

Standards for Rangeland Health and Guidelines for Grazing Administration
Implementation Project: Allotment Assessment
Big Spring Pipeline #4870

I. Introduction

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

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

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

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

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

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

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

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

The RRT, IAT, permittees and other interested parties were invited to attend an issue scoping meeting on October 22, 2003, and a field visit on March 17, 2004. In cases where standards were not being met, the group identified which resource uses needed to be addressed, and teams presented recommendations to improve resource conditions.

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

II. Grazing Use

A. Total grazing privileges

<u>Livestock Numbers</u>	<u>Season of Use</u>	<u>% Federal</u>	<u>Active AUMs</u>
222 Cattle	03/01 – 02/28	92%	2,451
20 Horses	03/01 – 02/28	92%	220

B. Season(s) of use

222 cows and 20 horses from March 1 to February 28

C. Kind and class of livestock

Cow/Calf Operation

D. Percent federal range

The Big Spring Pipeline allotment is 92% public land. The state and private lands within the allotment boundaries are grazed in conjunction with the federal lands. Grazing fees for AUMs on state ground are paid to the State of Arizona by the permittee.

III. Allotment Profile

A. Description

The Big Spring Pipeline allotment lies approximately 65 miles south of St. George, Utah within the Grand Canyon-Parashant National Monument on the Arizona Strip. The allotment is within the boundaries of Townships. 32, 33, and 34 N., Ranges 8, 9, and 10 W., south-southeast of Bundyville. The north end of the allotment boundary begins 3-4 miles south of Bundyville and runs approximately 15 miles south towards the Colorado River. Included in the allotment are Whitmore Point, Whitmore Canyon, Kinney Point, Cold Spring Point, and Cold Spring Canyon.

Elevations range from 3,400 feet in Whitmore Canyon to 7,000 feet near Death Valley

Lake. The topography of the allotment is rough. Flat ridge tops with steep slopes and canyon bottoms are characteristic of the allotment.

B. Acreage

The allotment contains:

- 42,222 acres of federal land (BLM)
- 13,680 acres of federal land (Lake Mead Nat'l Recreation Area)
- 1,280 acres of state land
- 403 acres of private land

In 1993, 5,432 private acres on the allotment were acquired by BLM from Anthony Heaton in a land exchange. The above acreages reflect that acquisition.

C. Objectives

Program guidance decisions for the Big Spring Pipeline allotment are found in the Arizona Strip Resource Management Plan (RMP, 1992), the Shivwits Resource Area RMP Implementation Plan (SRAIP), Big Spring Pipeline Allotment Management Plan (AMP) and the Clayhole Habitat Management Plan.

1. Land Use Plan Objectives

GZ17 – Allowable use on key forage species is 50 percent on allotments with rotational grazing systems.

RR01 - Continue authorizing the organized recreational events now occurring on the Resource Area.

RR06 - Implement actions to restore and/or maintain natural conditions or appearance in all areas.

RR08 - Manage the majority of the resource area for extensive recreation while maintaining its naturalness/remoteness. The exception to this is the Cedar Pockets Campground.

RR09 - Commercial recreation permits would be issued to the extent that their cumulative impacts are consistent with the overall objectives of this plan and in the public interest.

WS01- Manage vegetation cover towards ecological stability and sound long-term protective soil cover using mechanical, chemical, biological or fire methods as tools for accomplishments.

WS21- Manage watershed areas according to watershed categorizations to achieve identified objectives.

TE01 -Manage areas consistent with multiple uses to conserve candidate species and their habitats and ensure that actions authorized, funded, or carried out do not contribute to the need to list any of these species as threatened or endangered. Adverse impacts to listed species will be avoided.

WL02 Maintain productive wildlife habitat and ensure wildlife needs and considerations are incorporated into land use planning, National Environmental Policy Act documents, and management decisions.

WL06 In cooperation with Arizona Game and Fish Department, continue restoration of native wildlife into their historic ranges by supporting and assisting in the releases of native species.

WL16 Complete ecological site inventories in key areas to determine site potentials and present ecological conditions; establish desired plant community objectives for various areas and include these objectives in Allotment Management Plans, Habitat Management Plans, watershed plans, and other plans in order to prescribe management or improvement practices to achieve these objectives.

2. Specific Resource Objectives

California Condor Recovery Plan

Provide foraging habitat for California condors. Re-establish extirpated native ungulate populations. Encourage livestock owners to leave dead livestock on rangelands.

Release California condors (*Gymnogyps californianus*) in northern Arizona (Houserock Valley) in order to reduce the risk to the overall population and to facilitate their optimal genetic and demographic management. Maintain a self-sustaining population with a positive rate of growth of at least 150 individuals with at least 15 breeding pair.

Mt. Trumbull Habitat Management Plan (HMP)

1. (To) increase the carrying capacity of the habitat from the present 2,000 deer yearlong to 4,000 deer yearlong by improving the habitat. A corresponding increase in the deer herd is expected and this will increase consumptive recreation use from the present 2,500 hunter days to 5,000 hunter days by 1996.
2. (To) increase the production of quality forage for wildlife by establishing livestock grazing management systems by 1986.

3. (To) construct 26 new wildlife waters based on the HMP implementation schedule.
4. (To) manage areas above 6,000 feet elevation and wildlife waters as crucial wildlife habitat.
- 4a. (To) increase the mule deer production and fawn survival rate from the present five year average of 30 fawns per 100 does to a five year average of 75 fawns per 100 does by 1996.
5. (To) maximize turkey populations through protection and improvement of existing turkey habitat.
6. (To) establish a viable Kaibab squirrel population within all suitable habitat within the Ponderosa pine vegetation type.
8. (To) establish a chukar population in Whitmore and Parashant Canyons through a transplant program.

Big Spring Pipeline AMP (1994)^a

Key Area #4 - Whitmore Point Pasture

- Increase the frequency of perennial cool season grasses from 4 percent to 30 percent in 15 years.
- Increase the frequency of perennial warm season grasses from 15 to 35 percent.
- Increase the frequency of browse from 0 to 10 percent in 15 years.

Key Area #5 - Lava Canyon; Airstrip Pasture

- Increase the frequency of perennial cool season grasses from 0 percent to 10 percent in 15 years.
- Maintain perennial warm season grasses at present levels.
- Increase the frequency of browse from 1 percent to 10 percent in 15 years.

Key Area #6 - Cole Spring Pasture

- Increase the frequency of perennial cool season grasses from 0 to 10 percent in 15 years.
- Increase the frequency of perennial warm season grasses from 25 to 45 percent in 15 years.
- Increase the frequency of browse from 0 to 10 percent in 15 years.

^a Current frequency objectives found in the Allotment Management Plan will be analyzed in this assessment. They will, however, be replaced by Desired Plant Community objectives for future assessments.

Key Area #7 – Canyon Bottom; Cold Spring Pasture

- Increase the frequency of perennial cool season grasses from 0 to 10 percent in 15 years.
- Increase the frequency of browse from 0 to 10 percent in 15 years.

Key Area #9 - Big Sprig Pasture

- Increase the frequency of perennial cool season grasses from 0 to 10 percent in 15 years.
- Increase the frequency of perennial warm season grasses from 0 to 20 percent in 15 years.
- Increase the frequency of browse from 0 to 10 percent in 15 years.
- Decrease the frequency of sagebrush, pinion and juniper from 100 percent to 50 percent in 15 years.

All objectives for Key Area #9 would be dependent on a prescribed land treatment or wildfire occurrence. With neither done, the frequency would not change from the present (1990).

Key Area #10 - Canyon Bottom; Lava Pasture

- Maintain perennial warm season grasses at present frequency level
- Increase the frequency of browse from < 1 percent to 10 percent in 15 years.
- Increase the frequency of perennial cool season grasses from < 1 percent to 5 percent in 15 years.

Key Area #11 – Chaparral Pasture

- Maintain perennial warm season grasses at present frequency levels.
- Increase the frequency of browse from 10 percent to 15 percent in 15 years.
- Increase the frequency of perennial cool season grasses from 0 to 5 percent in 15 years.

Desired Plant Community (DPC) Objectives

DPC objectives for the key areas were developed during this evaluation process by an interdisciplinary team of resource specialists. These objectives focus on the ecological sites and their potentials, which reflect the vegetative diversity of the area. DPC objectives are expressed in figures of Composition by Weight (CBW) for key species. Composition data is collected using the Dry Weight Rank (DWR) sampling method.

Key Area #4 – Whitmore Point Pasture (Shallow Loamy 10-14”)

Maintain the perennial native grass composition between 20 to 40% through the year 2030 by:

- Maintaining Hija CBW at between 5 to 15%

- Increasing Sihy CBW to between 5 to 10%

- Increasing Orhy CBW to between 1 to 5%

- Increasing Boer CBW to between 1 to 5%

Decrease shrub/tree composition between 25 to 45% through 2030 by:

- Decreasing Artr CBW between 20 to 30%

- Maintain Juos CBW at between 0 and 5%

Maintain forbs CBW at between 5 and 15% through 2030.

Maintain ground litter at between 15 and 30% through 2030.

Maintain basal cover at between 5 and 15% through 2030.

Rational: The ecological site for this key area is a Shallow Loamy 10-14” precipitation zone and is within the Great Basin Ecoregion identified in the Grand Canyon-Parashant National Monument Environmental Impact Statement/Land Use Plan (GCPNM EIS/LUP) currently being drafted. This draft LUP proposes the ecoregion is to be managed for a mosaic of early and mid seral vegetation communities.

Sagebrush currently exceeds the 5 to 30% CBW allowable in the site guide, and while sagebrush is important for wildlife, it can often be too dominant. On this key area, sagebrush is the only species where a decrease is warranted. Other species of shrubs and trees found at the key area provide important thermal and hiding cover for wintering mule deer. Juniper in particular provides both cover and forage for mule deer in winter.

The grass species listed individually are components of the ecological site and are recognized as key species. The site guide allows from 5 to 15 % CBW for Hija, 5 to 10% for Sihy, 5 to 10% for Orhy, and 1 to 5% for Boer. In this semi-arid climate, maintaining basal cover at between 5 and 15% is realistic under normal weather conditions. Even though the percentage of litter at key areas can be very dynamic, past monitoring data suggests DPC values for the litter are within the expected range for this climate. In general forbs are very important for wildlife, but forb CBW varies widely depending on the season of the year, weather, and other factors.

Current monitoring data suggests achievement of these DPC objectives is attainable and within the potential of the site.

Key Area #5 - Airstrip Pasture (Unclassified 7-11")

Maintain the perennial native grass community between 50 and 70% through the year 2030 by:

- Maintaining Hija CBW at between 30 and 60%
- Maintaining Spcr CBW at between 5 and 15%
- Maintaining the Boer CBW at between 10 and 20%
- Maintain forbs CBW to between 2-10%
- Maintain Epne CBW at between 5-10%
- Maintain shrub composition at between 30-50%
- Maintain ground litter at between 10 and 30%
- Maintain basal cover at between 2 and 10%

Rational: This key area is located on NPS administered land within the Grand Canyon-Parashant National Monument and no site guide has been written. However, based on past and current monitoring data, a DPC objective for the key area has been developed. It should be assumed that when the ecological site is classified, and a site guide prepared those objectives will be analyzed and modified for consistency with the site guide potential.

Key Area #6 - Cole Spring Pasture (Shallow Loamy 10-14")

Maintain the perennial native grass community between 11 and 40% through the year 2030 by:

- Increasing Bogr CBW to between 5 and 15%
 - Maintaining Hija CBW at between 5 and 15%
 - Increasing the Sihy CBW to between 1 and 10%
- Decrease shrub/tree composition to between 25 and 45% through the year 2030 by:
- Decreasing Artr CBW to between 20 and 30%
 - Decreasing Juso CBW to between 5 and 10%
- Increase forbs CBW to between 5 and 15% through the year 2030
- Maintain ground litter at between 15 and 30% through the year 2030
- Maintain basal cover at between 5 and 15% through the year 2030

Rationale: The ecological site for this key area is a Shallow Loamy 10-14" precipitation zone and is within the Great Basin Ecoregion identified in the Grand Canyon-Parashant National Monument Environmental Impact Statement/Land Use Plan (GCPNM EIS/LUP) currently being drafted. This draft LUP proposes the ecoregion is to be managed for a mosaic of early and mid seral vegetation communities.

