

**U.S. Department of the Interior  
Bureau of Land Management**

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**STANDARDS DETERMINATION DOCUMENT  
August 11, 2011**

**Operator # 2703457 (Egan Field Office)  
Operator # 2703458 (Schell Field Office)  
Grazing Term Permit Renewal on Fourteen  
Allotments**

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**STANDARDS DETERMINATION DOCUMENT**  
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## ***STANDARDS DETERMINATION DOCUMENT***

***Operator #2703457 and #2703458 Grazing Term Permit Renewal on Fourteen Allotments***  
Big Six Well (00812), Brown Knoll (00831), Cattle Camp/Cave Valley (00903), Dee Gee Spring (00815), East Wells (00830), Maybe Seeding (00828), North Cove (00816), Preston (00806), Rock Canyon (00808), Sheep Trail Seeding (00829), Sorenson Well (00818), Swamp Cedar (00832), Wells Station (00819), and Willow Spring Seeding Addition (00825).

### **Standards and Guidelines Assessment – Overview & Introductory Information**

Standards and Guidelines for Grazing Administration were developed by the Nevada Northeastern Great Basin Area Resource Advisory Council (RAC) and the Nevada Southern Mojave Great Basin Area Resource Advisory Council (RAC) and approved by the Secretary of the Interior on February 12, 1997. In December 2000, the Northeastern Great Basin RAC approved Wild Horse and Burro Standards and Guidelines and they were incorporated into the existing rangeland health document. Vegetation Guidelines were approved in March 2004, and added as Appendix A. In May 1999, the Southern Mojave RAC approved Wild Horse and Burro Standards and Guidelines and they were incorporated into the existing rangeland health document. The Standards and Guidelines reflect the stated goals of improving rangeland health while providing for the viability of the livestock industry, all wildlife species and wild horses and burros. Standards are expressions of physical and biological conditions required for sustaining rangelands for multiple uses. Guidelines point to management actions related to livestock grazing for achieving the Standards.

This Standards Determination Document (SDD) evaluates and assesses livestock grazing management achievement of the Standards and conformance to the Guidelines for fourteen allotments in the Ely District BLM, in both the Egan and Schell Field Office Areas. This SDD evaluates rangeland health. This document does not evaluate or assess achievement of the Wild Horse and Burro Standards and Guidelines or Off Highway Vehicle Standards or conformance to the respective Guidelines.

Grazing use is currently authorized on fourteen allotments. These allotments occur in both the Nevada Northeastern Great Basin Area and the Nevada Mojave-Southern Great Basin Area. The late winter/spring/early summer allotments occur in both Nye and White Pine Counties, in White River Valley, within the Southern Mojave Area and Northeastern Great Basin Area. The summer/fall grazing area (Cattle Camp/Cave Valley) occurs in White Pine County, in the Northeastern Great Basin Area. Both RAC Area Standards and Guidelines will be used to determine if current livestock management practices are conforming to the Standards and Guidelines.

The Brown Knoll (00831), Cattle Camp/Cave Valley (00903), and Rock Canyon (00808) allotments (Permit #2703458) are administered by the Schell Field Office BLM while the Big Six Well (00812), Dee Gee Spring (00815), East Wells (00830), Maybe Seeding (00828), North Cove (00816), Preston (00806), Sheep Trail Seeding (00829), Sorenson Well (00818), Swamp Cedar (00832), Wells Station (00819), and Willow Spring Seeding Addition (00825) allotments (Permit #2703458) are administered by the Egan Field Office BLM.

***New Allotments Acquired by Permit***

Permit #2704605 (old permit number for the Ely District prior to the creation of the Egan and Schell Field Office Areas) was renewed in September, 2006. At that time 95 AUMs of active cattle use was acquired on the Preston Allotment and 103 AUMs of active use was acquired on the Willow Springs Seeding Addition Allotment through a grazing transfer. The current gazing permits #2703457 and #2703458 which have been issued for the period 5/1/2010 to 2/28/2015 authorize a total of 6,640 active AUMs on fourteen allotments which includes the two new allotments acquired in 2006.

