thus, there are no wetland/riparian areas in any of the allotments.
Wild and Scenic Rivers	NP	There are no river segments within these allotments that are designated, eligible, or suitable as wild, scenic, or recreational under the Wild and Scenic Rivers Act.
Wilderness	NI	Portions of the Hacks Allotment and the entire Kanab Gulch and Gulch Allotments are within Kanab Creek Wilderness. Livestock grazing is an historical use that was identified as acceptable in the Wilderness Act of 1964. Grazing was occurring in these allotments at the time of wilderness designation. Livestock grazing in these allotments has had no noticeable impact on wilderness characteristics historically, and the nature of grazing in the next 10 years is not expected to change. There are no proposals at this time for new facilities (e.g. fences or ponds) or surface disturbing activities; any facilities or activities that may be proposed in the future would be considered on a case-by-case basis, and impacts to wilderness would be assessed and mitigated as appropriate at that time. Consequently, there would be no impacts to wilderness as a result of actions proposed in this EA, and this issue is therefore not analyzed further.
Other Elements of the Human Environment		
Livestock Grazing	PI	Permit renewal is required to allow continued livestock use on these allotments; this issue is therefore analyzed in detail later in this EA.
Woodland / Forestry	NI	Continued livestock use would not affect the availability of, or access to, these resources.
Vegetation	PI	Grazing has a direct impact on vegetation resulting from the practice of grazing in which livestock eat and trample plants within the allotments. This issue is therefore analyzed in detail later in this EA.

Resource	Determination	Rationale for Determination
BLM or State Sensitive Plant Species	NP	BLM or State sensitive plant species do not occur in these allotments.
Wildlife (including sensitive species and migratory birds)	PI	Multiple sensitive animal species, including migratory birds, may occur within or adjacent to the Hacks, Gulch and Kanab Gulch Allotments Desert bighorn sheep and mule deer are big game species that are known to occur throughout these allotments. Interactions with livestock and competition for forage could occur; this issue is therefore analyzed in detail later in this EA.
Soils	PI	Some soil disturbance occurs around water sites where livestock gather and trail. This issue is therefore analyzed in detail later in this EA.
Recreation	NI	The area within these two allotments is managed for dispersed, unstructured recreation opportunities that focus only on visitor health and safety, user conflict, and resource protection issues (i.e., an extensive recreation management area) while maintaining the area's naturalness/remoteness. All three allotments are considered to have recreational values for their geology, scenic viewsheds, and remoteness. General recreation activities could include sightseeing, horseback riding, hiking, camping, hunting, rock collecting, photography, bird watching, and nature study. Continued livestock use would not affect the availability of recreational opportunities within these allotments.
Visual Resources	NI	The portions of the allotments within the Kanab Creek Wilderness (all of Kanab Gulch and Gulch Allotments, as well as part of the Hacks Allotment) are designated as Visual Resource Management (VRM) Class I. Class I objective is to preserve the existing character of the landscape. The level of change to the characteristic landscape should be very low and must not attract attention. The portion of the Hacks Allotment outside the wilderness and below the canyon rim in Hack Canyon is designated as VRM Class II. The objective of Class II is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. The part of the Hacks Allotment that is outside the wilderness and above the canyon rim in Hack Canyon is designated as VRM Class III. The objective of Class III is to partially retain the existing character of the landscape. Changes should repeat the basic elements in the predominant natural features of the characteristic landscape. Continuing livestock grazing as proposed would not affect visual resources because no new range improvements are proposed, so the existing character of the landscape would not change.
Geology / Mineral Resources / Energy Production	NP	Continuing livestock grazing would not alter geological features or mineral resources. Mineral exploration activities (uranium and oil and gas) are occurring across the Arizona Strip, but grazing of livestock would not alter or impair the opportunities to explore for

