Standards for Rangeland Health and Guidelines for Grazing Administration
Implementation Project Allotment Assessment

HIDDEN SPRING - 4803

I. Introduction

The Hidden Spring Allotment Assessment was conducted in accordance with directions set forth in the Washington Office Instruction Memorandum No. 98-91 and Arizona State Instruction Memorandum No. 99-012 for implementation of Standards for Rangeland Health and Guidelines for Grazing Administration (Standards and Guides).

The purpose of Standards and Guides is to ensure the health of public rangelands. These standards help the Bureau of Land Management (BLM), rangeland users, and interested members of the public achieve a common understanding of acceptable resource conditions, and work together to implement that vision (see Appendix A for a copy of the Standards and Guidelines).

Arizona's Standards and Guides were developed by the BLM State Standards and Guides Team and the Arizona Resource Advisory Council (RAC), a state level council appointed by the Secretary of the Interior.

The Secretary of the Interior approved the Standards and Guides in April 1997. The Decision Record, signed by the BLM State Director (April 1997) provides for full implementation of the Standards and Guides in all Arizona Land Use Plans.

This assessment was conducted by an interdisciplinary assessment team (IAT) of resource specialists from:

- BLM
- Natural Resource Conservation Service (NRCS)
- Arizona Game and Fish Department (AGFD)
- Mohave County Extension

The IAT was assisted by the Rangeland Resource Team (RRT), a diverse group of local residents formed and appointed under the RAC charter (see Appendix B for a list of members on both teams). The RRT may provide informal advice to the BLM Monument Manager regarding implementation of Standards and Guides, and "will have opportunities to raise any matter of concern with the resource advisory council and ... to provide information and options to the council for their consideration" as provided for by regulations at 43 CFR 1784.6-2(a)(2)(iv)(A).

The BLM/RAC Implementation Strategy for Arizona states that the RRTs primary role is to assist BLM managers in assuring the Standards and Guides are consistently applied and technically sound. The IAT analyzed all available information in cooperation with the RRT. Based on field observations, team members determined whether rangeland conditions were meeting, progressing toward meeting, or not meeting the Standards for Rangeland Health.

The RRT, IAT, permittees, and other interested parties were invited to attend an issue scoping meeting on June 10, 1999, and a field visit on June 24, 1999. In cases where standards were not being met, the group identified which resource uses needed to be addressed, and teams presented recommendations to improve resource conditions.

After consultation with interested persons, permittees, and the IAT, the Authorized Officer will select the appropriate actions. The selected management actions will be analyzed through the National Environmental Policy Act (NEPA) process and a proposed decision will be issued.

II. Grazing Use

A. Total Grazing Privileges

Active Grazing Use:	1,256 AUMs
Suspended Non-use:	631 AUMs
Total:	**1,887 AUMs**

(Note: an AUM, or Animal Unit Month, is a unit of measurement indicating how much forage is eaten by a cow/calf pair in one month.)

B. Season(s) of Use

Year long

C. Kind and Class of Livestock

Cattle, cow/calf

D. Percent Federal Range[1]

96 percent

III. Allotment Profile

A. Description

The Hidden Spring Allotment is located approximately 45 miles southwest of St. George, Utah. It is situated on the upper head drainages of Hidden Canyon. All of the allotment is located within Mohave County, Arizona. This acreage is predominantly vegetated with pinyon and juniper, sagebrush, cliffrose, and grass association.

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1 The percentage of public land use determined by the proportion of livestock forage available on public lands within the allotment compared to the total amount available from public lands, state lands, and those owned or controlled by the permittee or lessee.

The allotment is categorized as an "improve" (I) allotment, which means that one or more of the following exists:

a) Present range condition is unsatisfactory;
b) The allotments have high to moderate resource production potential and are producing at low to moderate levels;
c) Serious resource-use conflicts/controversy exists;
d) Opportunities exist for positive economic return from public investments;
e) Present management appears unsatisfactory.

B. Acreage

Land Status (acres)	
Public Lands	18,642
*State	565
Private	0
	19,207

* State land is not fenced separately from public lands and is used in common with public lands.

C. Objectives

Program guidance decisions, as well as specific resource objectives for the Hidden Spring Allotment, are found in the Grand Canyon-Parashant National Monument Resource Management Plan (RMP).

1. Land Use Plan Objectives

Objectives are labeled according to the applicable resource or resource use and sequentially numbered in the RMP. Listed here are the Desired Future Condition (DFC) decisions that will be assessed in this document. The codes are as follows:

RP= Riparian Ecological Zone	WF=Wildlife and Fisheries	RR=Recreation Resources
WS=Air, Water and Soils	GM=Livestock Grazing	VR=Visual Resources
VM=Vegetation	TE=Special Status Species	

Water

DFC-RP-06
All surface water will meet, or be improving towards, Arizona State water quality standards.

DFC-WS-03
Surface water availability at seeps and springs will be appropriate for the soil type, climate, and landform.

Soil Stability

DFC-VM-04 (Vegetation – All Ecological Zones)
Vegetative communities will provide sufficient plant cover and litter accumulation to protect soils from wind and water erosion and enhance nutrient cycling and productivity, even during drought years.

DFC-WS-06
The natural hydrologic functions of all watersheds will be intact.

DFC-WS-07
Soils will exhibit infiltration, permeability, and erosion rates appropriate for the soil type, climate, and landform.

Ecological Processes

DFC-VM-05 (Vegetation – All Ecological Zones)
Ecological processes and functions will be protected, enhanced, and/or restored by allowing tools that are necessary and appropriate to mitigate adverse impacts of allowable uses and undesirable disturbances, and contribute to meeting the Standards for Rangeland Health and NPS Vital Signs and enhance Monument values.

DFC-WF-01
Ecological conditions will be within the range of natural variability and will be functional for dependant animal species.

DFC-WF-12
The natural biological diversity of fish, wildlife, and plant species will be maintained or, where necessary and feasible, restored throughout the Monument. Habitats will be managed on an ecosystem basis, ensuring that all parts of the ecosystem and natural processes are functional.

Invasive Plants

DFC-VM-06 (Vegetation – All Ecological Zones)
Invasive plant species will be contained, controlled, or eliminated and native species restored to meet desired plant community (DPC) objectives.

No Net Loss

DFC-VM-15 (Vegetation – Great Basin Ecological Zone – Sagebrush Communities)
There will be no net loss of total acres within sagebrush communities (i.e., long-term or permanent removal from the landscape). A no net loss objective will not preclude restoration, rehabilitation, or related management actions.

Livestock Grazing

DFC-GM-02
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.

DFC-GM-04
Monument values will be maintained, protected, and improved.

Desired Plant Community

DFC-VM-03 (Vegetation – All Ecological Zones)
Native vegetative communities will be protected. A mosaic of native perennial and non-invasive annual vegetative communities will be present across the landscape with diversity of species, canopy, density, and age class reflecting its local ecological site potential and naturally occurring habitat conditions.

DFC-VM-14 (Vegetation – Great Basin Ecological Zone – Sagebrush Communities)
Sagebrush (primarily Artemisia tridentata) communities will consist of a healthy, diverse mosaic of different height and age structures with a thriving community of native grasses and forbs. Mosaics may include stands of young and old sagebrush, openings (ranging from bare ground to short or sparse vegetation to high-density grasslands), wet meadows, seeps, healthy streamside (riparian) vegetation, and other interspersed shrub and woodland habitats.

DFC-VM-16 (Vegetation – Great Basin Ecological Zone – Sagebrush Communities)
Treatment objectives in sagebrush communities will focus on restoring natural disturbance processes, such as by using fire, increasing vegetative ground cover of native grasses and forbs, and removing invasive non-native plants.

DFC-VM-18 (Vegetation – Great Basin Ecological Zone – Sagebrush Communities)
Existing stands of sagebrush will have a balance between shrub and perennial grass cover, for open to moderate shrub canopy cover (5 to 25%), and multiple height classes. This mosaic will include young, sparse stands to support Vesper sparrows and lark sparrows, and older, dense stands to benefit Brewer's sparrows, sage sparrows, black-throated sparrows, gray flycatchers, and sage thrashers.

DFC-VM-19 (Vegetation – Great Basin Ecological Zone – Sagebrush Communities)
Sagebrush communities will include small, grassy openings to support long-billed curlews and burrowing owls.

DFC-VM-20 (Vegetation – Great Basin Ecological Zone – Sagebrush Communities)
Sagebrush communities will include large, continuous blocks (≥300 acres) of

unfragmented sagebrush habitat, including mosaics of open to moderate shrub canopy cover (5 to 25%) and multiple age and height classes to benefit sage-dependent species.

DFC-VM-21 (Vegetation – Great Basin Ecological Zone – Sagebrush Communities) Sagebrush communities will include openings of short vegetation surrounded by sagebrush for ground foraging by sage thrashers, loggerhead shrikes, Brewer's sparrows, and sage sparrows.

DFC-VM-22 (Vegetation – Great Basin Ecological Zone – Sagebrush Communities) Sagebrush communities will include openings of short vegetation (2 to 8 in.) with wide visibility to provide breeding habitat for long-billed curlews, and burrowing owls.

DFC-VM-23 (Vegetation – Great Basin Ecological Zone – Sagebrush Communities) Sagebrush communities will include native grass and forb cover in balance with open to moderate (5 to 25%) shrub canopy cover and within ecological site potential. Perennial grass components will be at or above 10%. Native forb composition will be at or above 5%.

DFC-VM-24 (Vegetation – Great Basin Ecological Zone – Sagebrush Communities) Fragmentation of sagebrush habitat will be less than 50% of the treatment area.

DFC-VM-25 (Vegetation – Great Basin Ecological Zone – Pinyon-Juniper Communities) Healthy, diverse woodland communities will consist of a mosaic of trees, shrubs, grasses, and forbs. Mosaic patches can include stands of young and old pinyon-juniper, openings, wet meadows, seeps, and other interspersed shrub habitats. The communities will be composed of a variety of different height structures and age classes, with a thriving understory community of native grasses, forbs, and shrubs.

DFC-VM-27 (Vegetation – Great Basin Ecological Zone – Pinyon-Juniper Communities) Treatment objectives in the pinyon-juniper vegetation communities will focus on restoring the natural disturbance regime; increasing vegetative ground cover of native grasses, forbs, and shrubs; and removing non-native invasive species.

DFC-VM-28 (Vegetation – Great Basin Ecological Zone – Pinyon-Juniper Communities) Stands of pinyon-juniper will include a balance between tree, shrub, and perennial grass cover to support pinyon jay and mule deer. This mosaic will include stands of old growth pinyon-juniper to support juniper titmouse; large openings of grasses, forbs and shrubs to support mule deer and provide foraging habitat for raptors such as sharp-shinned hawk, northern goshawk, Coopers hawk, American kestrel, and red-tailed hawk; and areas of sparse to dense tree canopy cover to support pinyon jay.

DFC-VM-29 (Vegetation – Great Basin Ecological Zone – Pinyon-Juniper Communities) Individual old growth trees will be present and will be protected during treatment implementation.

DFC-WF-17
Mule deer habitat in pinyon-juniper woodland sites will include a healthy diverse mosaic of trees, shrubs, grasses, and forbs.

Wildlife Habitat

DFC-WF-02
Native wildlife communities will be protected. A complete range of diverse, healthy, and self-sustaining populations of native animal species will occupy all available suitable habitats.

Habitat Connectivity

DFC-WF-06
Habitat connectivity and wildlife movement between ecological zones will be maintained.

DFC-TE-14
Habitat connectivity will be maintained, providing sufficiently frequent contact between tortoises to maintain genetic diversity.

Fences

DFC-WF-05
Fences will be the minimum necessary for effective livestock control or other administrative purposes. Fences will be wildlife passable, consistent with the species found in the area.

DFC-WF-20
All fences in mule deer habitat will be deer passable.

Healthy Wildlife Populations

DFC-WF-03
Forage, water, cover, and space will be available to wildlife of sufficient quantity and quality to support productive and diverse wildlife populations.

DFC-WF-13
Mule deer habitat will provide the necessary forage, water, and shelter components for healthy, self-sustaining populations within the range of natural variability.

DFC-WF-35
Desert cottontail habitat will provide the necessary forage, water, and shelter components for healthy, self-sustaining populations within the range of natural variability.

DFC-WF-37
Migratory bird habitats will provide the necessary forage, water, and shelter components for healthy, self-sustaining populations within the range of natural variability.

DFC-WF-45
Carnivore habitat will provide the necessary forage, water, and shelter components for healthy, self-sustaining populations within the range of natural variability.

Wildlife Population Numbers

DFC-WF-14
On BLM administered lands, mule deer populations will be at or near maximum levels sustainable for the habitat.

DFC-WF-36
Desert cottontail rabbits will be present in sufficient quantity to provide an adequate prey base for raptors, carnivores, and other predatory species, as well as ample recreational opportunities for hunting and wildlife viewing.

DFC-WF-38
Migratory birds that nest in the Monument will have resources of sufficient quantity and quality to provide for nesting sites and to fledge young successfully.

Wildlife Waters

DFC-WF-04
All waters will be safely accessible to wildlife.

DFC-WF-18
Water sources within mule deer habitat will be safely accessible to deer and other wildlife.

DFC-WF-19
On BLM administered lands, water sources within mule deer habitat will be spaced no more than 3 miles apart.

DFC-WF-43
Water sources within game bird habitats will be safely accessible by all wildlife.

Threatened and Endangered Species Habitat

DFC-TE-03
The Monument will provide a block of remote, contiguous habitat that will serve as refugia for populations of special status species.

DFC-TE-21
Habitat areas for special status raptors will provide sufficient forage and cover attributes to support thriving populations of the species.

DFC-TE-23
Potential roosting and nesting sites (for special status raptors) will be abundant.

Healthy Threatened and Endangered Populations

DFC-TE-20
Special status raptor populations will be healthy and self-sustaining throughout their range.

DFC-TE-25
Rodent populations, as a prey base (for special status raptors), within the Monument will be abundant.

No Net Loss of Threatened and Endangered Species Habitat

DFC-TE-04 and DFC-TE-08
There will be no net loss in the quality or quantity of special status species habitat throughout the Monument.

DFC-TE-22
No net loss will occur in the quality and quantity of suitable habitat for special status raptors within the Monument.

Condors

DFC-TE-27
The experimental non-essential population of California condor will be at or above 150 individuals, viable, and stable to increasing in number.

Recreation and Visitor Services

DFC-RR-01
Recreation and visitor services will be managed to provide varying levels of structured recreation opportunities that offer a range of specific benefits, activities, and experiences within outdoor settings.

DFC-RR-05
The excellent opportunities that exist to enjoy remote, rustic settings that provide moderate challenge and solitude in the Specialized travel management areas (TMAs) will be maintained/enhanced.

DFC-RR-06
In Backways and Specialized TMAs, recreation opportunities associated with somewhat remote settings, such as exploring backcountry roads, vehicle camping, hunting, sightseeing, recreation aviation, and picnicking will be maintained/enhanced on existing roads, provided they will be compatible with the protection and enhancement of sensitive resource values, where appropriate.

DFC-RR-07
In the Primitive TMA, high quality recreation opportunities associated more with primitive recreation experience opportunities and non-motorized uses such as camping, sightseeing, hiking, horseback riding, and hunting, will be maintained/enhanced, provided they will be compatible with the protection and enhancement of sensitive resource values, where appropriate.

Visual Resources

DFC-VR-01
Public lands will be managed in a manner which will protect the quality of the scenic (visual) values of these lands. (43 U.S. Code [USC] 1701, Section 102 (a) (8)).

DFC-VR-03
The region's scenic beauty, open space landscapes, and other high-quality visual resources will be maintained within the Monument.

