Land Health Evaluation for the Mosby Allotment – 4835

I. Introduction

The Mosby Allotment Assessment was conducted in accordance with directions set forth in the Washington Office (WO) Instruction Memorandum (IM) 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 Guidelines). Additional guidance is provided in WO IM No. 2009-007.

The purpose of Standards and Guidelines is to ensure the health of public rangelands. 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, mining, fire, weather, and insects and disease. The standards are goals for the desired condition of the biological and physical components and characteristics of rangelands, such as adequate canopy and ground cover; guidelines are management approaches, methods, and practices that are intended to achieve a standard.

Background Information

Arizona's Standards for Rangeland Health and Guidelines for Grazing Administration were developed by the BLM State Standards and Guidelines 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 Guidelines in April 1997. The Decision Record, signed by the BLM State Director (April 1997) provides for full implementation of the Standards and Guidelines in all Arizona land use plans. See Appendix A for a copy of the Arizona Standards and Guidelines.

The permittee, interested publics, state agencies, and other federal agencies were encouraged to provide the BLM with allotment-specific resource data for consideration in development of this land health evaluation. This assessment was then conducted by an interdisciplinary assessment team (IAT) of resource specialists with expertise in soils, vegetation, and wildlife biology from:

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

The IAT was advised 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 Guidelines, 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 RRT's primary role is to assist BLM managers in assuring the Standards and Guidelines are consistently applied. The IAT analyzed all available information in cooperation with the RRT. Based on field observations, team members made recommendations on whether rangeland conditions were meeting, progressing toward meeting, or not meeting the Standards for Rangeland Health.

The RRT, permittees and other interested parties were invited to attend an issue scoping meeting with the IAT on February 26, 2008 and a field visit on February 3, 2009. At the conclusion of the field visit, the group that attended the allotment tour provided their opinions on the status of rangeland health in the Mosby Allotment.

Technical recommendations from this land health evaluation will identify appropriate actions needed, which will inform the National Environmental Policy Act (NEPA) analysis, and provide the Field Manager the opportunity to consider all available information before making a final determination on achievement of standards. If the evaluation report documents that standards are not achieved in the assessment area, then the Field Manager will determine significant causal factors for non-achievement. Causal factors can include current grazing practices, historical livestock use, drought, off-highway vehicle (OHV) use, fire, recreation, etc. If existing grazing management practices or levels of grazing use on public land are significant factors, then an appropriate action will be developed and implemented in accordance with 43 CFR subpart 4180.2(c) and direction contained within WO IM No. 2009-007.

II. Allotment Profile

A. Description

This allotment sits in the upper reaches of the Mojave Desert, in the Mojave-Great Basin Ecological Zone. Its elevation is approximately 4,500 feet above sea level. The allotment is mostly on a ridge with a large flat to the north, and springs on the north and south sides of the allotment. A large water trough fed by a pipeline from Middle Spring is at the old Jacobs Ranch. This provides most of the livestock water. The vegetation zone is one of black brush and associated vegetation. The allotment sits on the east side of the Virgin Mountains.

Grazing allotments are categorized in one of three management categories: improve, maintain, or custodial. These categories were developed primarily to establish priorities for resource management and investing in range improvements. Mosby Allotment is categorized as a "maintain" (M) allotment. This means that:

a) Present range condition is satisfactory;
b) The allotment has high or moderate resource potential and is producing near its potential (or trend is moving in that direction);

c) No serious resource-use conflicts/controversy exists;
d) Opportunities may exist for positive economic return from public investments; and
e) Present management is satisfactory.

B. Acreage

The allotment contains:

- 1,185 acres of federal land
- 428 acres of state land
- 0 acres of private land

Total: 1,613 acres

C. Permitted Use

1. Total grazing privileges

Active Grazing Use: 82 AUMs
Suspended Non-use: 28 AUMs
Total: 110 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.)

2. Season(s) of use

5 Horses 03/1 – 08/31
20 Cattle 10/1 – 02/28

3. Kind and class of livestock

Cattle and horses.

4. Percent federal range[a]

63 percent

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

[a] 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 both public lands and those owned or controlled by the permittee or lessee.

associated species; and (2) Those species which must, because of their importance, be considered in the management program. Key species for this allotment are:

- *Ephedra nevadensis* (Mormon tea)
- *Purshia stansburiana* (Stansbury cliffrose)
- *Coleogyne ramosissima* (Blackbrush)

E. Grazing System

There is no formal grazing system for this allotment.

F. Biological Resources

1. Special Status Species

Threatened, Endangered, and Candidate Species

There are no listed or candidate plant species, or habitat for any listed plant species, in this allotment. Two federally listed animal species (Mexican spotted owl – threatened, and California condor – endangered) may occur within the Mosby Allotment. See Section IV.B.7 of this assessment report for a detailed discussion of these species.

Sensitive Species 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. Species designated as sensitive by the BLM must be native species found on BLM-administered lands for which the BLM has the capability to significantly affect the conservation status of the species through management, and either:

1. There is information that a species has recently undergone, is undergoing, or is predicted to undergo a downward trend such that the viability of the species or a distinct population segment of the species is at risk across all or a significant portion of the species

2. The species depends on ecological refugia or specialized or unique habitats on BLM-administered lands, and there is evidence that such areas are threatened with alteration such that the continued viability of the species is that area would be at risk.

All federally-designated candidate species, proposed species, and delisted species in the 5 years following delisting are included as BLM sensitive species. Table 1 lists the sensitive species that may occur within this allotment, or may be affected by livestock grazing within the allotment.

Table 1. Sensitive Species Associated with the Mosby Allotment

Species	Potential for Occurrence
Bald eagle (*Haliaeetus leucocephalus*)	potential*
Golden eagle (*Aquila chrysaetos*)	potential
American peregrine falcon (*Falco peregrinus*)	potential
Ferruginous hawk (*Buteo regalis*)	potential
Spotted bat (*Euderma maculatum*)	potential
California leaf-nosed bat (*Macrotus californicus*)	potential
Townsend's big-eared bat (*Corynorhinus townsendii pallescens*)	potential
Allen's big-eared bat (*Idionycteris phyllotis*)	potential
Greater western mastiff bat (*Eumops perotis californicus*)	potential

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

2. Other Wildlife Species

The Mosby Allotment, which consists of a low desert vegetation community (in the Mojave-Great Basin Transition Ecological Zone), is considered limited and yearlong mule deer habitat. Mule deer exist in the allotment in low densities.

The allotment is considered suitable habitat for desert bighorn sheep (*Ovis Canadensis nelsoni*), although it is used on an infrequent basis. Use primarily occurs at reliable waters (i.e., Middle and Red Rock springs). The habitat within this allotment is included within the Virgin Mountains Wildlife Habitat Area (BLM 2008).

A variety of other wildlife species are present on the allotment. These species include a variety of small mammals, birds (including raptors), and reptiles. Predators include coyotes, bobcats, and mountain lions.

3. Recreation Resources

General Management: The Mosby Allotment's recreational values derive from its geology, scenic viewsheds, and history. General recreation activities that occur in this allotment include: sightseeing, ATV riding, hiking, horseback riding, camping, hunting, rock collecting, photography, bird and wildflower watching and nature study. The Mosby Allotment is along a major travel corridor (BLM Road #101) due east of Whitney Pockets, a popular camping and recreating area in Nevada. It is easily accessed along a paved road south from Bunkerville, Nevada, turning to

unpaved only a few miles from the Mosby Allotment. It is also near the popular Gold Butte area located in Nevada, southwest of the allotment.

The allotment is within Grand Canyon-Parashant National Monument, within the Parashant Special Recreation Management Area (SRMA) and the Shivwits Frontier Recreation Management Zone (RMZ). 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. The Shivwits Frontier RMZ is 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 Backways. TMAs describe areas delineated for varying types of access. Both the Backways TMA and Specialized TMA provide 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. They are characterized by low to moderate densities of improved roads and primitive roads.

Off Highway Vehicles (OHV): The OHV area designation for this allotment is "limited to designated roads and trails."

Visual Resource Management (VRM): The Mosby Allotment is designated entirely as VRM Class II. The objective for this VRM 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.

Trails: No developed recreational or historic trails exist in this allotment.

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

H. Special Designations

1. Designated Wilderness

There is no designated wilderness within the allotment.

2. Wild & Scenic Rivers

No eligible or suitable wild and scenic river segments occur within the allotment.

3. Areas of Critical Concern (ACECs)

There are no Areas of Critical Environmental Concern within this allotment.

II. Management Objectives

A. Land Use Plan Objectives

Grand Canyon – Parashant National Monument Resource Management Plan (RMP)

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

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.

DFC-WS-08
Physical soil crusts will show an increase in organic cover including cryptobiotic colonies, moving them towards being organic crusts.

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-RP-02
Riparian areas 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 Arizona Standards for Rangeland Health, NPS Vital Signs, and enhance Monument objects and values.

DFC-RP-03
Ecological functions and processes will be intact with vegetative species composition and cover appropriate to the site.

DFC-WS-04
Ecological functions and processes will be intact at all seeps and springs.

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

DFC-RP-11
Invasive plants and animals such as tamarisk, Russian olive, and brown-headed cowbird will be reduced or eliminated.