The fourteen permitted allotments together encompass approximately 167,734 acres of public land. The following Table 1 lists the public land acres by allotment:

Table 1. Public Land Acres – Allotments Permitted to Operator #2703457 and #2703458

<i>Allotment</i>	<i>Public Land Acres</i>	<i>Allotment</i>	<i>Public Land Acres</i>
Big Six Well	4,300	Preston	10,250
Brown Knoll	10,366	Rock Canyon	7,256
Cattle Camp/Cave Valley	75,846	Sheep Trail Seeding	564
Dee Gee Spring	4,975	Sorenson Well	5,880
East Wells	3,542	Swamp Cedar	6,330
Maybe Seeding	941	Wells Station	13,926
North Cove	25,446	Willow Spring Addition	602

The Big Six Well, Brown Knoll, Cattle Camp/Cave Valley, Dee Gee Spring, East Wells, North Cove, Preston, Sorenson Well, Swamp Cedar, and Wells Station Allotments are primarily native range allotments. The Cattle Camp/Cave Valley and Dee Gee Spring Allotments contain fenced seeded pastures. The Rock Canyon Allotment is primarily a fenced seeded allotment that also contains native range. The Maybe Seeding, Sheep Trail Seeding, and Willow Spring Addition Allotments are fenced, seeded allotments. The Maybe Seeding also contains approximately 100 acres of native range.

***General Operation***

This is a cattle operation. Cattle begin grazing in White River Valley in late winter/early spring. Cattle grazing is authorized in White River Valley from 12/1 to 5/31. Cattle are normally turned out around March 1 (dates vary). Cattle are turned out for short term, high intensity grazing, and grazing locations are rotated each year, so that grazing dates in each allotment vary from year to year. Normally one or two allotments or grazing areas are completely rested each year from grazing use. Cattle return to private ground during June, July, and part of August. Cattle are normally turned out to South Steptoe Valley (Cattle Camp/Cave Valley) in August and return to private ground in December. In Cattle Camp/Cave Valley, cowboys herd the cattle intensively to keep the cattle distributed in the higher country and away from the bottomlands.

In 2011, cattle began grazing in White River Valley on January 17 and were removed on June 20. Generally, from 300 to 590 cows grazed during this period.

In 2010, cattle began grazing in White River Valley on March 8 and were removed on June 25. Generally, from 285 to 685 cows grazed during this period. About 120 cattle began grazing in the Cattle Camp/Cave Valley Allotment (CCCV) on August 14 and were removed from the Rock Canyon Seeding at the end of winter grazing on January 2, 2011. Generally, from 120 to 585 cows grazed during this period.

In 2009, cattle began grazing in White River Valley on January 26 and were removed on June 10. Generally, from 410 to 639 cows grazed during this period. About 165 cattle began grazing in the CCCV Allotment on August 5 and were removed from the Rock Canyon Seeding at the end of winter grazing on January 8, 2010. Generally, from 165 to 535 cows grazed during this period.

In 2008, cattle began grazing in White River Valley on February 29 and were removed on June 8. Generally, from 375 to 754 cows grazed during this period. About 575 cattle began grazing in the CCCV Allotment on August 6 and were removed from the Rock Canyon Seeding at the end of winter grazing on December 8, 2010. Generally, from 401 to 575 cows grazed during this period.

### ***Holistic Resource Management***

Operator #2704605 (old permit number) and the BLM entered into an agreement signed in July 1995 which authorized grazing use in accordance with the principles of Holistic Resource Management (HRM). The term of this agreement was for a five year period beginning March 1, 1993. This agreement authorized 6,316 active AUMs on 12 allotments and also included the submission of an annual biological plan. The agreement specified the number of active AUMs by allotment. Biological plans have been submitted annually since the agreement and have been reviewed and approved annually by the authorized officer prior to implementation. Authorized grazing use in accordance with the principles of Holistic Resource Management has been carried forward to the most current grazing permits.

### ***Annual Biological Plan***

The annual biological plan states that it is a grazing strategy that provides forage for livestock and wildlife. This biologic plan encompasses 12 allotments (now 14) in the White River Valley and Cave Valley (South Steptoe Valley) ecosystems. The HRM biological plan takes into consideration livestock, wildlife (game and non-game including threatened and endangered species), forage, plant succession, water cycles, mineral and nutrient cycles, energy flow, growing seasons, timing of grazing periods, herd effect, private lands, public lands, and economics. The goal of the Biological Plan is to stabilize and/or improve the watershed in White River Valley and Cave Valley (South Steptoe Valley) by use of livestock.