Resource	Determination	Rationale for Determination
		these resources.
Paleontology	NP	No paleontological resources are known to occur in these allotments.
Lands / Access	NI	Access to public lands would not be altered or impaired by implementation of the proposed action. No other lands issues have been identified in connection with the proposed action.
Fuels / Fire Management	NI	No hazardous fuel reduction or fuels management projects are proposed for these areas. Continued livestock use would not affect fire management, other than the continued reduction of some light fuels through livestock grazing.
Socio-economic Values	NI	The economic base of the Arizona Strip is mainly ranching with a few gypsum/selenite mines and uranium operations. Nearby communities are supported by tourism (including outdoor recreation), construction, and light industry. The social aspect involves remote, unpopulated settings with moderate to high opportunities for solitude. Issuance of the permits under the proposed action would allow the permittees to continue their grazing operations with some degree of predictability during the 10-year period of the term permit and would allow a historical and traditional use of the land to be maintained. The proposed action would have no overall effect on the economy of the county since tourism and recreational uses are contributing increasing amounts to the economy of the region and cattle ranching is no longer a significant contributor.
Wild Horses and Burros	NP	There are no wild horse or burro herd management areas within these grazing allotments.
Wilderness characteristics	NI	The portion of the Hacks Allotment that is below the canyon rim in Hack Canyon possesses the wilderness characteristics of naturalness, opportunities for solitude and opportunities for primitive and unconfined recreation. Livestock grazing in this area has had no noticeable impact on wilderness characteristics historically, and the nature of grazing in the next 10 years is not expected to change. There are no proposals at this time for new facilities (e.g. fences or ponds) or surface disturbing activities; any facilities or activities that may be proposed in the future would be considered on a case-by-case basis, and impacts to wilderness characteristics would be assessed and mitigated as appropriate at that time. Consequently, there would be no impacts to wilderness characteristics as a result of actions proposed in this EA, and this issue is therefore not analyzed further.

Resources Brought Forward for Analysis

Livestock grazing

A grazing permit is issued for livestock forage produced annually on the public lands and is allotted on an AUM basis. (An AUM is a unit of measurement indicating how much forage is eaten by a cow/calf pair in one month.) The BLM does not control adjacent private lands owned

by the permit holders. The livestock operator assumes grazing management responsibility with the intent to maintain or improve existing resources. Livestock are to be grazed on public lands only during the established season of use. If private land is used during different periods, it is the permittee's responsibility to keep livestock off the public land during non-grazing periods. The BLM retains the right to manage the public lands for multiple uses and to make periodic inspections to ensure that inappropriate grazing does not occur. If inappropriate grazing should occur, then the BLM would work with affected permittees to identify and prescribe actions to be taken that would return the allotment to compliance.

All three allotments are categorized as "custodial" (C) allotments. Custodial allotments are typically small areas of public land intermingled with larger blocks of private land. The *Arizona Strip Proposed RMP/Final EIS,* defines custodial allotments as those in which:

a) Present range condition is not a paramount factor;
b) Allotments have low resource production potential, and are producing near their potential;
c) Limited resource-use conflicts/controversy may exist;
d) Opportunities for positive economic return on public investment do not exist or are constrained by technological or economic factors;
e) Present management appears satisfactory or is the only logical practice under existing resource conditions or land ownership pattern.

Although custodial allotments do not generally have an AMP, one was written for the Hacks Allotment in 1982. This allotment is grazed as the winter-spring allotment of a three-allotment cow-calf operation. The Hacks Allotment is used from November 16 through May 31 and then cattle are moved to another allotment in Utah from June to September, after which cattle are moved to private land until they are moved back onto the Hacks Allotment in November. No specific grazing formula has been designated for this allotment because it has been placed under less intensive management. This allotment is grazed by 36 cattle and 2 horses and contains 423 AUMs of which 176 have been suspended leaving 247 active grazing AUMs.

Kanab Gulch Allotment is grazed from November 16 through April 30. This allotment is grazed by 26 horses and contains 143 AUMs, with 67 suspended non-use AUMs (total AUMS is 210). Gulch Allotment is grazed from November 1 through April 30. This allotment is grazed by 16 horses and contains 96 AUMs, and there are 80 suspended non-use AUMs (total AUMs is 176).

On the Hacks Allotment, voluntary non-use has varied from 0 to 108 AUMs per year from 1982 to 2007 (56-100% AUM use). On the Kanab Gulch Allotment, voluntary non-use has varied from 1 to 91 AUMs per year from 1995 to 2008 (36-99% AUM use). On the Gulch Allotment, voluntary non-use has varied from 0 to 96 AUMs per year from 1995 to 2008 (0-100% AUM use). Non-use reflects seasonally dry periods, drought years, or other factors.