Sagebrush currently exceeds the 5 to 30% CBW allowable in the site guide, and while sagebrush is important for wildlife, it can often be too dominant. On this key area, juniper and sagebrush are the only species where decreases are warranted. Shrubs and trees found at the key area provide important thermal and hiding cover, as well as forage in most cases, for wintering mule deer. Juniper in particular

provides both cover and forage for mule deer in winter. Cliffrose is an important browse species for mule deer, but is not listed on the site guide and was only encountered once in the previous vegetation monitoring. Therefore, cliffrose is not listed as part of the desired plant community for this site.

The grass species listed individually are components of the ecological site and are recognized as key species. The site guide allows from 5 to 15 % CBW for Hija, 5 to 10% for Sihy, and 5 to 15% for Bogr. In this semi-arid climate, maintaining basal cover at between 5 and 15% is realistic under normal weather conditions. In general forbs are very important for wildlife, but the forb CBW varies widely depending on the season of the year, weather, and other factors.

Recognizing that this key area is on the edge of a forty year old chaining explains why in 1984 the percentage of litter was 38%. Because the percentage of litter at key areas can be very dynamic, past monitoring data suggests the DPC values for the litter at between 15 and 30% are within the expected range for this climate at the present time.

Current monitoring data suggests achievement of these DPC objectives is attainable and within the potential of the site.

Key Area #7 – Lower Cold Spring Pasture, (Gypsum Fan 7-11”)

Maintain the perennial native grass community between 60 and 85% through the year 2030 by:

- Maintaining Hija CBW at between 30 and 45%

- Maintaining the Spcr CBW to between 30 and 40%

- Maintain shrub/tree composition to between 15 and 25% through the year 2030:

- Increase forbs CBW to between 1 and 15% through the year 2030

- Maintain ground litter at between 7 and 40% through the year 2030

- Maintain basal cover at between 2 and 15% through the year 2030

Rational: This key area is located on BLM administered land within the Grand Canyon-Parashant National Monument and no site guide has been written. However, the soil survey has been completed. Therefore, based on past and current monitoring data, DPC objectives for the key area have been developed. It should be assumed that when the site guide is prepared these objectives will be analyzed and modified for consistency with the new site guide's potential.

Key Area #8 – Canyon Bottom; Airstrip Pasture (Auxillary to Key Area #5)

Rationale: No composition data exists as this is an auxiliary key area. This key area is in the same pasture as key area number 5 but on a different site, and this key area is on the same site, but in a different pasture, as key area #10.

Key Area #9 - Big Spring Pasture, (Clay Loam Upland Gravelly 13-17")

Increase the perennial native grass community between 1 and 10% through the year 2030 by:

 Increase Sihy CBW at between 1 and 5%

Decrease shrub/tree composition to between 50 and 70% through the year 2030

Maintain forbs CBW to between 15 and 30% through the year 2030

Maintain ground litter at between 18 and 25% through the year 2030

Maintain basal cover at between 9 and 20% through the year 2030

Rationale: This key area is in an old chaining which has regrown with fairly thick tree and shrub cover. Very little grass has been found during monitoring. Without subsequent treatment or wildfire, little change is expected. In the fall and spring, this is a transition area for mule deer moving between their summer and winter ranges.

Key Area #10 - Lava Pasture, (Gypsum Fan 7-11")

Maintain the perennial native grass community between 50 and 85% through the year 2030 by:

 Maintaining Boer CBW to between 55 and 70%

 Maintaining Spcr CBW at between 5 and 15%

 Maintaining Hija CBW to between 2 and 10%

Maintain shrub composition to between 10 and 20% through the year 2030

Increase forbs CBW to between 1 and 15% through the year 2030

Maintain ground litter at between 5 and 25% through the year 2030

Maintain basal cover at between 10 and 35% through the year 2030

Rationale: This key area is on BLM administered land and the soil survey has been completed, but no site guide has been developed. Based on past and present monitoring efforts, DPC objectives for the key area have been developed above. It should be assumed that when the site guide is prepared these objectives will be analyzed and modified for consistency with the new site guide's potential. No trees are found on this site.

Key Area #11 – Chaparral Pasture, (Unclassified 7-11")

Maintain the perennial native grass community between 45 and 75% through the year 2030 by:

 Maintaining Hija CBW at between 2 and 10%

 Maintaining Spcr CBW at between 2 and 10%

 Maintaining the Boer CBW at between 5 and 15%

Maintain forbs CBW to between 2-10%

Maintain shrub composition at between 20 to 50%

Maintain ground litter at between 2 and 15%

Maintain basal cover at between 1 and 10%

Rational: This key area is located on NPS administered land within the Grand Canyon-Parashant National Monument and no site guide has been written. However, based on past and current monitoring data, a DPC objective for the key area has been developed above. It should be assumed that when the ecological site is classified, and a site guide prepared those objectives will be analyzed and modified for consistency with the site guide potential.

D. Key Species

<u>Plant Category</u>	<u>Common Name</u>	<u>Scientific Name</u>
Cool Season grasses	Squirreltail	Sitanion hystrix
	Indian rice grass	Oryzopsis hymenoides
Warm Season grasses	Galleta	Hilaria jamesii
	Sand dropseed	Sporobolus cryptandrus
	Blue grama	Bouteloua gracilis
	Black grama	Bouteloua eriopoda
Browse/shrubs	Fourwing saltbrush	Atriplex canescens
	Mormon tea	Ephedra nevadensis

E. Grazing System

A grazing system was established on the Big Spring Pipeline allotment in 1994. This system was split into two units; a winter unit that is grazed from October 16 to April 15 and a summer unit which is grazed from April 16 to October 15. Within the winter unit are four pastures operating under a four pasture, deferred-rotation schedule. Included in the winter unit is, the Cold Spring, Airstrip, Lava, and Chaparral pastures. Each pasture is grazed approximately 45 days during the use period. Each pasture receives spring use (March 1 – April 15) once every four years. Utilization levels in the winter pastures are set at 45% as to minimize grazing impacts in the bottom of Whitmore Canyon.

The summer unit is operated as a two pastures deferred-rotation system. Whitmore Point and Cole Spring pastures are grazed in the summer rotation. One of the pastures receives grazing from April 16 to July 15, the other July 16 to October 15. Scheduled use periods for each pasture are switched each year. This is done to negate a pasture being used at the same time each year and to allow rest and recovery during a portion of the growing season.

Beginning the summer of 1997, the grazing system was modified. Since the summer of 1997, the allotment has only been grazed from October through May. The deferred-rotation schedule has continued relative to all the pastures plus an additional large pasture (Pa's Pocket allotment). Livestock are moved off the allotment and taken to private pasture in Panquitch, Utah from June through September. This has allowed all pastures recovery time during the summer growing season.

F. Other uses

1. Special Status Species

Federally Listed Threatened or Endangered Species: There are three species of federally listed birds which may occur in this allotment, plus one recently delisted species.

First is the **California condor** (*Gymnogyps californianus*). Condors are federally listed as endangered. The population in Arizona currently (as of April 19, 2005) contains 61 birds. The Arizona/Utah condor population has also been designated as a experimental, non-essential population (as defined under Section 10(j) of the Endangered Species Act).

The California condors were re-introduced to Arizona on December 12, 1996. Each bird is equipped with wing markers and radio transmitters, and is monitored daily. Condors are strictly scavengers, prefer to feed on large dead mammalian carcasses, and can fly long distances. Additional captive reared birds are released annually and the population is slowly growing..

Condors are likely to be found in this allotment year-round, but only on rare occasions. They are often found in the Grand Canyon in the summer months and also typically soar along large cliff faces, like the Hurricane Rim. Most of the condors have been released from a site on the Vermilion Cliffs, but in 1998 and 1999 condor releases were made from the Hurricane Cliffs northeast of Diamond Butte, approximately 24 miles north of this allotment. GPS equipped condors have been shown to fly up Whitmore Canyon in this allotment.

The **bald eagle** (*Haliaeetus leucocephalus*) is a winter migrant. It is federally listed as threatened and is proposed to be de-listed. It does not nest in this area, but is likely in the winter season to be found either flying over or feeding in this allotment. It can be either a scavenger or a predator in this area. Numerous bald eagles winter within the Grand Canyon which is adjacent to this allotment.

The **Mexican Spotted Owl** (MSO)(*Strix occidentalis lucida*) is federally listed as threatened and may be found in this allotment. For the past decade BLM has looked for nesting MSOs in the forested areas of Mt. Trumbull and Mt. Logan, including surveys in this allotment, without success. However, MSOs are known to nest in the Grand Canyon in canyon habitats. They also are believed to fly out of the canyon habitats to forage. They eat small prey, ranging in type from moths to wood rats. MSO nesting in this allotment is not anticipated, but foraging MSOs and possibly dispersing (non-nesting) owls could be found here.

The **peregrine falcon** (*Falco peregrinus anatum*) is likely to occasionally fly over or feed in this allotment. Status-wise, peregrine falcons were de-listed in 1999, but

their populations remain carefully monitored. They may nest on the nearby Hurricane Cliffs and are also known to nest in the Grand Canyon. They are found year-round in the Grand Canyon. Peregrines are primarily avian predators.

Non-Federally Listed Sensitive Species. Sensitive species are usually rare within at least a portion of their range. Listed below are sensitive animal species that may occur within or adjacent to the Big Springs Pipeline Grazing Allotment:

- Spotted bat (*Euderma maculatum*)
- Western small-footed myotis (*Myotis ciliolabrum*)
- Fringed myotis (*Myotis thysanodes*)
- Big free-tailed bats (*Nyctinomops macrotis*)
- Townsend's big-eared bat (*Corynorhinus townsendii*)

2. Wildlife Resources

Mule deer are the primary big game species that occupy this allotment. The Big Springs Pipeline Allotment contains some crucial mule deer summer range (above 6,000 feet in elevation/Ponderosa pine habitat). It also contains a great deal of mule deer winter range. Especially in years of harsh winter weather, mule deer from the Trumbull and Logan areas move into the lower shrub habitats in this allotment, Whitmore Canyon is a favorite such area. However, deer numbers are significantly reduced from the population levels of the 1950's and 60's.

Wild turkeys are the other important big game species found in this allotment. The turkeys are not native, but the result of a 1961 transplant from the Kaibab Plateau. The turkeys are mostly found in the higher elevations. They use the Ponderosa pine for roosts and feed, and nest on the ground.

Other big game species, such as desert bighorn sheep and pronghorn would only very rarely be found in this allotment and will not be discussed further. Kaibab squirrels are a small game species that is found in the Ponderosa pine habitat in this allotment. These squirrels were introduced to this area from the Kaibab Plateau in 1972.

3. Recreation

The AMP area is considered to have recreation values for its geology, scenic view sheds, and remoteness. General recreation activities might include: Sight seeing, horseback riding, backpacking, hiking, camping, hunting, photography, bird watching and nature study.

Off Highway Vehicles: This AMP area falls in an area classified as Limited to Existing Roads and Trails. This would include all areas outside the wilderness designation.

Recreation Opportunity Spectrum: This AMP area was classified as having the following Recreation Spectrum Classes in it: Semi Primitive – Non Motorized, Semi Primitive - Motorized, and Roaded Natural.

4. Wilderness

Portions of the Mt. Logan Wilderness are within the boundary of this AMP.

G. Issues brought out in scoping.

1. Issues relating to Rangeland Health

- a. Vegetative diversity and erosion in Whitmore Canyon
- b. Weeds, Scotch Thistle south of Browns Knoll
- c. Sheet and gully erosion in tributaries, head/lateral head cutting in the upper reaches in Upper Langs Run, near Death Valley Lake.

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

- a. Wildlife drinker on livestock catchment in sec 17 is not working, trough needs to be secured.

BLM staff will visit and assess maintenance needs of the wildlife drinker. Any maintenance needs relating to the livestock trough will be done by the permittee.

- b. Forty acres of private at Big Spring not shown on the map.

It is unsure what map is being referenced with this issue, however, the new BLM visitor maps do show the 40 acres of private land around Big Spring.

- c. Fences in poor condition around Hells Hollow and Whitmore Canyon.

Many of these fences in the Hells Hollow and Whitmore Canyon area are old pasture or allotment boundary fences. The Rangeland Management Specialist and permittee will assess these fences and determine current and future needs of these fences. Fences unnecessary for obtaining resource objectives would be programmed for removal.