2. Specific Resource Objectives

Desired Plant Community Objectives

DPC objectives were developed during this evaluation process by an interdisciplinary team of resource specialists. The species composition objectives were developed by consulting the Ecological Site Guides, developed by Natural Resource Conservation Service, and site-specific information of the potential of the site to produce vegetation. These objectives focus on the ecological sites and their potentials, which reflect the vegetative diversity of the area. DPC objectives include species Composition by Weight (CBW) and percent basal vegetative cover. Species composition is monitored using the Dry Weight Ranking method. Percent basal vegetative cover is monitored using the "Step-Point" method.

Key Area #1:
Rangesite: Clay Upland, 13"-17" precipitation zone (p.z.)

- Maintain bottlebrush squirreltail composition by dry weight of 5-15%
- Increase Indian ricegrass composition by dry weight to 1-5%
- Increase western wheatgrass composition by dry weight to 10-15%
- Increase sand dropseed composition by dry weight to 1-5%
- Reduce sagebrush composition by dry weight to 10-20%

Key Area #2:
Rangesite: Shallow Loamy 10-14" p.z.

- Maintain muttongrass composition by dry weight of 0-2%
- Increase bottlebrush squirreltail composition by dry weight to 1-6%
- Maintain sagebrush composition by dry weight of 20-35%
- Maintain blackbrush composition by dry weight to 30-50%
- Maintain rabbitbrush composition by dry weight to 0-2%
- Maintain skunkbush sumac composition by dry weight to 0-2%

D. Key Species

Management of the allotment is based on a selection of key species. These species are selected for their similarity to other grasses and browse species that occur in the allotment. The definition of key species is: (1) forage species of sufficient abundance and palatability to justify its use as an indicator to the *degree of use* of associated species, and (2) those species which must, because of their importance, be considered in the management program. Key species for this allotment are listed below by common name and scientific (Latin) name.

Plant Category	Common Name	Scientific Name (Synonym)
Cool Season Grasses	Indian ricegrass	*Achnatherum hymenoides* (*Oryzopsis hymenoides*)
	Bottlebrush squirreltail	*Elymus elymoides* (*Sitanion hystrix*)
	Western wheatgrass	*Pascopyrum smithii* (*Agropyron smithii*)
	Muttongrass	*Poa fendleriana*
Warm Season Grasses	Sand dropseed	*Sporobolus* spp.
Browse	Skunkbush sumac	*Rhus trilobata*
	Blackbrush	*Coleogyne ramosissima*
	Rubber rabbitbrush	*Ericameria nauseosa* (*Chrysothamnus nauseosus*)
	Sagebrush	*Artemisia tridentata*

The above listed key species are all important to wildlife and cattle for forage, cover, and watershed protection. These species are all native to the subject ecological sites, and add to the biodiversity of the region.

E. Grazing System

Grazing has been operated as a two pasture deferred rotation system. During the summer months (April – September), livestock graze the upper ranges which are the points above and south of Hidden Canyon. During the winter months (October - March), livestock use the lower ranges that include the side slopes and bottom of Hidden Canyon. Livestock

movement between these units is controlled by livestock access to existing water sources within each grazing area, which forces livestock to relocate on water sources in the scheduled grazing unit. The lack of adequate water at the proper time has sometimes been problematic, but is augmented by hauling water. The development of an allotment management plan (AMP) would assist in facilitating added control of grazing on the allotment. As a part of the AMP, range improvements necessary to provide this added control (such as fencing and additional waters) would be identified.

F. Other Uses

1. Special Status Species

Threatened and Endangered Species

The following federally-listed wildlife species may occur on the Hidden Spring Allotment:

- California condor (*Gymnogyps californiianus*)
- Mexican spotted owl (*Strix occidentalis lucida*)

There are no federally-listed plant species, or habitat, within the allotment.

California condor: The California condor was listed as endangered in 1967. A reintroduction program began on the BLM's Arizona Strip District in 1996. This reintroduced population has been designated experimental, non-essential, as defined under Section 10(j) of the Endangered Species Act (ESA). They are a scavenger by nature and can fly hundreds of miles in their searches for carrion. They do not nest (or roost) in this allotment, but they may fly over or forage on carrion found within this allotment at any time of year.

Mexican spotted owl: This species was listed as threatened on April 15, 1993. It is known to nest in Zion and Grand Canyon National Parks near Arizona Strip BLM lands. To date, no spotted owls have been found to nest on the Arizona Strip District, although a confirmed sighting of an owl occurred in 2007 just north of Colorado City. Approximately 110 acres of potential Mexican spotted owl occur on this allotment.

BLM Sensitive Species, Wildlife Species of Concern, and Migratory Birds

Sensitive species are usually rare within at least a portion of their range. Many are protected under certain State and/or Federal laws. A species listed as sensitive by the BLM typically consists 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 (USFWS); 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 (AGFD) listing of Wildlife of Special Concern in Arizona. Table 1 lists the sensitive animal species that may occur within the Hidden Spring Allotment.

Table 1. Sensitive and/or Special Status Species that are Known to Occur or have the Potential to Occur* in the Allotment

Species	Hidden Spring	BLM Sensitive	Arizona Wildlife Species of Concern
Bald eagle (*Haliaeetus leucocephalus*)	potential	no	endangered
American peregrine falcon (*Falco peregrinus*)	verified	yes	yes
Ferruginous hawk (*Buteo regalis*)	potential	yes	yes
Swainson's hawk (*Buteo regalis*)	potential	no	yes
Western burrowing owl (*Athene cunicularia hypugea*)	potential	yes	no
Spotted bat (*Euderma maculatum*)	verified	yes	yes
Small-footed myotis (*Myotis ciliolabrum*)	verified	yes	no
Fringed myotis (*Myotis thysanodes*)	verified	yes	no
Big free-tailed bat (*Nyctinomops macrotis*)	verified	yes	yes

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

Executive Order 13186 requires the BLM and other Federal agencies to work with the USFWS to provide protection for migratory birds. It is important to maintain habitat for migratory birds so migration patterns and nesting sites are not disrupted. All migratory birds are protected under the 1918 Migratory Bird Treaty Act (16 USC 703), which prohibits hunting, taking, capturing, killing, possessing, selling, purchasing, shipping, transporting or exporting migratory birds, parts, nests and eggs, covered by the MBTA, except as permitted by regulations (50 CFR Subchapter B). Additional protection is provided by the Neotropical Migratory Bird Conservation Act of 2000 (16 USC Chapter 80).

Bald and golden eagles are protected by the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c). This law, enacted in 1940, and amended several times since then, prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald eagles, including their parts, nests, or eggs.

2. Other Wildlife Species

The Hidden Springs Allotment is within AGFD's Game Management Unit (GMU) 13B. There is some potential for pronghorn (*Antilocapra americana*) presence on the eastern edge of the allotment. Mule deer (*Odocoileus hemionus*) may be found throughout the

allotment. Other wildlife found on the allotment is typical of the area, including a variety of small mammals such as desert cottontail rabbits, birds including raptors, amphibians, reptiles, and invertebrates. Predators include coyotes, bobcats, and mountain lions.

3. Recreation

General Management: This allotment is located within GCPNM. The allotment's recreational values derive from its geology, open landscapes, remoteness, and wildlife. General recreation activities that could occur in this allotment include sightseeing, ATV riding, horseback riding, hiking, backpacking, camping, trophy hunting, photography, and nature study.

Recreational Settings: The Hidden Spring Allotment is within the Parashant Special Recreation Management Area (SRMA). The primary strategy for the Parashant SRMA is to target a demonstrated undeveloped recreation-tourism market demand from local community and regional/national visitors for trophy hunting opportunities, guided backcountry tours, hiking, viewing and appreciating wildland landscapes and cultural sites, canyoneering and motorized/mechanized/non-mechanized exploring. This demand is supported by the area's distinctive remote, rugged landscape; its proximity to the Grand Canyon; its vast size; and the largely open and undeveloped character of its recreation settings. Regional and local recreation-tourism visitors value this area for the distinctive kinds of dispersed recreation it produces.

This allotment is also within the Shivwitz Frontier Recreation Management Zone (RMZ), managed for sustainable access for scenic, natural, open-space appreciation, and exploration recreation adventure somewhat close to nearby communities.

The allotment contains portions of two Travel Management Areas (TMAs): Specialized and Primitive. TMAs describe areas delineated for varying types of access. The Specialized TMA provides for a variety of motorized, non-motorized, and mechanical travel modes to serve existing and future recreational, traditional, casual, commercial, and private needs in remote, rustic settings, but not to the detriment or exclusion of the protection of resources. It is characterized by low to moderate densities of improved roads and primitive roads. In the Primitive TMA, high quality recreation opportunities associated with more primitive recreation experience opportunities and non-motorized uses such as camping, sightseeing, hiking, horseback riding, and hunting, will be maintained/ enhanced, provided they will be compatible with the protection and enhancement of sensitive resource values, where appropriate.

Trails: No historic or scenic trails occur in this allotment.

Off Highway Vehicles (OHV) Management: OHVs in this allotment are limited to designated roads and trails.

Visual Resource Management (VRM): The Hidden Spring Allotment has been designated primarily as Visual Resource Management (VRM) Class II with small slivers

of VRM Class III along the southern and southeastern border of the allotment. The objectives for these VRM classes are:

Class II - The objective of this class 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. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

Class III - The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.

Wild & Scenic Rivers: No eligible or suitable wild and scenic river segments occur within the allotment.

Wilderness Characteristics: There are no areas managed to maintain wilderness characteristics in this allotment.

4. Wilderness

No designated wilderness is located within this allotment.

G. Issues brought out in scoping meeting

1. Issues Relating to Rangeland Health and Guidelines for Grazing Administration

a. Invasion of woody species
b. Slight downward trend in vegetation at Trend Site #1
c. Riparian areas developing after livestock structures are installed

2. Issues not relating to Rangeland Health and not discusses further in this document.

a. The corral at Rattlesnake Spring is not neat and well maintained.

In the past, large numbers of sheep grazed the area and needed several corrals to work the animals at different times and places. Once sheep were replaced with cattle, many of the corrals were not needed. Those that were not converted to work cattle were left to go by the wayside. Some of these are now considered to be of historical value and portray the image of the old west and its way of life. The corrals that were used for working cattle were little more than sheep corrals. These were patched and modified to get the job done, but may be unattractive to visitors.

IV. Management Evaluation

A. Purpose of Evaluation

The purpose of this assessment is to determine if the existing soil, water, and vegetative resources are meeting, making progress toward meeting, or are not meeting the Arizona Standards for Rangeland Health. These resources are managed according to the Grand Canyon-Parashant National Monument RMP and activity plans that identify terms and conditions for management on public lands within the Hidden Spring Allotment. If the current livestock grazing practices are determined to be causing non-attainment of standards, then they will be modified to comply with the Guidelines for Grazing Administration. This assessment will also evaluate and update existing activity plan objectives to ensure multiple use objectives are tied to the indicators for rangeland health. Evaluation of rangeland conditions are based upon all available monitoring, inventory, and assessment data.

B. Summary of Studies Data

1. Actual Livestock Use

Active use on the Hidden Spring Allotment is 1,256 AUMs. Table 2 is a summary of AUMs actually used each year since 1987.

Table 2. Actual Use – Hidden Spring Allotment

Period of Use	AUMs Available	AUMs Used	Approx % Use
1987	1,256	531	42%
1988		701	56%
1989		325	26%
1990		565	45%
1991		508	40%
1992		530	42%
1993		530	42%
1994		530	42%
1995		553	44%
1996		565	45%
1997		576	46%
1998		576	46%
1999		576	46%
2000		807	64%
2001		784	62%
2002		1,256	100%
2003		461	37%
2004		795	63%
2005		806	64%
2006		1,256	100%
2007		1,256	100%
2008		1,256	100%
2009		1,221	97%
	Average	738	59%

2. Precipitation

Precipitation data applicable to this allotment is collected at the Poverty rain gauge located less than one mile from the southeast corner of the allotment. The Poverty rain gauge has recorded the following average precipitation information:

Fall	Winter	Spring	Summer	Total
2.36"	5.54"	2.83"	4.81"	15.54"

Recent drought has and is still playing a major role in modifying the vegetative community as below average annual precipitation has been the norm for nine out of the last eleven years. Both winter and summer precipitation has been below average at least 72% of the time during the same period.

Precipitation data (starting in 1978 for the Poverty rain gauge) is located in Appendix C of this report. Table 3 lists yearly seasonal averages over time for the precipitation gauge.

Table 3

Poverty Precipitation Rain Gauge Number: 12

Year	1978	79	80	81	82	83	84	85	86	87	88	89	90	91	92
Fall % Avg	78	202	86	61	57	203	133	91	191	78	184	41	21	64	50
Winter % Avg	180	144	116	43	97	99	86	151	37	102	48	102	65	95	88
Spring % Avg	132	92	92	170	189	151	29	62	126	108	126	64	95	54	203
Summer % Avg	37	101	109	130	181	101	139	79	101	72	94	50	138	91	104
Annual % Avg	112	130	105	95	133	125	99	104	96	90	97	70	86	81	108
Year	1993	94	95	96	97	98	99	00	01	02	03	04	05	06	07
Fall % Avg	161	122	109	2	117	69	121	11	154	26	103	42	392	69	50
Winter % Avg	206	79	196	107	95	139	34	63	92	36	77	72	202	19	47
Spring % Avg	115	89	191	36	54	86	117	23	166	27	128	45	136	182	31
Summer % Avg	111	42	79	74	187	137	142	221	26	45	96	96	45	71	154
Annual % Avg	154	76	146	68	119	118	96	96	95	36	96	70	171	72	78
Year	08	09													
Fall % Avg	11	101													
Winter % Avg	177	106													
Spring % Avg	38	45													
Summer % Avg	90	54													
Annual % Avg	100	78													

3. Utilization

Utilization is defined as the proportion or degree of current year's forage production that is consumed or removed by animals (both livestock and wildlife). Estimates of utilization are made using the key species grazed class method, a procedure in which

photo guides are used to estimate utilization. Utilization was read at the key areas. Table 4 below shows the utilization data that has been compiled for this evaluation.

Table 4																
Key species utilization by year																
Key Area #1	1983	84	85	86	87	88	89	90	92	93	94	95	96	97	98	00
Achnatherum hymenoides				20									32			
Elymus elymoides	40	28	44	12	46	48	54	51	47	28	44	35		43	40	26
Poa fendleriana					64	47	70	43	40	56	51	54		47	36	35
Sporobolus cryptandrus			30		70	50	65	58	57	58	47	38	41	45	42	23
Bouteloua gracilis	47	44	66	52	51	53	65	42	51	47	48	33	41	44	38	15
Key Area #2	1983	87	88	89	90	91	92	93	94	95	96	97	98	99	00	
Elymus elymoides	30	10	40	40	48	45	24	49	27	49	49	46	42	35	22	
Poa fendleriana	16	19	49	52	51	54	22	42	39	42	45	40	44	26	23	
Pleuraphis jamesii		30	58	30	34	43	21	50	52	37	47	42	33	18	19	
Ephedra			51	60	55	52	38	55	51	55	50	47	49			

4. Trend

The trend of an area may be judged by noting changes in vegetation attributes such as species composition, density, cover, production, and frequency. Vegetation data is collected at different points in time on the same site (key area), and results are then compared to detect change.

Trend monitoring data was collected at both key areas using the Pace-Frequency method, which measures the occurrence frequency of forage and non-forage vegetative species. This monitoring is conducted at five key areas over the AMP area. Cover data, which determines the percent of bare ground, litter, rock and live basal vegetation, is also collected. Ground cover is determined by dividing the total number of hits for all categories except bare ground by the total number of hits (including bare ground) – see page 73 of TR 1734-4 (*Sampling Vegetation Attributes*). In addition, the occurrence frequency of all plant species is collected. The first readings established a baseline for comparison to all future readings. Trend is considered up when the species increases by 10+ points from the first reading to the last shown reading. The trend of a species is static if it shows a change of 0 to 10 or 0 to -10 from the first to the last reading. Down trend is a reading of more than -10 from the first reading.