Vegetation

According to the Natural Resources Conservation Service (NRCS) the dominant ecological site on all three allotments is Breaks 10-14" p.z. There are small inclusions of other ecological sites within these allotments that make up less than five percent of each allotment. There are two principal vegetative types within the allotments – grassland and desert shrub. The grassland type consists of plant species such as galleta grass, sand dropseed, black grama, needle-and-thread grass, and Indian ricegrass. The desert shrub vegetative type consists of fourwing saltbush, winterfat, shadscale, ephedra, wolfberry, blackbrush, and annual species such as phlox, euphorbia, and globemallow.

Key species on the Hacks Allotment are:

- Browse species – fourwing saltbush and Mormon tea
- Warm season grasses – sand dropseed, galleta grass, and black grama
- Cool season grasses – needle-and-thread grass

Key species on the Kanab Gulch Allotment are:

- Browse species – fourwing saltbush and Mormon tea
- Warm season grasses – sand dropseed and black grama
- Cool season grasses – desert needlegrass, needle-and-thread grass, and hairy tridens.

Key species on the Gulch Allotment are:

- Browse species – fourwing saltbush and Mormon tea
- Warm season grasses – sand dropseed, galleta and black grama
- Cool season grasses –Sandberg bluegrass and needle 'n' thread.

Proper management of these key species provides for the physiological requirements of most of the desirable species on the allotments.

Wildlife (including sensitive species and migratory birds)

Sensitive Species

Species listed as sensitive by the BLM typically consist of small and widely dispersed populations, inhabit ecological refugia or specialized or unique habitats, could become endangered or extirpated from the State or within a significant portion of its range; is under status review by the U.S. Fish and Wildlife Service; or is State-listed, but may be better conserved through application of BLM sensitive species status. Arizona wildlife species of special concern are ones whose occurrence in Arizona is or may be in jeopardy, or with known or perceived threats or population declines, as described by the Arizona Game and Fish Department's listing of Wildlife of Special Concern in Arizona. Table 5 lists the sensitive animal species that may occur within the Hacks, Gulch, and Kanab Gulch Allotments.

Table 5. Sensitive Species that are known to occur or have the Potential to Occur* in the Allotments

Species	Hacks	Kanab Gulch	Gulch	BLM Sensitive	Arizona Wildlife Species of Concern
Ferruginous hawk (*Buteo regalis*)	Potential	Potential	Potential	Yes	Yes
Swainson's hawk (*Buteo swainsoni*)	Potential	Potential	Potential	No	Yes
Western burrowing owl (*Athana cunicularia hypugea*)	Potential	Potential	Potential	Yes	No
American peregrine falcon (*Falco peregrinus*)	Verified	Potential	Potential	No	Yes
Townsend's big-eared bat (*Corynorhinus townsendii*)	Verified	Verified	Verified	No	No
Spotted bat (*Euderma maculatum*)	Verified	Verified	Verified	No	Yes
Western small-footed myotis (*Myotis ciliolabrum*)	Verified	Verified	Verified	Yes	No
Fringed myotis (*Myotis thysanodes*)	Verified	Verified	Verified	Yes	No
Big free-tailed bat (*Nyctinomops macrotis*)	Verified	Verified	Verified	Yes	No
Allen's lappet-browed bat (*Idionycteris phyllotis*)	Potential	Potential	Potential	No	No
Northern leopard frog (*Rana pipiens*)	Potential	Potential	Potential	No	Yes

* "Potential to occur" means that suitable habitat exists, but species presence has not been verified.

Suitable habitat for the ferruginous hawk is present on these allotments. It has been verified within the Arizona Strip District, but not from within any of these allotments. Swainson's hawk is an Arizona State sensitive species. While it has not been verified for the Arizona Strip District, suitable habitat exists on these allotments. Confirmed sightings are located south of the Grand Canyon. Suitable habitat occurs for the western burrowing owl in some of the Hacks, Kanab Gulch, and Gulch Allotments, although the species has not been positively identified from these allotments.

The American peregrine falcon was delisted from the Federal endangered species list in 1999. American peregrine falcons nest in cliffs along Kanab Creek and in the nearby Grand Canyon. They are avian predators that may hunt and feed in these allotments. The area's habitat is mapped as historic peregrine habitat. There is at least one active nest in the Hacks Allotment.

Bats have been monitored periodically at livestock waters across the Arizona Strip. A variety of sensitive bat species have been captured on these and neighboring allotments including Townsend's big-eared, spotted bats, western small-footed myotis, fringed myotis, and big free-tailed bats. Townsend's big-eared bat and Allen's lappet-browed bat are locally rare, although not listed as sensitive species by either the BLM or AGFD. Although no Allen's lappet-browed

bats have been captured on these (or neighboring) allotments, there is a high potential for them to occur in these areas.