IV. Management Evaluation

A. Purpose of Evaluation

The purpose of this assessment is to determine if the existing permitted livestock use, Allotment Management Plan, and other activity plans, which identify terms and conditions for management on public lands within the Big Spring Pipeline Allotment is meeting/making progress toward meeting or are not meeting the Arizona Standards for Rangeland Health. If the current livestock grazing practices are determined to be causing the 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

Actual use was determined by annual actual use reports submitted to BLM. Total active preference for the allotment is 2,671 AUMs.

<u>Grazing Year</u>	<u>AUMs Used</u>	<u>Percent of Authorized AUMs Used</u>
1986	2,092	78%
1987	2,055	77%
1988	1,731	65%
1989	2,277	85%
1990	1,840	69%
1991	1,648	62%
1992	1,593	60%
1993	1,593	60%
1994	934	35%
1995	1,767	66%
1996	1,672	63%
1997	994	37%
1998	2,059	77%
1999	2,284	86%
2000	2,033	76%
2001	1,488	56%
2002	1,256	47%
2003	967	36%

2. Precipitation

Average annual precipitation on the Big Spring Pipeline allotment falls into two zones. The higher elevations on the allotment are within a 10-14" precipitation zone (p.z.). The Side of Mountain rain gauge located in T35N, R9W, Sec. 6 is

the reference gauge for annual precipitation data. This rain gauge is approximately ½ mile from the north boundary fence. Average precipitation is ~ 13.07” annually. Seasonal distribution is 20% (2.62”) in the fall, 26% (3.42”) in the winter, 21% (2.75”) in spring, and 33% (4.28”) during the summer.

	Annual Precipitation 1988-1995							
Rain Gauge	1988	1989	1990	1991	1992	1993	1994	1995
Side of Mtn.	No Data	No Data	No Data	No Data	16.24”	13.97”	13.10”	23.91”
Pa’s Pocket	11.18”	6.62”	11.13”	5.27”	10.91”	17.09”	8.31”	16.57”

	Annual Precipitation 1996-2003							
Rain Gauge	1996	1997	1998	1999	2000	2001	2002	2003
Side of Mtn.	9.60”	15.00”	17.68”	13.15”	5.52”	12.25”	4.59”	13.17”
Pa’s Pocket	6.69”	8.65”	14.63”	10.10”	4.44”	9.19”	4.07”	12.70”

The lower reaches of the allotment, such as Whitmore Canyon and Cold Spring Canyon are in a 7-11” precipitation zone. The Pa’s Pocket rain gauge provides reference rain fall data for this zone. It is located on the southern allotment boundary in T33N, R9W, Sec. 26. Average precipitation is ~ 10.81” annually. Approximately 17% (1.88”) is distributed in the fall, 32% (3.47”) in the winter, 20% (2.16”) in spring, and 31% (3.30”) during the summer. For detailed precipitation data see the appendices.

3. Utilization

Utilization is the portion or amount of a key plant species current year’s growth that is consumed or destroyed by animals. Utilization data from 1990-2003 has been compiled for this evaluation. The Key Species Grazed Class method was used to collect the data. Utilization is read at or around the designated key area for each pasture. ND = No data collected, NU = Non-use, meaning livestock did not graze the pasture.

Before the existence of the AMP, and particularly in the 1970’s and early 1980’s heavy utilization was common in the bottoms of Whitmore and Cold Spring canyons. Utilization in excess of allowable 50% levels has lessened since AMP implementation in 1994. The tables below show utilization of each key species by pasture.

Key Species Utilization at Key Area #4 (Whitmore Pont)									
	1990	1992	1994	1998	1999	2000	2001	2002	2003
Hija	70	32	26	24	47	43	22	38	15
Spcr	ND	16	25	25	50	44	37	34	11
Sihy	ND	24	37	24	36	43	30	24	13
Atca	ND	50	37	18	58	48	38	44	25

Utilization levels on a key species in the Whitmore Point pasture exceeded the 50% allowable in 1990 and 1999. The highest overall use level in this pasture for all key species also occurred in 1999 at 49%. Overall utilization in the Whitmore Point pasture for the evaluation period was 36%.

Key Species Utilization at Key Area #5 (Airstrip)									
	1990	1994	1997	1998	1999	2000	2001	2002	2003
Hija	62	45	NU	43	41	45	41	25	29
Spcr	64	53	NU	46	40	46	36	21	30
Atca	ND	43	NU	48	38	47	44	43	33
Epne	ND	43	NU	49	40	46	59	41	23

Three pastures located in Whitmore Canyon; Airstrip, Lava, and Chaparral. The AMP established utilization levels on all key species at 45% for these pastures. Utilization on a key species in the Airstrip pasture exceeded the 45% level in 1990, 1994, 1998 and 2000. The highest overall use level in this pasture for all key species occurred during those same years. Overall utilization in the Whitmore Point pasture for the evaluation period was 40%.

Key Species Utilization at Key Area #6 (Upper Cole)									
	1994	1996	1997	1998	1999	2000	2001	2002	2003
Hija	37	41	21	10	46	NU	NU	32	35
Bogr	30	42	17	5	43	NU	NU	7	26
Sihy	18	43	24	10	37	NU	NU	31	41
Epvi	23	31	22	10	38	NU	NU	38	26

The Cole pasture has two key areas. The data displayed above represents upper Cole. The highest utilization recorded on key species occurred in 1999 at 41%. Use levels on individual key species above 50% did not occur during the evaluation period. The overall pasture average for all key species utilization is 28%.

Key Species Utilization at Key Area #7 (Lower Cole)									
	1990	1991	1994	1997	1999	2000	2001	2002	2003
Hija	44	37	44	43	37	36	NU	41	36
Spcr	ND	38	49	44	34	31	NU	38	35
Sihy	ND	ND	ND	43	40	29	NU	37	35
Bogr	ND	ND	ND	32	25	24	NU	0	21

Utilization at the lower Cole key area reached its highest levels in 1994 at 47%. Utilization on individual key species above the 50% allowable did not occur during the evaluation period. Overall utilization average is 38%.

Utilization data is not collected at Key Area #9. The key area was established principally to monitor trend in an old treatment area. The monitoring location is on the boundary of the Mt. Logan Wilderness Area. Because of the rocky, rough terrain, lack of water and available forage, livestock rarely spend time using the area.

Key Species Utilization at Key Area #10 (Lava)									
	1994	1995	1997	1998	1999	2000	2001	2002	2003
Hija	44	NU	33	23	40	37	NU	NU	NU
Spcr	53	NU	33	20	43	39	NU	NU	NU
Epne	36	NU	37	25	55	30	NU	NU	NU

Utilization on individual key species above the 45% allowable occurred in 1994 and 1999 during the evaluation period. The highest utilization on all key species happened also in 1994 and 1999 at 45%. The Lava pasture combined utilization average is 36%.

Key Species Utilization at Key Area #11 (Chaparral)						
	1998	1999	2000	2001	2002	2003
Hija	48	38	39	NU	32	38
Spcr	49	34	37	NU	35	38
Boer	52	33	38	NU	34	31

Key species utilization above 45% occurred once in 1998. In 1998, the highest utilization for all key species also occurred at 50%. The overall average for the Chaparral pasture is 38%.

4. Trend

Trend monitoring data was conducted at eight key areas over the allotment. The Whitmore Point, Airstrip, Cole, Cold, Big Spring, Lava and Chaparral pastures have key area locations where trend data was collected. Key Area #8, is an auxiliary trend location in the Airstrip pasture. Key area #6 was established in 1984, #4 in 1987, and the remaining key areas were established in 1990.

Trend over all key areas appear to be split with four key areas in a static or upward trend, while four are in a downward trend. The downward trend is not surprising considering the recent drought. Precipitation in Whitmore Canyon for 2000 was 41% of normal (0% for fall, 52% winter, 57%, spring, and 43% for summer). The 2001 precipitation year was again below normal at 85%. This was followed by the bench mark year of 2002 of below normal with no effective precipitation received, (fall 38%, winter 17%, spring 19%, and summer 38%). The 2002 annual precipitation was only 38% of normal.

Data was collected using the Pace-Frequency method. This method of monitoring measures the percent of bare ground, litter, rock and live vegetation/basal cover. In addition, it measures the occurrence frequency of plant species. Measurement of these different attributes for plant species at each key area, then compared to a previous reading is used to demonstrate that a change in a particular vegetation attribute has occurred.

Key Area # 4; Whitmore Point Pasture; Shallow Loamy 10-14" p.z., 5,040' elevation. Apparent Trend – Down, Basal Cover 12%

Big Spring Pipeline Allotment Key Area #4					
Plant Species (Pace Frequency)	Included in the EcoSite Guide	Present at the Key Area	% Frequency in 1987	% Frequency in 2003	TREND
Grasses					
Hija*	Y	Y	31	21	Down
Bogr	Y	Y	0	4	
Spcr*	Y	Y	3	6	Static
Sihy*	Y	Y	25	13	Down
Orhy*	Y	Y	4	2	Static
Arlo	Y	Y	0	5	
Boer	Y	Y	1	0	
Brte			0	10	
Forbs					
Euphorb	N	Y	0	17	
AAFF	Y	Y	0	6	
PPFF	Y	Y	3	12	
Spam	Y	Y	5	9	
Shrubs					
Artr	Y	Y	59	53	
Gusa	Y	Y	23	11	
Chvi	Y	Y	0	5	
Juos	Y	Y	1	2	
Epvi	Y	Y	0	1	
Befr	Y	Y	1	1	
Cover (Step Point)	EcoSite potential Basal Cover	Reading in 1987	Reading in 2003	AMP objective for cover	TREND
Live Basal Veg.	NA	5% cover	12% cover	NA	Down

Key Area #5; Lower Airstrip Pasture; 4,000' elevation. Apparent Trend – Static, Basal Cover 3%. The key area is on NPS-Lake Mead administered lands and no site guide has been written.

Big Spring Pipeline Allotment Key Area #5					
Plant Species (Pace Frequency)	Included in the EcoSite Guide	Present at the Key Area	% Frequency in 1990	% Frequency in 2003	TREND
Grasses					
Hija*		Y	45	11	Down
Spcr*		Y	8	4	Static
Boer*		Y	3	1	Static
Mupo*		Y	0	5	Up
Trpu		Y	5	0	
Boba		Y	0	16	
Forbs					
Eriastrum		Y	0	1	
Shrubs					
Gusa		Y	4	3	
Opuntia		Y	1	2	
Yuba		Y	1	4	
Epne*		Y	1	3	Static
Lyan		Y	0	1	
Cover (Step Point)	EcoSite potential Basal Cover	Reading in 1990	Reading in 2003	AMP objective for cover	TREND
Live Basal Veg.	NA	2% cover	3% cover	NA	Static

Key Area # 6; Cole Pasture (Upper); Shallow Loamy 10-14" p.z., 5,260' elevation. Apparent Trend – Down, Basal Cover 17%

Big Spring Pipeline Allotment Key Area #6					
Plant Species (Pace Frequency)	Included in the EcoSite Guide	Present at the Key Area	% Frequency in 1984	% Frequency in 2003	TREND
Grasses					
Hija*	Y	Y	31	7	Down
Bogr*	Y	Y	14	1	Down
Arlo	Y	Y	26	5	
Sihy*	Y	Y	3	0	Down
Forbs					
Solenium	N	Y	3	0	
Eriog.	Y	Y	16	0	
AAFF	Y	Y	2	0	
Spam	Y	Y	4	0	
Shrubs					
Juos	Y	Y	5	16	
Pied	Y	Y	2	5	
Artr	Y	Y	11	16	
Come*	N	Y	1	0	Static
Gusa	Y	Y	37	5	
Chvi	Y	Y	1	1	
Erfa	Y	Y	16	0	
Epvi	Y	Y	1	1	
Befr	Y	Y	2	0	
Psc02	N	Y	7	0	
Cover (Step Point)	EcoSite potential Basal Cover	Reading in 1987	Reading in 2003	AMP objective for cover	TREND
Live Basal Veg.	NA	4% cover	17% cover	NA	Down

Key Area #7; Cole Pasture (Lower); Gypsum Fan 7-11" p.z., 4,300' elevation. Apparent Trend – Static, Basal Cover 2%. The Ecological Site Guide has not been written.