Table 5 (below) lists changes in trends on key species comparing the most recent data to the base year. Trend is shown at the right side of the table and is the direction of change in frequency observed between the initial reading (base year) and the current reading, as depicted by the arrows, i.e., (↗) up, (↘) down, and (→) static. The overall trend from the base year indicates one key species improved, nine remained static, and one was down. However, the species that was down was sagebrush which is actually trending in the desired direction (see DPC objectives pages 10-11 and 36-37). Ground cover showed an

improving trend on one key area and static on the other. Live vegetative cover remained static on both key areas.

Monitoring data (1982 to 2010) from the allotment indicates that drought has had impacts on trends, particularly on unpalatable plants such as sagebrush and snakeweed as noted at Key Area #2, where frequency of sagebrush changed from 59% in 2000 to 11% in 2010, and frequency of broom snakeweed changed from 19% in 2000 to 10% in 2010. (For specific information on all plants monitored, including snakeweed, see pace frequency analysis tables in Appendix D.)

Table 5. Changes to basal cover, litter and key plant species by key area from base year								
Key Species or Cover Category	**Years plots were read**							**Trend**
Key Area #1	1982	1986	1988	1995	2000	2005	2010	
Litter	47	50	44	41	43	47	40	→
Live Basal Veg.		3	4	3	4	2	1	→
Agropyron smithii	2	1		2				→
Oryzopsis hymenoides	2	1		1	2			→
Elymus elymoides	15	36	11	8	12	14	15	→
Sporobolus cryptandrus		1		1		1		→
Bouteloua gracilis							4	
Artemisia tridentata	83	57	60	63	64	66	79	→
Key Area #2	1982	1984	1987	1990	1995	2000	2005	2010	**Trend**
Litter (Cryptogam, Litter, and Rock)	41	50	53	51	49	44	74	67	↗
Live Basal Veg.	2	3	4	3	2	6	3		→
Poa fendleriana			1				2	2	→
Elymus elymoides	8	14	12	8	4	10		3	→
Artemisia tridentata	45	46	46	50	56	59	17	11	↘
Coleogyne ramosissima	23	28	22	26	22	21	36	47	↗
Chrysothamnus nauseosus	2	1	2	2	1	1	1	T	→
Rhus trilobata		1	1	1	1	2	1	T	→

5. Ecological Site Inventory

The "Dry Weight Rank" vegetative sampling method was used to measure composition, which is the proportion (percentage) of various plants in relation to the total at a particular area. This vegetation attribute is also used to describe ecological sites. 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. These ecological site descriptions (or guides) are provided by the Natural Resource Conservation Service (NRCS). The ecological site's potential for change in composition over time was considered along with other vegetation attributes to quantify desired plant community objectives for each key area. The potential composition is determined by the applicable soil type and precipitation zone. These potentials are described in the NRCS Ecological Site Guides, and were used to set the DPC objectives.

Ecological (successional) status is the present state of the vegetation at an ecological site in relation to the potential natural community (PNC). A PNC is "the biotic community that would become established if all successional sequences were completed without interferences by humans under the present environmental conditions". It may include "acclimatized or naturalized nonnative species" (*Interpreting Indicators of Rangeland Health*, BLM, 2005 and *Ecological Site Inventory*, BLM, 2001). PNC 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*, BLM, 2001). The BLM uses "potential natural community" terminology rather than "historic climax plant community" because PNC recognizes past influences by man. It is an expression of the relative degree to which the kinds, proportions, and amount of plants in a plant community resemble that of the PNC for the site. It is a coefficient of community similarity, which gives an ecological rating of the plant community.

Ecological status 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 status changes slowly for most of the sites in this area; it is reported in the following four classes, or seral stages, which are the developmental stages of ecological succession (and corresponds to percent similar to the PNC):

- **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.
- **PNC:** 76-100% of the expected potential natural community exists.

Table 6 compares the most recent key species composition data with the base year at key areas in relation to allowable percent composition from the site-guide and the DPC objectives. (See the Appendices for specific ecological site information.)

Table 6. Hidden Spring Allotment Composition Data				
Plant Species	Site-Guide Allowable Percent Composition	Composition		Desired Percent Composition Objective
Key Area #1		1988	2005	
Elymus elymoides	11%-16%	3%	6%	5-15%
Achnatherum hymenoides	1%-5%	0%	0%	1-5%
Pascopyrum smithii	32%-43%			10-15%
Sporobolus cryptandrus	1%-5%			1-5%
Artemisia tridentata	11%-16%	97%	92%	10-20%
Key Area #1 22% Similarity Index (Early seral)				
Key Area #2	Guide Allowed #'s/acre	1989	2005	
Poa fendleriana	0%-2%	0%	0%	0-2%
Elymus elymoides	1%-6%	8%	0%	1-6%
Artemisia tridentata	82%-100%	45%	34%	20-35%
Coleogyne ramosissima	0%-2%	29%	49%	30-50%
Chrysothamnus nauseosus	0%-2%	0%	1%	0-2%
Rhus trilobata	0%-2%	0%	1%	0-2%
Key Area #2 53% Similarity Index (Late seral)				

6. Special Status Species

Threatened, Endangered, and Candidate Species

California condor: As previously stated, the California condor was listed as endangered in 1967. In the late 1970s, the species was reduced to a population of less than 25 birds. The decision was made to bring all of the wild condors into captivity to begin a captive breeding program, the last wild condor was secured in April of 1987. In 1996, California condors were re-introduced into Arizona in the Vermilion cliffs under the ESA's 10J rule (non-essential experimental). Subsequent condor releases have occurred annually, with additional releases in 1998, and 1999 of 16 condors from the Hurricane Cliffs, northeast of Diamond Butte. As of August 2010, there were 72 condors in the wild in northern Arizona. The reintroduced population as a whole appears to be stable and is increasing.

California condors currently range across the entire Arizona Strip, throughout the Grand Canyon, into adjacent Utah and Nevada, and south of the Grand Canyon in Arizona. Condors range widely, easily covering over 100 miles in a day. Condors are most commonly observed near the release site on the Vermilion Cliffs, at Navajo Bridge near Marble Canyon, on the Kaibab Plateau, and near the South Rim of the Grand Canyon. Condors occasionally fly over and may feed on carrion in this allotment.

Mexican spotted owl: As stated on page 13 of this assessment, the Mexican spotted owl was listed as threatened on April 15, 1993. The range of the Mexican spotted owl extends from the southern Rocky Mountains in Colorado and the Colorado Plateau in central and southern Utah, southward through Arizona and New Mexico and into northern Mexico. Although the Mexican spotted owl's entire range covers a broad area

of the southwestern United States and Mexico, it does not occur uniformly throughout its range. Instead, it occurs in disjunct localities that correspond to isolated forested mountain systems, canyons, and in some cases steep, rocky canyon lands. Surveys have revealed that the species has an affinity for older, uneven-aged forests, and the species is known to inhabit a physically diverse landscape in the southwestern United States and Mexico. Steep slopes and canyons with rocky cliffs characterize much of the owl's habitat on the Colorado Plateau (which includes the majority of the Arizona Strip). The Arizona Strip District is surrounded by areas where Mexican spotted owls have been detected, including Grand Canyon, Zion, and Canyonlands national parks, and Grand Staircase-Escalante National Monument.

Designated critical habitat was established for this species in 2001 and revised in 2004. No designated critical habitat occurs on these allotments. A tool for predicting suitable canyon habitats that may have higher potential for species occupancy and nesting birds than other nearby canyons is the Mexican Spotted Owl Habitat Model (Willey, 2001, and 1997). The model uses terrain parameters to determine depth and width of canyons (owls need cooler microsites for nesting and roosting) and other features (such as distance to water and north facing cliff sites). The model predicts the canyons most likely to support nesting owls; from this it can then be determined if any "higher quality" habitat (according to the model) exists. It is important to note that any model is only an analysis tool, and experience with the current owl model has shown it to be accurate in some cases, but not in others (such as delineating cliff faces outside of canyons as high potential owl habitat). For canyon habitats, the primary constituent elements of habitat include one or more of the following attributes: (1) cooler and often more humid conditions than the surrounding area, (2) clumps or stringers of trees and/or canyon walls with crevices, ledges or caves, (3) high percent of ground litter and woody debris, and (4) riparian or woody vegetation. The primary constituent elements related to forest structure include (1) a range of tree species, (2) a shade canopy created by the tree branches covering 40 percent or more of the ground, and (3) large dead trees with a trunk diameter of at least 12 inches.

According to the 1997 Willey model, the allotment contains 120 acres of potentially suitable Mexican spotted owl habitat, categorized as canyon habitat. All of the modeled habitat is contained within the Hidden Canyon complex (Hidden Canyon itself and several smaller side canyons. Potential spotted owl habitat was visually surveyed to assess the accuracy of the model's predictions. Hidden Canyon itself is long (approximately 10 miles), but relatively wide (up to 1 mile across in the widest parts, but generally between ½ mile and 1 mile wide) through most of its length. All of the modeled habitat is contained within this wider portion of the canyon. Despite the overall width of Hidden Canyon, there are several locations which provide cool, shady microsites including numerous fins and crevices to block the sun, ledges for nesting locations, and a few deep caves. Most sites contain pinyon-juniper woodland or are directly adjacent to such. The canyon bottom provides ample flat area for foraging below the cliff walls, however little actual bench exists directly below microsites themselves. Much of the potential habitat is north or northeast-facing, providing some protection from the sun throughout most of the day. However, much of the habitat is high up on the

canyon walls and cliffs, causing some of it to be quite exposed overall, despite some cooler microsites within. Hidden Spring is located in Hidden Canyon and provides dependable water throughout much of the year. Hidden Canyon contains a dry wash throughout the bottom which may also contain water intermittently, but very little riparian vegetation is present. Thus, Hidden Spring Allotment may provide some potential Mexican spotted owl habitat based on the presence of many cool microsites and other important factors, but this habitat is not optimum due to the overall width and exposure of the canyon.

BLM Sensitive Species, Wildlife Species of Concern, and Migratory Birds

Bald eagles may occur and golden eagles are known from this allotment. The bald eagle was delisted from the Federal ESA on August 9, 2007. This species is not known to nest anywhere on the BLM's Arizona Strip District. The bald eagle is a seasonal (winter) migrant that forages in and around the Kaibab Plateau. Bald eagles are both scavengers and predators. Golden eagles feed mainly on small mammals like rabbits and ground squirrels, but may also take snakes, birds, insects, and even juvenile ungulates and carrion.

American peregrine falcons range across the Arizona Strip and nest on cliff faces. Peregrines were removed from federal listing in 1999, and a monitoring plan is in place. Peregrine falcons are an Arizona Species of Concern. Peregrine falcons have been observed using a few selected nest sites along the Grand Wash Cliffs. It is believed that these nest sites have successfully fledged young. There are no known peregrine nest sites on the Hidden Spring Allotment.

Ferruginous hawks, Swainson's hawks, and western burrowing owls are known to use habitat similar to that found on the Hidden Spring Allotment, though specific sightings have not been recorded for any of these species.

A variety of sensitive bat species have been captured on this and neighboring allotments, including spotted bats, small-footed myotis, fringed myotis, and big free-tailed bats.

7. Wildlife Habitat

Habitat categorized by AGFD for mule deer is 75 percent summer and 25 percent yearlong on this allotment. GMU 13B is famous for producing large antlered "trophy" class mule deer bucks. Mule deer populations are monitored annually by AGFD. While there is no estimate of mule deer numbers available for the Hidden Spring Allotment, population trends should parallel data collected for GMU 13B. Despite low deer densities throughout the GMU, good numbers of deer can typically be found in the higher elevations, generally over 4,000 feet. The mule deer population in GMU 13B, while remaining at a low density throughout, appears to be showing signs of growth.

An extremely small portion of this allotment contains habitat for pronghorn. On the far eastern edge, approximately two percent of this allotment contains poor quality

pronghorn habitat and one percent low quality pronghorn habitat. There is a low probability that pronghorn use this allotment.

8. Riparian/Fisheries Habitat

There is no fisheries habitat on this allotment. Riparian systems are limited to a few small springs, most of which have been developed for use by livestock, wildlife, or both. 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 some riparian vegetation exists at these sites, they are developed water facilities and are therefore not by definition wetland/riparian areas.

9. Wild Horse and Burro Habitat

None on this allotment

10. Geological Resources

a. Lithology

Most of the allotment consists of Kaibab limestone. There are basalt outcrops along the southeast edge and Moenkopi mudstones exposed in the southeast corner. The alluvium in the bottoms of Hidden Canyon on the east and Rattlesnake Canyon on the west is stratified and extremely variable from clay loams to cobbly or gravelly sands. There are cliffs of Coconino and Supai sandstones along the canyon in the north end of the allotment.

b. Soils

Recent field reconnaissance, to locate possible problem areas, showed there is some sheet and rill erosion and old gullies on some drainage soils in MUs 02, 25, and 73 where big sagebrush dominates. These are small scattered areas which could be treated to remove the sagebrush and seeded to erosion-reducing grasses.

Soil Map Units (SCS,1993)

02 Albers silty clay, 0 to 1 percent slopes (stream terrace), basalt, Moenkopi; Clay Upland, 13" to 17"

25 Goesling loam, 1 to 5 percent slopes (stream terrace), Moenkopi; Loamy Upland (Gravelly), 13" to 17"

45 Mellenthin-Rock outcrop-Torriorthents complex, 10 to 70 percent slopes (hills) Kaibab; Mellenthin-Shallow Loamy, 9" to 13"; Torriorthents Breaks, 9" to 13"

51 Meriwhitica-Rock outcrop-Strych complex, 35 to 70 percent slopes, (cliffs, canyons) Callville & Redwall limestones; Meriwhitica-Breaks, 9" to 13"; Strych-Loamy Upland, 9" to 13"

52 Meriwhitica-RO-Strych complex, 35 to 70 percent slopes, warm, (scarps, cliffs, canyon walls), basalt, limestone, sandstone, gypsite, shale, conglomerates; Meriwhitica-Breaks (calcareous), 9" to 13"; Strych-Loamy Upland (calcareous), 9" to 13"

64 Riverwash-Torrifluvents complex, 1 to 3 percent slopes, (channel, floodplain), mixed; Torrifluvents-Sandy Wash, 9" to 12"

69 Showlow-Thunderbird complex, 2 to 25 percent slopes, (basalt mesas), basalt; Showlow and Thunderbird-Clay Loam Upland (gravelly), 13" to 17"

73 Strych very gravelly loam, 2 to 10 percent slopes (fan) mixed; Loamy Upland, 9" to 13"

93 Yumtheska-Katzine-Rock Outcrop complex, 2 to 30 percent slopes (hills) limestone; Yumtheska-Limestone Slopes, 13" to 17"; Katzine-Loamy Upland (gravelly), 13" to 17"

95 Yumtheska-Natank complex, 10 to 45 percent slopes (plateau, mesa), limestone; Yumtheska-Limestone Slopes, 13" to 17"; Natank-Clay Loam Upland (gravelly), 13" to 17"

C. Information and/or Data Pertaining to Issues from III.G.1

1. Issues relating to Rangeland Health and Guidelines for Grazing Administration

a. Invasion of woody species

For the kind of ecosystems found on this allotment, it appears that the vegetation is going from the herbaceous to the more woody type. Numerous large pinyon and juniper trees (having no understory), along with other areas of young pinyon and juniper on the sagebrush range sites, indicate the past and continued invasion of these large, woody vegetation species. There is no serious soil erosion except in the bottoms of the large canyons. Key Area #1 illustrates woody expansion where the ecological site guide allows 11 to 16% composition by weight for *Artemisia tridentata*, but it currently is at 92%.

b. Slight downward trend in vegetation at Trend Site #1

Except for *Artemisia tridentata,* all other plant species at Key Area #1 have a static trend.

c. Riparian areas developing after livestock structures are installed

There are several small springs where water is collected for livestock use and then piped to several water troughs and small reservoirs at different locations. Several

of these springs are located on state land, which BLM does not administer (i.e. Coin Spring, Lower Hidden Spring, and several small unnamed springs). The pipeline connected to these springs is also connected to a pipeline from Hidden Spring, just off the state lands where the water flows into a trough and on into a reservoir. Water at these sites depends on water availability, which fluctuates with season and precipitation amounts. The livestock structures suggested as having water available resulting in riparian areas developing are on state lands (Section 36 of T. 36 N., R. 13 W.). As described on page 24 of this assessment report, these small springs are not by definition riparian/wetland areas. As such, no riparian areas occur on public lands within this allotment.