DFC-VM-38 (Vegetation – Mojave-Great Basin Transition Ecological Zone)
Management of Mohave-Great Basin Transition Ecological Zone plant communities will focus on removing invasive non-native plants, especially cheatgrass, Sahara mustard, and red brome, and preventing habitat degradation due to wildfire.

No Net Loss

DFC-VM-37 (Vegetation – Mojave-Great Basin Transition Ecological Zone)
There will be no net loss in acres of Transition plant 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-GM-01
Healthy, sustainable rangeland ecosystems will be maintained or improved to meet Arizona's Standards for Rangeland Health and Vital Sign Standards on NPS-administered lands, and produce a wide range of public values such as wildlife habitat, livestock forage, recreation opportunities, clean water, and functional watersheds.

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-34 (Vegetation – Mojave-Great Basin Transition Ecological Zone)
Endemic plant species and associated communities such as black brush, Joshua tree, Mojave yucca, and cacti will be present along with other shrubs, grasses, and wildflowers. These communities can include stands of young and old shrubs, sparse vegetation, scattered to larger expanses of black brush to various mixes of black brush, Joshua trees, pinyon-juniper, yucca, and shrub habitats.

DFC-VM-36 (Vegetation – Mojave-Great Basin Transition Ecological Zone)
Priority plant species and associated communities such as black brush, Joshua tree, Mojave yucca, and cacti will be present along with other shrubs, grasses, and wildflowers. These communities can include stands of young and old shrubs, sparse vegetation, scattered to larger expanses of black brush to various mixes of black brush, Joshua trees, pinyon-juniper, yucca, and shrub habitats.

DFC-RP-01
Riparian areas, including Monument objects, will consist of a diversity of vertical and horizontal structures, vegetative age classes, and endemic species.

Riparian

DFC-RP-04
Where sites have the potential for over-story vegetation, the canopy cover of over-story and under-story vegetation will be at or approaching maximum density.

DFC-RP-05
All riparian areas will be in, or moving towards, proper functioning condition.

DFC-RP-08
Availability of surface water at seeps and springs will be appropriate for the soil type, climate, and landform and will support a diverse population of endemic plant and wildlife species.

DFC-RP-10
Riparian communities will provide habitat for common species such as rush, cottonwood, willow, and yellow-breasted chat, as well as rare species such as southwestern willow (SW) flycatcher, common black hawk, Lucy's warbler, and speckled dace where consistent with site potential.

DFC-TE-15
Essential habitats, important migration routes, required flows, and water quality will be protected and maintained in lentic and lotic systems in the Monument.

DFC-TE-24
Riparian areas will be in proper functioning condition and be of sufficient quantity and quality to provide adequate foraging areas for bald eagles, peregrine falcon, common black hawk, and other special status raptors.

DFC-TE-31
Riparian areas will be in proper functioning condition and be of sufficient quantity and quality to provide adequate foraging areas for SW flycatcher, Yuma clapper rail, yellow-billed cuckoo, and other special status birds.

DFC-TE-36
Potential roosting and nesting sites for riparian dependent special status birds will be abundant.

Wildlife Habitat

DFC-VM-35 (Vegetation – Mojave-Great Basin Transition Ecological Zone)
Endemic animal species such as desert tortoise, chuckwalla, and desert bighorn sheep will be present and thriving with more than adequate food, water, and cover resources.

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.

Wildlife Forage Needs

DFC-WF-30
On BLM administered lands, forage in desert bighorn sheep habitat areas will include at least 20% grasses, 20% forbs, and 20% palatable shrub species CBW, where consistent with site potential.

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-28
Desert bighorn 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-29
On BLM administered lands, desert bighorn sheep 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-31
Water sources within bighorn sheep habitat areas will be safely accessible to bighorn and other wildlife.

DFC-WF-32
On BLM administered lands, water sources within bighorn sheep habitat will be spaced no more than 4 miles apart.

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

DFC-RP-09
A sufficient quantity of water with safe access for wildlife will be available, where appropriate.

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-16
No net loss will occur in the quality and quantity of suitable habitat for endemic amphibians and aquatic invertebrate species within 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.

DFC-TE-29
No net loss will occur in the quality and quantity of suitable habitat for riparian-dependent special status bird species 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.

Aquatic Habitat

DFC-TE-17
All biologically suitable perennial waters on public lands in the Monument will be occupied by thriving, self-sustaining populations of native, endemic amphibians and aquatic invertebrate species, as appropriate.

DFC-TE-18
New introduced (or re-introduced) populations of relict leopard frog will increase to the point of being viable and self-sustaining.

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.

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.

B. Specific Resource Condition Objectives

1. Land Health Standards

Standard 1 - Upland Sites

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

Objective:

- Signs of accelerated erosion are minimal and are appropriate for the site as indicated by ground cover (litter, rock, vegetative cover, etc.) and signs of erosion.
- This objective applies to all ecological sites. A departure from the ecological site description or reference sheet of moderate or greater would not be achieving the standard. A departure of none to slight or slight to moderate is considered achieving the standard.
- Achievement of Standard 1 (appropriate erosion and vegetative cover levels) will ensure properly functioning watersheds and ecological processes in order to sustain healthy biotic populations and communities.

Standard 2 – Riparian/Wetlands

Riparian-wetland areas are in properly functioning condition. If Standard 2 is achieved, 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.

Standard 3 – Desired Resource Conditions

Productive and diverse upland and riparian-wetland communities of native species exist and are maintained. If Standard 3 is achieved, ecological sites contain productive and diverse communities of native species, resulting in proper ecosystem function. Under Standard 3, when Desired Plant Community (DPC) objectives for

wildlife habitat are being achieved, the site is producing desirable forage, cover and soil protection. For wildlife this means "healthy" rangeland should provide the necessary food and cover to sustain the species.

All key areas will be measured against the ecological site DPC objectives. The objectives will be used to determine whether standards for land health are being achieved or not achieved, and if not achieved, is significant progress being made toward achievement

2. Allotment Management Plan

Due to the season of use and size of allotment, no allotment management plan has been developed nor is there a plan for future development of one.

3. Desired Plant Community (DPC) 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. The site guide used is from the Soil Survey of Shivwits Area, Arizona, Part of Mohave County, Natural Resource and Conservation Service, 2004. The DPC objectives implement RMP objectives and reflect vegetative composition and attributes important for wildlife habitat. The objectives are set to be achieved within a time interval of 20 years from permit renewal. DPC objectives are expressed in figures of Composition by Weight (CBW). Composition data is collected using the Dry Weight Rank sampling method.

Key Area #5

Ecological site: Shallow Upland, 10-13" precipitation zone (p.z.)

- Maintain total ground cover at between 15-30%.
- Maintain native perennial grass (includes *Achnatherum hymenoides, Achnatherum speciosum, Aristida, Dasyochloa pulchella, Elymus elymoides ssp. Elymoides, Muhlenbergia porteri and Tridens muticus*) at between 1-3% CBW.
- Maintain browse composition at between 50-70% CBW (includes *Ephedra nevadensis, Coleogyne ramosissima and Purshia stansburiana).*
- Maintain other shrubs / trees at between 20-30% CBW (includes *Yucca baccata, Larrea tridentata, Opuntia, Acamptopappus sphaerocephalus, Echinacea, Encelia frutescens, Ephedra viridis, Ferocactus, Hymenoclea salsola, Lycium andersonii, Mortonia utahensis, Psorothamnus fremontii, Yucca brevifolia* and other shrubs except *Gutierrezia sarothrae*).
- Maintain forbs composition at between 1-3% CBW (excludes non-native invasive species).

Rationale for the above objectives:

These objectives are set according to the ecological site guide and current composition at the site.

C. Issues identified in scoping.

1. Issues relating to Rangeland Health

a. Riparian functionality at Middle and Red Rock springs

b. Noxious weeds at Middle Spring

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

None

IV. Management Evaluation

A. Purpose of Evaluation

The purpose of this land health evaluation 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, which identify terms and conditions for management of public lands within the Mosby 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.

B. Summary of Studies Data

1. Livestock Actual Use

Table 2. Actual Use Data

Year	AUMs Used	% of Permitted Use
1988	82	100%
1989	82	100%
1990	75	91%
1991	38	46%
1992	82	100%

1993	**82**	**100%**
1994	**82**	**100%**
1995	**82**	**100%**
1996	**82**	**100%**
1997	**82**	**100%**
1998	**82**	**100%**
1999	**101**	**123%**
2000	**82**	**100%**
2001	**82**	**100%**
2002	**63**	**77%**
2003	**63**	**77%**
2004	**63**	**77%**
2005	**63**	**77%**
2006	**82**	**100%**
2007	**0**	**0%**
2008	**45**	**55%**
2009	**19**	**23%**
2010	**82**	**100%**
2011	**82**	**100%**
Average % of Permitted Use		**85%**

3. Precipitation

Precipitation on this region has been variable. The 1980s and 1990s had their share of dry years, but also had a good quantity of wet years (see Appendix C). However, since 1999 only three years have been above average precipitation.