Big Spring Pipeline Allotment Key Area #7					
Plant Species (Pace Frequency)	Included in the EcoSite Guide	Present at the Key Area	% Frequency in 1990	% Frequency in 2003	TREND
Grasses					
Hija*	NA	Y	50	42	Static
Spcr*	NA	Y	45	24	Down
Forbs					
Eriastrum	NA	Y	0	1	
Shrubs					
Gusa	NA	Y	23	7	
Artr	NA	Y	2	3	
Chvi	NA	Y	0	1	
Cover (Step Point)	EcoSite potential Basal Cover	Reading in 1990	Reading in 2003	AMP objective for cover	TREND
Live Basal Veg.	NA	2% cover	2% cover	NA	Static

Key Area #8; Airstrip Pasture (Auxiliary Plot); Gypsum Fan 7-11" p.z. elevation 4,000'. Apparent Trend – Up, Basal Cover 3%. The site guide has not been written.

Big Spring Pipeline Allotment Key Area #8					
Plant Species (Pace Frequency)	Included in the EcoSite Guide	Present at the Key Area	% Frequency in 1990	% Frequency in 2003	TREND
Grasses					
Hija*	NA	Y	11	15	Static
Spcr*	NA	Y	33	43	Static
Forbs					
Saka	NA	Y	91	0	
Euphorbia	NA	Y	91	0	
Spam	NA	Y	0	1	
Shrubs					
Gusa	NA	Y	1	9	
Atca	NA	Y	0	1	
Cover (Step Point)	EcoSite potential Basal Cover	Reading in 1990	Reading in 2003	AMP objective for cover	TREND
Live Basal Veg.	NA	3% cover	3% cover	NA	Up

Key Area # 9; Big Spring Pasture; Clay Loam Upland, Gravelly (PIED, JUOS)
13-17" p.z., elevation 5,100'. Apparent Trend – Static, Basal Cover 9%.

Big Spring Pipeline Allotment Key Area #9					
Plant Species (Pace Frequency)	Included in the EcoSite Guide	Present at the Key Area	% Frequency in 1990	% Frequency in 2003	TREND
Grasses					
Sihy*	Y	Y	0	2	Static
Forbs					
Leonurus	Y	Y	0	5	
Perezia	Y	Y	0	1	
Shrubs					
Juos	Y	Y	10	5	
Pied	Y	Y	0	1	
Artr	Y	Y	45	12	
Come*	N	Y	0	1	Static
Gusa	Y	Y	0	5	
Opuntia	Y	Y	6	9	
Epvi*	Y	Y	0	1	
Cholla	Y	Y	0	1	
Cover (Step Point)	EcoSite potential Basal Cover	Reading in 1990	Reading in 2003	AMP objective for cover	TREND
Live Basal Veg.	NA	19% cover	9% cover	NA	Static

Key Area #10; Lava Pasture; Gypsum Fan 7-11" p.z. elevation 4,000'. Apparent
Trend – Up, Basal Cover 3%. The site guide has not been written.

Big Spring Pipeline Allotment Key Area #10					
Plant Species (Pace Frequency)	Included in the EcoSite Guide	Present at the Key Area	% Frequency in 1990	% Frequency in 2003	TREND
Grasses					
Hija*	NA	Y	12	3	Down
Spcr*	NA	Y	28	3	Down
Boer*	NA	Y	75	19	Down
Forbs					
Saka	NA	Y	2	0	
Euphorbia	NA	Y	7	0	
Verbena	NA	Y	1	0	
Shrubs					
Gusa	NA	Y	1	11	
Atca*	NA	Y	1	1	Static
Opuntia	NA	Y	3	3	
Cover (Step Point)	EcoSite potential Basal Cover	Reading in 1990	Reading in 2003	AMP objective for cover	TREND
Live Basal Veg.	NA	8% cover	3% cover	NA	Down

Key Area #11; Chaparral Pasture; 4,000' elevation. Apparent Trend – Static, Basal Cover 1%. The key area is on NPS-Lake Mead administered lands and no site guide has been written.

Big Spring Pipeline Allotment Key Area #11					
Plant Species (Pace Frequency)	Included in the EcoSite Guide	Present at the Key Area	% Frequency in 1990	% Frequency in 2003	TREND
Grasses					
Hija*	NA	Y	17	5	Down
Spcr*	NA	Y	56	3	Down
Boer*	NA	Y	18	16	Static
Mupo*	NA	Y	0	1	Static
Trpu	NA	Y	9	24	
Forbs					
Euphorbia	NA	Y	26	0	
Verbena	NA	Y	4	0	
Shrubs					
Gusa	NA	Y	21	7	
Lyan	NA	Y	2	8	
Epne*	NA	Y	10	7	Static
Cover (Step Point)	EcoSite potential Basal Cover	Reading in 1990	Reading in 2003	AMP objective for cover	TREND
Live Basal Veg.	NA	3% cover	1% cover	NA	Down

5. Ecological Site Information

The “Dry Weight Rank” vegetative sampling method is used to determine species composition. The present composition and the potential for each key species are used to set composition objectives. The potential composition is determined by the applicable soil type and precipitation zone. These potentials are described in Ecological Site Guides provided by the Natural Resources Conservation Service.

Key Area #4, Shallow Loamy 10-14” p.z., Late seral (71% of PNC)

Key Area #4; Plant Species	Site Guide Allowable Composition	1990 Composition	2003 Composition	Desired Composition Objective
Grasses				
Hija*	5-15%	8%	12%	5-15%
Bogr	5-15%	2%	2%	
Sihy*	5-10%	0%	4%	5-10%
Spcr	1-5%	0%	2%	
Arlo	1-5%	0%	T	
Orhy*	5-10%	0%	T	1-5%
Boer*	5-20%	0%	T	1-5%
Brte	NA	0%	1%	
Forbs				
Sphae	1-5%	0%	2%	1-5%
PPFF	1-5%	0%	2%	1-5%
Euphorbia	NA	0%	6%	
AAFF	1-5%	0%	1%	1-5%
Shrubs				
Artr	5-30%	80%	56%	20-30%
Gusa	5-10%	6%	6%	
Befr	5-10%	2%	2%	
Juos	5-10%	T	T	0-5%
Epvi	1-5%	T	T	
Chvi	5-10%	2%	4%	

Key Area #5, this key area is within the boundaries of the Lake Mead National Recreation Area, where site guides have not yet been written. DWR data has been collected, but an ES rating cannot be defined without a site guide.

Key Area #5; Plant Species	Site Guide Allowable Composition	1990 Composition	2003 Composition	Desired Composition Objective
Grasses				
Hija*	NA	59%	36%	30-60%
Spcr*	NA	8%	7%	2-10%
Boer*	NA	12%	14%	5-15%
Mupo*	NA	0%	T	0-5%
Trpu	NA	8%	T	
Boba	NA	0%	T	
Forbs				
Eriogonum	NA	4%	0%	
PPFF	NA	0%	T	
Shrubs				
Gusa	NA	T	14%	
Opuntia	NA	0%	T	
Yuba	NA	4%	21%	
Epne*	NA	4%	7%	5-10%
Lyan	NA	0%	T	

Key Area #6, Shallow Loamy 10-14" p.z., Late seral (63% of PNC)

Key Area #6; Plant Species	Site Guide Allowable Composition	1990 Composition	2003 Composition	Desired Composition Objective
Grasses				
Hija*	5-15%	10%	8%	5-15%
Bogr*	5-15%	11%	0%	5-15%
Sihy*	5-10%	T	0%	1-10%
Arlo	1-5%	23%	8%	
Forbs				
Solenium	1-5%	T	0%	1-5%
Eriogonum	1-5%	T	0%	1-5%
Sphae	NA	T	0%	1-5%
Shrubs				
Artr	5-30%	20%	46%	20-30%
Gusa	5-10%	21%	11%	
Befr	5-10%	T	0%	
Juos	5-10%	3%	16%	5-10%
Pied	5-10%	4%	11%	5-10%
Epvi	1-5%	T	0%	
Come	NA	T	0%	
Chvi	5-10%	T	0%	

Key Area #7, Gypsum Fan 7-11" p.z., the ecological site guide has not been written and site data is not yet available. DWR data has been collected, but an ES rating cannot be defined without a site guide.

Key Area #7; Plant Species	Site Guide Allowable Composition	1990 Composition	2003 Composition	Desired Composition Objective
Grasses				
Hija*	NA	45%	41%	30-45%
Spcr*	NA	42%	36%	25-40%
Forbs				
AAFF	NA	T	T	1-5%
PPFF	NA	T	T	1-5%
Shrubs				
Gusa	NA	13%	12%	
Artr	NA	0%	7%	
Chvi	NA	0%	4%	

Key Area #9, Clay Loam Upland Gravelly 13-17", Mid seral (35% of PNC); the site guide allowable composition percentages are for a site with a sparse, (10-30%) canopy cover.

Key Area #9; Plant Species	Site Guide Allowable Composition	1990 Composition	2003 Composition	Desired Composition Objective
Grasses				
Sihy*	1-10%	0%	T	1-10%
Forbs				
Leonurus	1-5%	0%	25%	
Perezia	1-5%	0%	T	
Shrubs				
Artr	1-10%	48%	28%	5-15%
Pied	1-5%	0%	T	
Juos	1-5%	43%	8%	1-10%
Chvi	1-5%	T	T	
Gusa	1-5%	T	17%	
Opuntia	1-5%	9%	18%	
Epvi	1-5%	0%	4%	
Cholla	1-5%	0%	T	
Come	1-5%	0%	T	1-5%

Key Area #10, Gypsum Fan 7-11", the ecological site guide has not been written and site data is not yet available. DWR data has been collected, but an ES rating cannot be defined without a site guide.

Key Area #10; Plant Species	Site Guide Allowable Composition	1990 Composition	2003 Composition	Desired Composition Objective
Grasses				
Hija*	NA	2%	6%	2-10%
Spcr*	NA	22%	6%	5-15%
Boer*	NA	64%	67%	55-70%
Arlo	NA			
Forbs				
Sphae	NA	T	T	1-5%
AAFF	NA	T	T	1-5%
Plantago	NA	T	0%	1-5%
Shrubs				
Atca	NA	3%	5%	1-5%
Gusa	NA	T	3%	
Opuntia	NA	7%	3%	

Key Area #11, this key area is within the boundaries of the Lake Mead National Recreation Area, where site guides have not yet been written. DWR data has been collected, but an ES rating cannot be defined without a site guide.

Key Area #11; Plant Species	Site Guide Allowable Composition	1990 Composition	2003 Composition	Desired Composition Objective
Grasses				
Hija*	NA	9%	3%	2-10%
Spcr*	NA	45%	3%	2-10%
Boer*	NA	27%	6%	5-15%
Mupo*	NA	T	T	
Trpu	NA	T	47%	
Arlo	NA	3%	T	
Forbs				
Euphorbia	NA	16%	0%	
Shrubs				
Lyan	NA	6%	3%	
Gusa	NA	5%	9%	
Epne*	NA	8%	26%	15-30%
Cora	NA	T	3%	
Chvi	NA	T	T	
Atca	NA	T	T	

6. Special Status Species – Animals

Regarding the three federally listed avian species which may occur in this allotment, the California condor, the bald eagle, and the Mexican Spotted Owl (MSO), there is little allotment specific information.

However, within the greater northern Arizona-southern Utah area, the re-introduced **condor** population overall is doing well and is increasing. Approximately ten captive reared additional young condors are released annually. In addition, between 1 and 3 wild condor chicks fledge annually. All condors in Arizona are marked with numbered wing tags and equipped with radio transmitters. Each bird is monitored daily, if possible. 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. The current condor population in northern Arizona/southern Utah totals 61 and two eggs are being incubated in the wild (as of April 14, 2005).

Some condors have been recently outfitted with satellite GPS transmitters which plot an individual bird's location up to 12 times per day. These new transmitters

have already shown that the condors are ranging wider than previously believed. GPS information has documented condors flying over Whitmore Canyon in this allotment.

Less specific information is known about **bald eagles**, and for that matter, golden eagles (which are also federally protected, but not federally listed) on the Arizona Strip. Both species of eagles may be found in this allotment. Both are scavengers and predators. The bald eagles are only found here in the winter months. A number of bald eagles winter in the Grand Canyon and would readily forage in this allotment. Golden eagles can be found on the Strip yearlong, but in the winter months their numbers increase as migrants from the north join the resident golden eagles.

No recent **peregrine** information is known. However, the spectacular cliffs in the area in the Grand Canyon are classed as superior peregrine habitat and generally support active eyries every 3-5 miles every year. Peregrines forage up to ten miles from their eyries. Peregrines are believed to nest on the Hurricane Rim, in Parashant Canyon, and in other nearby locations.