V. Conclusions

A. Pertaining to Objectives

1. Land Use Plan Objectives

Grand Canyon – Parashant National Monument RMP[2]

Water

DFC-RP-06
All surface water will meet, or be improving towards, Arizona State water quality standards.

DFC-WS-03
Surface water availability at seeps and springs will be appropriate for the soil type, climate, and landform.

These objectives are being met. Water quality and quantity are at acceptable levels. Field visits to the small springs and seeps located on this allotment have not indicated any water quality issues.

Soil Stability

DFC-VM-04 (Vegetation – All Ecological Zones)
Vegetative communities will provide sufficient plant cover and litter accumulation to protect soils from wind and water erosion and enhance nutrient cycling and productivity, even during drought years.

DFC-WS-06
The natural hydrologic functions of all watersheds will be intact.

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[2] Similar RMP objectives have been grouped together with one conclusion per grouping.

DFC-WS-07
Soils will exhibit infiltration, permeability, and erosion rates appropriate for the soil type, climate, and landform.

All of these objectives are being met over most of the allotment. Soil and vegetative condition and watershed function are at acceptable levels except for about 125 acres of Gosling loam and Albers silty clay, stream terrace soils, in the southeastern part of the allotment. Conditions could be improved by removing the sagebrush and trees and seeding soil stabilizing grasses.

Ecological Processes

DFC-VM-05 (Vegetation – All Ecological Zones)
Ecological processes and functions will be protected, enhanced, and/or restored by allowing tools that are necessary and appropriate to mitigate adverse impacts of allowable uses and undesirable disturbances, and contribute to meeting the Standards for Rangeland Health and NPS Vital Signs and enhance Monument values.

DFC-WF-01
Ecological conditions will be within the range of natural variability and will be functional for dependant animal species.

DFC-WF-12
The natural biological diversity of fish, wildlife, and plant species will be maintained or, where necessary and feasible, restored throughout the Monument. Habitats will be managed on an ecosystem basis, ensuring that all parts of the ecosystem and natural processes are functional.

These objectives are being met. Site visits to the allotment determined that soils are within normal parameters or are making significant progress toward functioning properly. Plant communities contain a diversity of species, including native shrubs, perennial grasses, and annual forbs, and provide functional habitat for mule deer and other dependent wildlife species.

Invasive Plants

DFC-VM-06 (Vegetation – All Ecological Zones)
Invasive plant species will be contained, controlled, or eliminated and native species restored to meet desired plant community (DPC) objectives.

This objective is being met to the extent feasible. Noxious plants are monitored and treated as resources allow. To this date, no noxious weeds have been located on this allotment. In developing the DPC objectives, the focus is not be solely on removal of invasive species but rather on enhancing the current species that exist. The presence of stable plant communities, such as occur on this allotment, minimize the likelihood of non-native species becoming dominant. Invasive plant issues will continue to be

addressed as technology and funding allows. In an allotment several miles to the west, a research project is ongoing that is testing ways to control red brome.

No Net Loss

DFC-VM-15 (Vegetation – Great Basin Ecological Zone – Sagebrush Communities) There will be no net loss of total acres within sagebrush communities (i.e., long-term or permanent removal from the landscape). A no net loss objective will not preclude restoration, rehabilitation, or related management actions.

This objective is being met. There has been no net loss of any plant community. DPC objectives, while recommending to reduce the sagebrush composition at Key Area #1, will maintain the current acreage of this plant community.

Livestock Grazing

DFC-GM-02
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.

DFC-GM-04
Monument values will be maintained, protected, and improved.

These objectives are being met. Livestock grazing (i.e., season of use, utilization levels, etc.) is managed to maintain or improve the ecological condition of the allotment and protect monument values. DPC objectives have been developed to maintain and/or improve ecological condition. These actions will ensure rangeland resources including Monument values (i.e. special status species, wildlife habitat, native vegetation, watershed function, and soil productivity) are preserved or improved.

Desired Plant Community

DFC-VM-03 (Vegetation – All Ecological Zones)
Native vegetative communities will be protected. A mosaic of native perennial and non-invasive annual vegetative communities will be present across the landscape with diversity of species, canopy, density, and age class reflecting its local ecological site potential and naturally occurring habitat conditions.

DFC-VM-14 (Vegetation – Great Basin Ecological Zone – Sagebrush Communities) Sagebrush (primarily Artemisia tridentata) communities will consist of a healthy, diverse mosaic of different height and age structures with a thriving community of native grasses and forbs. Mosaics may include stands of young and old sagebrush, openings (ranging from bare ground to short or sparse vegetation to high-density grasslands), wet

meadows, seeps, healthy streamside (riparian) vegetation, and other interspersed shrub and woodland habitats.

DFC-VM-16 (Vegetation – Great Basin Ecological Zone – Sagebrush Communities) Treatment objectives in sagebrush communities will focus on restoring natural disturbance processes, such as by using fire, increasing vegetative ground cover of native grasses and forbs, and removing invasive non-native plants.

DFC-VM-18 (Vegetation – Great Basin Ecological Zone – Sagebrush Communities) Existing stands of sagebrush will have a balance between shrub and perennial grass cover, for open to moderate shrub canopy cover (5 to 25%), and multiple height classes. This mosaic will include young, sparse stands to support Vesper sparrows and lark sparrows, and older, dense stands to benefit Brewer's sparrows, sage sparrows, black-throated sparrows, gray flycatchers, and sage thrashers.

DFC-VM-19 (Vegetation – Great Basin Ecological Zone – Sagebrush Communities) Sagebrush communities will include small, grassy openings to support long-billed curlews and burrowing owls.

DFC-VM-20 (Vegetation – Great Basin Ecological Zone – Sagebrush Communities) Sagebrush communities will include large, continuous blocks (≥300 acres) of unfragmented sagebrush habitat, including mosaics of open to moderate shrub canopy cover (5 to 25%) and multiple age and height classes to benefit sage-dependent species.

DFC-VM-21 (Vegetation – Great Basin Ecological Zone – Sagebrush Communities) Sagebrush communities will include openings of short vegetation surrounded by sagebrush for ground foraging by sage thrashers, loggerhead shrikes, Brewer's sparrows, and sage sparrows.

DFC-VM-22 (Vegetation – Great Basin Ecological Zone – Sagebrush Communities) Sagebrush communities will include openings of short vegetation (2 to 8 in.) with wide visibility to provide breeding habitat for long-billed curlews, and burrowing owls.

DFC-VM-23 (Vegetation – Great Basin Ecological Zone – Sagebrush Communities) Sagebrush communities will include native grass and forb cover in balance with open to moderate (5 to 25%) shrub canopy cover and within ecological site potential. Perennial grass components will be at or above 10%. Native forb composition will be at or above 5%.

DFC-VM-24 (Vegetation – Great Basin Ecological Zone – Sagebrush Communities) Fragmentation of sagebrush habitat will be less than 50% of the treatment area.

DFC-VM-25 (Vegetation – Great Basin Ecological Zone – Pinyon-Juniper Communities) Healthy, diverse woodland communities will consist of a mosaic of trees, shrubs, grasses, and forbs. Mosaic patches can include stands of young and old pinyon-juniper, openings, wet meadows, seeps, and other interspersed shrub habitats. The communities will be

composed of a variety of different height structures and age classes, with a thriving understory community of native grasses, forbs, and shrubs.

DFC-VM-27 (Vegetation – Great Basin Ecological Zone – Pinyon-Juniper Communities) Treatment objectives in the pinyon-juniper vegetation communities will focus on restoring the natural disturbance regime; increasing vegetative ground cover of native grasses, forbs, and shrubs; and removing non-native invasive species.

DFC-VM-28 (Vegetation – Great Basin Ecological Zone – Pinyon-Juniper Communities) Stands of pinyon-juniper will include a balance between tree, shrub, and perennial grass cover to support pinyon jay and mule deer. This mosaic will include stands of old growth pinyon-juniper to support juniper titmouse; large openings of grasses, forbs and shrubs to support mule deer and provide foraging habitat for raptors such as sharp-shinned hawk, northern goshawk, Coopers hawk, American kestrel, and red-tailed hawk; and areas of sparse to dense tree canopy cover to support pinyon jay.

DFC-VM-29 (Vegetation – Great Basin Ecological Zone – Pinyon-Juniper Communities) Individual old growth trees will be present and will be protected during treatment implementation.

DFC-WF-17
Mule deer habitat in pinyon-juniper woodland sites will include a healthy diverse mosaic of trees, shrubs, grasses, and forbs.

These objectives are mostly being met. The allotment supports a diversity of wildlife (including avian species, reptiles, and large and small mammals), provides forage for livestock, provides recreational opportunities, and provides functional watersheds across the majority of the allotment. DPC objectives have been developed for this allotment to maintain and/or enhance these public values. Communities of healthy diverse habitat, including vertical and horizontal structures, vegetative age classes, and endemic species are present throughout the allotment. However, there are some areas on the allotment in which pinyon/juniper and sagebrush are too dense and are lacking in overall understory plant cover and diversity. As a result, vegetation treatments are recommended in portions of the allotment to increase the composition of grasses and forbs.

Wildlife Habitat

DFC-WF-02
Native wildlife communities will be protected. A complete range of diverse, healthy, and self-sustaining populations of native animal species will occupy all available suitable habitats.

This objective is being met. Sustainability needs (such as forage, cover, shelter, and nesting sites) of endemic wildlife species, including mule deer, have been taken into consideration when developing DPC objectives for this allotment.

Habitat Connectivity

DFC-WF-06
Habitat connectivity and wildlife movement between ecological zones will be maintained.

DFC-TE-14
Habitat connectivity will be maintained, providing sufficiently frequent contact between tortoises to maintain genetic diversity.

These objectives are being met through continued wildlife population and habitat monitoring. Habitat connectivity and wildlife movement are taken into consideration for all project level planning, including travel management.

Fences

DFC-WF-05
Fences will be the minimum necessary for effective livestock control or other administrative purposes. Fences will be wildlife passable, consistent with the species found in the area.

DFC-WF-20
All fences in mule deer habitat will be deer passable.

This objective is being met. No issues have been identified on this allotment regarding unsafe wildlife fences. Should wildlife safety issues be identified, fence modification will occur as funding allows.

Healthy Wildlife Populations

DFC-WF-03
Forage, water, cover, and space will be available to wildlife of sufficient quantity and quality to support productive and diverse wildlife populations.

DFC-WF-13
Mule deer habitat will provide the necessary forage, water, and shelter components for healthy, self-sustaining populations within the range of natural variability.

DFC-WF-35
Desert cottontail habitat will provide the necessary forage, water, and shelter components for healthy, self-sustaining populations within the range of natural variability.

DFC-WF-37
Migratory bird habitats will provide the necessary forage, water, and shelter components for healthy, self-sustaining populations within the range of natural variability.

DFC-WF-45
Carnivore habitat will provide the necessary forage, water, and shelter components for healthy, self-sustaining populations within the range of natural variability.

These objectives are all being met. Habitat needs (such as forage, cover, and shelter) for wildlife including mule deer, migratory birds, and carnivores were taken into consideration when the DPC objectives for this allotment were developed. Wildlife waters are inspected by the BLM and AGFD and maintained/repaired as funding allows. A mule deer management plan has been jointly developed between the BLM and AGFD. This plan outlines objectives to better manage this species. Wildlife population and habitat monitoring will continue. Annual mule deer surveys will continue and the results will provide data to assist in management of this and other species.

Wildlife Population Numbers

DFC-WF-14
On BLM administered lands, mule deer populations will be at or near maximum levels sustainable for the habitat.

DFC-WF-36
Desert cottontail rabbits will be present in sufficient quantity to provide an adequate prey base for raptors, carnivores, and other predatory species, as well as ample recreational opportunities for hunting and wildlife viewing.

DFC-WF-38
Migratory birds that nest in the Monument will have resources of sufficient quantity and quality to provide for nesting sites and to fledge young successfully.

These objectives are being met. Sustainability needs such as forage, cover, shelter, and nesting sites, for mule deer, migratory birds, and other species have been taken into consideration when developing DPC objectives for this allotment which will facilitate wildlife population numbers reaching maximum levels sustainable for the habitat. A mule deer management plan, which will outline objectives to better manage this species, has been jointly developed by the BLM and AGFD. Annual mule deer population surveys will continue and the results would provide data to assist in management of this and other species.

Wildlife Waters

DFC-WF-04
All waters will be safely accessible to wildlife.

DFC-WF-18
Water sources within mule deer habitat will be safely accessible to deer and other wildlife.

DFC-WF-19
On BLM administered lands, water sources within mule deer habitat will be spaced no more than 3 miles apart.

DFC-WF-43
Water sources within game bird habitats will be safely accessible by all wildlife.

Progress toward meeting these objectives is occurring and is ongoing. Wildlife and livestock water catchments are inspected and repaired/maintained as funding allows; those found to be hazardous to wildlife are modified. The wildlife catchments located within this allotment are now fenced with a pipe fence designed by AGFD to allow deer and wildlife free access but preclude livestock. Additionally, a mule deer management plan, which outlines objectives to better manage this species, has been jointly developed by the BLM and AGFD. This plan includes objectives to provide additional wildlife waters (to meet the water spacing requirement) and repair and maintain existing wildlife waters (to ensure reliable water sources).

Threatened and Endangered Species Habitat

DFC-TE-03
The Monument will provide a block of remote, contiguous habitat that will serve as refugia for populations of special status species.

DFC-TE-21
Habitat areas for special status raptors will provide sufficient forage and cover attributes to support thriving populations of the species.

DFC-TE-23
Potential roosting and nesting sites (for special status raptors) will be abundant.

These objectives are all being met. Quantity and quality of habitat for special status species are taken into consideration for all project-level planning, including applications for new trails, roads, or projects that bisect contiguous habitat and/or may affect the habitat needs for these species. Sustainability needs such as prey items, forage, cover, roosting and nesting sites, and quantity of suitable habitat for special status species have also been taken into consideration when developing the DPC objectives for this allotment.

Healthy Threatened and Endangered Populations

DFC-TE-20
Special status raptor populations will be healthy and self-sustaining throughout their range.

DFC-TE-25
Rodent populations, as a prey base (for special status raptors), within the Monument will be abundant.

These objectives are all being met. Sustainability needs such as forage, cover, shelter, and nesting sites, for special status species have been taken into consideration when developing DPC objectives for these allotments, which will facilitate wildlife population numbers (including those of special status raptor species) reaching maximum levels sustainable for the habitat.

No Net Loss of Threatened and Endangered Species Habitat

DFC-TE-04 and DFC-TE-08
There will be no net loss in the quality or quantity of special status species habitat throughout the Monument.