Precipitation and weather patterns affect the amount of vegetation produced on the allotment; fluctuating amounts and the seasonal distribution of precipitation results in varying amounts of forage from year to year. Normal grazing schedules and livestock management practices may have to be modified during periods of drought. WO IM No. 2002-120 and Arizona IM No. AZ-2002-025 outline guidance strategies when evaluating impacts to rangelands due to drought. The BLM works with livestock permittees to voluntarily reduce livestock numbers on public lands, or portions of or entire allotments may be temporarily closed. Livestock operators and the BLM jointly develop short and long-term strategies for modifying livestock use on public land to ensure the conservation and protection of soil and vegetation resources. For example, the BLM works cooperatively with livestock permittees to match available forage with appropriate livestock numbers. Historically, most

livestock operators impacted by drought conditions have voluntarily reduced their numbers without issuance of formal livestock closure notices. However, if the BLM determines immediate protection of the range resource is merited, closures or modifications to an allotment may be issued effective upon issuance under the authority of 43 CFR 4110.3-3.

3. Utilization

Utilization is defined as the proportion of current years' forage production that is consumed or destroyed by grazing animals. Utilization is read using the grazed class method to collect the data. Utilization was read at the key area (see Table 3). Blank cells indicate no plants of that species were encountered in the transect.

Table 3. Utilization Data – Mosby Allotment

Species	Year Data Collected							
	1983 (for 1982)	1983	1985	1987	1988	1989	1990	2007
Purshia stansburiana	15%	23%	10%	10%	10%	6-40%		No use
Ephedra nevadensis	21%	25%	10%	6%	17%	6-40%	14%	No use
Coleogyne ramosissima					12%	6-40%	18%	No use

As shown in Table 3, forage utilization of key species has been consistently below the 50% standard. Utilization was not read in the 1990s and 2000s, as no livestock had used the allotment. (Livestock were licensed, as shown in Table 2, but none actually used the allotment.)

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 key area, and the results are then compared to detect change.

Trend monitoring was collected using the Pace-Frequency method, which measures the occurrence frequency of forage and non-forage vegetative species. Cover data, which determines the percent of bare ground, litter, rock, cryptogram and live basal vegetation, is also collected. Ground cover is determined by dividing the total number of hits for all categories except bare ground and rock by the total number of hits – see page 73 of BLM Technical Reference 1734-4 (BLM 1996). Change in ground cover is an important aspect of vegetative trend and proper functioning watersheds. 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 or not

apparent 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 4 (below) shows the key species frequency, which is the ratio between the number of sample units that contain key species and the total number of sample units, comparing the most recent data to the base year. Overall trend at each key area 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 (→) no apparent trend (if numbers are between 1-10%) or static.

Table 4. Mosby Allotment Trend Data

Table 4 – Trend Data		
Key Species or Cover Category	**Years plots were read**	
Mosby Allotment		
Key Area #1	**1984**	**2008**
Litter	**24**	**44**
Vegetation (basal cover)	**2.5**	**5**
Ephedra nevadensis	**0.5**	**2**
Purshia stansburiana	**1**	**2**
Coleogyne ramosissima	**23**	**38**
Overall Trend for Key Area #1: (↑) Up		

The upward trend in *Coleogyne ramosissima* is in concurrence with ecological succession, as this ecological site is *Coleogyne ramosissima* dominated. Numerous small and young *Coleogyne ramosissima* were observed while doing the transect.

5. Lithology and Soils

a. Lithology

The Mosby Allotment consists mainly of limestone, Navajo sandstone, gypsum, granite and gneiss. Landforms are mountain slopes, mesas, ridges, fan and stream terraces, fan terrace dunes, and cliffs that have slopes ranging from one to seventy percent. Soils are sandy, gravelly, or cobbly, shallow to very deep and well to somewhat excessively well drained.

b. Soils – Shivwits SSA 623

03 Arada family loamy fine sand, 1 to 10 percent slopes, (fan terrace dunes), sandstone; Coarse Sandy Loam (limey), 6" to 9" ppt
39 Hobog very gravelly sandy loam, 5 to 30 percent slopes, (plateau, mesa), limestone, Navajo sandstone; Shallow Upland, 9" to 12"

44 Meadview very gravelly sandy loam, 2 to 18 percent slopes, (fan terraces) LS, Moenkopi; Limey Upland (Deep), 6" to 9"

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

94 Yumtheska-Katzine-Rock outcrop complex, 5 to 50 percent slopes, moist (mountain) Supai sandstone, Callville & Redwall limestones; Limestone Slopes (Chaparral, PJ-Woodland), 13" to 17"

99 Yurm family very gravelly loam, 15 to 35 percent slopes, moist, (fan terraces), LS; Shallow Upland, 9" to 12" ppt

Additional field observations, data collection and lab testing were done in August of 2011 as follows:

Soil Sample	Location	Texture	pH $CaCO_3$	EC	Normal Bulk Density (Db) g/cc	Root restricting Db g/cc*	Sample Db g/cc	% Increase in Db	% Decrease in Porosity
Mosby-Db1 (3-7") Hobog, mu 39	T36N, R16W sec 07 S1/2N1/2	vgr-sandy loam	8.0 es-ev	0.21	1.30	1.75	1.29	0	0
Mosby-Db2 (2-7") Meadview mu 44	T36N, R16W sec 04 NWSW	gr- loam to sandy loam	7.9 es-ev	0.22	1.40	1.70	1.49	6.4	7.8
Mosby-Db3 (3-8") Arada mu 03	T36N, R16W sec 04 SESW	loamy fine sand	8.0 es	0.12	1.50	1.80	1.57	4.7	4.8
Mosby-Db4 (4-9") Arada mu 03	T36N, R16W sec 08 NENE	loamy fine sand	7.6 eo-e-	0.10	1.50	1.80	1.64	9.3	12.4
Mosby-Db5 (3-7") Meadview mu 44	T36N, R16W sec 08 NWNE	gr-sandy loam	7.9 es	0.23	1.40	1.75	1.46	4.3	4.7

*NRCS soil quality information sheet "Rangeland Soil Quality – Compaction", May 2001. Most root systems are greatly affected at these Db levels, especially young grasses. The initiation of root restriction for many plants may start below these Db levels.

Except for the floodplains, most of the soils on the allotment are shallow gravelly sandy loams over sandstone or limestone. The shallow soils have zero to moderate compaction, but all are well below root restricting bulk density. Very little sheet or rill erosion is evident, likely due to low precipitation, high infiltration rates of the sandy soils, some litter, and surface gravels of 25 to 60 percent. Crypotgamic cover is fair to good. As in the first field assessment, no significant areas of impacts detrimental to soils or vegetation were found.

6. 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 (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 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 "naturalized nonnative species" (BLM 2005 and 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" (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 and seral stages should not be confused with Desired Plant Communities. Ecological status 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 5 displays ecological site inventory data for the Mosby Allotment. Key Area #5, Shallow Upland (10-13" p.z.) is in the late seral stage, scoring 78% of PNC.

Table 5. Ecological Status Data for the Mosby Allotment Key Area

Key Area and Plant Species	Current Composition	Allowable Site Guide Composition	Current Score
Key Area #1: Shallow Upland 10-13" p.z.			
Last monitoring data collected in 2008			
Ericameria nauseosa	10%	0	0
Ephedra nevadensis	2%	2%	2
Coleogyne ramosissima	60%	60%	60
Encelia frutescens	1%	1%	1
Thamnosma montana	7%	0	0
Gutierrezia sarothrae	2%	2%	2
Ericameria linearifolia	3%	0%	0
Yucca baccata and *Y. brevifolia*	7%	7%	7
Purshia stansburiana	1%	1%	1
Aristida longiseta	1%	1%	1
Rhus trilobata	2%	0%	0
Opuntia	3%	3%	3
Perennial Forbs	1%	1%	1
Score: 78% Similar to PNC (or PNC)			

7. Special Status Species

Threatened, Endangered, and Candidate Species

California condor: The California condor (*Gymnogyps californianus)* 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 Endangered Species Act's (ESA) 10(j) rule (non-essential experimental population). Additional releases in 1998 and 1999 of 16 condors occurred in 1998 and 1999 from the Hurricane Cliffs northeast of Diamond Butte. The reintroduction continues annually as captive-reared birds are released along the Vermilion Cliffs. Each released condor is equipped with radio telemetry or GPS satellite transmitters and numbered wing tags to allow observers to track their movements. As of March 2011 there were 74 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. They have also been seen flying over Fredonia. Condors are strictly scavengers and prefer to eat large, dead mammals such as deer, elk, pronghorn, bighorn sheep, cattle, and horses. While the condors now find much of their food on their own, carcasses of dairy calves are provided near the Vermilion Cliffs release site in order to provide carrion which is contaminant free.