BLM has surveyed for Mexican Spotted Owls in the Mt. Trumbull and Mt. Logan area for the past fifteen years. Much of this effort has been in this allotment or adjacent to it, mostly in Ponderosa pine forested areas. No MSOs have been documented.

7. Wildlife Habitat

Mule deer and all big game species populations are monitored annually by the AGFD. Mule deer survey data for the Mt. Trumbull area includes direct counts by sex and age class. The number of mule deer counted in this area varied considerably over the 13 year period from 1989 to 2001, from a low of 31 in 1992 to a high of 170 in 2001 (See appendices for specific information). While there are no published estimates of mule deer numbers specifically for the Tuweep Allotment, the deer herd in GMU 13A is probably less than 2,000 animals. This herd has been stable to increasing over the 13 year period from 1989 - 2001. It should be noted that the number of mule deer counted may not accurately reflect population trends due to variations and other inherent biases in survey techniques. In addition, population numbers do not necessarily reflect habitat conditions. Populations may be high despite poor habitat conditions, or low despite excellent conditions.

Mule deer fawn production estimates are generally not available. However, AGFD researchers confirmed successful reproduction for 11 of 16 (69%) telemetered does last spring (2001). Accounting for twins, this would result in a production estimate of 1.4 fawns/doe, or 140 fawns per 100 does. Fawn survival rates are typically considerably lower due to over-winter mortality. A typical

five year average would be about 44 fawns per 100 does (See appendices for specific information).

Mule deer are most likely to be found in open forested areas or on the plains and prairies. They prefer rocky or broken terrain at higher elevations during the summer and seek shelter at lower elevations during the winter. Cover becomes important to mule deer during the winter, although it is less important in areas such as the Arizona Strip where winters are mild with minimal snowfall. Optimal cover proportions for the region include 55 percent for foraging, 20 percent for hiding cover, 10 percent for thermal cover, 10 percent for fawn-rearing cover, and 5 percent for fawn habitat.

Mule deer are primarily browsers, feeding on a wide variety of plant species. They are capable of altering or severely damaging plant communities through over browsing. Mule deer consume leaves, stems, and shoots of woody plants most often during summer and fall, while grasses and forbs compose the bulk of spring diets. Some of the most common foods include: rabbitbrush (*Chrysothamnus* spp.), mountain-mahogany (*Cercocarpus* spp.), snowberry (*Symphoricarpos* spp.), buffaloberry (*Shepherdia* spp.), ceanothus (*Ceanothus* spp.), rose (*Rosa* spp.), serviceberry (*Amelanchier* spp.), sagebrush (*Artemisia* spp.), sumac (*Rhus* spp.), willow (*Salix* spp.), Gambel oak (*Quercus gambellii*), cliffrose (*Purshia mexicana*), mariposa (*Calochortus* spp.), juniper (*Juniperus* spp.), yucca (*Yucca* spp.), euphorbia (*Euphorbia* spp.), manzanita (*Arctostaphylos* spp.), milkvetch (*Astragalus* spp.), and dandelion (*Taraxacum officinale*). Grasses include bluegrasses (*Poa* spp.), wheatgrasses (*Agropyron* spp.), and bromes (*Bromus* spp.).

No population data is available either for Merriam's turkey or for Kaibab squirrels for the Mt. Trumbull area. Populations of both species are considered by AGFD to be stable.

8. Riparian/Fisheries Habitat

There is no fisheries habitat on the allotment. Riparian systems are limited to a few small springs that are privately owned and have been developed for use by livestock, wildlife or both.

9. Wild Horse and Burro Habitat

There is no wild horse or burro habitat on the allotment.

10. Lithology and Soils

Lithology

The Big Springs Pipeline Allotment consists of basalt capped Moenkopi mudstones and limestone at the upper end and sandstone and limestone canyons at the lower end. Whitmore Canyon lies to the south and Mt Trumbull to the north.

Soils

ECOSITE AND SOIL MAP UNIT INDEX (623)

- 08 Barx fine sandy loam, 1 to 5 percent slopes, (fan terraces), mixed; Loamy Upland, 9" to 13"
- 10 Berzatic fam-RO-Goblin complex, 35 to 70 percent slopes, (escarpments, cliffs), LS-gyp; Berzatic=Breaks, 7" to 11"; Goblin=Breaks (gypsiferous), 7" to 11"
- 14 Boquillas family-Showlow complex, 25 to 50 percent slopes, (basalt mesas), basalt, shale; Basalt Slopes, 13" to 17"
- 20 Dermalama fam-Guy fam-Rock Outcrop complex, 10 to 40 percent slopes (mesa scarp) basalt; Basalt Slopes, 13" to 17"
- 45 Mellenthin-Rock outcrop-Torriorthents complex, 10 to 70 percent slopes (hills) Kiabab; Mellenthin=Shallow Loamy, 9" to 13"; Torriorthents=Breaks, 9" to 13"
- 46 Mellenthin-Strych Complex, 4 to 25 percent slopes, cool, (plateaus, mesas), limestone; Mellenthin=Shallow Loamy, 9" to 13"; Strych=Loamy Upland, 9" to 13"
- 48 Mellenthin-Tanbark complex, 5 to 50 percent slopes, cool (mesas, hills) Kiabab, Harrisburg; Mellenthin=Shallow Loamy, 9" to 13"; Tanbark=Gypsum Hills, 9" to 13"
- 51 Meriwhitica-Rock outcrop-Strych complex, 35 to 70 percent slopes, (cliffs, canyons) Callville & Redwall limestones; Meriwhitica=Breaks, 9" to 13"; Strych=Loamy
- 55 Moenkopie-Pennell-RO complex, 10 to 50 percent slopes, (plateau, mesa), limestone; Shallow Loamy, 7" to 11" ppt
- 58 Nutter-Gypocket complex, 2 to 20 percent slopes, (fan terraces), gyp-alluvium; Gypsum Upland, 7" to 11" ppt
- 66 Robroost fine sandy loam, 1 to 3 percent slopes, (fan terrace), mixed sedimentary; Gypsum Fan, 7" to 11"
- 68 Sedillo very cobbly loam, 1 to 8 percent slopes, (fan terrace), mixed alluvium; Clay Loam Upland, 9" to 13" ppt
- 69 Showlow-Thunderbird complex, 2 to 25 percent slopes, (basalt mesas), basalt; Clay Loam Upland (gravelly) PJ-Woodland, 13" to 17"
- 71 Sponiker loam, 1 to 10 percent slopes, (fan terrace), mixed alluvium; Loamy Terrace (PIPO Woodland), 17" to 20" ppt
- 72 Springerville-Delenbaw complex, 3 to 25 percent slopes (mesa) basalt; Springerville and Delenbaw=Clay Loam Upland (gravelly) PJ-Woodland, 13" to 17"
- 75 Tanbark loam, 15 to 75 percent slopes, (hills, escarpments), Moenkopi; Gypsum Hills (calcareous), 9" to 13"
- 83 Twist very cobbly loam, 1 to 8 percent slopes, (fan terrace), mixed alluvium; Clay Loam Upland, 7" to 11" ppt

- 90 Wutoma-Lozinta complex, 15 to 50 percent slopes, (cinder cone), cinders; Cinder Hills (PIPO Gambel oak, PJ- Woodlands), 13" to 17" ppt

ECOSITE AND SOIL MAP UNIT INDEX (625)

- 1 Badland, steep to very steep eroding gyp areas, (hills, scarps), Moenkopi; No Ecosite assigned, but consider a cryptogamic site.
- 59 Showlow very cobbly clay loam, 1 to 15 percent slopes, (hills, fan terraces), basalt, pyroclastics; Clay Loam Upland (PJ-Woodland), 14" to 18" ppt
- 61 Sponiker gravelly loam, 1 to 15 percent slopes, (hills, fan terraces), basalt, pyroclastics; Loamy Upland (PIPO-Woodland), 18" to 30" ppt
- 66 Whiskey silt loam, 1 to 4 percent slopes, (stream terraces) mixed alluvium; Loamy Upland, 14" to 18" ppt
- 67 Wukoki-Lomaki complex, 15 to 50 percent slopes, (cinder cones), scoriaceous basalt, pyroclastics; Cinder Hills, 10" to 14" ppt
- 68 Wutoma-Lozinta complex, 1 to 15 percent, slopes, (fan terraces), scoriaceous basalt, pyroclastics; Cinder Upland (PJ-Woodland), 14" to 18" ppt
- 69 Wutoma-Lozinta complex, 15 to 50 percent slopes, (cinder cones), scoriaceous basalt, pyroclastics; Cinder Hills (PJ-Woodland), 14" to 18" ppt

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

1. Issues relating to Rangeland Health

a. Vegetative diversity and erosion in Whitmore Canyon

Historical heavy use by sheep and cattle had an impact on vegetation diversity. The lack of vegetation in the bottom of Whitmore Canyon reciprocated slightly higher erosion rates into Whitmore Wash. Another factor contributing to the increased water flows in the canyon was the increase and maturity of woody species (pinyon and juniper) on the adjacent uplands. As the woody species increased in numbers and matured in age, understory plant species such as grasses, forbs, and shrubs decreased.

b. Weeds, Scotch Thistle south of Browns Knoll

A patch of scotch thistle approximately ¼ acres in size has been located at Cold Tank, south of Browns Knoll. This infestation has been treated over the past three years. Although the treatments have not yet eradicated the noxious weed, they have had an impact in reducing the size and plant numbers of the infestation.

- d. Sheet and gully erosion in tributaries, head/lateral head cutting in the upper reaches in Upper Langs Run, near Death Valley Lake.

This watershed issue at Lang's Run has been an element of on-going discussion for several years. It has been identified for treatment in previous watershed plans. The lower end of Upper Lang's Run received treatment in the late 1980's and has been effective in slowing and in some cases eliminating gully and sheet erosion. To date, the upper end of this watershed has had no such treatment and continues to pose problems to the watershed as a whole. The Death Valley watershed treatment project is currently in the primary stages of implementation and is designed to treat five units within the Upper Lang's Run watershed.

V. Conclusions

A. Pertaining to Objectives

1. Land Use Plan Objectives

Shivwits Resource Area Implementation Plan for the Arizona Strip RMP

GZ17 *Allowable use on key forage species is 50% on allotments with rotational grazing systems.*

This objective has been met. Combined utilization across all pastures and all key species is 36%.

TE01 *Manage areas consistent with multiple uses to conserve candidate species and their habitats and ensure that actions authorized, funded, or carried out do not contribute to the need to list any of these species as threatened or endangered. Adverse impacts to listed species will be avoided.*

This objective has been met. No actions which might contribute to the need to list candidate species have occurred. No adverse impacts to listed species are known.

RR06 - *Implement actions to restore and/or maintain natural conditions or appearance in all areas.*

This objective is being met. This objective is a process that is an ongoing effort based on observations of range and other specialists and restoration actions are evaluated through the planning and NEPA process for interdisciplinary input and review.

RR08 - Manage the majority of the resource area for extensive recreation while maintaining its naturalness/remoteness. The exception to this is the Cedar Pockets Campground.

This objective is being met. Visitors to this AMP area engage in hunting, camping, and sightseeing and indulge in a variety of legitimate recreation activities and are monitored to see that the area's values are not degraded by overuse.

RR09 - Commercial recreation permits would be issued to the extent that their cumulative impacts are consistent with the overall objectives of this plan and are in the public interest.

This objective is being met. As new requests for commercial special recreation use permits are received they are evaluated and reviewed for consistency with this objective and processed accordingly.

WL02 Maintain productive wildlife habitat and ensure wildlife needs and considerations are incorporated into land use planning, National Environmental Policy Act documents, and management decisions.

This objective is being met. Wildlife and wildlife habitat needs are incorporated into management decisions. An interdisciplinary team evaluates and proposed actions and ensures wildlife needs for productive habitat are incorporated into any pertinent plans or decisions. Because this allotment is within the Grand Canyon-Parashant National Monument, proposals are carefully reviewed and receive extra scrutiny.

WL06 In cooperation with Arizona Game and Fish Department, continue restoration of native wildlife into their historic ranges by supporting and assisting in the releases of native species.

This objective is being met. No restorations of native wildlife have occurred in this allotment, but the re-introduction of the California condor, desert bighorn sheep, and pronghorn elsewhere on the Arizona Strip have led to increased wildlife diversity in this allotment. Condors and bighorn sheep occur at times in this allotment.