The principles of the HRM biological plan are based on plant recovery periods and the timing of the grazing periods. The HRM strategy is based on controlling the time when the grazing animals are present to graze. Intensive herding is used to move livestock and does not allow the animal to return to the same plant until the plant has time to recover. Electric fencing is used extensively by this permit in several allotments to facilitate the timing of grazing. The timing of

the grazing period and livestock movement is based on monitoring information which takes into account the phenological stage of the plant (such as early or late green up) and annual grazing use made on the plant. The strategy of controlling the time when the grazing animals are present to graze is to allow the plant a chance to recover during the growing season and to reach the mature seed producing stage.

The HRM strategy is also expected to improve wildlife and riparian habitats. The overall goal or strategy of HRM is to maintain or improve biodiversity.

### ***Geographic Area***

The late winter/spring/early summer grazing area occurs in White River Valley, which is bordered on the west by the Horse Mountain Range and bordered on the east by the Egan Mountain Range. Grazing occurs on both sides of State Highway 318. Many hundreds of acres of private agricultural ground occur in the main White River drainage, which drains south. The “Cove”, a broad alluvial fan, is a major geographic feature in the area. The late summer/fall range occurs in the area of Cattle Camp Wash, Jones Spring Wash, Monument Canyon, and Basque Canyon. The Egan Range forms the western boundary of the area while the Schell Creek Range forms the eastern boundary.

The fourteen allotments are located within sage grouse, deer, elk, and antelope habitat. Desert bighorn “unoccupied range” occurs on the west side of White River Valley in the Horse Range mountains and on the east side of White River Valley in the Egan Range Mountains. Desert bighorn sheep occupied range occurs about 3 miles south of where cattle are grazed in the Cattle Camp Pasture of the Cattle Camp/Cave Valley Allotment. A portion of the Cattle Camp/Cave Valley Allotment occurs within the Mt. Grafton Wilderness. All of the Wells Station and Maybe Seeding Allotments and the western portion of the North Cove Allotment occur within the former White River Wild Horse Herd Management Area (HMA); which was dropped from HMA status and returned to Herd Area (HA) status (managed for “0” wild horses) according to the Ely District Record of Decision/Resource Management Plan approved in August, 2008.

The fourteen allotments are located within Major Land Resource Area (MLRA) 028B, the Central Nevada Basin and Range Area. The fourteen allotments are together located within the White River Central (160B), South Steptoe (161), and Cave Valley (181) Watersheds.

### ***History of Grazing Permit***

The current grazing permits were renewed in May, 2010 as a result of district re-organization which created the Egan and Schell Field Office Areas within the Ely District BLM. Prior to this, as previously mentioned, grazing permit #2704605 was renewed in September, 2006, following the acquisition of two new BLM grazing allotments (Preston and Willow Spring Seeding Addition Allotments). Prior to this, the grazing permit was renewed in March, 2004 (which included 12 allotments) because the permit was due to expire. Prior to this, the grazing permit was renewed through public consultation in February, 1997 following the issuance of a Final Multiple Use Decision (FMUD) that established an authorized active use of 6,316 AUMs for permit #2704605 on 12 allotments. This decision also established the authorized active use for

Frank Reid on the Cattle Camp/Cave Valley Allotment and designated separate fenced use areas for Carter and Reid in the allotment. The 1997 decision stated the following:

{1} Carter Cattle Company will be authorized to make livestock use according to the principles of Holistic Resource Management (HRM) and to use the HRM model as its guide as related to livestock grazing management in the 12 allotments.

{2} Carter Cattle Company will be authorized the flexibility to graze the public lands of the 12 allotments for the prescribed season at initially 6,316 AUMs of livestock in accordance with an annually submitted biological plan. The annual plan will include a grazing schedule for the year.

### ***Multiple Use Grazing Decisions***

A Final Multiple Use Decision (FMUD) was issued for the Willow Spring Seeding Addition Allotment On May 24, 1991. The FMUD authorized a decrease in cattle AUMs for W.R. McLeod from 185 to 103 active AUMs (82 AUM decrease), which was phased in over a five year period. The season of use changed from 6/1 – 8/31 to 6/1 – 7/21. The September 2006 and April 2010 grazing permit renewals for permit #2704605 also authorized 103 active AUMs for the allotment, with a season of use from 6/1 to 7/1.