Herpetological inventories have not been conducted; however, no sensitive reptiles or amphibians are known or suspected to occur on these allotments.

Migratory Birds

Executive Order 13186 requires the BLM and other federal agencies to work with the USFWS to provide protection for migratory birds. These species are protected by law and it is important to maintain habitat for these species so migratory patterns are not disrupted. All migratory birds are protected under the 1918 Migratory Bird Treaty Act (16 USC 703), which prohibits the taking of any migratory birds, their parts, nests, or eggs. Additional protection is provided by the Neotropical Migratory Bird Conservation Act of 2000 (16 USC Chapter 80). Migratory birds are known to occur within the Arizona Strip, some of which are known to use the habitat types present within these allotments.

Big Game

Desert bighorn sheep are present in the Hacks, Kanab Gulch and Gulch Allotments. After Grand Canyon National Park was expanded in 1974, supplemental transplants of desert bighorn were made in lower Hack Canyon to ensure a huntable population was maintained. Several sheep water facilities were constructed overlooking Hack and Kanab Creek Canyons.

The Kanab Creek Habitat Area for bighorn sheep includes these allotments. The Bighorn Sheep Management Plan, as amended (2006), estimated that this area can support between 340 and 480 bighorn sheep. In total, 63 have been translocated into this locality between 1985 through 1996. In 2006, the population was estimated at 91 individuals.

In 2003, bighorn sheep managers started to have concerns related to declining sheep population levels in the Kanab Creek drainage. It has been theorized that the extreme drought of 2002 concentrated sheep around relatively limited water sources, which could have resulted in an increase in disease transmission (AGFD, 2007). Disease is thought to be the primary reason for declining sheep numbers.

All three allotments provide yearlong habitat for mule deer. While no population estimates are available specifically for these allotments, the mule deer population in Game Management Units (GMU) 13A was considered stable to increasing over the ten year period from 1990 to 2000.

Other Wildlife Species

Small game species on the allotments include chukar, quail, and rabbits. Non-game wildlife found on the allotments is typical of the area and includes a variety of small mammals, birds, raptors, and reptiles. Coyotes are relatively common. Other predators that may be found on the allotments include mountain lions, foxes, bobcats, golden eagles, and ring-tailed cats.

Soil

Soil map units are from the Soil Survey of Mohave County Area 625, Arizona (NRCS, 1993). The Hacks Allotment consists of a portion of Hack Canyon that is bounded by high canyon walls exposing Kaibab limestone at the top, and Toroweep and Coconino sandstones to Hermit or Supai shales at the bottom. The flood plain is composed of gravelly and cobbly sands. The Kanab Gulch and Gulch Allotments consist of limestone, sandstone, and shales that form very steep walls and steep toe slopes within Kanab Canyon. There are a few small drainages containing mixed alluvium. Various soil inclusions on the ridges and bottoms of these allotments have not been mapped. Soil map units present on the allotments can be found in the project file at the Arizona Strip Field Office.

Soil condition evaluations were accomplished by field inspections during the rangeland health assessments. Field reconnaissance to locate possible problem areas on the allotments via onsite soil profile property determinations indicated no problems.

IV. ENVIRONMENTAL IMPACTS

The potential consequences or effects of the proposed action are discussed in this chapter. Only impacts that may result from implementing the proposed action are described in this EA. If an ecological component is not discussed, it is because BLM resource specialists have considered effects to the component and found the proposed action would have minimal or no effects (see Table 4). The intent of this analysis is to provide the scientific and analytical basis for the environmental consequences.

General effects from projects similar to the proposed action are also described in the documents to which this EA is tiered (the *Arizona Strip Proposed RMP/Final EIS*, 2007).

Direct and Indirect Effects

Livestock Grazing

The proposed action would affect the livestock grazing permittees on the Hacks, Kanab Gulch, and Gulch Allotments by renewing each term grazing permit. The proposed action would maintain the current level of livestock grazing authorized for the permittees, while continuing to meet the Arizona Standards and Guidelines for Rangeland Health. This would provide some degree of stability for the permittees' livestock operation. Permit renewal would also meet the goals of the *Arizona Strip Field Office RMP* (2008) related to livestock grazing on public lands ("healthy, sustainable rangeland ecosystems" that "produce a wide range of public values such as … livestock forage …") for an additional ten years.