WL07 Manage wildlife habitat through the Habitat Management Plan process to achieve desired plant community objectives.

This objective is being met. Wildlife species and habitats are managed through the Mt. Trumbull HMP. Desired plant community objectives consider the needs of wildlife and their habitat. Objectives for this allotment have been developed that incorporate wildlife needs.

WL16 Complete in key areas to determine site potentials and present ecological conditions; establish desired plant community objectives for various areas and include these objectives in Allotment Management Plans, Habitat Management Plans, watershed plans, and other plans in order to prescribe management or improvement practices to achieve these objectives.

Met. The ecological site inventories have been completed at key areas. As described above desired plant community objectives are being cooperatively set as part of this S&G process and will be incorporated into the various activity plans as are revised upon completion of the new land use plan (RMP) which currently being developed.

WS01- Manage vegetation cover towards ecological stability and sound long-term protective soil cover using mechanical, chemical, biological or fire methods as tools for accomplishments.

This work is in progress. Implementing the Death Valley Watershed treatment project is critical in improving and correcting the head cutting and erosion issues found on Upper Lang's Run Watershed.

WS21- Manage watershed areas according to watershed categorizations to achieve identified objectives.

The allotment was classified in the 1992 RMP as category IV. This means that the watershed units currently are in unsatisfactory erosion condition and the soils would be responsive to treatment. The allotment should remain a category IV until treatments have reduced the erosion to an acceptable level.

2. Specific Resource Objectives

California Condor Recovery Plan

Provide foraging habitat for California condors. Re-establish extirpated native ungulate populations. Encourage livestock owners to leave dead livestock on rangelands.

Met. Adequate foraging habitat is provided. The pronghorn and desert bighorn sheep populations on the Strip were extirpated, but have now been re-established. However, because of the condors sensitivity to lead, permittees are no longer being encouraged to leave dead livestock on the range, especially if there is any possibility that the animals had been shot.

Release California condors (Gymnogyps californianus) in northern Arizona in order to reduce the risk to the overall population and to facilitate their optimal genetic and demographic management. Maintain a self-sustaining population with a positive rate of growth of at least 150 individuals with at least 15 breeding pair.

Partially met. There have been 20 separate condor releases in northern Arizona since 1996. The current condor population in northern Arizona/southern Utah is 61 and the population has increased every year mostly due to the annual release of captive reared condor chicks. However, some wild reproduction is also occurring. In 2003 and in 2004, one chick and two chicks respectively, fledged in the wild, and currently at least 2 eggs are being incubated. Nonetheless, it will be many years before the population is self-sustaining with at least 150 individuals and 15 breeding pairs.

Mt. Trumbull HMP (1977)

1. *(To) increase the carrying capacity of the habitat from the present 2,000 deer yearlong to 4,000 deer yearlong by improving the habitat. A corresponding increase in the deer herd is expected and this will increase consumptive recreation use from the present 2,500 hunter days to 5,000 hunter days by 1996.*

Not measured, not met. No measurements of the current habitat carrying capacity for mule deer exist for the Trumbull HMP area. Despite a number of habitat improvements over the years done in cooperation with the range program, no corresponding increase in deer numbers has occurred. In GMU 13A, which is much larger than the HMP area, only 40 to 50 deer permits are issued annually. Currently if each hunter in GMU 13A spent 10 days hunting and only hunted in the Trumbull HMP area, both of which are very unlikely, only approximately 500 hunter days would be generated.

2. *(To) increase the production of quality forage for wildlife by establishing livestock grazing management systems by 1986.*

This objective is being met. Livestock grazing systems called Allotment Management Plans have been put in place. Most observers believe forage conditions have improved since the 1970's.

3. *(To) construct 26 new wildlife waters based on the HMP implementation schedule.*

This objective is being met. All 26 wildlife water developments were built. Four of these are in the Big Springs Pipeline Allotment. However, now maintenance of most developments is needed. When this HMP was written in 1977 water for deer was believed limiting, but the deer population did not increase as much as was expected when the waters were developed.

4. *(To) manage areas above 6,000 feet elevation and wildlife waters as crucial wildlife habitat.*

This objective is being met. especially in the Ponderosa pine areas. However, through unintentional mismanagement over the past century much of the Ponderosa pine type has become decadent. About 3,000 acres have been treated since 1995 in the Trumbull area outside designated wilderness to restore its productivity. Much of the higher elevation habitat in the Mt. Logan and Mt. Trumbull areas was designated as wilderness in 1984.

5. *(To) increase the mule deer production and fawn survival rate from the present five year average of 30 fawns per 100 does to a five year average of 75 fawns per 100 does by 1996.*

Nearly met. In 2004, 140 mule deer were surveyed and most of these were in the Trumbull HMP area. The herd composition was calculated at 40:100:75, which means there were 75 fawns per 100 does. The five year average of fawns per 100 does from 1999 to 2003 is 48.2 for GMU 13A.

6. *(To) maximize turkey populations through protection and improvement of existing turkey habitat.*

Not currently met. Wild turkeys were introduced to the area in 1961 and the turkey population was doing well until about six years ago. The fall hunt has been discontinued and the population may be possibly declining. The reasons for the current decline are not known.

7. *(To) establish a viable Kaibab squirrel population within all suitable habitat within the Ponderosa pine vegetation type.*

This objective is being met. The Kaibab squirrels which were introduced to the Mt. Trumbull and Mt. Logan ponderosa pine areas in 1972 have done well and have spread to all suitable habitat. Like all rodents, the squirrel numbers fluctuates widely, and is currently believed to be a bit low. Nonetheless, the population is considered viable and these squirrels are annually hunted under Arizona State law. These squirrels are also considered a non-native, but established, species within the Grand Canyon-Parashant National Monument which was designated in 2000. Future squirrel releases are unlikely to be authorized in the Monument.

8. *To establish a chukar population in Whitmore and Parashant Canyons through a transplant program.*

This objective is being met. A chukar population, though scattered, is established in Whitmore and Parashant Canyons. It is believed a number of chukar have been

put out on the Arizona Strip through individual private efforts, rather than by government agency efforts. Chukars are considered a non-native, but established, species within the Grand Canyon-Parashant National Monument which was designated in 2000. Future chukar releases are unlikely to be authorized in the Monument.

Big Spring Pipeline AMP (1994)

Key Area Objectives (It is important to note that the time frame for attaining these objectives is 15 years or 2009. We are currently in year 11 of that 15.)

Key Area #4 - Whitmore Point Pasture

- *Increase the frequency of perennial cool season grasses from 4 percent to 30 percent in 15 years.*

Not currently met. Substantial progress is being made toward obtainment of the objectives set for cool season grasses. Trend monitoring data collected in 2003 at Key Area #4 shows the frequency of perennial cool season grasses are at 20%.

- *Increase the frequency of perennial warm season grasses from 15 to 35 percent.*

Not currently met. Monitoring data collected in 2003 at Key Area #4 shows the frequency of perennial warm season grasses at 31%

- *Increase the frequency of browse from 0 to 10 percent in 15 years.*

Not currently met. Browse species frequency is at 1%. Review and analysis of all trend monitoring data suggests meeting the browse frequency objective at the key area may be unattainable. Several browse species such as cliffrose and Mormon tea are present within the pasture, but are found on the ridges above a fractured, rocky limestone substrate. The key area is located off the ridges in a sagebrush swale where a heavier soil dominates.

Key Area #5 - Lava Canyon; Airstrip Pasture

- *Increase the frequency of perennial cool season grasses from 0 percent to 10 percent in 15 years.*

Not currently met. Cool season grasses remain at 0 percent. This objective may be unattainable. Analysis of past trend data from the key area shows no cool season grasses have been recorded. In addition, no ecological site guide is available for verification of cool season grass percentages.

- *Maintain perennial warm season grasses at present levels.*

Not currently met. From 1990 to 2000 warm season grasses were maintained at 61% frequency. Warm season grass frequency decreased to 21% in 2003. This decrease was due to persistent drought conditions in 2001-2002.

- *Increase the frequency of browse from 1 percent to 10 percent in 15 years.*
Not currently met. Even though the frequency of browse has increased from 1 to 3%, it has not increased to the objective level of 10%.

Key Area #6 - Cole Spring Pasture

- *Increase the frequency of perennial cool season grasses from 0 to 10 percent in 15 years.*
Not currently met. Progress towards objective is occurring. Frequency of cool season grasses at the key area is at 5%.
- *Increase the frequency of perennial warm season grasses from 25 to 45 percent in 15 years.*
Not currently met. Since the drought, warm season grasses have decreased from 25% frequency to 8%.
- *Increase the frequency of browse from 0 to 10 percent in 15 years.*
Not currently met. The frequency of browse at key area #6 increased one percent, from 0 to 1.

Key Area #7 – Canyon Bottom; Cold Spring Pasture

- *Increase the frequency of perennial cool season grasses from 0 to 10 percent in 15 years.*

Not currently met. The frequency of cool season grasses remains at 0%. Since 1990, cool season grasses have gone unrecorded in the monitoring transects. Warm season grasses have maintained and even increased in frequency percentage since that time. This objective may be unattainable at this specific key area.

- *Increase the frequency of browse from 0 to 10 percent in 15 years.*
Not currently met. The frequency of browse remains at 0%. Browse species such as Mormon tea and four-wing saltbush are present within the pasture, but have never been recorded at the key area. This may indicate the objective is unattainable at the key area.

Key Area #9 - Big Spring Pasture

All objectives for Key Area #9 would be dependent on a prescribed land treatment or wildfire occurrence. With neither done, the frequency would not change from the present (1990).

- *Increase the frequency of perennial cool season grasses from 0 to 10 percent in 15 years.*

Not currently met. The frequency of cool season grasses as of 2003 is at 2%.

- *Increase the frequency of perennial warm season grasses from 0 to 20 percent in 15 years.*

Not currently met. The 2003 frequency data shows warm season grasses stayed at 0%.

- *Increase the frequency of browse from 0 to 10 percent in 15 years.*

Not currently met. Even though cliffrose has increased a percentage from 0 to 1% since 1990, the objective remains unmet.

- *Decrease the frequency of sagebrush, pinion and juniper from 55 percent to 25 percent in 15 years.*

Met. The combined frequency of sagebrush, pinyon, and juniper decreased from 55% in 1990 to 18% in 2003. This reduction of woody species is attributed to the 2001-2002 drought. No prescribed land treatment or wildfire has occurred in the area.

Key Area #10 - Canyon Bottom; Lava Pasture

- *Maintain perennial warm season grasses at present frequency level*

Not currently met. The frequency of warm season grasses decreased after the drought of 2001-2002 from 90% in 1997 to 25% in 2003. Up until 2001 the objective was being met.

- *Increase the frequency of browse from < 1 percent to 10 percent in 15 years.*

Not currently met. The frequency of four-wing saltbush currently remains at 1% at the key area. It is unrealistic to expect the frequency of browse to increase to 10% by 2009, at which time the 15 years will have elapsed.

- *Increase the frequency of perennial cool season grasses from < 1 percent to 5 percent in 15 years.*

Not currently met. The frequency of cool season grasses at the key area remains at < 1%.

Key Area #11 – Chaparral Pasture

- *Maintain perennial warm season grasses at present frequency levels.*

Not currently met. The frequency of warm season grasses decreased after the drought of 2001-2002 from 100% in 1990 to 49% in 2003. Up until 2001 the objective was being met.

- *Increase the frequency of browse from 10 percent to 15 percent in 15 years.*
Not currently met. Browse species frequency decreased 3% from 1997 to 2003 from the effects of drought. Current frequency is at 7%.
- *Increase the frequency of perennial cool season grasses from 0 to 5 percent in 15 years.*
Not currently met. Cool season grass frequency has not changed since 1990 and remains at 0%.

Desired Plant Community Objectives developed during this evaluation

Key Area #4 – Whitmore Point Pasture

Maintain the perennial native grass composition between 20 to 40% through the year 2030 by:

Maintaining Hija CBW at between 5 to 15%

Increasing Sihy CBW to between 5 to 10%

Increasing Orhy CBW to between 1 to 5%

Increasing Boer CBW to between 1 to 5%

Decrease shrub/tree composition between 25 to 45% through 2030 by:

Decreasing Artr CBW between 20 to 30%

Maintain Juos CBW at between 0 and 5%

Maintain forbs CBW at between 5 and 15% through 2030.