A Final Multiple Use Decision (FMUD) was issued for the North Cove Allotment on February 4, 1992. The FMUD authorized an increase in cattle AUMs from 732 to 1,177 active AUMs (445 AUM increase), which was to be phased in over a five year period.

The HRM Agreement of July, 1995 authorized 879 active AUMs for the North Cove Allotment, which implemented the first year increase of 147 AUMs which was to be phased in over the five year period. The 1997 Grazing Decision also authorized 879 active AUMs for the allotment. The March 2004 and September 2006 grazing permit renewals authorized 1,003 active AUMs for the allotment, which implemented the third year increase of 271 AUMs. The most recent grazing permit #2703457 (2010) also authorizes 1,003 AUMs for the North Cove Allotment, which is the third year phase in level from the 1992 decision.

A Final Multiple Use Decision (FMUD) was issued for the Brown Knoll Allotment on January 19, 1993. The FMUD authorized an increase in cattle AUMs from 135 to 213 active AUMs (78 AUM increase), which was to be phased in over a five year period. The season of use remained the same, from 11/1 – 5/1. The HRM Agreement of July, 1995 authorized 161 active AUMs for the Brown Knoll Allotment, which implemented the first year increase of 26 AUMs from the 1993 decision. The 1997 Grazing Decision also authorized 161 active AUMs for the allotment. The most recent grazing permit #2703457 (2010) also authorizes 161 AUMs for the Brown Knoll Allotment.

A Final Multiple Use Decision (FMUD) was issued for permit #2704605 on 12 allotments in February 1997 that established an authorized active use of 6,316 AUMs for the 12 allotments with authorized use AUMS specified for each allotment.

### ***Interdisciplinary Team Review of the Grazing Permit Renewal***

The project proposal for this permit renewal was presented to a BLM interdisciplinary (ID team) on December 1, 2008. At this meeting the ID team scoped the project proposal and discussed the known resource issues and concerns on the allotments. An assessment of the rangeland health has been conducted during the permit renewal process. Standards for Rangeland Health have been reviewed and evaluated by the BLM ID team for the fourteen allotments. The interdisciplinary team (consisting of Rangeland Management Specialists, Wildlife Biologist, Weeds Specialist, Soil/Water/Air Specialist, Archaeologist, Recreation Specialist, Wild Horse Specialist, Wilderness Specialist, and others) individually or collaboratively utilized several scientifically based documents and official publications to complete the assessment. These documents include the Western White Pine County and Nye County Soil Surveys (USDA-SCS), Rangeland Ecological Site Descriptions (USDA-SCS 2003), Interpreting Indicators of Rangeland Health (USDI-BLM et al. 2005), Sampling Vegetation Attributes (USDI-BLM et al. 1996), the Nevada Rangeland Monitoring Handbook (USDA-SCS et al. 1984), Utilization Studies and Residual Measurements, Rangeland Health Standards (H-4180-1, USDI-BLM et al. 2001), and the National Range and Pasture Handbook (USDA NRCS 2003). The interdisciplinary team also used rangeland monitoring data, electronic data files, maps, professional observations, and photographs to evaluate achievement of the Standards and conformance with the Guidelines. A complete list of references is included as an appendix to this SD.

### ***Standards Determination Chronology and Grazing Permittee Coordination Following ID Team Review***

Following the ID team scoping and review in December 2008, a letter was forwarded to Carter Cattle Company concerning the proposed project on December 9, 2008. Draft SDDs were provided to Carter Cattle Company on January 19, 2010 and February 25, 2011 for review and comment. This current SDD which is being provided to a public interest mailing list for review and comment, is a refinement of the former drafts based upon BLM internal coordination and based upon comments, meetings, and field trips with the grazing permittee that have taken place since the original BLM scoping in December, 2008. The meetings and field trips have focused on land areas or allotments in White River Valley that have been identified as not achieving Rangeland Health Standards (problem areas). The grazing permittee has adjusted livestock management practices in these areas in response to BLM's findings in order to improve them and make progress towards Rangeland Health Standards (i.e. several allotments or pastures have been rested one or more years, the season of use has been changed on other allotments or pastures, and special management practices have been implemented on other allotments). In addition, the permittees have increased the level of voluntary non-use taken on their grazing permit. The cattle stocking level for use in the White River Valley Allotments from 2008 to 2011 averaged 2187 AUMs, far less than the 1999 to 2003 average of 4,341 AUMs.