Vegetation

Livestock grazing can directly affect vegetation by reducing plant vigor, decreasing or eliminating desirable forage species, increasing soil instability and erosion, reducing water quantity and quality, and causing loss of, or injury to, individual plants from trampling, particularly near water developments. Long-term changes in vegetation may result if livestock use consistently exceeds established allocations, or drought or other environmental factors reduce range carrying capacity. Improper grazing practices may lead to soil compaction, reduced infiltration rates, increased runoff and erosion, and declines in watershed condition. Grazing impacts on vegetation are mitigated by timing of use, adjustment of stocking rates, and conformance with S&Gs. The current grazing systems on these allotments have been developed to minimize adverse effects to vegetation.

Plants can withstand removal of a part of their current year's growth and still achieve normal growth the following year. Properly managed livestock grazing is designed to cause minimal impacts to rangeland resources. DPC objectives (as described on pages 8 and 9 of this EA) for vegetation components at key areas are being met on all allotments addressed in this EA (the key areas are primarily in late seral stage). Managing these allotments to achieve DPC objectives would result in maintaining or improving the ecological condition of the allotments.

As described on page 13 of this EA, the 2008 pace-frequency study on the Gulch Allotment showed a downward trend. This is mainly due to the recent precipitation patterns which are half

what was received in the three years preceding the base data, or original trend reading, in 1982. The Gulch Allotment has shown an increase in some species such as blackbrush and fourwing saltbush which have a strong and deep tap root that will help the plant maintain or increase under a dry climate regime. A solid grass component does exist on the site where the trend study was established; however, because there have been only 6-7 inches of moisture over the last three years (compared to the 10-11 inch average and the 12-16 inches in the early 1980s when this key area was established), the frequency of grasses has decreased. Thus, the downward trend appears to be a result of the recent drought, and not due to livestock grazing.

As discussed in Chapter III of this EA, allotment monitoring data indicate that resource conditions on the allotments currently meet all applicable standards for rangeland health. One factor in making this determination was the assessment that DPC objectives for vegetation components at key areas are being met, or are progressing toward meeting, on all allotments addressed in this EA. Managing these allotments to achieve DPC objectives (as described on pages 8-9 of this EA) and implementation of the proposed utilization levels would result in maintaining or improving the ecological condition of the allotments, resulting in no adverse impacts on vegetation. If future monitoring indicates any areas within the allotments are not in compliance with the Fundamentals of Rangeland Health, changes to the grazing use would be made. Thus, ecological status of these allotments would be maintained and/or improved.

Wildlife (including sensitive species and migratory birds)

Sensitive Species

Several sensitive species are present or potentially present within these allotments. Vegetation present appears to be sufficient to provide food and shelter requirements of native wildlife populations including BLM sensitive species. Managing these allotments to achieve DPC objectives and implementation of the proposed utilization levels would result in maintaining or improving the ecological condition of the allotments (see "Vegetation" discussion above). Therefore, implementation of the proposed action is not expected to adversely affect BLM sensitive species within these allotments.

Migratory Birds

Properly managed livestock grazing is designed to cause minimal impacts to rangeland resources, including wildlife habitat. Managing these allotments to achieve DPC objectives and implementation of the proposed utilization levels would result in maintaining or improving the ecological condition of the allotments (see "Vegetation" discussion above). Implementation of the proposed action is therefore not likely to adversely affect any species of migratory bird known or suspected to occur on the allotments. No take of any such species is anticipated.

Big Game

The rugged and steep nature of bighorn habitat limits contact between sheep and livestock to a few areas within these allotments. The majority of habitat used by desert bighorn sheep in these allotments is essentially ungrazed due to its inaccessibility to livestock.

As described in Chapter II, mule deer are present year-round in these allotments, although densities are most likely low. The presence of livestock and the trailing of livestock between use areas could displace some wildlife from preferred habitats and/or water sources. However, this displacement would only be temporary. In addition, the rugged terrain within these allotments would tend to limit contact between deer and livestock in many areas.

The DPC objectives developed for these allotments consider the needs of wildlife and their habitat. Managing these allotments to achieve DPC objectives and implementation of the proposed utilization levels would result in maintaining or improving the ecological condition of the allotments (see "Vegetation" discussion above). The proposed action would therefore not affect meeting habitat objectives for bighorn sheep or mule deer that are provided for in the *Arizona Strip Field Office RMP*.