Maintain ground litter at between 15 and 30% through 2030.

Maintain basal cover at between 5 and 15% through 2030.

These objectives are partially met. The ecological condition is 71 percent similar to PNC, which is late seral. Present CBW for the key species is as follows: Hija is 12%, Sihy 4%, Orhy trace, and Boer is a trace.

By functional group, CBW for shrubs is at 68 percent with Artr contributing 56 percent, CBW for trees is at a trace, CBW for grasses is at 20 percent, and the CBW for forbs are at 12 percent.

Key Area #5 - Airstrip Pasture

Maintain the perennial native grass community between 50 and 70% through the year 2030 by:

Maintaining Hija CBW at between 30 and 60%

Maintaining Spcr CBW at between 5 and 15%

Maintaining the Boer CBW at between 10 and 20%

Maintain forbs CBW to between 2-10%

Maintain Epne CBW at between 5-10%

Maintain shrub composition at between 30-50%

Maintain ground litter at between 10 and 30%

Maintain basal cover at between 2 and 10%

These objectives are met. The ecological condition has not been determined since a site guide has not been developed. Present CBW for the key species is as follows: Hija is 36%, Spcr 7%, and Boer is at 14%.

By functional group, CBW for shrubs is at 42 percent, CBW for grasses is at 57 percent, and the CBW for forbs are at 1 percent.

Key Area #6 - Cole Spring Pasture

Maintain the perennial native grass community between 11 and 40% through the year 2030 by:

Increasing Bogr CBW to between 5 and 15%

Maintaining Hija CBW at between 5 and 15%

Increasing the Sihy CBW to between 1 and 10%

Decrease shrub/tree composition to between 25 and 45% through the year 2030 by:

Decreasing Artr CBW to between 20 and 30%

Decreasing Juso CBW to between 5 and 10%

Increase forbs CBW to between 5 and 15% through the year 2030

Maintain ground litter at between 15 and 30% through the year 2030

Maintain basal cover at between 5 and 15% through the year 2030

These objectives are partially met. The ecological condition is 63 percent similar to PNC, which is late seral. Present CBW for the key species is as follows: Bogr is a trace, Hija is 8%, and Sihy is a trace.

By functional group, CBW for trees is at 27 percent, CBW for shrubs is at 57 percent with Artr contributing 46 percent, CBW for grasses is at 16 percent, and the CBW for forbs are at a trace.

Key Area #7 – Lower Cold Spring Pasture

Maintain the perennial native grass community between 60 and 85% through the year 2030 by:

Maintaining Hija CBW at between 30 and 45%

Maintaining the Spcr CBW to between 30 and 40%

Maintain shrub/tree composition to between 15 and 25% through the year 2030:

Increase forbs CBW to between 1 and 15% through the year 2030

Maintain ground litter at between 7 and 40% through the year 2030

Maintain basal cover at between 2 and 15% through the year 2030

These objectives are met. The ecological condition is 41 percent similar to PNC, which is mid seral. Present CBW for the key species is as follows: Hija is 41%, and Spcr is 36%.

By functional group, CBW for trees and shrubs is at 23 percent and CBW for grasses is at 77 percent and the CBW for forbs are at a trace.

Key Area #9 - Big Spring Pasture

Increase the perennial native grass community between 1 and 10% through the year 2030 by:

Increase Sihy CBW at between 1 and 5%

Decrease shrub/tree composition to between 50 and 70% through the year 2030

Maintain forbs CBW to between 15 and 30% through the year 2030

Maintain ground litter at between 18 and 25% through the year 2030

Maintain basal cover at between 9 and 20% through the year 2030

These objectives are partially met. The ecological condition is 35 percent similar to PNC, which is mid seral. Present CBW for the key specie Sihy is a trace.

By functional group, CBW for trees is at 8 percent, CBW for shrubs is at 67 percent with Artr contributing 28 percent, CBW for grasses is at a trace, and the CBW for forbs are at 25 percent.

Key Area #10 - Lava Pasture

Maintain the perennial native grass community between 50 and 85% through the year 2030 by:

Maintaining Boer CBW to between 55 and 70%

Maintaining Spcr CBW at between 5 and 15%

Maintaining Hija CBW to between 2 and 10%

Maintain shrub composition to between 10 and 20% through the year 2030

Increase forbs CBW to between 1 and 15% through the year 2030

Maintain ground litter at between 5 and 25% through the year 2030

Maintain basal cover at between 10 and 35% through the year 2030

These objectives are met. The ecological condition has not been determined since a site guide has not been developed. Present CBW for the key species is as follows: Boer is 67%, Spcr 6%, and Hija is at 6%.

By functional group, CBW for shrubs is at 11 percent, CBW for grasses is at 79 percent, and the CBW for forbs is at a trace.

Key Area #11 - Chaparral Pasture

Maintain the perennial native grass community between 45 and 75% through the year 2030 by:

Maintaining Hija CBW at between 2 and 10%

Maintaining Spcr CBW at between 2 and 10%

Maintaining the Boer CBW at between 5 and 15%

Maintain forbs CBW to between 2-10%

Maintain shrub composition at between 20 to 50%

Maintain ground litter at between 2 and 15%

Maintain basal cover at between 1 and 10%

These objectives are met. The ecological condition has not been determined since a site guide has not been developed. Present CBW for the key species is as follows: Hija is 3%, Spcr 3%, and Boer is at 6%.

By functional group, CBW for shrubs is at 41 percent, CBW for grasses is at 59 percent, and the CBW for forbs is at a trace.

B. Pertaining to Issues

1. Issues relating to Rangeland Health

a. Vegetative diversity and erosion in Whitmore Canyon

Diversity of vegetation within the Whitmore Canyon corridor has improved since the AMP was implemented and would be beneficial to continue with current grazing practices, particularly in the canyon pastures. Whitmore Wash and incoming tributaries are revegetating and shows signs of stabilizing. Livestock use in the canyon is exclusively in the winter months, during plant dormancy. Pastures receive 45-60 days use then are moved to the next scheduled pasture.

The woody species on adjacent uplands have not changed substantially. However, the recent drought of 2002 has had some mortality impact on shrubs and pinyon and juniper trees. Given the topography, slopes, vegetation structure and seasonally intense storm events on adjacent uplands of Whitmore Canyon, some natural erosion will occur and is within the natural range of variability.

b. Weeds, Scotch Thistle south of Browns Knoll

A concerted effort of herbicide treatment and hand grubbing must continue to eradicate and stop the expansion of scotch thistle around the Cold Tank area. At present, less than one acre of thistle has been discovered at this location.

Past treatment work has kept the infestation from advancing beyond its existing location.

- c. Sheet and gully erosion in tributaries, head/lateral head cutting in the upper reaches in Upper Langs Run, near Death Valley Lake.

Implementing the Death Valley Watershed treatment project is critical in improving and correcting the head cutting and erosion issues found on Upper Lang's Run Watershed. This project should be viewed as long term, to be completed in phases, with no quick fixes, as vegetation succession is dynamic and ever changing. It is also important to recognize that the future integrity and long term success of this and others projects depends largely on maintenance actions.

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

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

- ☐ Meet all applicable standards for rangeland health
- ☒ [XX] Are making significant progress toward meeting the applicable standards for rangeland health

Do not meet the standards for rangeland health for:

- ☐ No. 1: Upland sites
- ☐ No. 2: Riparian-Wetland sites
- ☐ No. 3: Desired Resource Conditions
- ☐ Have not been sufficiently documented to make a specific determination, but there is no reason to believe that current management would preclude meeting the standards for rangeland health.

VI. Recommendations:

- A.** Renew the ten year grazing permit on Big Spring Pipeline allotment with current terms and conditions.
- B.** Continue with current grazing practices established in the AMP, specifically in the Whitmore Canyon pastures, where timing of use and duration of use appears to be improving vegetation conditions.
- C.** Implement the Death Valley Watershed Treatment Project.

- D. Implement the installation of two lateral pipelines off of the Big Spring pipeline in Whitmore Canyon. These two pipelines would facilitate moving water out of the canyon bottom and up on adjacent uplands.
- E. Continue treatment of scotch thistle and other noxious weeds on the allotment.
- F. Carry forward the new key area DPC objectives established in this evaluation into the AMP. Evaluate DPC objectives at key areas on Lake Mead when ecological site guides become available. This should be done to verify attainability of DPC objectives.

AUTHORIZED OFFICER CONCURRENCE:

X

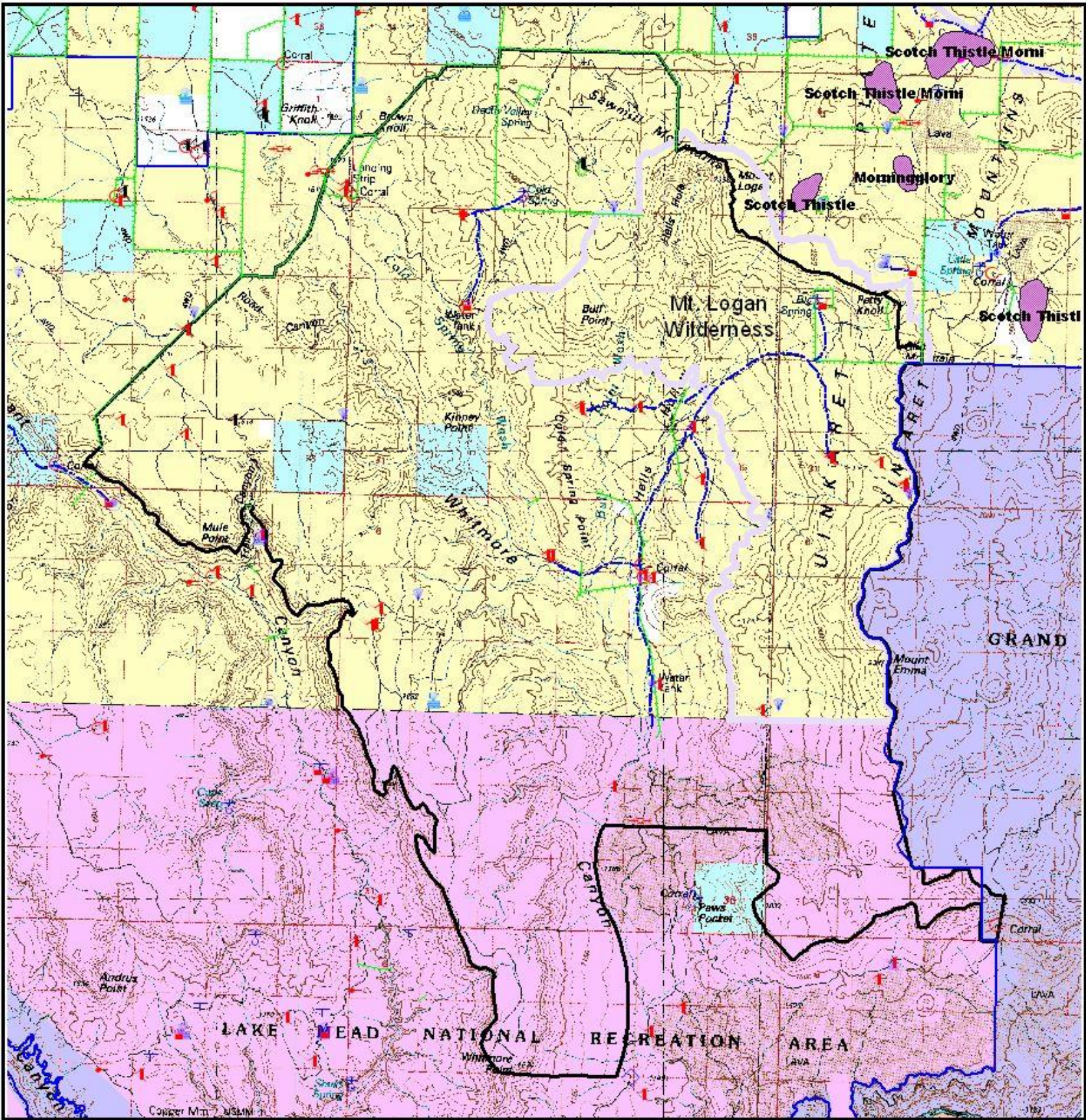
I concur with the conclusions and recommendations as written.

I do not concur.