DFC-TE-22
No net loss will occur in the quality and quantity of suitable habitat for special status raptors within the Monument.

These objectives are all being met. Quantity and quality of habitat for special status species are taken into consideration for all project-level planning, including applications for new trails, roads, or projects that bisect contiguous habitat and/or may affect the habitat needs for these species. Sustainability needs such as prey items, forage, cover, roosting and nesting sites, and quantity of suitable habitat for special status species have also been taken into consideration when developing the DPC objectives for this allotment to ensure no net loss of habitat for these species.

Condors

DFC-TE-27
The experimental non-essential population of California condor will be at or above 150 individuals, viable, and stable to increasing in number.

Progress toward meeting this objective is occurring and is ongoing. The BLM works cooperatively with USFWS, AGFD, and the Peregrine Fund to continue the highly successful California condor reintroduction program on the Arizona Strip. The BLM provides financial and in-kind assistance to this program. Sustainability needs such as forage and cover for the California condor were taken into consideration when the DPC objectives for this allotment were developed. In addition, conservation measures developed specifically for the California condor are incorporated into all projects that have the potential to affect the species.

Recreation and Visitor Services

DFC-RR-01
Recreation and visitor services will be managed to provide varying levels of structured recreation opportunities that offer a range of specific benefits, activities, and experiences within outdoor settings.

DFC-RR-05
The excellent opportunities that exist to enjoy remote, rustic settings that provide moderate challenge and solitude in the Specialized TMAs will be maintained/enhanced.

DFC-RR-06
In Backways and Specialized TMAs, recreation opportunities associated with somewhat remote settings, such as exploring backcountry roads, vehicle camping, hunting, sightseeing, recreation aviation, and picnicking will be maintained/enhanced on existing roads, provided they will be compatible with the protection and enhancement of sensitive resource values, where appropriate.

DFC-RR-07
In the Primitive TMA, high quality recreation opportunities associated more with primitive recreation experience opportunities and non-motorized uses such as camping, sightseeing, hiking, horseback riding, and hunting, will be maintained/enhanced, provided they will be compatible with the protection and enhancement of sensitive resource values, where appropriate.

These objectives are being met because a wide variety of recreation experiences are being provided to local and regional community members within the SRMA in this allotment.

Visual Resources

DFC-VR-01
Public lands will be managed in a manner which will protect the quality of the scenic (visual) values of these lands. (43 U.S. Code [USC] 1701, Section 102 (a) (8)).

DFC-VR-03
The region's scenic beauty, open space landscapes, and other high-quality visual resources will be maintained within the Monument.

The objectives for management of visual resources in this allotment are being met. Visual resources are taken into consideration for all project-level planning in order to minimize impacts from proposed activities.

2. Specific Objectives:

Desired Plant Community Objectives

Key Area #1:
Rangesite: Clay Upland, 13"-17" p.z.

- *Maintain bottlebrush squirreltail composition by dry weight of 5-15%*
  Met – bottlebrush squirreltail is at 6% composition by dry weight.

- *Increase Indian ricegrass composition by dry weight to 1-5%*
  Not met – Indian ricegrass is at 0% composition by dry weight.

- *Increase western wheatgrass composition by dry weight to 10-15%*
  Not met – western wheatgrass is at 0% composition by dry weight.

- *Increase sand dropseed composition by dry weight to 1-5%*
  Not met – sand dropseed is at 0% composition by dry weight.

- *Reduce sagebrush composition by dry weight to 10-20%*
  Not met – sagebrush is at 92% composition by dry weight

Summary for Key Area #1:

One of the five objectives is being met. One objective not meeting involves big sagebrush, which is present at a much higher percent composition by dry weight than the ecological site guide allows. The other three objectives not meeting involve grasses, which can only be attained if some form of land treatment would release them from sagebrush which dominates the site. Grasses respond to precipitation fluctuations, particularly timing and amount, and it is believed that with a land treatment and adequate precipitation they will respond.

The ecological site on which this key area is located is small, only 56 acres, which as mentioned is predominately sagebrush. There is more sage than members of the field tour would like to see; the IAT believes that it is the 92% composition by dry weight of sagebrush that is impeding DPC achievement at this key area and that the only way to make progress towards attainment of these DPC objectives is by implementing a land treatment that would release grasses from the dominant competitive sagebrush.

Key Area #2:
Rangesite: Shallow Loamy 10-14" p.z.

- *Maintain muttongrass composition by dry weight of 0-2%*
  Met – muttongrass is at 0% composition by dry weight.

- *Increase bottlebrush squirreltail composition by dry weight to 1-6%*
  Not met – bottlebrush squirreltail is at 0% composition by dry weight.

- *Maintain sagebrush composition by dry weight of 20-35%*
  Met – sagebrush is at 34% composition by dry weight.

- *Maintain blackbrush composition by dry weight to 30-50%*
  Met – blackbrush is at 49% composition by dry weight.

- *Maintain rabbitbrush composition by dry weight to 0-2%*
  Met – rabbitbrush is at 1% composition by dry weight.

- *Maintain skunkbush sumac composition by dry weight to 0-2%*
  Met – skunkbush sumac is at 1% composition by dry weight.

Summary for Key Area #2:

Five of the six objectives are being met. The one grass objective not meeting is *Elymus elymoides*, which is present in the plant community but its composition is very low, similar to what is expected based on the ecological site guide. Grasses respond to precipitation fluctuations, particularly timing and amount, and it is believed that *Elymus elymoides* with adequate seasonal precipitation will respond. The IAT again believes that the 34% composition by dry weight of sagebrush is impeding DPC achievement at this key area, and that progress towards attainment of DPC objectives may be achieved by implementing a land treatment that would release grasses from the dominant competitive sagebrush.

B. Response to Issues

1. Issues Relating to Rangeland Health and Guidelines for Grazing Administration

a. Invasion of woody species.

For the kind of ecosystems found on this allotment, it appears that the vegetation is going from the herbaceous to the more woody type. However, there are areas on the upper benches and small canyons that have potential for treating the pinyon and juniper, and re-seeding. There may be some potential for using "Tebuthiuron" in sagebrush areas to restore the grasses and forbs. This could help improve some watershed conditions and increase desirable forage species for

wildlife and livestock. The bottoms of large canyons do have soil erosion concerns, but these bottoms are too narrow to allow any conversion work to be done to reduce woody species and encourage more herbaceous species. It is possible that treating the upper benches and small canyons would also provide a benefit to the bottoms of large canyons (i.e., a reduction in erosion).

b. Slight downward trend in vegetation at Trend Site #1.

With sagebrush dominating Key Area #1, trend is expected to remain static with a potential of a downward trend of desirable vegetation unless some energy is expended to set the ecosystem back to an earlier seral stage with more grasses and forbs. The present desirable species cannot compete with the less desirable woody species.

c. Riparian areas developing after livestock structures are installed.

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 some riparian vegetation exists at these sites, they are not by definition a wetland/riparian area. In addition, these sites are located on state lands, so the BLM does not have management jurisdiction over them.

C. SUMMARY (Meeting Arizona Standards for Rangeland Health)

1. Standard 1. Upland Sites.

Ground cover was measured at both key areas on the allotment. Litter accumulation, one attribute of ground cover, was improving at one and static at the other key area. Ground cover was improving at one key area and static at the other. The key area where ground cover is static (Key Area #1) is dominated by sagebrush. However, at both key areas plants, litter, and rock are present in pattern, kind, and amount sufficient to prevent accelerated erosion. The vegetative cover (basal) at the key areas were similar to or higher than what is suggested in the ecological site guides with both key areas static.

Soil and vegetative condition and watershed function are at acceptable levels and being met over most of the allotment except for about 125 acres (0.67% of the allotment) of stream terrace soils in the southeastern part of the allotment. Conditions could be improved by removing the sagebrush and trees and seeding soil stabilizing grasses.

Both key areas are considered to be functioning properly or progressing towards attainment of Standard 1.

2. Standard 2. Riparian-Wetland sites

a. There are no riparian areas in the Hidden Spring Allotment.

3. Standard 3. Desired Resource Conditions.

On the allotment, 55% (6 out of 11) of the key area DPC objectives are being met. However, of the five not meeting, four of the DPC objectives pertain to reducing big sagebrush and pinyon-juniper at Key Area #1, while the other pertains to increasing bottlebrush squirreltail at Key Area #2. Bottlebrush squirreltail is not only affected by the amount of sagebrush at Key Area #2 but the density of bottlebrush squirreltail varies in relationship to drought and adequate amounts of cool season moisture.

Some DPC objectives were set based on perceptions of what members of the field tour would like to see, as well as what the ecological site guide allowed which, if the DPC objectives are to be attained, would require some type of major land treatment to reduce sagebrush. At Key Area #1, the site guide allows 11-16% CBW for sagebrush; it is currently at 92%, and the DPC objective is set at 10-20%.

The IAT determined that it was the amount of sagebrush present that was the causal factor in plant species not meeting the DPC objectives. These communities are in a stable state and not likely to move across thresholds to other states, regardless of whether livestock graze or not. Members of the field tour also realized that a land treatment would send the plant community back to a very early seral stage. This type of treatment would require a separate NEPA documentation to ensure that monument values are protected.

The data also shows that drought has played a major role in vegetation changes, particularly between 1998 and 2005 (see pages 17 and 18, and Appendices C and D of this document) where even unpalatable plants decreased in frequency during that period.

An assessment at key areas relative to criteria for meeting standards, and indicators of rangeland health, resulted in a determination that Key Area #2 is progressing towards meeting standard #3. However, until some form of land treatment to release grasses and forbs from the dominant sagebrush has been accomplished, DPC objectives at Key Area #1 would not be attainable on the Clay Upland ecological site which consists of 56 acres (0.30% of the allotment).

In spite of the drought, the IAT determined based on supporting documentation and on site observation that native species are present; and re-sprouting was occurring, which is moving the community in the desired direction.

The IAT determined that attainment of DPC objectives largely depends on the implementation of a land treatment that would reduce the composition of woody species (sagebrush) and allow grasses and forbs a competitive edge for moisture and other soil nutrients. The IAT further determined that current livestock grazing is not the causal factor for non-attainment of DPC objectives at Key Area #1.

In conclusion, the amount and timing of precipitation has affected the frequency of plant species and other vegetation attributes. Monitoring data indicates that it was drought rather than livestock grazing that was the primary causal factor influencing vegetation attributes. With the exception of the 125 acres not meeting Standard 1 and the 56 acres not meeting Standard 3, the IAT determined, based on supporting documentation and on-site observation, that desired resource conditions on the majority of the allotment (99.3%) are being met, as evidenced by re-sprouting that is occurring, moving the community in the desired direction, and thus progressing towards meeting Standards #1 and 3.

The following is added for conclusions relative to implementation of the Standards for Rangeland Health and Guidelines for Grazing Administration

Based on the analyses and supporting documentation referenced herein, resource conditions on the allotment:

[ ] Meet all applicable standards for rangeland health

[X] Are making significant progress toward meeting the applicable standards for rangeland health

Do not meet the standards for rangeland health for:
[ ] No. 1: Upland sites
[ ] No. 2: Riparian-Wetland sites
[ ] No. 3: Desired Resource Conditions

[ ] Have not been sufficiently documented to make a specific determination, but there is no reason to believe that current management would preclude meeting the standards for rangeland health.

VI. Recommendations

A. Renew the ten-year grazing permit on Hidden Spring Allotment with current terms and conditions.

B. Develop an AMP for the Hidden Spring Allotment and carry forward the new key area DPC objectives established in this evaluation into the AMP.

C. Remove all unauthorized structures, facilities, and garbage.

D. The permittee, BLM, and AGFD should meet to work out the details of providing safe and reliable access to water for all wildlife, and if necessary update cooperative agreements and provide needed maintenance to management facilities and spring developments.

E. Identify vegetative treatments and secure funding to implement those treatments in the Hidden Spring Allotment. The eroding stream terrace soils in the southeastern part of the allotment should be included in the treatments. If a vegetative treatment is feasible and a proposal implemented then the DPC objectives develop in this assessment would be valid and should be carried forward. If a vegetative treatment is not an option then drop listed DPC objectives in this assessment that are tied to a land treatment action and develop new DPC objectives based on the state and transition model descriptions developed for the ecological site that is tied to the current vegetation.

AUTHORIZED OFFICER CONCURRENCE:

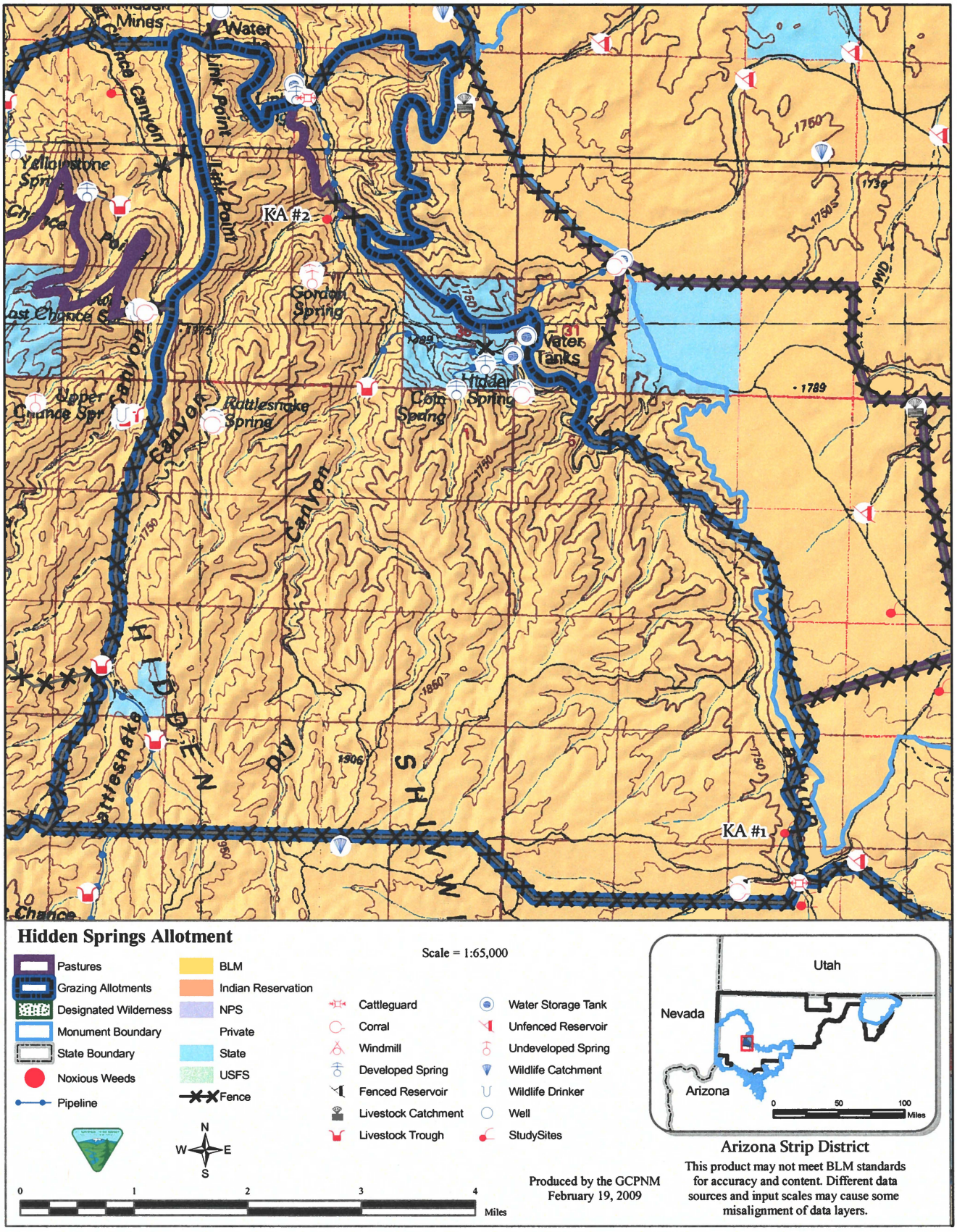
__✓__ I concur with the conclusions and recommendations as written.