Mexican spotted owl: The Mexican spotted owl (*Strix occidentalis lucida*) 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. On the Colorado Plateau (which includes the majority of the Arizona Strip), spotted owls use narrow, steep-walled canyons where ledges and caves provide cover from high temperatures, as well as nest sites and foraging habitat. In essence, complex, rocky terrain has been substituted for old-growth forest (Willey and Ward 2003). 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 this allotment. A tool for predicting suitable canyon habitats that may have higher potential for species occupancy and nesting birds than other nearby canyons is the Willey and Spotskey Mexican spotted owl habitat model (created in 1997 and revised in 2001). This model uses a geographic information system to identify key features of owl habitat and then map the extent of suitable habitat (Willey and Spotskey 2000). 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, a 1.25-acre polygon of potential habitat lies within the allotment. A ground survey to visually inspect the polygon has not yet been performed to assess the validity of the model's assertion. However, it is unlikely to support nesting Mexican spotted owls because of its small size. In addition it is unlikely to be suitable Mexican spotted owl habitat because it does not occur in a canyon (it is an exposed cliff face) and vegetation in the area is low desert scrub.

BLM Sensitive Species and Migratory Birds

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, although it may occur as a transient on this allotment. The bald eagle is a seasonal (winter) migrant that may roost in large cottonwood trees that occur along rivers and other riparian areas. Bald eagles are both scavengers and predators. Golden eagles use their agility and speed combined with extremely powerful talons to snatch up prey including rabbits, marmots, ground squirrels, and large mammals such as fox, wild and domestic cats, and young deer. They will also eat carrion if prey is scarce, as well as reptiles. Birds, including large species up to the size of swans and cranes as well as ravens have all been recorded as prey. Golden eagles nest in high places

including cliffs, trees, or human structures such as telephone poles. There are no known nests within this allotment.

The American peregrine falcon was delisted in 1999. Optimum habitat is considered to be steep cliffs overlooking woodlands, riparian habitats or other areas supporting abundant avian prey species. While the cliffs along the perimeter of the allotment may provide suitable nesting habitat for this species, there are no known nest sites. However, peregrine falcons may fly over and forage on this allotment.

Ferruginous hawks are large hawks that inhabit the grasslands, deserts, and open areas of western North America – they are the largest American hawk and are often mistaken for eagles due to their size. Ferruginous means "rusty color" and refers to the bird's colored wings and legs. During the breeding season, the preference is for grasslands, sage, and other arid shrub country. Nesting occurs in the open areas or in trees including cottonwoods, willows and swamp oaks along waterways. They nest in trees if they are available, including riparian strips, but the presence of water does not appear to be critical. The ferruginous hawk primarily hunts small to medium-sized mammals but will also take birds, reptiles, and some insects. Mammals generally comprise 80 to 90 percent of the prey items or biomass in the diet with birds being the next most common mass component. The diet varies somewhat geographically, depending upon the distribution of prey species (Wikipedia 2011a). Ferruginous hawks are known to use habitat similar to that found on the Mosby Allotment, although specific sightings have not been recorded for the species.

Five sensitive bat species have the potential to occur on this allotment: spotted bats, California leaf-nosed bats, Townsend's big-eared bats, Allen's big-eared bats, and greater western mastiff bats. No indications of declining populations have been detected for any of these species, although there is no widely accepted methodology for monitoring bat species.

Spotted bats have been found from low desert in southwestern Arizona to high desert and riparian habitats in northwestern Arizona and Utah to conifer forests in northern Arizona and other western states. They are found in desertscrub, riparian, pinyon-juniper, and montane coniferous forests at elevations up to 8,670 feet. They roost in small cracks found in cliffs and stony outcrops. They forage on large flying insects, primarily moths (AGFD 2003).

The California leaf-nosed bat is the only bat in North America, north of Mexico, with large ears and leaf-like projections on the nose. They have very large ears and an erect triangular flap on nose. These bats do not migrate or hibernate. Because their wings are short and broad they are not suited for long distance flight needed for migration. Preferred habitats are caves, mines, and rock shelters, mostly in desert scrub. Roost sites are usually located near foraging areas. They eat various insects such as crickets, some beetles, grasshoppers, katydids, June beetles, diving beetles; and sphinx and other types of moths. They will capture prey either in flight or off of foliage or the ground. They are the only bats in North America known to catch

caterpillars and are among the very few insect-eating bats that supplement their diets with cactus fruit (Arizona-Sonora Desert Museum 2011a).

Townsend's big-eared are a medium-sized bat with very long ears – when the ears are laid back they extend to the middle of its body. They use a variety of habitats, almost always near caves or other roosting areas. They can be found in pine forests and arid desert scrub habitats. When roosting they do not tuck themselves into cracks and crevices like many bat species do, but prefer large open areas. They specialize in eating moths and other insects such as beetles, flies and wasps (Arizona-Sonora Desert Museum 2011b).

Allen's big-eared bat is one of the most poorly known bat species in North America. It was not discovered in the United States until 1955. This species is often found near boulder piles, cliffs, rocky outcroppings, or lava flows. Preferred habitats for the species include rocky and riparian areas in woodland and scrubland regions. This bat is also known to roost in abandoned mine shafts (Pima County 2011). Little is known about the breeding activity of the species, but females have been found with single young during the late spring and early summer (UDWR 2005). Colonies are most often found in rocky places near riparian habitat or woodlands. These bats feed on moths, soldier beetles, dung beetles, leaf beetles, roaches, and flying ants, either catching them in flight or gleaning them from foliage. Their enormous ears combined with unique lappets easily distinguish them from all other species (Bat Conservation International 2011).

The greater western mastiff bat is found in the Western United States, Mexico and South America, and is the largest bat native to North America. The subspecies *Eumops perotis californicus* is a species of concern as identified by the U.S. Fish and Wildlife Service. The range of this subspecies is principally southwest desert regions of the United States, where it is most commonly found in rugged rocky canyons and cliffs, where crevices provide favored daytime retreats. Some roost sites are occupied throughout the year, but the four seasons are usually spent in different roosts. The greater mastiff is capable of fast and prolonged flight; the wings are long and slender and the flight membranes are tough and leathery. These bats live in high, dry places, and usually cannot get airborne from the ground, but will scramble to a post or a tree to gain height for launching (Arizona-Sonora Desert Museum 2011c).

8. Wildlife Habitat

Mule deer populations are monitored annually by the AGFD. While there is no estimate of mule deer numbers available specifically for this allotment, population trends should parallel data collected for Game Management Unit 13B. The mule deer population in the unit exists at low densities, in some areas less than one per square mile. The population, while not at levels attained in the 1970s, has shown signs of growth in recent years. Fawn production in the unit has remained at approximately 50 per 100 does for the past five years, as documented by AGFD survey counts, and the buck to doe ratio appears strong. Despite wide fluctuations,

AGFD considers the mule deer population in Unit 13B to be stable and gradually increasing. Black Rock Mountain (northeast of the Mosby Allotment) and southern portions of Grand Canyon-Parashant National Monument contain the highest densities of mule deer in Unit 13B. However, mule deer are found year-round in most of the unit.

Desert bighorn sheep habitat has been identified from habitat analysis that evaluates a combination of slope, topography, aspect, vegetation, proximity to escape cover, and water availability. To escape predators, bighorn sheep prefer rough, rocky terrain with slopes greater than 20%, as is found in much of the allotment. Bighorn sheep likely obtain some of the moisture they need from succulent vegetation. During the hot summer months, the sheep stay in shaded areas near water as much as possible and are seldom found more than three miles from dependable water sources. When rain or snowfall occurs, bighorn sheep expand their use of suitable habitat and range out from permanent waters. They also commonly drink from ephemeral pools of water found in rock pockets (Bighorn Sheep Core Team 2006).

Habitat on the allotment favors small game (such as rabbits and quail), raptors, reptiles, passerines, and small mammals. Lizards, snakes, coyote, jackrabbits, cottontail rabbits, rodents, and raptors are the most common wildlife found.

9. Riparian/Fisheries Habitat

There are two riparian areas on this allotment. Red Rock Spring and Middle Spring contain properly functioning riparian areas. Both are fenced and protected unless the fence is violated. Cattle got into Red Rock in 2002 through a hole in the fence and on that same year someone left the gate open. Also, it was observed that feral hogs have rooted around in the spring causing some disturbance. Middle Spring has been fenced for years as the spring is shared by two allotments. Cattle got into the fenced area in 2007, as the wings on the cattleguard were damaged by a grader and not fixed right away. This provided a passage way. Both riparian areas are in proper functioning condition. Currently, the fences are all functional and keeping cattle out. Red Rock Spring has a native orchid (*Epipactis gigentea*) – giant helleborine or stream orchid – growing in its wet areas.

The Red Rock Spring riparian area is approximately 1 acre in size. The vegetation structure and composition at this riparian area is as follows: all woody vegetation structure was found to be in the young or mature stage, with less than 50% dead component age class. The height of woody vegetation spanned from 0 to greater than 10 feet with the majority being 3 to 6 feet. This shows a good diversity of structure for this riparian area. The vegetative composition is as follows:

Baccharis sergiloides: 41%
Muhlenbergia spp.: 18%
Anemopsis californica: 20%
Populus tremuloides: 3%

Salix ssp.: 3%
Eleocharis spp.: 5%
Juncus torreyi: 4%
Epipactis gigantean: 3%
Paspalum dilatatum: 3%
Celtis spp.: Trace
Rumex crispus: Trace

The Middle Spring riparian area is approximately 7 acres in size. The vegetation structure and composition at this riparian area is as follows: all woody vegetation structure was found to be in the mature stage, with less than 50% dead component age class. One plant was found to be greater than 50% dead. The height of woody vegetation spanned from 3 to greater than 10 feet with the majority being 3 to 6 feet. This shows a good diversity of structure for this riparian area. Seedling and younger plants were present; however, due to the thick nature of vegetation it was hard to separate them during the study. The vegetative composition is as follows:

Baccharis sergiloides: 52%
Acacia greggii ssp.: 3%
Anemopsis californica: 25%
Populus tremuloides: 3%
Eleocharis spp.: 2%
Juncus torreyi: 0.5%
Rhus trilobata 5%
Paspalum dilatatum: 2%
Atriplex canescens: 2%
Scirpus pungens: 4%
Lycimachia spp.: 1%
Physalis spp.: 0.5%

10. Wild Horse and Burro Habitat

This allotment is outside of any herd management area.