### ***Rangeland Monitoring***

Rangeland monitoring is conducted at key areas and representative study sites that have been established on all allotments in the term permit renewal area. The key areas and study sites have been selected based on accessibility, soil mapping units (SMU), representative rangeland

ecological sites, livestock use patterns, and permittee input. The term permit renewal area has been monitored for vegetation condition and rangeland health periodically since the 1960s. The primary evaluation period for this Standards Determination Document is considered to be from 1997 through 2010. Most monitoring data gathered for this permit renewal has been conducted during the 1997 to 2010 period. “Current livestock grazing management practices” are considered to be those practices implemented since the FMUD of February 1997. Historical livestock grazing management practices are considered to be those practices implemented prior to 1997. Some data prior to 1997 is also considered in this SDD. All scientifically based documents and rangeland monitoring data are available for public inspection at the Ely District Office during business hours.

Specific rangeland monitoring studies and methods have included line intercept vegetation cover studies, ecological condition studies, key forage plant method utilization studies, use pattern mapping, riparian proper functioning condition studies, licensed livestock use, and observed apparent trend studies.

### ***Holistic Resources Management Monitoring***

HRM monitoring has occurred in the permit renewal area since about 1991 up to the present time. The grazing permittees have taken an active, motivated, and unique approach to monitoring range conditions. The grazing permittees have actively participated along with BLM, NRCS, and in some cases, NDOW in this monitoring (HRM team). Monitoring compilations have been made for vegetative attributes such as plant spacings, ground cover, age classes of vegetation, and plant group composition (grass, shrub, or forb). In addition, photo points have been established at key areas and observations of range trend have been made based upon the photo points. In March 2010 the permittee submitted to BLM a packet of information and photos that included a three year monitoring plan, compilation of monitoring pictures, and monitoring sites summary for average plant spacings and other vegetative attributes. Additional monitoring information was submitted to BLM in March 2011 that included data for the 2010 grazing year. The submitted data has been reviewed and incorporated in this SDD in Section A.4 on page 104 and throughout the Standards Conformance Review for each allotment.

### ***Precipitation Data***

The precipitation data section applies to the overall grazing permit renewal area (all allotments currently authorized to permits #2703457 and #2703458).

The following precipitation data by year is presented for the Ely Weather Station (Yelland Field) as summarized by the National Oceanic and Atmospheric Administration (NOAA). The precipitation totals are for **crop year precipitation**, or that moisture (including snow) measured from September through June. This is effective moisture for plant growth. The average crop year precipitation for the Ely Station for the thirty year period 1977 – 2006 is 8.44 inches. Twelve of the fifteen years listed below are below this average. Many of the years have been far below normal. This represents drought conditions during which plant community production is generally unfavorable.

**Table 12-1. Crop Year Precipitation – Ely Station**

Year	Crop Year Precipitation
1997	7.83
1998	10.00
1999	7.18
2000	6.70
2001	5.26
2002	4.42
2003	6.88
2004	5.45
2005	12.20
2006	8.32
2007	5.62
2008	4.14
2009	7.95
2010	6.80
2011	13.67

The following precipitation data by year is presented for the Lund Weather Station as summarized by the National Oceanic and Atmospheric Administration. The precipitation totals are for **annual precipitation**, or that moisture (including snow) measured from January through December. The average annual precipitation for the Lund Station is currently 11.01 inches. Eight of the eleven years listed are below this average, and many are far below the average. This represents drought conditions.

**Table 12-2. Annual Precipitation – Lund Station**

Year	Annual Precipitation
1998	16.15
1999	7.52
2000	9.82
2001	8.43
2002	4.99
2003	8.72
2004	11.22
2005	12.16
2006	9.01
2007	6.48
2008	5.65

The U.S. Drought Monitor (National Drought Mitigation Center – NDMC) showed eastern Nevada in a severe drought (D2) on February 3, 2009. This severe intensity classification (D2) has been common in eastern Nevada. The U.S. Drought Monitor showed eastern Nevada in an abnormally dry category (D0) on December 8, 2009 and normal on September 7, 2010.