_____ I do not concur.

_____ I concur, with the following modifications:

Thomas R. Edgerton
Monument Manager
Grand Canyon-Parashant National Monument

11/4/10
Date


Hidden Springs Allotment
Pastures
Grazing Allotments
Designated Wilderness
Monument Boundary
State Boundary
Noxious Weeds
Pipeline
BLM
Indian Reservation
NPS
Private
State
USFS
Fence
Cattleguard
Corral
Windmill
Developed Spring
Fenced Reservoir
Livestock Catchment
Livestock Trough
Water Storage Tank
Unfenced Reservoir
Undeveloped Spring
Wildlife Catchment
Wildlife Drinker
Well
StudySites
Scale = 1:65,000
N
W
E
S
0 1 2 3 4
Miles
Produced by the GCPNM
February 19, 2009
Utah
Nevada
Arizona
0 50 100
Miles
Arizona Strip District
This product may not meet BLM standards for accuracy and content. Different data sources and input scales may cause some misalignment of data layers.
KA #1
KA #2
Water Tanks
Gordon Spring
Hidden Spring
Coin Spring
Rattlesnake Spring
Upper Chance Spr
Yellowstone Spr
Mines
Water
Link Point
Chance
Canyon
HIDDEN HILLS
DRY

The determination represents an administrative process and is not a decision document.

DETERMINATION

Achieving Standards for Rangeland Health
and
Conforming with Guidelines for Grazing Administration

Office: Arizona Strip District, Grand Canyon-Parashant National Monument

Grazing Allotment Name/Number: Hidden Spring Grazing Allotment #4803

Public Land (acres):

Upland:	18,642
Riparian/Wetland:	0
Total:	18,642

Streams on Public Land (miles): N/A

Name of Permittee(s): Kay Argwen Bundy

Assessment Participants:

Name	Discipline	Interest
Bill Gubler,	Commodity Interests	Grazing
Kent McComb	Commodity Interests	Grazing
Scott Hansen	Non-Commodity Interests	Environmental Conservation
Spence Esplin	Non-Commodity Interests	Historical
Phil Squire	Non-Commodity Interests	Dispersed Recreation/Wildlife
Frank Malan	Local Area Interests	Public-at-Large

Alternates:

Maggie Sacher	Commercial	Recreation/Tourism

Interdisciplinary Assessment Team:

Name	Title	Agency
Linda Price	Project Coordinator	BLM
Karen Jensen	Wildlife Biologist, Team Lead	BLM
Mike Herder	Wildlife Biologist, Team Lead	BLM
Diana Hawks	Recreation, Wilderness, and Cultural Resources Team Lead	BLM
Phil Seegmiller	Vegetation/Grazing Administration	BLM
Larry Gass	Vegetation/Grazing Administration	BLM
Robert Smith	Soil Scientist	BLM
Brian Bock	Soils and Watershed	BLM

Luke Thompson	Wildlife Manager	Arizona Game and Fish Department
Kyle Spencer	Soils and Vegetation	Natural Resource Conservation Service
Robert Price	Wildlife Manager	Arizona Game and Fish Department
Art Meen	Soils and Vegetation	Natural Resource Conservation Service
Rob Grumbles	Vegetation and Social Economics	Mohave County Extension Service

Standard 1 (Upland Sites)

_X_ Meet all applicable standards for rangeland health over most of allotment.
___ Not Meeting the Standard, Livestock Grazing Management Practices are Significant Factors
___ Not Meeting the Standard, but Making Significant Progress towards the standard.
_X_ Not Meeting the Standard, Livestock Grazing Management Practices are not Significant Factors on 125 acres of stream terrace soils in the southeastern part of the allotment. Conditions could be improved by removing the sagebrush and trees and seeding soil stabilizing grasses.

Rationale/Information Sources:

Ground cover was measured at both key areas on the allotment. Litter accumulation, one attribute of ground cover, was improving at one and static at the other key area. Ground cover was improving at one key area and static at the other. The key area where ground cover is static is key area #1, which is dominated by sagebrush. However, at both key areas plants, litter, and rock are present in pattern, kind, and amount sufficient to prevent accelerated erosion. The vegetative cover (basal) at the key areas were similar to or higher than what is suggested in the ecological site guides with both key areas static.

Soil and vegetative condition and watershed function are at acceptable levels and being met over most of the allotment except for about 125 acres (0.67% of the allotment) of stream terrace soils in the SE part of the allotment. Conditions could be improved by removing the sagebrush and trees and seeding soil stabilizing grasses.

Both key areas are considered to be functioning properly or progressing towards attainment of Standard 1.

Standard 2 (Riparian-Wetland Sites)

__ Meeting the Standard.
__ Not Meeting the Standard, Livestock Grazing Management Practices are Significant Factors
__ Not Meeting the Standard, but Making Significant Progress towards the standard..
__ Not Meeting the Standard, Livestock Grazing Management Practices are not Significant Factors

Rationale/Information Source.

There are no riparian areas within the allotment boundaries.

Standard 3 (Desired Resource Conditions)

___ Meeting the Standard
___ Not Meeting the Standard, Livestock Grazing Management Practices are significant factors.
_X_ Not Meeting the Standard, but Making Significant Progress towards meeting the standard at Key

Area (#2), 5 of 6 objective met.

_X_ Not Meeting the Standard, Livestock Grazing Management Practices are not Significant Factors at Key Area #2 (56 acres). This area would require a vegetative treatment reducing sagebrush composition to allow key area to met standard 3.

Rationale/Information Sources:

On the allotment, 55% (6 out of 11) of the key area DPC objectives are being met. However, of the five not meeting, four of the DPC objectives pertain to reducing big sagebrush and pinyon-juniper at Key Area #1 while the other pertains to increasing bottlebrush squirreltail at Key Area #2. Bottlebrush squirreltail is not only affected by the amount of sagebrush at Key Area #2 but the density of bottlebrush squirreltail varies in relationship to drought and adequate amounts of cool season moisture.

Some DPC objectives were set based on perceptions of what members of the field tour would like to see, as well as what the ecological site guide allowed which, if the DPC objectives are to be attained, would require some type of major land treatment to reduce sagebrush. At Key Area #1 the site guide allows 11-16% CBW for sagebrush, it is currently at 92%, and the DPC objective is set at 10-20%.

The IAT determined that the present composition of sagebrush was the causal factor in plant species not meeting the DPC objectives. These communities are in a stable state and not likely to move across thresholds to other states, regardless of whether livestock graze or not. Members of the field tour also realized that a land treatment would send the plant community back to a very early seral stage. This type of treatment would require a separate NEPA documentation to ensure that monument values are protected.

The data also shows that drought has played a major role in vegetation changes, particularly between 1998 and 2005 (see pages 17 and 18, and Appendices C and D of this document) where even unpalatable plants decreased in frequency during that period.

An assessment at key areas relative to criteria for meeting standards, and indicators of rangeland health, resulted in a determination that Key Area #2 is progressing towards meeting standard #3. However, until some form of land treatment to release grasses and forbs from the dominant sagebrush has been accomplished, DPC objectives at Key Area #1 would not be attainable on the Clay Upland ecological site which consists of 56 acres (0.30% of the allotment).

In spite of the drought, the IAT determined based on supporting documentation and on site observation that native species are present; and re-sprouting was occurring, which is moving the community in the desired direction.

Until such time as a land treatment is implemented, the IAT further determined that current livestock grazing would not be a factor influencing attainment of DPC objectives. However, when a land treatment is implemented, to reduce sagebrush and allow grasses and forbs a competitive edge for moisture, then at that time livestock would be managed to facilitate DPC obtainment.

In conclusion, the amount and timing of precipitation has affected the frequency of plant species and other vegetation attributes. Monitoring data indicates that it was drought rather than livestock grazing that was

the primary causal factor influencing vegetation attributes. With the exception of the 125 acres not meeting Standard 1 and the 56 acres not meeting Standard 3, the IAT determined, based on supporting documentation and on-site observation, that desired resource conditions on the majority of the allotment (99.3%) are being met, as evidenced by re-sprouting that is occurring, moving the community in the desired direction, and thus progressing towards meeting Standards #1 and 3.

Determination:

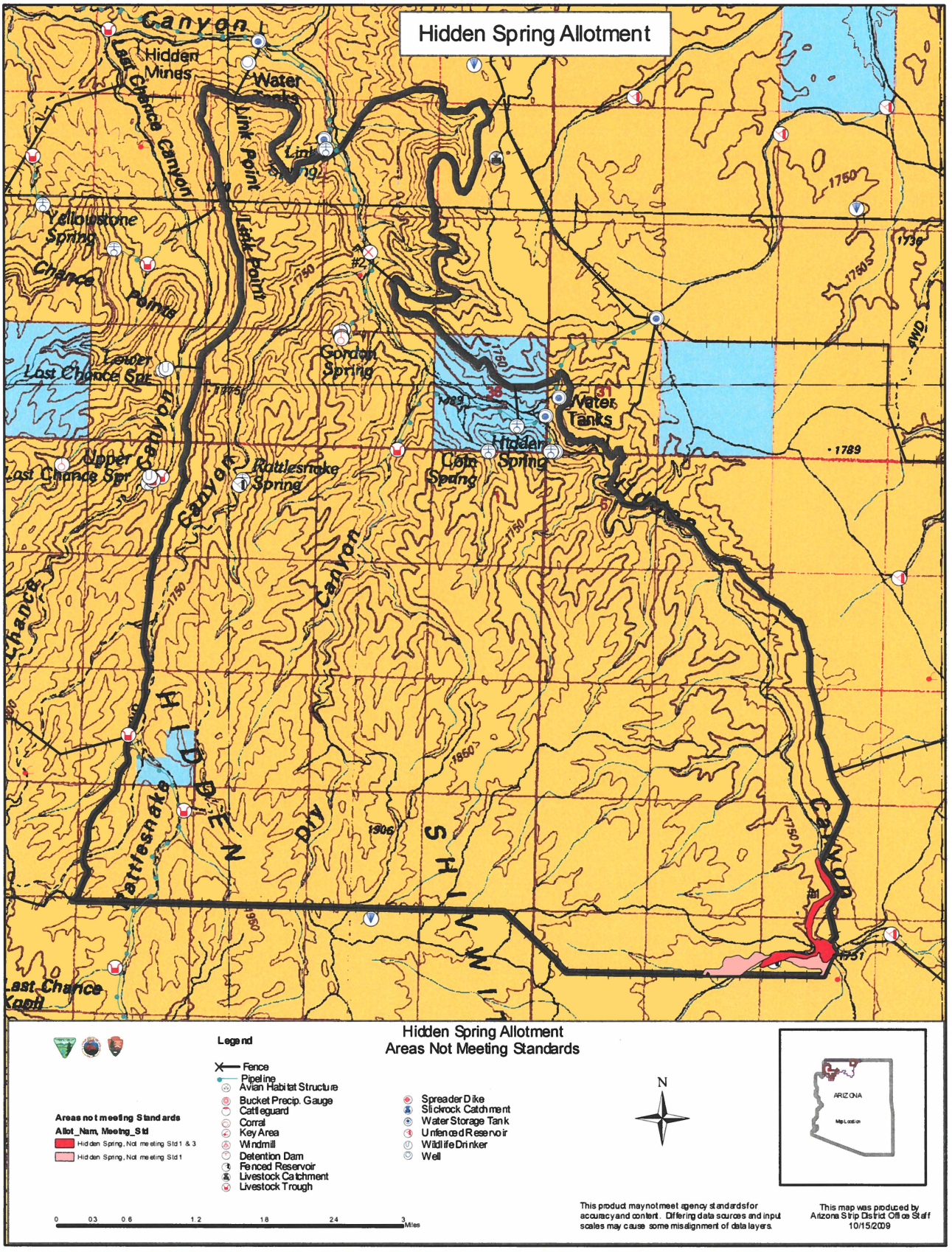
I have determined that most of the allotment is meeting Standard 1 or are making significant progress towards meeting Standard 1, except for the 125 acres of stream terrace soils in the southeastern part of the allotment, which will require a vegetation treatment to reduce sagebrush and increase grass composition to reduce erosion.

Key Area #2 is making significant progress towards meeting Standard 3. Key Area #1 will require a vegetation treatment to reduce the amount of sagebrush composition and release the key species, allowing them to compete for moisture and nutrients before that area can make progress toward meeting standard 1. Current livestock grazing is not the causal factor for non-attainment of Standard #3 at Key Area #1.

Approximately 99% of the allotment is meeting or making significant progress toward meeting Standards 1 and 3.

Thomas R. Edgerton
Monument Manager
Grand Canyon-Parashant National Monument

11/4/10
Date


Hidden Spring Allotment
Hidden Mines
Water Tanks
Link Point
Yellowstone Spring
Little Point
Gordon Spring
Lower Last Chance Spr
Upper Last Chance Spr
Rattlesnake Spring
Hidden Spring
Water Tanks
Last Chance Canyon
Rattlesnake Canyon
Hidden Spring Allotment
Areas Not Meeting Standards
Legend
Fence
Pipeline
Avian Habitat Structure
Bucket Precip. Gauge
Cattleguard
Corral
Key Area
Windmill
Detention Dam
Fenced Reservoir
Livestock Catchment
Livestock Trough
Spreader Dike
Slickrock Catchment
Water Storage Tank
Unfenced Reservoir
Wildlife Drinker
Well
Areas not meeting Standards
Allot_Nam, Meeting_Std
Hidden Spring, Not meeting Std 1 & 3
Hidden Spring, Not meeting Std 1
N
ARIZONA
This product may not meet agency standards for accuracy and content. Differing data sources and input scales may cause some misalignment of data layers.
This map was produced by Arizona Strip District Office Staff 10/15/2009

Appendix A

ARIZONA STANDARDS FOR RANGELAND HEALTH AND GUIDELINES FOR GRAZING ADMINISTRATION

INTRODUCTION

The Department of the Interior's final rule for Grazing Administration, issued on February 22, 1995, and effective August 21, 1995, requires that Bureau of Land Management (BLM) State Directors develop State or regional standards and guidelines for grazing administration in consultation with BLM Resource Advisory Councils (RAC), other agencies and the public. The final rule provides that fallback standards and guidelines be implemented, if State standards and guidelines are not developed by February 12, 1997. Arizona Standards and Guidelines and the final rule apply to grazing administration on public lands as indicated by the following quotation from the Federal Register, Volume 60, Number 35, page 9955.

> "The fundamentals of rangeland health, guiding principles for standards and the fallback standards address ecological components that are affected by all uses of public rangelands, not just livestock grazing. However, the scope of this final rule, and therefore the fundamentals of rangeland health of §4180.1, and the standards and guidelines to be made effective under §4180.2, are limited to grazing administration."

Although the process of developing standards and guidelines applies to grazing administration, present rangeland health is the result of the interaction of many factors in addition to grazing by livestock. Other contributing factors may include, but are not limited to, past land uses, land use restrictions, recreation, wildlife, rights-of-way, wild horses and burros, mining, fire, weather, and insects and disease.

With the commitment of BLM to ecosystem and interdisciplinary resource management, the standards for rangeland health as developed in this current process will be incorporated into management goals and objectives. The standards and guidelines for rangeland health for grazing administration, however, are not the only considerations in resolving resource issues.