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

1. Issues relating to Rangeland Health

a. Riparian functionality at Middle and Red Rock springs

The question was asked if these two springs are functioning properly. Red Rock was fenced in 1986 and Middle Spring in the early 1980s. On September 21, 2011, the ID Team conducted a riparian condition assessment at both springs and both were found to be in proper functioning condition (PFC).

b. Noxious weeds at Middle Spring.

There was a small occurrence that has been sprayed; it is not known what species was present. During the riparian assessment, no noxious weeds were found.

V. Conclusions

A. Pertaining to Objectives

1. Land Use Plan Objectives[b]

Grand Canyon – Parashant National Monument RMP

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. There are no water quality monitoring stations at either of the springs in the allotment. However, site visits to these springs by BLM staff (during riparian condition assessments and spring inventory) show that there are no issues with water quality standards.

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.

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

All of these objectives are being met. A Standard #1 documentation worksheet was completed at the key area. The documentation worksheet evaluated seven indicators (surface litter, bare ground, rock, flow patterns, gullies, rills, and plant pedestalling) that determine the functional condition of upland sites as it relates to infiltration, permeability, and erosion rates. All seven indicators were rated at "None to Slight" at the key area. The "None to Slight" determination means there was no or only a slight departure of those indicators from normal or the natural range of variation. The determination for the key area is that it is functioning properly and meeting Standard #1. Soils, vegetative condition, and watershed function are at acceptable levels and are appropriate for the site according to the above worksheets and visits by watershed personnel. The sandy and gravelly soils are resistant to compaction and have not been adversely altered by grazing. Accelerated erosion is very minimal and is not readily observed.

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-VM-08 (Vegetation – All Ecological Zones)
In addition to the above, vegetation communities on NPS-administered lands retain ecological integrity where natural processes maintain native plants and plant communities and are the principal influence on community and population fluctuation.

DFC-RP-02
Riparian areas 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 Arizona Standards for Rangeland Health, NPS Vital Signs, and enhance Monument objects and values.

DFC-RP-03
Ecological functions and processes will be intact with vegetative species composition and cover appropriate to the site.

DFC-WS-04
Ecological functions and processes will be intact at all seeps and springs.

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.

The ESI and trend data show that the vegetation communities are diverse in this allotment. Plant communities include native shrubs and perennial grasses (see Appendix D). The species composition and cover are appropriate for the site and communities are intact and stable (as shown by the ground cover data trend in Appendix D). The existing intact and stable plant community provides for wildlife species diversity. Therefore this objective is being met. In addition, the riparian areas at the two springs are properly functioning. Vegetation species present are appropriate for the site, and ecological functions and processes are intact. These objectives are therefore being met.

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.

DFC-RP-11
Invasive plants and animals such as tamarisk, Russian olive, and brown-headed cowbird will be reduced or eliminated.

DFC-VM-38 (Vegetation – Mojave-Great Basin Transition Ecological Zone)
Management of Mohave-Great Basin Transition Ecological Zone plant communities will focus on removing invasive non-native plants, especially cheatgrass, Sahara mustard, and red brome, and preventing habitat degradation due to wildfire.

These objectives are being met to the extent possible. As shown in the ecological site inventory data (Table 5), this allotment's plant communities are very stable and late seral. Under normal to dry weather conditions, invasive plants have little success in this plant community. If above normal precipitation occurs, then chances of invasive plants entering the plant community is high as there is much open space between the shrubs. However, on most years the invasives such as Sahara mustard and red brome do not invade. No invasive or noxious species are currently documented at either Red Rock or Middle Spring.

No Net Loss

DFC-VM-37 (Vegetation – Mojave-Great Basin Transition Ecological Zone)
There will be no net loss in acres of Transition plant 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.

These objectives are being met. There have been no seral stage altering events within the allotment, so no net loss of Mojave-Great Basin plant communities has occurred, as shown in the ESI and trend data tables. The plant communities are at late seral stage, are healthy, and are functioning properly. The IAT examined the indicators of Standard 1 (soil conditions and ground cover) and determined that there was "slight to no" departure from normal.

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 and/or improve the ecological condition of the allotment. The allotment receives spring and summer deferment every year. This allows warm season plants to grow and set seed. Trend is up. Livestock use will continue to be managed in a manner that will ensure that rangeland resources (i.e. habitat for special status species and other wildlife, native vegetation, watershed function, soil productivity, etc.) are maintained or improved.

Desired Plant Community

DFC-GM-01
Healthy, sustainable rangeland ecosystems will be maintained or improved to meet Arizona's Standards for Rangeland Health and Vital Sign Standards on NPS-administered lands, and produce a wide range of public values such as wildlife habitat, livestock forage, recreation opportunities, clean water, and functional watersheds.

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-34 (Vegetation – Mojave-Great Basin Transition Ecological Zone)
Endemic plant species and associated communities such as black brush, Joshua tree, Mojave yucca, and cacti will be present along with other shrubs, grasses, and wildflowers. These communities can include stands of young and old shrubs, sparse

vegetation, scattered to larger expanses of black brush to various mixes of black brush, Joshua trees, pinyon-juniper, yucca, and shrub habitats.

DFC-VM-36 (Vegetation – Mojave-Great Basin Transition Ecological Zone)
Priority plant species and associated communities such as black brush, Joshua tree, Mojave yucca, and cacti will be present along with other shrubs, grasses, and wildflowers. These communities can include stands of young and old shrubs, sparse vegetation, scattered to larger expanses of black brush to various mixes of black brush, Joshua trees, pinyon-juniper, yucca, and shrub habitats.

DFC-RP-01
Riparian areas, including Monument objects, will consist of a diversity of vertical and horizontal structures, vegetative age classes, and endemic species.

These objectives are being met. The allotment provides habitat for a diversity of wildlife (including avian species, reptiles, and large and small mammals), recreational opportunities, soil productivity, and functional watersheds. DPC objectives have been developed to maintain and/or enhance these public land values. Site visits to the allotment determined that soils are within normal parameters and functioning properly. Plant communities, which are in accordance with the ecological site description, include native shrubs, perennial grasses, and annual and perennial forbs. The ESI and trend data demonstrate stable (i.e., within normal variance) plant communities. As shown on pages 28-29 of this document, the riparian areas display a wide variety of native riparian vegetation including trees, shrubs, perennial grasses and grass-likes and forbs. These riparian areas are meeting PFC.

Riparian

DFC-RP-04
Where sites have the potential for over-story vegetation, the canopy cover of over-story and under-story vegetation will be at or approaching maximum density.

DFC-RP-05
All riparian areas will be in, or moving towards, proper functioning condition.

DFC-RP-08
Availability of surface water at seeps and springs will be appropriate for the soil type, climate, and landform and will support a diverse population of endemic plant and wildlife species.

DFC-RP-10
Riparian communities will provide habitat for common species such as rush, cottonwood, willow, and yellow-breasted chat, as well as rare species such as southwestern willow (SW) flycatcher, common black hawk, Lucy's warbler, and speckled dace where consistent with site potential.

DFC-TE-15
Essential habitats, important migration routes, required flows, and water quality will be protected and maintained in lentic and lotic systems in the Monument.

DFC-TE-24
Riparian areas will be in proper functioning condition and be of sufficient quantity and quality to provide adequate foraging areas for bald eagles, peregrine falcon, common black hawk, and other special status raptors.

DFC-TE-31
Riparian areas will be in proper functioning condition and be of sufficient quantity and quality to provide adequate foraging areas for SW flycatcher, Yuma clapper rail, yellow-billed cuckoo, and other special status birds.

DFC-TE-36
Potential roosting and nesting sites for riparian dependent special status birds will be abundant.

As previously discussed, the two riparian areas – Red Rock Spring and Middle Spring – have been protected by fences, are in PFC, and have good diversity of plant structure and composition. Although no bird surveys have been conducted at these riparian areas, they do provide important habitat elements (i.e., cover, roosting and foraging sites) for riparian-dependent species. These objectives are therefore being met.

Wildlife Habitat

DFC-VM-35 (Vegetation – Mojave-Great Basin Transition Ecological Zone)
Endemic animal species such as desert tortoise, chuckwalla, and desert bighorn sheep will be present and thriving with more than adequate food, water, and cover resources.

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.