Other Wildlife Species

Forage and cover needs have not been specifically addressed in habitat management plans for these allotments. It is typically assumed that management actions that provide for healthy rangelands will benefit most wildlife species. The proposed grazing regimes (including managing the allotments to achieve DPC objectives described in Chapter II and implementation of the proposed utilization levels) would maintain and/or improve ecological condition of the rangelands. It has therefore been determined that this alternative would not adversely impact any wildlife found on the allotments.

Soil

Livestock grazing can increase soil compaction in trailing, watering, and mineral supplement areas. However, properly managed livestock grazing is designed to cause minimal impacts to rangeland resources, including soils. Utilization levels proposed under this alternative would maintain and/or improve ecological condition, which would help maintain soil resources. In addition, livestock grazing within these allotments would be managed in keeping with applicable laws and regulations, including the Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration. Adhering to these standards and guidelines, including achieving DPC objectives identified in Chapter II, would minimize impacts from livestock grazing by maintaining plant vigor and increasing litter accumulation, resulting in the maintenance or improvement of organic matter content, soil structure, permeability, and productivity. This would ensure that upland soils would exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform. Soil quality and health should therefore remain stable or improve through implementation of this alternative and enforcement of the Arizona S&G process for permitted livestock grazing within the Hacks, Kanab Gulch, and Gulch Grazing Allotments. The rangeland health assessments conducted on these allotments did not indicate excessive erosion patterns or that ecosystems are not properly functioning. Continuation of current grazing practices would therefore not be expected to adversely impact soil resources within the allotments.

Cumulative Impacts

"Cumulative impacts" are those impacts resulting from the incremental effect of an action when added to other past, present, or reasonably foreseeable actions regardless of what agency or person undertakes such other actions. Cumulative impacts are tiered to the *Arizona Strip Proposed RMP/Final EIS* (2007).

Cumulative impacts occur when additional management facilities are added to those already present. Grazing plans are intended to meet specific objectives to the plan area and involve rangeland improvements that are designed to maintain or improve wildlife habitat, watershed, and overall resource conditions, thus improving ecosystem health.

Livestock grazing in the region has evolved and changed considerably since it began in the 1860s, and is one factor that has created the current environment. At the turn of the century, large herds of livestock grazed on unreserved public domain in uncontrolled open range. Eventually, the range was stocked beyond its capacity, causing changes in plant, soil, and water relationships. Some speculate that the changes were permanent and irreversible, turning plant communities from grass and herbaceous species to brush and trees. Protective vegetative cover was reduced, and more runoff brought erosion, rills, and gullies.

In response to these problems, livestock grazing reform began in 1934 with the passage of the Taylor Grazing Act. Subsequent laws, regulations, and policy changes have resulted in adjustments in livestock numbers, season-of-use changes, and other management changes. Given the past experiences with livestock impacts on public land resources, as well as the cumulative impacts that could occur on the larger ecosystem from grazing on various public and private lands in the region, management of livestock grazing is an important factor in ensuring the protection of public land resources.

Past, present, and reasonably foreseeable actions within the analysis area would continue to influence range resources, watershed conditions and trends. The impact of vegetation treatments, voluntary livestock reductions during dry periods, and implementation of a grazing system have improved range conditions. The net result has been greater species diversity, improved plant vigor, and increased ground cover from grasses and forbs.

The effects of livestock grazing on resources in the allotments identified in this EA have been analyzed under the "Direct and Indirect Effects" section of this chapter. Since livestock grazing occurs throughout the area and adjacent private lands, it is reasonable to assume that impacts similar to those identified earlier in this chapter would occur elsewhere in the area. This additive impact may affect wildlife habitat or corridors and the greater ecosystems by altering vegetation associations or decreasing water quality. These systems and the health of the region as a whole are important for the survival of many native species. Consultation with AGFD in regard to renewal of livestock grazing permits did not identify any issues directly related to livestock grazing beyond those already discussed above.

No cumulative impacts are therefore predicted to result from implementation of the proposed action.

Monitoring

Dry weight ranking (DWR) studies would be used to measure attainment of the key area DPC objectives. In addition, pace frequency studies would be used at each key area to detect changes of individual species which determines a trend or change in vegetation composition. Pace frequency and DWR would be completed on each key area. DWR and pace frequency study methodologies are described in *Sampling Vegetation Attributes*, Interagency Technical Reference 1734-4 (1999).