### ***Vegetation Nutritional Value***

Vegetation nutrition value is one of the rangeland health indicators for the **Habitat Standard**. The following statement applies to all the allotments authorized to permits #2703457 and #2703458:

Vegetation nutritional value has not been monitored, however nutritious, palatable plant species are present to meet the physiological requirements of livestock and wildlife, even during the winter period. No concerns have been presented by the grazing permittees, interested publics, or the division of wildlife (NDOW) related to animal condition. Key species production of native grasses and forbs has generally been below desired objectives.

### **PART 1. STANDARD CONFORMANCE REVIEW**

**The Standards Conformance Review will proceed by allotment, alphabetically, according to the following schedule:**

1. Big Six Well (00812)
2. Brown Knoll (00831)
3. Cattle Camp/Cave Valley (00903)
4. Dee Gee Spring (00815)
5. East Wells (00830)
6. Maybe Seeding (00828)
7. North Cove (00816)
8. Preston (00806)
9. Rock Canyon (00808)
10. Sheep Trail Seeding (00829)
11. Sorenson Well (00818)
12. Swamp Cedar (00832)
13. Wells Station (00819)
14. Willow Springs Addition (00825)

### **1. BIG SIX WELL (WHITE PINE COUNTY – NORTHEAST RAC)**

#### ***Standard # 1. Upland Sites***

Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate and land form.

Soils indicators:

- ❖ Canopy and ground cover, including litter, live vegetation and rock, appropriate to the potential of the site.

#### ***Determination:***

##### **X Achieving the Standard**

- Not achieving the Standard, but making significant progress towards
- Not achieving the Standard, not making significant progress towards

**Guidelines Conformance:**

**X In conformance with the Guidelines**

Not in conformance with the Guidelines

**Conclusion: Achieving the Standard.** Rangeland monitoring indicates that upland soils are exhibiting infiltration and permeability rates that are generally appropriate to soil type, climate, and land form. The amount of vegetation canopy and ground cover, including litter, live vegetation, and rock, are appropriate to the potential of the site.

Key area BSW-01 occurs in salt desert shrub vegetation in the northwest portion of the allotment. Key Area BSW-02 occurs in a saline meadow in the east portion of the allotment. Vegetation cover studies at Key Areas BSW-01 and 02 accomplished on July 7, 2008 found that the **amount** of vegetation cover was appropriate to the potential for the range sites. Vegetation cover studies accomplished at BSW-01 on July 31, 2002 and July 8, 1998 also found the amount of native vegetation cover to be appropriate to the potential of the site. Notes from utilization forms of March 19, 2009 indicate soils are generally stable and functioning properly in the allotment. Generally no plant pedestalling was noted. Soils are stabilized by live vegetation, gravelly fragments, litter, and biotic crusts. Biotic crusts are common or abundant through most of the allotment. Utilization data gathered for this allotment shows generally moderate or less use recorded, with heavy use sometimes recorded. Use has sometimes been slight or less during the growing season. This tends to promote appropriate litter to protect soil stability. However, plant community **composition** is inappropriate to ecological site potential at BSW-01, BSW-02, and at other areas of the allotment as indicated by ecological condition studies, walking transects, professional observations, and photographs. The shrub winterfat dominates at BSW-01 and large big sagebrush, greasewood, rabbitbrush, shadscale, and other shrubs are dominant over approximately 70% of the land area of the allotment. The herbaceous understory of native grasses and forbs is largely absent in these areas, and invasive plant species are common in portions of the allotment. This may contribute towards infiltration and permeability rates that are inappropriate to the soil types. This condition should continue to be monitored.

**Standard #2. Riparian and Wetland Sites**

Riparian and wetland areas exhibit a properly functioning condition and achieve State water quality criteria

**Conclusion: Not Applicable**

This Standard was not evaluated since there are no public land riparian systems present in the Big Six Well Allotment.

**Standard #3. Habitat**

Habitats exhibit a healthy, productive, and diverse population of native and/or desirable plant species, appropriate to the site characteristics, to provide suitable feed, water, cover and living space for animal species and maintain ecological processes. Habitat conditions meet the life cycle requirements of threatened and endangered species.

Habitat indicators:

- ❖ Vegetation composition (relative abundance of species); vegetation structure (life forms, cover, height, or age classes); vegetation distribution (patchiness, corridors); vegetation

productivity; and vegetation nutritional value.