These objectives are being met. The allotment is in good shape overall (i.e., trend and ecological condition) and contains an intact plant community with diverse vegetative structure; the vegetation present is in accordance with the ecological site description. DPC objectives for this allotment have been developed that incorporate wildlife needs (such as forage, cover, shelter, and nesting sites of endemic wildlife species). For example, the DPC objectives provide a mixture of shrubs, native perennial grasses, and forbs, thus ensuring healthy populations of native species. In addition, AGFD participated in this rangeland health assessment process and did not identify any wildlife habitat issues.

Habitat Connectivity

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

This objective is being met through continued wildlife population monitoring (conducted by AGFD for big game and other wildlife species – such as peregrine falcon) and habitat (i.e., vegetation) monitoring (conducted by the BLM). There are no known barriers to wildlife movement within the allotment. In addition, habitat connectivity and wildlife movement are taken into consideration for all project level planning, including travel management to reduce or mitigate impacts from proposed activities so that wildlife movement will not be adversely affected.

Wildlife Forage Needs

DFC-WF-30
On BLM administered lands, forage in desert bighorn sheep habitat areas will include at least 20% grasses, 20% forbs, and 20% palatable shrub species CBW, where consistent with site potential.

The key area within the Mosby Allotment has the following forage compositions:

Grass	Forbs	Palatable Shrubs
1%	1%	63%

The Shallow Upland 10-13" p.z. ecological site does not allow for 20% grasses and 20% forbs. It does allow 20% palatable shrubs. This objective is therefore being met to the extent possible.

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.

These objectives are 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-28
Desert bighorn 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. DPC objectives reflect the habitat needs for wildlife, and are being met. Sustainability needs (such as forage, cover, and shelter) for wildlife including mule deer, bighorn sheep, migratory birds and carnivores were taken into consideration (within potential of the ecological site) when the DPC objectives for this allotment were developed. For example, bighorn sheep forage needs (at least 20% grasses, 20% forbs, and 20% palatable shrubs) were considered, but the Shallow Upland 10-13" p.z. ecological site does not allow for 20% grasses and 20% forbs; the shrub portion of this objective is met.

Waters within the allotment is available at two springs, both of which are accessible to wildlife. Wildlife population and habitat monitoring will continue by both AGFD and the BLM. Impacts to wildlife (including big game, desert cottontail rabbits, migratory birds, and carnivores) and their sustainability needs are taken into consideration and analyzed during all project-level planning in order to minimize impacts from proposed activities. In addition, the BLM will continue to work cooperatively with AGFD to identify and resolve issues that may be affecting mule deer and bighorn sheep populations in Unit 13B.

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-29
On BLM administered lands, desert bighorn sheep 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.

Progress toward meeting these objectives is ongoing. Unit 13B, which includes the Mosby Allotment, is considered a low productivity area for mule deer. The Mosby Allotment is classified as limited and yearlong habitat for mule deer; mule deer exist in the allotment in low densities. Factors suppressing mule deer population recovery have been identified and include limited summer range, lack of precipitation, high predation, and unrealistic estimates of the carrying capacity of the area for deer.

The plant communities within the allotment are at late seral, are healthy, and are functioning properly. The IAT examined the indicators of Standard 1 (soil conditions and ground cover) and determined that there was "None to Slight" departure from normal. In addition, habitat attributes (including shrubs and native perennial grasses which provide forage, cover and shelter) were incorporated into the DPC objectives for this allotment, within the limits of the site potential. These objectives also provide for sufficient plant cover and litter accumulation to protect soils from wind and water erosion, encouraging nutrient cycling and productivity. Management proposed for the allotment (season of use, utilization levels, etc.) is therefore expected to continue to achieve desired objectives, which will facilitate wildlife population numbers reaching maximum levels sustainable for the habitat.

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-31
Water sources within bighorn sheep habitat areas will be safely accessible to bighorn and other wildlife.

DFC-WF-32
On BLM administered lands, water sources within bighorn sheep habitat will be spaced no more than 4 miles apart.

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

DFC-RP-09
A sufficient quantity of water with safe access for wildlife will be available, where appropriate.

These objectives are all being met. Water within the allotment is available at two springs, both of which are accessible to wildlife. The BLM is working with AGFD to provide reliable waters across the Arizona Strip for mule deer and bighorn sheep that are spaced no more than 3 miles apart in mule deer habitat and 4 miles apart in bighorn sheep habitat since these water sources expand distribution into unoccupied areas. There are presently no wildlife water catchments within the Mosby Allotment, and none are proposed to be developed.

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 being met. The allotment contains Mojave-Great Basin Transition plants (including blackbrush, Mormon tea, and native perennial grasses)

that provide forage and cover attributes for special status species. The DPC objectives developed for this allotment provide a mixture of these plants, which are essential to support thriving populations of special status species. The plant communities present on the allotment are at late seral, are healthy, and are functioning properly (as demonstrated by the trend and EIS data).

Quantity and quality of habitat for special status species are taken into consideration for all project-level planning, including 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. All of these factors will ensure habitat constituents for listed species are provided.

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.

The BLM is progressing towards meeting these objectives. Sustainability needs such as prey items, forage, cover, roosting and nesting sites, and quantity of suitable habitat for special status species have been taken into consideration when developing the DPC objectives for this allotment. For example, the DPC objectives provide a mixture of shrubs (such as blackbrush and Mormon tea) and native perennial grasses, all of which are essential to the survival of special status species. The plant communities are at late seral, are healthy, and are functioning properly, as demonstrated by the trend and EIS data. The Mojave-Great Basin Transition vegetation communities within the allotment have not burned or experienced a seral stage altering event so they are intact. Management of this allotment (i.e., utilizing a deferred rotation system where the federal pasture receives summer deferment every year and grazing during the spring growing period occurs only once in a 3-year cycle) should continue to achieve desired objectives, which will facilitate wildlife population numbers (including those of special status species) maintaining or reaching levels sustainable for the habitat, to the extent possible.

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-16
No net loss will occur in the quality and quantity of suitable habitat for endemic amphibians and aquatic invertebrate species within 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.

DFC-TE-29
No net loss will occur in the quality and quantity of suitable habitat for riparian-dependent special status bird species within the Monument.

These objectives are all being met. The plant communities are at late seral stage, are healthy, and are functioning properly (as demonstrated by the trend and ESI data). None of the allotment has burned, so the plant communities are intact. DPC objectives for this allotment were developed that will ensure habitat attributes for special status species are provided (including blackbrush, Mormon tea, and native perennial grasses).

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 ongoing. The BLM works cooperatively with the 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.

Aquatic Habitat

DFC-TE-17
All biologically suitable perennial waters on public lands in the Monument will be occupied by thriving, self-sustaining populations of native, endemic amphibians and aquatic invertebrate species, as appropriate.

DFC-TE-18
New introduced (or re-introduced) populations of relict leopard frog will increase to the point of being viable and self-sustaining.

Progress is being made toward meeting these objectives. The riparian areas at the two springs are properly functioning – vegetation species present are appropriate for the site, and ecological functions and processes are intact. Although aquatic species diversity has not been documented, it is likely that the species which depend upon these habitats are also stable. Relict leopard frogs are believed to have been

extirpated from the area; there are no current plans for reintroduction of this species on the Mosby Allotment.

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.

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 Resource Objectives

Land Health Standards

Standard 1 (Upland Sites): Ground cover was measured at the key area; plants, litter, and rock are present in pattern, kind, and amount sufficient to prevent accelerated erosion. At the key area, ground cover increased from the base year (1984 to 2008).

In addition, a Standard #1 documentation worksheet was completed at the key area. The documentation worksheet evaluates seven indicators (surface litter, bare ground, rock, flow patterns, gullies, rills, and plant pedestalling) that determine the functional condition of upland sites as it relates to infiltration, permeability, and erosion rates. All seven indicators were rated at "None to Slight" at the key area. The "None to Slight" determination means there was no or only a slight departure of those indicators from normal or the natural range of variation. *The recommendation for this key area was that it was functioning properly and meeting Standard #1.*

Standard 2 (Riparian-Wetland Sites): Assessments were completed using the "Process for Assessing Proper Functioning Condition for Lentic Riparian-Wetland Areas" form for each riparian area. The team determined vegetation composition using the Dry Weight Rank Method and also performed a Greenline transect for vegetation structure. All of these studies combined to assist the team in properly assessing these two areas. It was found they are both rated to be in proper functioning condition. *The ID Team had consensus that the area was meeting Standard #2.*

Standard 3 (Desired Resource Conditions): An assessment was conducted at key area 1, relative to the criteria for meeting standards, and indicators of rangeland health. *The ID Team had consensus that the area was meeting Standard #3.* Plant composition was such that it met the desired plant community objectives in every category. These DPC objectives focused on recommendations from the ecological site guide.

Allotment Management Plan

As stated on page 16 of this evaluation report, due to the season of use and size of allotment, no allotment management plan has been developed nor is there a plan for future development of one.

Desired Plant Community Objectives

Table 6 presents each DPC objective and whether or not it is currently being met.

Key Area #5

Ecological site: Shallow Upland, 10-13" precipitation zone (p.z.)