Livestock use on forage plants is determined by conducting grazing utilization studies using the Grazed-Class Method as described in the *Utilization Studies and Residual Measurements* Interagency Technical Reference 1734-3 (1996). Utilization studies would be completed annually by the BLM, when livestock are removed from the pasture. Study data would be compiled each year. Other information to be collected and compiled includes precipitation and actual use. All monitoring data would be used to evaluate current management of the allotments and assist the BLM in making management decisions that help achieve vegetation objectives.

The monitoring addressed above and in Chapter II is sufficient to identify changes in vegetation as a result of livestock grazing activities. In addition to those methods described, there are efforts in place to inventory for noxious weed establishment, as well as monitor treated areas for treatment effectiveness.

V. CONSULTATION AND COORDINATION

Public involvement for the Hacks, Kanab Gulch, and Gulch S&G evaluations began with scoping meetings for the Hacks Allotment on March 14, 2001, followed by a meeting for the Kanab Gulch and Gulch Allotments on October 22, 2003. The assessments were conducted by an Interdisciplinary Assessment Team of BLM resource specialists assisted by the Rangeland Resources Team appointed by the Arizona Resource Advisory Council. Draft evaluations were sent out for public review and comment to individuals, groups, and agencies. Comments were incorporated into the Final Hacks, Kanab Gulch, and Gulch S&G evaluation reports, and this EA reflects those comments.

Table 6. List of BLM Preparers/Reviewers

Name	Title	Responsible for the Following Program(s)
Gloria Benson	Tribal Liaison	Native American Religious Concerns
Lorraine Christian	Arizona Strip Field Manager	Project Oversight
Rody Cox	Geologist	Geology, Minerals
Laurie Ford	Team Lead, Lands & Geological Sciences	Lands & Realty
Diana Hawks	Team Lead, Cultural Resources/Wilderness/ Recreation	Wilderness, Recreation, Visual Resources
John Herron	Archaeologist	Cultural Resources
Lee Hughes	Ecologist	Special Status Plants, Vegetation, Range
Karen Jensen	Team Lead, Wildlife	Special Status Animals, Wildlife
Linda Price	Manager, Vermilion Cliffs National Monument/Team Lead, Standards & Guidelines	Standards & Guidelines
Kevin Schoppmann	Vegetation/Grazing Administration	Rangeland Management Specialist
Robert Smith	Soil Scientist	Hazmat, Soils, Water, Air
Richard Spotts	Environmental Coordinator	NEPA Compliance
Ron Wadsworth	Supervisory Law Enforcement	Law Enforcement
L.D. Walker	Weed Coordinator	Invasive, Non-Native Species

Table 7. List of Persons, Agencies and Organizations Consulted

Name	Agency/Organization	Consulted for the Following Program(s)
Rob Grumbles	Mohave County Extension Service	Vegetation and Social Economics
Art Meen	Natural Resource Conservation Service	Soils and Vegetation
Vernon Parent	Washington County Extension Service	Vegetation and Social Economics
Andi Rogers	Arizona Game and Fish Department	Wildlife and Vegetation
Rick Miller	Arizona Game and Fish Department	Wildlife and Vegetation
LeAnn Skrzynski	Kaibab Paiute Reservation	Tribal and Native American Coordinator