The following quotations from the Federal Register, Vol. 60, No. 35, page 9956, February 22, 1995, describe the purpose of standards and guidelines and their implementation:

> "The guiding principles for standards and guidelines require that State or regional standards and guidelines address the basic components of healthy rangelands. The Department believes that by implementing grazing-related actions that are consistent with the fundamentals of §4180.1 and the guiding principles of §4180.2, the long-term health of public rangelands can be ensured.
>
> "Standards and guidelines will be implemented through terms and conditions of grazing permits, leases, and other authorizations, grazing-related portions of activity plans (including Allotment Management Plans), and through range improvement-related activities.
>
> "The Department anticipates that in most cases the standards and guidelines themselves will not be terms and conditions of various authorizations but that the terms and conditions will reflect the standards and guidelines.
>
> "The Department intends that assessments and corrective actions will be undertaken in priority order as determined by BLM.
>
> "The Department will use a variety of data including monitoring records, assessments, and knowledge of the locale to assist in making the "significant progress" determination. It is anticipated that in many

cases it will take numerous grazing seasons to determine direction and magnitude of trend. However, actions will be taken to establish significant progress toward conformance as soon as sufficient data are available to make informed changes in grazing practices."

FUNDAMENTALS AND DEFINITION OF RANGELAND HEALTH

The Grazing Administration Regulations, at §4180.1 (43 Code of Federal Regulation [CFR] 4180.1), Federal Register Vol. 60, No. 35, pg. 9970, direct that the authorized officer ensures that the following conditions of rangeland health exist:

(a) Watersheds are in, or are making significant progress toward, properly functioning physical condition, including their upland, riparian-wetland, and aquatic components; soil and plant conditions support infiltration, soil moisture storage, and the release of water that are in balance with climate and landform and maintain or improve water quality, water quantity, and timing and duration of flow.

(b) Ecological processes, including the hydrologic cycle, nutrient cycle, and energy flow, are maintained, or there is significant progress toward their attainment, in order to support healthy biotic populations and communities.

(c) Water quality complies with State water quality standards and achieves, or is making significant progress toward achieving, established BLM management objectives such as meeting wildlife needs.

(d) Habitats are, or are making significant progress toward being, restored or maintained for Federal threatened and endangered species, Federal Proposed, Category 1 and 2 Federal candidate and other special status species.

These fundamentals focus on sustaining productivity of a rangeland rather than its uses. Emphasizing the physical and biological functioning of ecosystems to determine rangeland health is consistent with the definition of rangeland health as proposed by the Committee on Rangeland Classification, Board of Agriculture, National Research Council (Rangeland Health, 1994, pg. 4 and 5). This Committee defined Rangeland Health ". . .as the degree to which the integrity of the soil and the ecological processes of rangeland ecosystems are sustained." This committee emphasized ". . .the degree of integrity of the soil and ecological processes that are most important in sustaining the capacity of rangelands to satisfy values and produce commodities." The Committee also recommended that "The determination of whether a rangeland is healthy, at risk, or unhealthy should be based on the evaluation of three criteria: degree of soil stability and watershed function, integrity of nutrient cycles and energy flow, and presence of functioning mechanisms" (Rangeland Health, 1994, pg. 97-98).

Standards describe conditions necessary to encourage proper functioning of ecological processes on specific ecological sites. An ecological site is the logical and practical ecosystem unit upon which to base an interpretation of rangeland health. Ecological site is defined as:

". . . a kind of land with specific physical characteristics which differs from other kinds of land in its ability to produce distinctive kinds and amounts of vegetation and in its response to management" (Journal of Range Management, 48:279, 1995). Ecological sites result from the interaction of climate, soils, and landform (slope, topographic position). The importance of this concept is that the "health" of different kinds of rangeland must be judged by standards specific to the potential of the ecological site. Acceptable erosion rates, water quality, productivity of plants and animals, and other features are different on each ecological site.

Since there is wide variation of ecological sites in Arizona, standards and guidelines covering these sites must be general. To make standards and guidelines too specific would reduce the ability of BLM and interested publics to select specific objectives, monitoring strategies, and grazing permit terms and conditions appropriate to specific

land forms.
Ecological sites have the potential to support several different plant communities. Existing communities are the result of the combination of historical and recent uses and natural events. Management actions may be used to modify plant communities on a site. The desired plant community for a site is defined as follows: "Of the several plant communities that may occupy a site, the one that has been identified through a management plan to best meet the plan's objectives for the site. It must protect the site as a minimum." (Journal of Range Management, 48:279, 1995.)

Fundamentals (a) and (b) define physical and biological components of rangeland health and are consistent with the definition of rangeland health as defined by the Committee on Rangeland Classification, Board on Agriculture, National Research Council, as discussed in the paragraph above. These fundamentals provide the basis for sustainable rangelands.

Fundamentals (c) and (d) emphasize compliance with existing laws and regulation and, therefore, define social and political components of rangeland health. Compliance with Fundamentals (c) and (d) is accomplished by managing to attain a specific plant community and associated wildlife species present on ecological sites. These desired plant communities are determined in the BLM planning process, or, where the desired plant community is not identified, a community may be selected that will meet the conditions of Fundamentals (a) and (b) and also adhere to laws and regulations. Arizona Standard 3 is written to comply with Fundamentals (c) and (d) and provide a logical combination of Standards and Guidelines for planning and management purposes.

STANDARD AND GUIDELINE DEFINITIONS

Standards are goals for the desired condition of the biological and physical components and characteristics of rangelands. Standards:

(1) are measurable and attainable; and
(2) comply with various Federal and State statutes, policies, and directives applicable to BLM Rangelands.

Guidelines are management approaches, methods, and practices that are intended to achieve a standard. Guidelines:

(1) typically identify and prescribe methods of influencing or controlling specific public land uses;
(2) are developed and applied consistent with the desired condition and within site capability; and
(3) may be adjusted over time.

IMPLEMENTING STANDARDS AND GUIDELINES

The authorized officer will review existing permitted livestock use, allotment management plans, or other activity plans which identify terms and conditions for management on public land. 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 significant progress toward meeting, the standards and are in conformance with the guidelines. The review will be interdisciplinary and conducted under existing rules which provide for cooperation, coordination, and consultation with affected individuals, federal, state, and local agencies, tribal governments, private landowners, and interested publics.

This review will use a variety of data, including monitoring records, assessments, and knowledge of the locale to assist in making the significant progress determination. Significance will be determined on a case by case basis, considering site potential, site condition, weather and financial commitment. It is anticipated there will be cases where numerous years will be needed to determine direction and magnitude of trend.

Upon completion of review, the authorized officer shall take appropriate action as soon as practicable but no later than the start of the next grazing year upon determining that the existing grazing management practices or level of

use on public land are significant factors contributing to failure to achieve the standards and conform with the guidelines that

are made effective under 43 CFR 4180.2. Appropriate action means implementing actions that will result in significant progress toward fulfillment of the standards and significant progress toward conformance with guidelines.

Livestock grazing will continue where significant progress toward meeting standards is being made. Additional activities and practices would not be needed on such allotments. Where new activities or practices are required to assure significant progress toward meeting standards, livestock grazing use can continue contingent upon determinations from monitoring data that the implemented actions are effective in making significant progress toward meeting the standards. In some cases, additional action may be needed as determined by monitoring data over time.

New plans will incorporate an interdisciplinary team approach (Arizona BLM Interdisciplinary Resource Management Handbook, April 1995). The terms and conditions for permitted grazing in these areas will be developed to comply with the goals and objectives of these plans which will be consistent with the standards and guidelines.

ARIZONA STANDARDS AND GUIDELINES

Arizona Standards and Guidelines (S&G) for grazing administration have been developed through a collaborative process involving the Bureau of Land Management State S&G Team and the Arizona Resource Advisory Council. Together, through meetings, conference calls, correspondence, and Open Houses with the public, the BLM State Team and RAC prepared Standards and Guidelines to address the minimum requirements outlined in the grazing regulations. The Standards and Guidelines, criteria for meeting Standards, and indicators are an integrated document that conforms to the fundamentals of rangeland health and the requirements of the regulations when taken as a whole.

Upland sites, riparian-wetland areas, and desired resource conditions are each addressed by a standard and associated guidelines.

Standard 1: Upland Sites

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

Criteria for meeting Standard 1:

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

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

Signs of accelerated erosion are minimal or diminishing for the ecological site as determined by monitoring over an established period of time.

As indicated by such factors as:

Ground Cover
- litter
- live vegetation, amount and type (e.g., grass, shrubs, trees, etc.)
- rock

Signs of erosion
- flow pattern
- gullies
- rills
- plant pedestalling

Exceptions and exemptions (where applicable):

none

Guidelines:

1-1. Management activities will maintain or promote ground cover that will provide for infiltration, permeability, soil moisture storage, and soil stability appropriate for the ecological sites within management units. The ground cover should maintain soil organisms and plants and animals to support the hydrologic and nutrient cycles, and energy flow. Ground cover and signs of erosion are surrogate measures for hydrologic and nutrient cycles and energy flow.

1-2. When grazing practices alone are not likely to restore areas of low infiltration or permeability, land management treatments may be designed and implemented to attain improvement.

Standard 2: Riparian-Wetland Sites

Riparian-wetland areas are in properly functioning condition.

Criteria for meeting Standard 2:

Stream channel morphology and functions are appropriate for proper functioning condition for existing climate, landform, and channel reach characteristics. Riparian-wetland areas are functioning properly when adequate vegetation, land form, or large woody debris is present to dissipate stream energy associated with high water flows.

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

The checklist for riparian areas is in Technical Reference 1737-9 "Process for Assessing Proper Functioning Condition." The checklist for wetlands is in Technical Reference 1737-11 "Process for Assessing Proper Functioning Condition for Lentic Riparian-Wetland Areas."

As indicated by such factors as:

Gradient
Width/depth ratio
Channel roughness and sinuosity of stream channel

Bank stabilization
Reduced erosion
Captured sediment
Ground-water recharge
Dissipation of energy by vegetation

Exceptions and exemptions (where applicable):

Dirt tanks, wells, and other water facilities constructed or placed at a location for the purpose of providing water for livestock and/or wildlife and which have not been determined through local planning efforts to provide for riparian or wetland habitat are exempt.

Water impoundments permitted for construction, mining, or other similar activities are exempt.

Guidelines:

2-1. Management practices maintain or promote sufficient vegetation to maintain, improve or restore riparian-wetland functions of energy dissipation, sediment capture, groundwater recharge and stream bank stability, thus promoting stream channel morphology (e.g., gradient, width/depth ratio, channel roughness and sinuosity) and functions appropriate to climate and landform.

2-2. New facilities are located away from riparian-wetland areas if they conflict with achieving or maintaining riparian-wetland function. Existing facilities are used in a way that does not conflict with riparian-wetland functions or are relocated or modified when incompatible with riparian-wetland functions.

2-3. The development of springs and seeps or other projects affecting water and associated resources shall be designed to protect ecological functions and processes.

Standard 3: Desired Resource Conditions

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

Criteria for meeting Standard 3:

Upland and riparian-wetland plant communities meet desired plant community objectives. Plant community objectives are determined with consideration for all multiple uses. Objectives also address native species, and the requirements of the Taylor Grazing Act, Federal Land Policy and Management Act, Endangered Species Act, Clean Water Act, and appropriate laws, regulations, and policies.

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

As indicated by such factors as:

Composition
Structure
Distribution

Exceptions and exemptions (where applicable):

Ecological sites or stream reaches on which a change in existing vegetation is physically, biologically, or economically impractical.

Guidelines:

3-1. The use and perpetuation of native species will be emphasized. However, when restoring or rehabilitating disturbed or degraded rangelands, non-intrusive, non-native plant species are appropriate for use where native species (a) are not available, (b) are not economically feasible, (c) cannot achieve ecological objectives as well as non-native species, and/or (d) cannot compete with already established non-native species.

3-2. Conservation of Federal threatened or endangered, proposed, candidate, and other special status species is promoted by the maintenance or restoration of their habitats.

3-3. Management practices maintain, restore, or enhance water quality in conformance with State or Federal standards.

3-4. Intensity, season and frequency of use, and distribution of grazing use should provide for growth and reproduction of those plant species needed to reach desired plant community objectives.

3-5. Grazing on designated ephemeral (annual and perennial) rangeland may be authorized if the following conditions are met:

ephemeral vegetation is present in draws, washes, and under shrubs and has grown to useable levels at the time grazing begins;

sufficient surface and subsurface soil moisture exists for continued plant growth;

serviceable waters are capable of providing for proper grazing distribution;

sufficient annual vegetation will remain on site to satisfy other resource concerns, (i.e., watershed, wildlife, wild horses and burros); and

monitoring is conducted during grazing to determine if objectives are being met.

3-6. Management practices will target those populations of noxious weeds which can be controlled or eliminated by approved methods.

3-7. Management practices to achieve desired plant communities will consider protection and conservation of known cultural resources, including historical sites, and prehistoric sites and plants of significance to Native American peoples.

Appendix B

Team Membership

Interdisciplinary Assessment Team

Linda Price	Project Coordinator (BLM)
Mike Herder	Former Arizona Strip Wildlife Biologist (BLM)
Diana Hawks	Recreation, Wilderness, and Cultural Resources (BLM)\
Larry Gass	Former Vegetation/Grazing Administration (BLM)
Whit Bunting	Vegetation/Grazing Administration (BLM)
Robert Smith	Soil Scientist/Watershed Management (BLM)
Robert Price	Wildlife Manager (Arizona Game and Fish Department)
Art Meen	Soils and Vegetation (Natural Resource Conservation Service)
Rob Grumbles	Vegetation and Social Economics (Mohave County Extension Service)

Rangeland Resource Team

<u>Commodity Interests</u>

Bill Gubler,
Grazing
Rancher, St. George, UT

Maggie Sacher,
Commercial Recreation/Tourism
Owner: Lee's Ferry Lodge,
Marble Canyon, AZ

<u>Non-Commodity Interests</u>

Scott Hansen,
Environmental Conservation
Retired, St. George, UT

Spence Esplin,
Historical
Retired, St. George, UT

Phil Squire,
Dispersed Recreation/Wildlife
Retired, St. George, UT

<u>Local Area Interests</u>

Kent McComb,
Public-at-Large
Retired, St. George, UT

Frank Malan,
Public-at-Large
Retired, St. George, UT

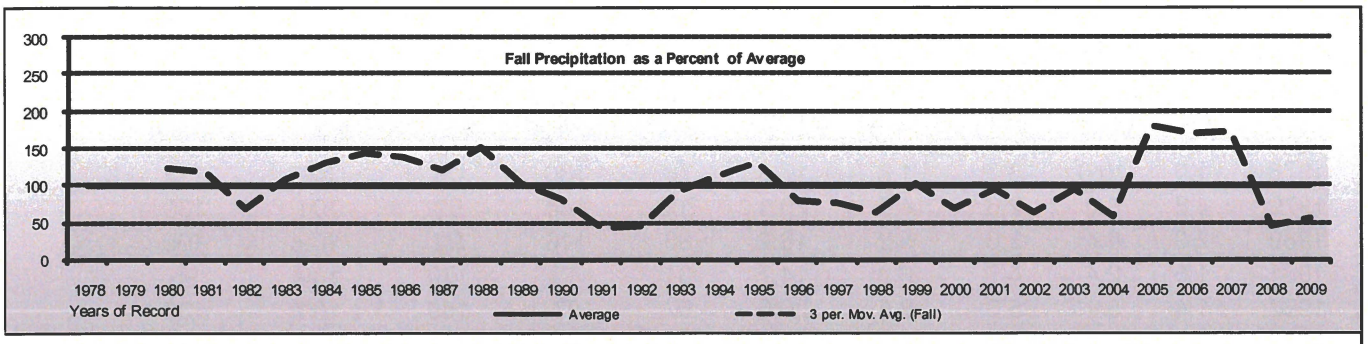
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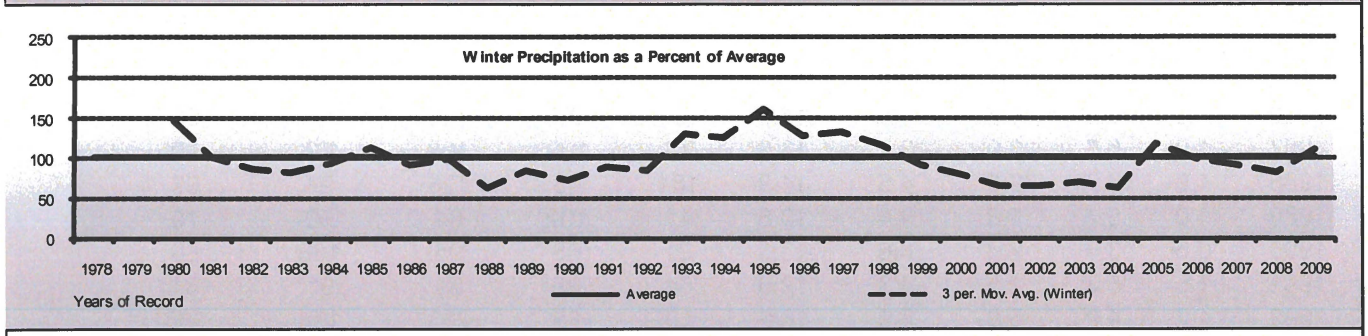
Precipitation Data