- Maintain total ground cover at between 15-30%.
- Maintain native perennial grass (includes *Achnatherum hymenoides, Achnatherum speciosum, Aristida, Dasyochloa pulchella, Elymus elymoides ssp. Elymoides, Muhlenbergia porteri and Tridens muticus*) at between 1-3% CBW.
- Maintain browse composition at between 50-70% CBW (includes *Ephedra nevadensis, Coleogyne ramosissima and Purshia stansburiana).*
- Maintain other shrubs / trees at between 20-30% CBW (includes *Yucca baccata, Larrea tridentata, Opuntia, Acamptopappus sphaerocephalus, Echinacea, Encelia frutescens, Ephedra viridis, Ferocactus, Hymenoclea salsola, Lycium andersonii, Mortonia utahensis, Psorothamnus fremontii, Yucca brevifolia* and other shrubs except *Gutierrezia sarothrae*).
- Maintain forbs composition at between 1-3% CBW (excludes non-native invasive species).

Conclusion: These objectives are met. Ground cover (currently at 49%) exceeds the objective. Composition of perennial grasses and forbs meets the objectives at 1% each. Total shrubs and trees and other shrubs and trees exceed their objectives at 96% and 33% respectively. Browse species also meet objectives.

Rationale for the above objectives: Maintaining ground cover at the desired levels at the key area will support stable soil conditions. Maintaining the desired composition of key browse species and other shrubs, perennial grass and forb species will ensure perennial forage for wildlife and livestock. The current functional groups of plants provide habitat for wildlife species in the area.

Table 6. Desired Plant Community Objectives Determination

Mosby Allotment			
Key Area #5			
Ecological site: Shallow Upland 10-13" precipitation zone			
Plant Group (or Ground Cover)	**Current Composition**	**Desired Plant Composition**	**Objective Met or Not Met**
Ground Cover	49%	15-30%	Met (Exceeds)
Perennial Grass (PG)	1%	1-3%	Met
Aristida longiseta	1%		
Total shrubs / trees	96%	50-70%	Met (Exceeds)
Browse species	63%	50-70%	Met
Ephedra nevadensis	2%		
Purshia stansburiana	1%		
Coleogyne ramosissima	60%		
Other shrubs / trees	33%	20-30%	Met (Exceeds)
Opuntia	3%		

Rhus trilobata	2%		
Yucca baccata/brevifolia	7%		
Encilia frutescens	1%		
Ericameria linearifolia	3%		
T amnosma montana	7%		
Ericameria nauseosa	10%		
Forbs	1%	1-3%	Met

It should be noted that the vegetative composition listed in the site guides is an average across the entire ecological site; variations in an ecological site (due to inclusions or transition zones) may result in an actual plant composition that is different from that listed in the site guide.

B. Pertaining to Issues

1. Issues relating to Rangeland Health

a. *Riparian functionality at Middle and Red Rock springs*

Conclusion: Middle and Red Rock Spring are protected by fences and are in PFC according to the ID teams extensive evaluations to determine PFC, age/size structure and composition.

b. *Noxious weeds at Middle Spring*

Conclusion: This weed infestation has been treated and will continue to be monitored; it will be retreated as necessary. As of September 21, 2011 no noxious weeds were present.

VI. Technical Recommendations

A. Maintain usage at current licensed levels and use periods and renew the ten year permit.

B. Change the management status of the Mosby Allotment from (M) Maintain to (C) Custodial.

AUTHORIZED OFFICER CONCURRENCE:

X I concur with the recommendations as written.

_____ I do not concur.

_____ I concur, with the following modifications:

Pamela D. McAlpin

Pamela D. McAlpin
Monument Manager
Grand Canyon-Parashant National Monument

11/17/2011
Date

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VIII. Plant Species List

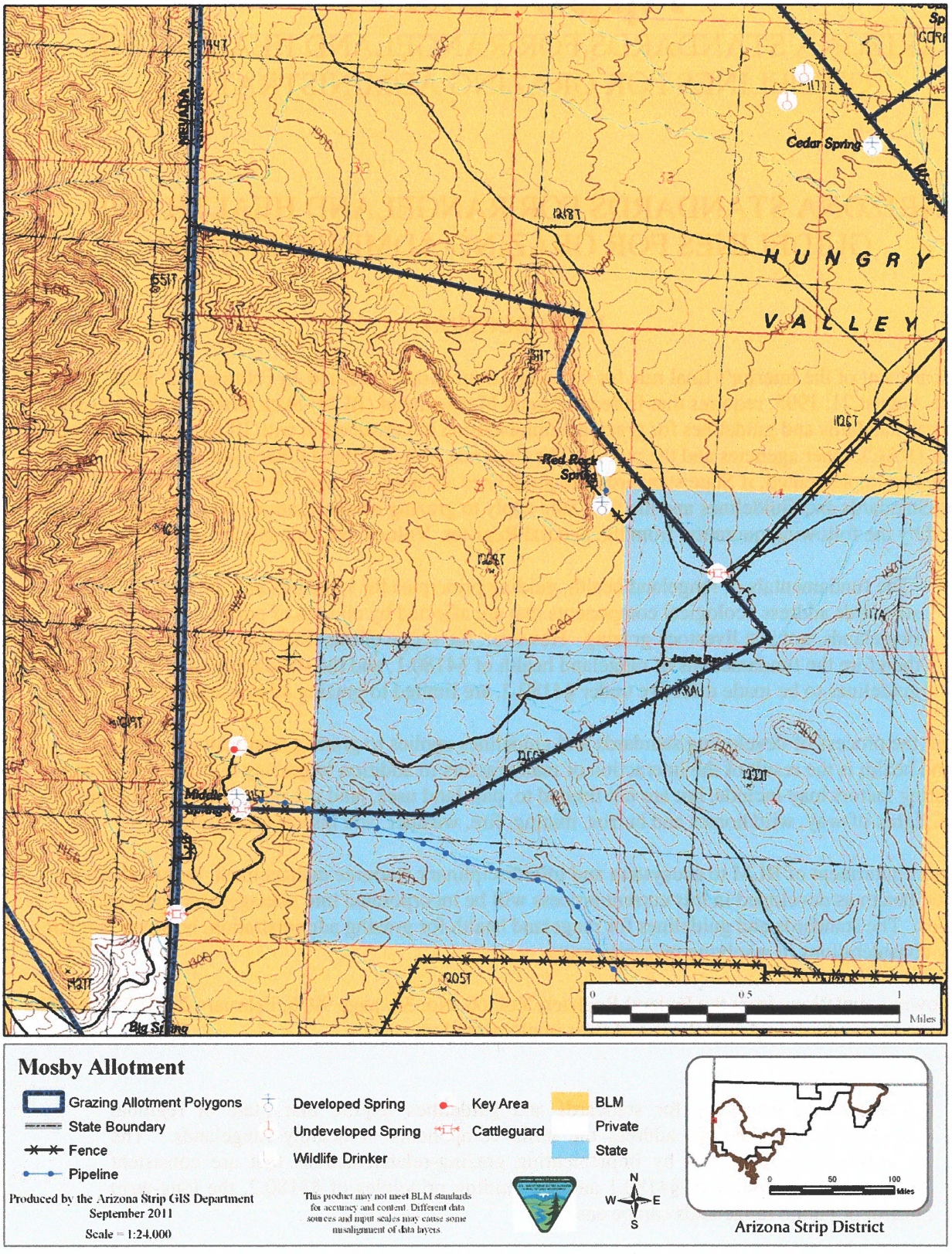
Below is a list of plant species (common and scientific names) included in this assessment report.

Table 7. List of Plant Species Included in this Assessment Report

Grasses	
Perennial species	
Fluffgrass	***Dasyochloa pulchella***
Bush muhly	***Muhlenbergia porteri***
Indian ricegrass	***Achnatherum hymenoides***
Desert needlegrass	***Achnatherum speciosum***
Squirreltail	***Elymus elymoides ssp. elymoides***
Fendler threeawn	***Aristida longiseta***
Mist muhly	***Muhlenbergia porteri***
Muhly	***Muhlenbergia spp.***
Dallisgrass	***Paspalum dilatatum***
Slim tridens	***Tridens muticus***
Grass-likes	
Torreys rush	***Juncus torreyi***
Spike rush	***Eleocharis spp.***
Bullrush	***Scirpus pungens***
Forbs	
Yerba mansa	***Anemopsis californica***
Stream orchid	***Epipactis gigantea***
Water dock	***Rumex crispus***
Loosestrife	***Lycimachia spp.***
Shrubs	
Rayless goldenhead	***Acamptopappus sphaerocephalus***
Catclaw acacia	***Acacia greggii spp.***
Fourwing saltbush	***Atriplex canescens***
Seep willow	***Baccharis sergiloides***
Hackberry	***Celtis spp.***
Blackbrush	***Coleogyne ramosissima***
Purple coneflower	***Echinacea***
Button brittlebush	***Encelia frutescens***
Mormon tea	***Ephedra nevadensis***
Mormon tea	***Ephedra viridis***
Narrowleaf goldenbush	***Ericameria linearifolia***
Rubber rabbitbrush	***Ericameria nauseosa***
Ferocactus	***Ferocactus***
Broom snakeweed	***Gutierrezia sarothrae***
Burrobrush	***Hymenoclea salsola***
Creosote bush	***Larrea tridentata***
Anderson wolfberry	***Lycium andersonii***
Utah mortonia	***Mortonia utahensis***
Opuntia	***Opuntia***
Ground cherry	***Physalis spp.***