VI. REFERENCES

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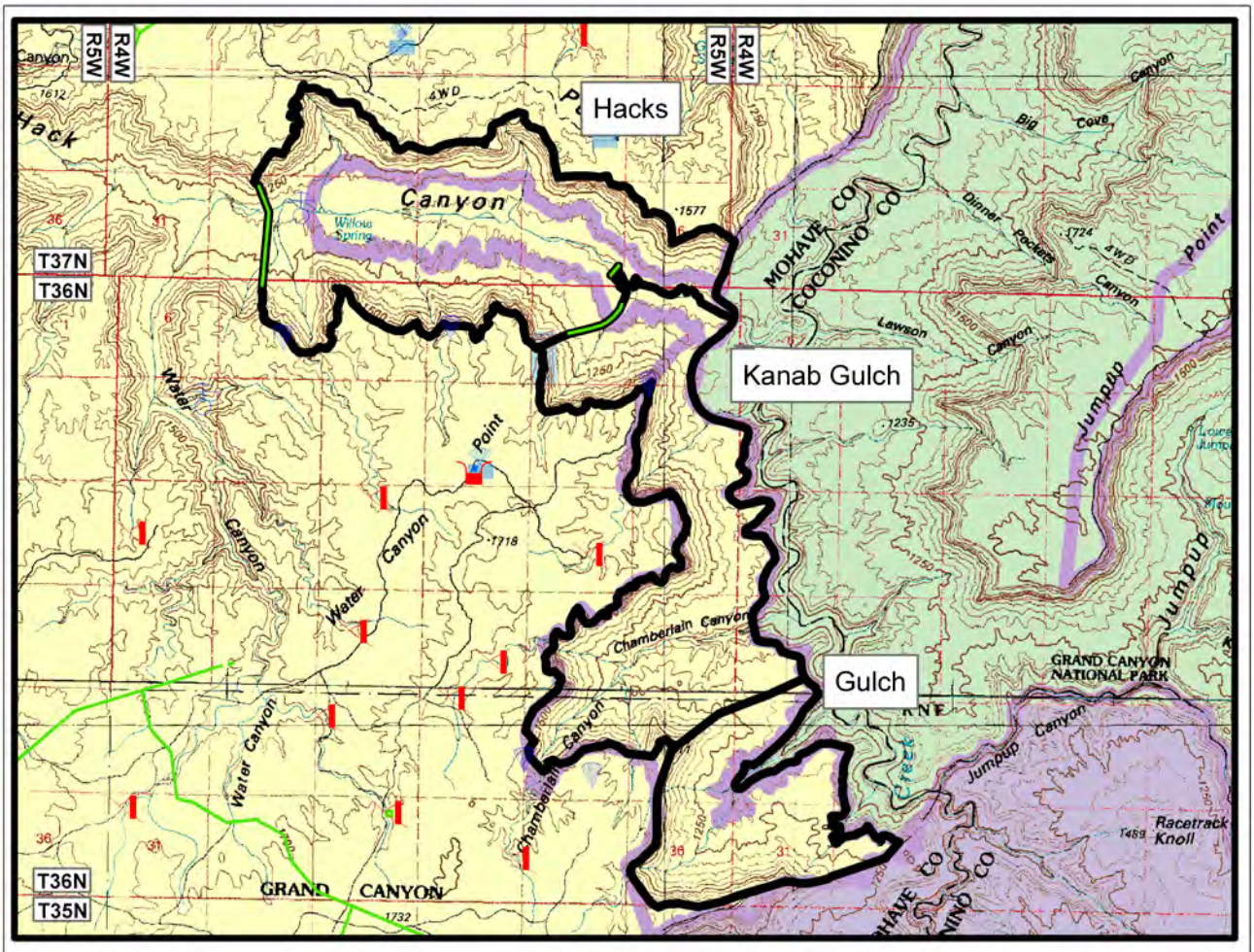
VII. ATTACHMENTS

Attachment 1 – Allotment Map



Hacks, Kanab Gulch and Gulch Allotments

Bureau of Land Management
Arizona Strip District

1:100,000

1 0.5 0 1 Miles

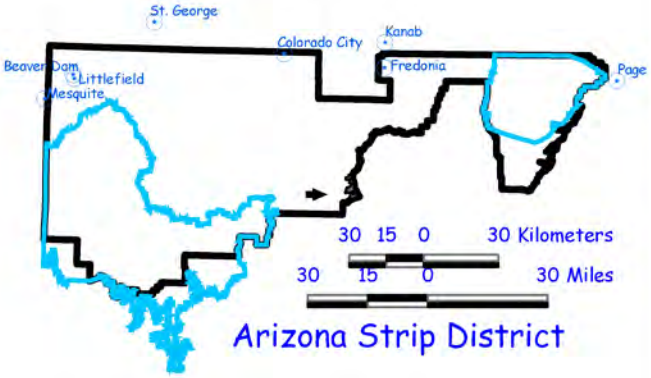
1 0.5 0 1 Kilometers

- Noxious Weeds
- Livestock Catchment
- Key Area
- Fence
- Pipeline
- Monument Boundary
- Allotment Boundary
- Wilderness Boundary

Ownership

- BLM
- Forest Service
- State
- National Park Service
- Private
- Native American Reservation

- Fenced Reservoir
- Trough
- Undeveloped Spring
- Unfenced Reservoir
- Water Storage Tank
- Well
- Wildlife Catchment
- Wildlife Drinker
- Windmill
- Cattleguard
- Corral
- Developed Spring



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