***Determination:***

- Achieving the Standard
- Not achieving the Standard, but making significant progress towards
- X Not achieving the Standard, not making significant progress towards**

***Guidelines Conformance:***

- In conformance with the Guidelines
- X Not in conformance with the Guidelines**

***Livestock As A Causal Factor:***

- X Livestock are a contributing factor to not achieving the Standard**
- Livestock are not a contributing factor to not achieving the Standard
- X Failure to achieve the Standard is also related to other issues or conditions**

***Conclusion: Not achieving the Standard, not making significant progress towards.***

In the Big Six Well Allotment habitats do not exhibit a healthy, productive, and diverse population of native and/or desirable plant species, appropriate to the site characteristics, to provide suitable feed, water, cover and living space for animal species and maintain ecological processes.

Ecological condition studies, range inventory worksheets, vegetation cover studies, utilization studies, photographs, HRM composition data, frequency trend studies, and professional observations indicate that major portions of the Big Six Well Allotment are shrub dominant, with a plant composition inappropriate to ecological site potential. This includes Key Areas BSW-01, BSW-02, and BSW-04 and surrounding range. The native understory of cool season perennial bunchgrasses and forbs are below site potential. At BSW-01 winterfat has become dominant while squirreltail, other native grasses, and the shrub shadscale have declined. At BSW-02, according to Ecological Condition Studies, the native grass alkali sacaton is below site potential while the invasive species pickleweed and poverty weed have become prominent. At BSW-04 in salt desert shrub range few to no cool season native perennial bunchgrasses are present while Russian thistle is abundant and halogeton plants are also present. The range has lost resiliency and is prone to invasive species spread. The invasive species halogeton and Russian thistle have replaced native species and are common in native range.

Vegetation ***structure*** is inappropriate in the Big Six Well Allotment to the extent that the winterfat and big sagebrush/greasewood plant communities are in a shrub dominant state. The shrub life form is over abundant and the native perennial grass life form or forb life form is lacking. Large decadent shrubs characterize much of the big sagebrush/greasewood plant communities. Also, young plants of the more desired native grasses and forbs have generally not been present. Vegetation ***distribution*** over the allotment as a whole is fair, as indicated by some topographic diversity and the variation in soil mapping units and rangeland ecological sites.

Vegetation ***productivity*** has been recorded at near unfavorable year levels for BSW-01 and BSW-02 in 2008, and far below unfavorable year levels for BSW-01 in 2002 and 1994.

Productivity along with plant vigor have generally been unfavorable throughout the area during the evaluation period, as can be ascertained from the precipitation data gathered for this analysis combined with notes from utilization forms.

Vegetation *nutritional value* (see page 10).

Threatened and Endangered species are not known to occur on the Big Six Well Allotment. No sensitive species are known within the allotment, however the sensitive plant species Sunnyside green gentian (*Frasera gypsicola*) and White River catseye (*Cryptantha welshii*) occur within 3 miles. The sensitive animal species White River wood nymph butterfly (*Cercyonis pegala pluvialis*) is also known within 3 miles. Sunnyside green gentian occurs on white calcareous barrens, in a saline bottom environment on the periphery and within an ecotype of Rocky Mountain juniper, and in association with a barberry community and a rabbitbrush community in an area of many springs. White River catseye is found in dry, open, sparsely vegetated outcrops, and derived sandy to silty or clay soils, of whitish calcareous or carbonate deposits, often forming knolls or gravelly hills, and on soils adjacent to such habitats, mostly in Juniperus – Artemisia - Chrysothamnus vegetation with pygmy sagebrush (*Artemisia pygmaea*). The White River wood nymph is a subspecies of the common wood nymph, whose larvae are known to eat various species of grasses.

There are no known sage grouse leks within three miles of the allotment, however there is some summer and some winter habitat on the allotment according to broad mapping layers created by the Nevada Division of Wildlife. There is no known or potential pygmy rabbit habitat. Pronghorn antelope use the allotment year-long. The allotment provides transitional range for a few mule deer.

Significant progress is not being made towards achievement of the Habitat Standard either in terms of vegetative change or the grazing management system in place. Due to shrub dominance, lack of vegetation production most years, lack of appropriate structure, and the risk of invasive species spread, the vegetative resources lack the resiliency once present in the Big Six Well Allotment. Only limited progress towards Habitat Standard achievement can be expected because of the shrub dominant ecological state in this allotment. The herbaceous component of native grasses and forbs is limited, but can improve with careful livestock management practices.