Narrow-leaf cottonwood	***Populus deltoides***
Fremont indigobush	***Psorothamnus fremontii***
Stansbury cliffrose	***Purshia stansburiana***
Skunkbush sumac	***Rhus trilobata***
Willow	***Salix spp.***
Turpentinebroom	***Thamnosma montana***
Banana yucca	***Yucca baccata***
Joshua tree	***Yucca brevifolia***

Map


Cedar Spring
HUNGRY
VALLEY
Red Rock Spring
Middle Springs
Big Spring
0
0.5
1
Miles
Mosby Allotment
Grazing Allotment Polygons
State Boundary
Fence
Pipeline
Developed Spring
Undeveloped Spring
Wildlife Drinker
Key Area
Cattleguard
BLM
Private
State
Produced by the Arizona Strip GIS Department
September 2011
Scale = 1:24,000
This product may not meet BLM standards for accuracy and content. Different data sources and input scales may cause some misalignment of data layers.
N
W
E
S
0
50
100
Miles
Arizona Strip District

Appendix A

ARIZONA STANDARDS FOR RANGELAND HEALTH AND GUIDELINES FOR GRAZING ADMINISTRATION

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:
Field Evaluation Form attached to Appendix E.
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 pedestaling

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)
Michael Herder	Wildlife Biologist (BLM)
Shawn Langston	Wildlife Biologist (BLM)
Tom Folks	Wilderness/Recreation Specialist (BLM)
Diana Hawks	Recreation, Wilderness, Cultural Resources Team Lead (BLM)
Lee E Hughes	Vegetation/Grazing Administration (BLM)
Jackie Roaque	Vegetation/Grazing Administration (BLM)
Brandon Boshell	Vegetation/Grazing Administration (BLM)
Robert Smith	Soil Scientist, Watershed Management (BLM)
John Sims	Wildlife Manager (Arizona Game and Fish Department)
Kyle Spencer	Soils and Vegetation (Natural Resource Conservation Service)
Rob Grumbles	Vegetation and Social Economics (Mohave County Extension Service)
Rokelle Reeve	Vegetation Research Technician (University of Arizona)

Rangeland Resource Team

Commodity Interests

Bill Gubler,
Grazing
Rancher, St. George, UT

Bill Howes
Off Road Vehicle Use
Wizards Motorcycle Club

Kent McComb,
Grazing
Retired, St. George, UT

Non-Commodity Interests

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

Spence Esplin,
Historical
Retired, St. George, UT

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

Local Area Interests

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

Roger McPeek
Public-at-Large
Retired, St. George, UT

Dennis Becenti
Native American Interests
Hopi and Navajo Tribes, AZ

Alternates

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

Paul Weaver
Non-Commodity
St. George, UT

Appendix C:
PRECIPITATION DATA

Historical Precipitation Report																
Grand Canyon Parashant National Monument											Cottonwood Wash Ex Precipitation Gauge					
Seasonal Precipitation Amounts						Annual Average					Percent of Normal					
Year	Fall	Winter	Spring	Summer	Annual	Fall	Winter	Spring	Summer	Annual	Fall	Winter	Spring	Summer	Annual
1978	1.14	15.41	2.91	2.66	22.12	1.80	4.87	1.99	3.27	11.93	63%	316%	146%	81%	185%
1979	3.88	5.14	4.00	2.25	15.27	1.80	4.87	1.99	3.27	11.93	216%	106%	201%	69%	128%
1980	0.50	0.90	1.09	3.04	5.53	1.80	4.87	1.99	3.27	11.93	28%	18%	55%	93%	46%
1981	1.59	2.00	3.00	2.90	9.49	1.80	4.87	1.99	3.27	11.93	88%	41%	151%	89%	80%
1982	0.98	2.75	2.40	5.63	11.76	1.80	4.87	1.99	3.27	11.93	54%	56%	121%	172%	99%
1983	3.95	5.75	2.86	4.16	16.72	1.80	4.87	1.99	3.27	11.93	219%	118%	144%	127%	140%
1984	2.38	0.98	0.55	7.28	11.19	1.80	4.87	1.99	3.27	11.93	132%	20%	28%	223%	94%
1985	1.93	6.50	0.75	2.15	11.33	1.80	4.87	1.99	3.27	11.93	107%	133%	38%	66%	95%
1986	3.25	2.10	3.70	3.33	12.38	1.80	4.87	1.99	3.27	11.93	181%	43%	186%	102%	104%
1987	1.19	4.38	1.80	3.19	10.56	1.80	4.87	1.99	3.27	11.93	66%	90%	90%	98%	89%
1988	3.94	3.12	3.07	4.12	14.25	1.80	4.87	1.99	3.27	11.93	219%	64%	154%	126%	119%
1989	0.60	4.14	0.64	3.52	8.9	1.80	4.87	1.99	3.27	11.93	33%	85%	32%	108%	75%
1990	0.43	2.60	2.17	3.90	9.1	1.80	4.87	1.99	3.27	11.93	24%	53%	109%	119%	76%
1991	1.32	3.36	1.91	4.62	11.21	1.80	4.87	1.99	3.27	11.93	73%	69%	96%	141%	94%
1992	1.17	5.50	5.16	1.45	13.28	1.80	4.87	1.99	3.27	11.93	65%	113%	259%	44%	111%
1993	3.20	12.30	1.88	1.24	18.62	1.80	4.87	1.99	3.27	11.93	178%	253%	94%	38%	156%
1994	2.00	2.40	1.36	7.75	13.51	1.80	4.87	1.99	3.27	11.93	111%	49%	68%	237%	113%
1995	1.54	9.46	1.50	2.50	15	1.80	4.87	1.99	3.27	11.93	86%	194%	75%	76%	126%
1996	1.12	2.88	0.63	2.37	7	1.80	4.87	1.99	3.27	11.93	62%	59%	32%	72%	59%
1997	2.25	4.85	1.15	5.50	13.75	1.80	4.87	1.99	3.27	11.93	125%	100%	58%	168%	115%
1998	1.00	5.52	2.40	5.33	14.25	1.80	4.87	1.99	3.27	11.93	56%	113%	121%	163%	119%
1999	2.80	1.45	2.25	4.00	10.5	1.80	4.87	1.99	3.27	11.93	156%	30%	113%	122%	88%
2000	0.00	3.87	0.26	3.10	7.23	1.80	4.87	1.99	3.27	11.93	0%	79%	13%	95%	61%
2001	3.45	8.45	4.10	5.50	21.5	1.80	4.87	1.99	3.27	11.93	192%	174%	206%	168%	180%
2002	0.50	0.88	0.63	1.74	3.75	1.80	4.87	1.99	3.27	11.93	28%	18%	32%	53%	31%
2003	1.13	3.37	2.50	1.00	8	1.80	4.87	1.99	3.27	11.93	63%	69%	125%	31%	67%
2004	0.70	4.42	1.01	0.87	7	1.80	4.87	1.99	3.27	11.93	39%	91%	51%	27%	59%
2005	6.50	12.25	2.75	2.75	24.25	1.80	4.87	1.99	3.27	11.93	361%	252%	138%	84%	203%
2006	1.25	0.50	2.50	4.25	8.5	1.80	4.87	1.99	3.27	11.93	69%	10%	126%	130%	71%
2007	1.25	1.00	0.38	2.88	5.5	1.80	4.87	1.99	3.27	11.93	69%	21%	19%	88%	46%
2008	0.00	6.50	0.25	1.88	8.63	1.80	4.87	1.99	3.27	11.93	0%	133%	13%	57%	72%
2009	1.38	4.12	0.50	0.50	6.5	1.80	4.87	1.99	3.27	11.93	77%	85%	25%	15%	54%
2010	0.25	7.63	4.37	0.58	12.83	1.80	4.87	1.99	3.27	11.93	14%	157%	220%	18%	108%
2011	2.63	9.08	1.25			1.80	4.87	1.99	3.27	11.93	146%	186%	63%		

Appendix D:

TEAM EVALUATION FORMS

Standards for Rangeland Health
Indicators of Standard #1
Documentation Worksheet

Arizona Bureau of Land Management
Arizona Strip Field Office
Mngmnt Unit: AZ010 AZ100 AZ300
(circle one)

Date: 2/3/09 Location: Mosby only KA

Mosby

Legal T _____, R _____, Sec _____, _____1/4, _____1/4

Observers:
Lee Hughes Robert Smith _____
Kari Yanskey Lorraine Christian _____
Kitti Jensen Bob Price _____

Standard #1: *Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate and landform (ecological site).*

Ecological Site: shallow upland

Indicators	Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
Ground Cover					
1. Litter					X
Comments					
2. Bare Ground (Live Veg Cover)					X
Comments					
3. Rock					X
Comments					
Signs of Erosion					
4. Flow Pattern					X
Comments					
5. Gullies					X
Comments					
6. Rills					X
Comments					
7. Plant Pedestalling					X
Comments					

(X) Meeting Standard #1 ( ) Making Progress towards Meeting Standard #1
( ) Not Meeting Standard #1