I concur, with the following modifications:

Dennis Curtis
Monument Manager
Grand Canyon Parashant National Monument

5/22/06
Date

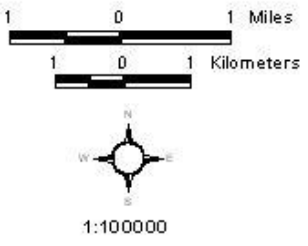


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| <ul style="list-style-type: none"> Noxious weeds Livestock Catchment Trough Fence Pipeline ACEC Boundary Monument Boundary Allotment Boundary Wilderness Boundary | <ul style="list-style-type: none"> Fenced Reservoir Key Area Undeveloped Spring Unfenced Reservoir Water Storage Tank Well Wildlife Catchment Wildlife Drinker Windmill Cattleguard Corral Developed Spring |
|--|---|

Bureau of Land Management
Arizona Strip Field Office



Big Spring Pipeline Allotment



This product may not meet BLM standards for accuracy and content. Different data sources and input scales may cause some misalignment of data layers.

Produced by
Linda Price
October 21, 2003

Appendix A

ARIZONA STANDARDS FOR RANGELAND HEALTH AND GUIDELINES FOR GRAZING ADMINISTRATION

INTRODUCTION

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

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

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

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

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

"The guiding principles for standards and guidelines require that State or regional standards and guidelines address the basic components of healthy rangelands. The Department believes that by implementing grazing-related actions that are consistent with the fundamentals of §4180.1 and the guiding principles of §4180.2, the long-term health of public rangelands can be ensured.

"Standards and guidelines will be implemented through terms and conditions of grazing permits, leases, and other authorizations, grazing-related portions of activity plans (including Allotment Management Plans), and through range improvement-related activities.

"The Department anticipates that in most cases the standards and guidelines themselves will not be terms and conditions of various authorizations but that the terms and conditions will reflect the standards and guidelines.

"The Department intends that assessments and corrective actions will be undertaken in priority order as determined by BLM.

"The Department will use a variety of data including monitoring records, assessments, and knowledge of the locale to assist in making the "significant progress" determination. It is anticipated that in many cases it will take numerous grazing seasons to determine direction and magnitude of trend. However, actions will be taken to establish significant progress toward conformance as soon as sufficient data are available to make informed changes in grazing practices."

FUNDAMENTALS AND DEFINITION OF RANGELAND HEALTH

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

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

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

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

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

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

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

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

rates, water quality, productivity of plants and animals, and other features are different on each ecological site.

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

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

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

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

STANDARD AND GUIDELINE DEFINITIONS

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

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

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

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

IMPLEMENTING STANDARDS AND GUIDELINES

The authorized officer will review existing permitted livestock use, allotment management plans, or other activity plans which identify terms and conditions for management on public land. Existing management practices, and levels of use on grazing allotments will be reviewed and evaluated on a priority basis to determine if they meet, or are making significant progress toward meeting, the standards and are in conformance with the guidelines. The review will be interdisciplinary and conducted under existing rules which provide for cooperation, coordination, and consultation with affected individuals, federal, state, and local agencies, tribal governments, private landowners, and interested publics.

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

Upon completion of review, the authorized officer shall take appropriate action as soon as practicable but no later than the start of the next grazing year upon determining that the existing grazing management practices or level of use on public land are significant factors contributing to failure to achieve the standards and conform with the guidelines that are made effective under 43 CFR 4180.2. Appropriate action means implementing actions that will result in significant progress toward fulfillment of the standards and significant progress toward conformance with guidelines.

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

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

ARIZONA STANDARDS AND GUIDELINES

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

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

Standard 1: Upland Sites

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

Criteria for meeting Standard 1:

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

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

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

As indicated by such factors as:

Ground Cover

litter

live vegetation, amount and type (e.g., grass, shrubs, trees, etc.)

rock

Signs of erosion

flow pattern

gullies

rills

plant 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." These checklists are reprinted on the pages following the Guidelines for Standard 3.

As indicated by such factors as:

Gradient
Width/depth ratio
Channel roughness and sinuosity of stream channel
Bank stabilization
Reduced erosion
Captured sediment
Ground-water recharge
Dissipation of energy by vegetation

Exceptions and exemptions (where applicable):

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

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

Guidelines:

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

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

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

Standard 3: Desired Resource Conditions

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

Criteria for meeting Standard 3:

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

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

As indicated by such factors as:

Composition
Structure
Distribution

Exceptions and exemptions (where applicable):

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

Guidelines:

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

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

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

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

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

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

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

serviceable waters are capable of providing for proper grazing distribution;

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

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

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

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

Appendix B

Team Membership

Interdisciplinary Assessment Team

Linda Price	Project Coordinator (BLM)
Mike Small	Wildlife Biologist (BLM)
Larry Gearhart	Wilderness/Recreation Specialist (BLM)
Whit Bunting	Vegetation/Grazing Administration (BLM)
Robert Smith	Soils and Watershed(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)

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
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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
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Local Area Interests

Frank Malan, Public-at-Large Retired, St. George, UT	Roger McPeck Public-at-Large Retired, St. George, UT	Dennis Becenti Native American Interests Hopi and Navajo Tribes, AZ
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Alternates

Maggie Sacher, Commercial Recreation/Tourism Owner: Lee's Ferry Lodge, Marble Canyon, AZ	Paul Weaver Non-Commodity St. George, UT
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Appendix C:

Precipitation Data

Historical Precipitation Report

Field Office **130** Rain Gauge Name: **Pa's Pocket**

Rain Gauge Number: **09**

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	1.94	8.00	2.68	2.09	14.71	1.96	3.57	2.14	3.32	10.99	99%	224%	125%	63%	134%
1979	3.83	5.60	3.40	4.98	17.81	1.96	3.57	2.14	3.32	10.99	196%	157%	159%	150%	162%
1980	3.36	7.22	2.12	4.11	16.81	1.96	3.57	2.14	3.32	10.99	172%	203%	99%	124%	153%
1981	1.04	1.97	0.97	5.29	9.27	1.96	3.57	2.14	3.32	10.99	53%	55%	45%	159%	84%
1982	1.42	4.53	2.21	4.35	12.51	1.96	3.57	2.14	3.32	10.99	73%	127%	103%	131%	114%
1983	3.30	2.62	3.25	1.98	11.15	1.96	3.57	2.14	3.32	10.99	169%	73%	152%	60%	101%
1984	1.29	1.83	0.45	5.90	9.47	1.96	3.57	2.14	3.32	10.99	66%	51%	21%	178%	86%
1985	1.62	4.89	1.13	4.04	11.68	1.96	3.57	2.14	3.32	10.99	83%	137%	53%	122%	106%
1986	2.90	0.92	2.57	4.23	10.62	1.96	3.57	2.14	3.32	10.99	148%	26%	120%	127%	97%
1987	1.53	3.62	1.39	2.75	9.29	1.96	3.57	2.14	3.32	10.99	78%	102%	65%	83%	85%
1988	3.40	2.13	3.78	2.50	11.81	1.96	3.57	2.14	3.32	10.99	174%	60%	176%	75%	107%
1989	0.40	2.50	1.32	2.40	6.62	1.96	3.57	2.14	3.32	10.99	20%	70%	62%	72%	60%
1990	1.24	1.65	1.78	6.46	11.13	1.96	3.57	2.14	3.32	10.99	63%	46%	83%	194%	101%
1991	0.34	3.05	0.45	1.43	5.27	1.96	3.57	2.14	3.32	10.99	17%	86%	21%	43%	48%
1992	0.96	2.70	5.90	1.35	10.91	1.96	3.57	2.14	3.32	10.99	49%	76%	275%	41%	99%
1993	2.50	10.30	1.79	2.50	17.09	1.96	3.57	2.14	3.32	10.99	128%	289%	84%	75%	156%
1994	1.96	2.50	2.25	1.60	8.31	1.96	3.57	2.14	3.32	10.99	100%	70%	105%	48%	76%
1995	4.80	4.72	4.23	2.82	16.57	1.96	3.57	2.14	3.32	10.99	245%	132%	197%	85%	151%
1996	0.20	4.38	0.77	1.34	6.69	1.96	3.57	2.14	3.32	10.99	10%	123%	36%	40%	61%
1997	1.15	2.50	1.50	3.50	8.65	1.96	3.57	2.14	3.32	10.99	59%	70%	70%	105%	79%
1998	1.72	3.83	3.08	6.00	14.63	1.96	3.57	2.14	3.32	10.99	88%	107%	144%	181%	133%
1999	2.05	1.15	2.20	4.70	10.10	1.96	3.57	2.14	3.32	10.99	105%	32%	103%	141%	92%
2000	0.00	1.79	1.24	1.41	4.44	1.96	3.57	2.14	3.32	10.99	0%	50%	58%	42%	40%
2001	3.30	1.32	3.32	1.25	9.19	1.96	3.57	2.14	3.32	10.99	169%	37%	155%	38%	84%
2002	0.72	0.60	0.40	2.35	4.07	1.96	3.57	2.14	3.32	10.99	37%	17%	19%	71%	37%
2003	2.35	4.00	2.00	4.35	12.70	1.96	3.57	2.14	3.32	10.99	120%	112%	93%	131%	116%
2004	1.39	2.80	1.32	2.07	7.58	1.96	3.57	2.14	3.32	10.99	71%	79%	62%	62%	69%
2005	5.07	9.50	2.50	5.30	22.37	1.96	3.57	2.14	3.32	10.99	259%	266%	117%	159%	204%
2006	1.00	0.77				1.96	3.57	2.14	3.32	10.99	51%	22%			

Historical Precipitation Report

Field Office **130** Rain Gauge Name: **Side of Mt**

Rain Gauge Number: **12**

Seasonal Precipitation Amounts						Annual Average					Percent of Normal				
Year	Fall	Winter	Spring	Summer	Annual	Fall	Winter	Spring	Summer	Annual	Fall	Winter	Spring	Summer	Annual
1992	2.50	2.29	6.10	5.35	16.24	2.87	3.80	2.77	4.19	13.63	87%	60%	220%	128%	119%
1993	1.87	6.15	2.12	3.83	13.97	2.87	3.80	2.77	4.19	13.63	65%	162%	77%	91%	102%
1994	5.40	3.00	2.20	2.50	13.10	2.87	3.80	2.77	4.19	13.63	188%	79%	79%	60%	96%
1995	9.99	5.75	4.77	3.40	23.91	2.87	3.80	2.77	4.19	13.63	349%	151%	172%	81%	175%
1996	0.19	4.73	0.94	3.74	9.60	2.87	3.80	2.77	4.19	13.63	7%	124%	34%	89%	70%
1997	1.80	2.50	2.10	8.60	15.00	2.87	3.80	2.77	4.19	13.63	63%	66%	76%	205%	110%
1998	1.00	5.25	3.73	7.70	17.68	2.87	3.80	2.77	4.19	13.63	35%	138%	135%	184%	130%
1999	2.25	1.75	2.65	6.50	13.15	2.87	3.80	2.77	4.19	13.63	79%	46%	96%	155%	96%
2000	0.00	2.13	1.50	1.89	5.52	2.87	3.80	2.77	4.19	13.63	0%	56%	54%	45%	40%
2001	4.43	2.67	4.07	1.08	12.25	2.87	3.80	2.77	4.19	13.63	155%	70%	147%	26%	90%
2002	1.49	0.60	0.65	1.85	4.59	2.87	3.80	2.77	4.19	13.63	52%	16%	23%	44%	34%
2003	1.85	4.20	2.20	4.92	13.17	2.87	3.80	2.77	4.19	13.63	65%	110%	79%	117%	97%
2004	1.32	4.35	1.72	2.35	9.74	2.87	3.80	2.77	4.19	13.63	46%	114%	62%	56%	71%
2005	7.15	11.05	4.00	5.00	27.20	2.87	3.80	2.77	4.19	13.63	249%	290%	145%	119%	200%
2006	1.75	0.65				2.87	3.80	2.77	4.19	13.63	61%	17%			

Appendix D:

Wildlife Data

Arizona Game & Fish Unit 13A Mule Deer Population Counts			
Year	Number of Animals Surveyed	Bucks / 100 does	Fawns / 100 does
1989	86	52	39
1990	44	10	27
1991	15	29	57
1992	Insuff. Data		-
1993	9	0	13
1994	43	42	84
1995	51	29	35
1996	55	42	69
1997	No Survey		-
1998	59	8	44
1999	108	23	31
2000	170	27	33
2001	165	36	68
2002	57	28	50
2003	148	39	59
2004	140	40	75