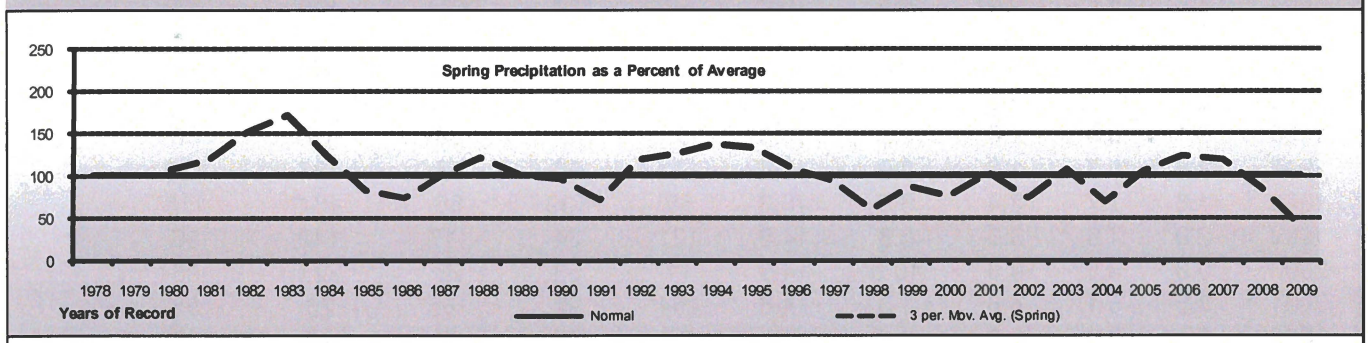
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Annual Average	2.36	5.55	2.78	4.74	15.43					
Year	Fall	Winter	Spring	Summer	Annual	Fall % Avg	Winter % Avg	Spring % Avg	Summer % Avg	Annual % Avg
1978	1.9	10.0	3.7	1.8	17.3	78	180	132	37	112
1979	4.8	8.0	2.6	4.8	20.1	202	144	92	101	130
1980	2.0	6.4	2.6	5.2	16.2	86	116	92	109	105
1981	1.5	2.4	4.7	6.2	14.7	61	43	170	130	95
1982	1.4	5.4	5.3	8.6	20.6	57	97	189	181	133
1983	4.8	5.5	4.2	4.8	19.3	203	99	151	101	125
1984	3.1	4.8	0.8	6.6	15.3	133	86	29	139	99
1985	2.1	8.4	1.7	3.8	16.0	91	151	62	79	104
1986	4.5	2.1	3.5	4.8	14.8	191	37	126	101	96
1987	1.9	5.7	3.0	3.4	13.9	78	102	108	72	90
1988	4.3	2.7	3.5	4.5	14.9	184	48	126	94	97
1989	1.0	5.7	1.8	2.4	10.8	41	102	64	50	70
1990	0.5	3.6	2.6	6.6	13.3	21	65	95	138	86
1991	1.5	5.3	1.5	4.3	12.6	64	95	54	91	81
1992	1.2	4.9	5.6	4.9	16.7	50	88	203	104	108
1993	3.8	11.5	3.2	5.3	23.7	161	206	115	111	154
1994	2.9	4.4	2.5	2.0	11.8	122	79	89	42	76
1995	2.6	10.9	5.3	3.8	22.5	109	196	191	79	146
1996	0.1	6.0	1.0	3.5	10.5	2	107	36	74	68
1997	2.8	5.3	1.5	8.9	18.4	117	95	54	187	119
1998	1.6	7.7	2.4	6.5	18.3	69	139	86	137	118
1999	2.9	1.9	3.3	6.8	14.8	121	34	117	142	96
2000	0.3	3.5	0.6	10.5	14.9	11	63	23	221	96
2001	3.6	5.1	4.6	1.3	14.6	154	92	166	26	95
2002	0.6	2.0	0.8	2.1	5.5	26	36	27	45	36
2003	2.4	4.3	3.6	4.6	14.8	103	77	128	96	96
2004	1.0	4.0	1.3	4.6	10.8	42	72	45	96	70
2005	9.3	11.2	3.8	2.1	26.4	392	202	136	45	171
2006	1.6	1.1	5.1	3.4	11.1	69	19	182	71	72
2007	1.2	2.6	0.9	7.3	12.0	50	47	31	154	78
2008	0.3	9.8	1.1	4.3	15.4	11	177	38	90	100
2009	2.4	5.9	1.3	2.6	12.1	101	106	45	54	78

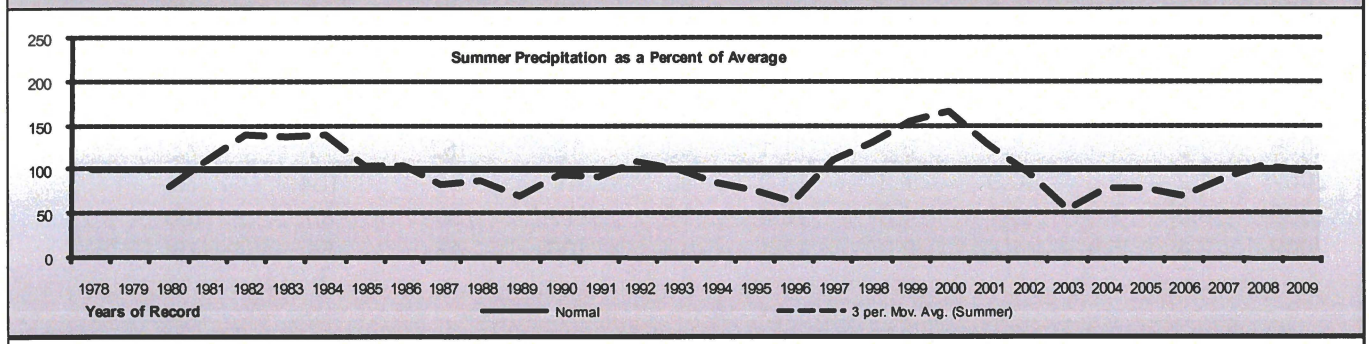
Poverty	Rain Gauge #12		
Percent of Average by Season.			
Fall	Winter	Spring	Summer
15%	36%	18%	31%

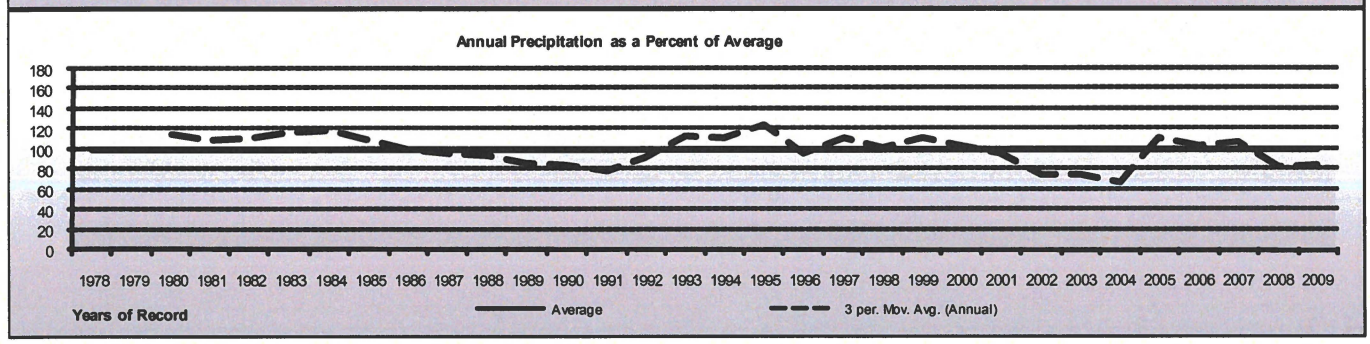
Poverty Precipitation rain gauge number 12











Appendix D:

Vegetation Data

Pace Frequency data

Site History	Allotment: Hidden Hills						
	Pasture: Upper Pasture				Key Area: 1		
% Ground Cover							
Ground Cover	1982	1986	1988	1995	2000	2005	Trend
Bare Ground	53	46	51	54	50	51	
Litter	47	50	44	41	43	47	
Live Basal Veg.		3	4	3	4	2	
Rock		1	1	2	3		
% Plant Frequency							
Woody Species	1982	1986	1988	1995	2000	2005	
Artemisia tridentata	83	57	60	63	64	66	
Gutierrezia sarothrae		9	7	4	6	3	
Juniperus osteosperma	2	2	5	2	1	2	
Grasses - Perennial							
Agropyron smithii	2	1		2			
Bouteloua gracilis	1	12	7	2	6		
Oryzopsis hymenoides	2	1		1	2		
Elymus elymoides	15	36	11	8	12	14	
Sporobolus cryptandrus		1		1		1	
Forbs - Perennial/Biennial							
Eriogonum - perennial forb #1		1		1	2		
Gilia aggregata						1	
Perennial forb(s)	1	1		2	3	1	
Phlox longifolia						1	
Viguiera multiflora		1					
Unclassified							
Euphorbia						3	

Site History	Allotment: Hidden Spring							
	Pasture: Lower					Key Area: 2		
% Ground Cover								
Ground Cover	1982	1984	1987	1990	1995	2000	2005	
Bare Ground	57	47	43	46	49	50	25	
Cryptogam							7	
Litter	39	40	47	44	44	39	51	
Rock	2	10	6	7	5	5	16	
Live Basal Veg.	2	3	4	3	2	6	3	
% Plant Frequency								
Woody Species	1982	1984	1987	1990	1995	2000	2005	
Artemisia tridentata	45	46	46	50	56	59	17	
Chrysothamnus nauseosus	2	1	2	2	1	1	1	
Chrysothamnus viscidiflorus		2	4	3	3	3	4	
Coleogyne ramosissima	23	28	22	26	22	21	36	
Ephedra viridis	1							
Fallugia paradoxa		2		1	1	2		
Gutierrezia sarothrae	9	17	22	25	23	19	4	
Juniperus osteosperma	2	5	3	2	1		4	
Lycium andersonii		1						
Opuntia	1		1	1		2		
Prunus fasciculata	1							
Rhus trilobata		1	1	1	1	2	1	
Grasses - Perennial								
Pleuraphis jamesii		1						
Poa fendleriana			1				2	
Elymus elymoides	8	14	12	8	4	10		
Sporobolus cryptandrus	1	4	1	2	3	3		
Forbs - Perennial/Biennial								
Eriogonum - perennial forb #1						1		
Annuals								
Eriogonum deflexum							1	
Stephanomeria exigua							4	

Ecological Site data

Key Area #	1	Allotment:	Hidden Spring		
		Pasture:	Upper		
Ecological Site	Clay Upland 13-17" pz		Map Unit #	73	
Plant Species	Site-Guide Allowable Percent Composition	1988	1999	2005	Desired Percent Composition Objective
Grasses	71%-80%	3%	5%	6%	
Elymus elymoides ssp. Elymoides	11%-16%	3%	4%	6%	
Achnatherum hymenoides	1%-5%	0%	1%	0%	
Pascopyrum smithii	32%-43%				10-15%
Sporobolus cryptandrus	1%-5%				1-5%
Forbs	1%-5%	0%	0%	0%	
AAFF	1%-2%	0%	0%	0%	
PPFF	1%-3%	0%	0%	0%	
Shrubs	19%-24%	97%	97%	97%	
Artemisia tridentata	11%-16%	97%	93%	92%	
Gutierrezia sarothrae	1%-5%	0%	0%	0%	
	Similarity	19%	21%	22%	
	Status	Early	Early	Early	

Key Area #	2	Allotment:	Hidden Spring	
2/18/2009		Pasture:	Lower	
Ecological Site	Shallow Loamy 10-14" pz		Map Unit #	73
Plant Species	Site-Guide Allowable Percent Composition	1999	2005	Desired Percent Composition Objective
Grasses	1%-12%	8%	0%	
Poa fendleriana	0%-2%	0%	0%	0-2%
Elymus elymoides	1%-6%	8%	0%	1-6%
Forbs	0%-4%	3%	2%	
Eriogonum deflexum	0%-3%	0%	2%	
AAFF	0%-3%	0%	0%	
PPFF	0%-2%	0%	0%	
Mentzelia	0%-3%	0%	0%	
Aster	0%-2%	2%	0%	
Shrubs	69%-97%	87%	98%	
Artemisia tridentata	82%-100%	45%	34%	20-35%
Chrysothamnus nauseosus	0%-2%	0%	1%	0-2%
Chrysothamnus viscidiflorus	4%-9%	0%	7%	
Coleogyne ramosissima	0%-2%	29%	49%	30-50%
Gutierrezia sarothrae	4%-9%	12%	5%	
Rhus trilobata	0%-2%	0%	1%	0-2%
Lycium andersonii	0%-2%	0%	0%	
Trees	1%-15%	2%	0%	
Juniperus osteosperma	0%-23%	2%	0%	
	Similarity	67%	53%	
	Status	Late	Late	

Appendix E:

Wildlife Data

Arizona Game Management Unit 13B Mule Deer Population Counts				
Year	**Number of Animals Surveyed**	**Bucks/100 Does**	**Fawns/100 Does**	**Population Estimate**
1985	108	30	50	1000-1500
1986	41	29	18	1000-1500
1987	63	31	44	1163
1988	--	No Data	No Data	No Data
1989	112	71	31	900
1990	63	68	32	900
1991	85	27	37	900
1992	31	24	59	<1000
1993	117	126	52	800-1000
1994	143	69	52	No Estimate
1995	88	183	79	No Estimate
1996	154	87	33	No Estimate
1997	64	77	29	No Estimate
1998	156	43	45	No Estimate
1999	145	51	35	No Estimate
2000	155	49	36	No Estimate
2001	275	34	67	No Estimate
2002	118	46	20	No Estimate
2003	84	29	46	No Estimate
2004	102	34	57	No Estimate
2005	128	65	72	No Estimate
2006	143	68	64	No Estimate
2007	152	79	41	No Estimate
2008	158	45	63	No Estimate
2009	150	28	42	No Estimate

Fixed wing surveys were flown in December - January for all of Game Management Unit 13B from 1985 through 1997. Helicopter surveys were used from 1998 through 2009.