The grazing system in place over the last 10 year evaluation period and over the 13 year period since the FMUD of February, 1997 has not resulted in appropriate habitat or vegetative conditions. The interpretation of the rangeland monitoring data is that drought and inappropriate historical livestock practices are the primary factors that have led to inappropriate plant composition (shrub dominance), lack of appropriate vegetation structure, and both the recorded increase and further future increased risk of invasive species spread. The cattle management practices implemented from 1997 to 2007 are a secondary factor, that when combined with drought and historical inappropriate livestock practices, have resulted in non-achievement of the Habitat Standard. Cattle used this allotment during 6 spring seasons from 1999 to 2007. Stocking levels and grazing dates have varied during spring. Soils are often wet or soft during this time period and are susceptible to disturbance that leads to the germination and establishment of invasive species, rather than the germination and establishment of native

grasses and forbs. Utilization has often been recorded as moderate or less, with some heavy use recorded. There is some indication that the livestock practices implemented from 2008 to 2011, including complete rest for 3 pastures during 2009, and changing the season of use on the saline meadows, are making some progress towards Habitat Standard achievement.

The Vegetation Guidelines (Appendix A to the Standards and Guidelines) Desired Conditions for Salt Desert Shrublands and Sagebrush/Bunchgrass Rangelands states that “Communities will exhibit or be progressing towards a healthy, productive, diverse population of native and/or desirable plant species, and functioning disturbance processes appropriate to the site characteristics.” This does not describe conditions in the Big Six Well Allotment.

## **2. BROWN KNOLL (WHITE PINE COUNTY – NORTHEAST RAC)**

### ***Standard # 1. Upland Sites***

Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate and land form.

Soils indicators:

- ❖ Canopy and ground cover, including litter, live vegetation and rock, appropriate to the potential of the site.

### ***Determination:***

- Achieving the Standard
- Not achieving the Standard, but making significant progress towards
- X Not achieving the Standard, not making significant progress towards**

### ***Guidelines Conformance:***

- In conformance with the Guidelines
- X Not in conformance with the Guidelines**

### ***Livestock As A Causal Factor:***

- X Livestock are a contributing factor to not achieving the Standard**
- Livestock are not a contributing factor to not achieving the Standard
- X Failure to achieve the Standard is also related to other issues or conditions**

### ***Conclusion: Not achieving the Standard, not making significant progress towards.***

Rangeland monitoring in the Brown Knoll Allotment indicates that upland soils are not exhibiting infiltration and permeability rates that are appropriate to soil type, climate, and land form. Canopy and ground cover, including litter, live vegetation, and rock, are not appropriate to the potential of the site.

For clarification, Key Areas BK-01 and BK-02 occur in native sagebrush range of the Brown Knoll Allotment. Study Sites BK-01 and BK-03 occur in burned areas of the allotment. Study site BK-04 also occurs in native sagebrush range.

Vegetation cover studies completed at Study Sites BK-01 and BK-03 on June 27, 2008 indicate an **amount** of vegetation cover far below ecological site potential (2.05 feet, 8.57 feet). Both

study sites are in burn areas that were once black sagebrush or shadscale range sites. Vegetation cover at Study Site BK-04 was appropriate to site potential on June 27, 2008 (19.47 feet), and vegetation cover was appropriate to site potential at Jake's Leap in July, 2002 (23.52 feet). Notes from utilization studies completed on March 25, 2008 indicate soil instability for the allotment. At Key Area BK-02 on that date, use was recorded as severe on bluegrass for year-long use during the 2007 grazing year. Use of bluegrass averaged 65% (heavy) for nine transects completed on that date. Use of Indian ricegrass averaged 40% (light) for four transects. Use of globemallow was observed to be heavy. Utilization in the allotment has varied from slight to severe during the evaluation period. Grazing prior to 1997 has generally been moderate or less, with use often observed to be light or slight. Minor heavy use did occur prior to 1997. When heavy or severe use has occurred, it has not contributed to an appropriate amount of plant litter to stabilize soils.

Biotic crusts were observed to be common or abundant in four other areas monitored on March 25, 2008. Cheatgrass occurs in varying densities in the allotment. In much of the unburned native range of the allotment, cheatgrass occurs by weight as less than 1% of the vegetation production. In the Six Mile (2001), Lund (1985), and Unknown Name (1983) fires, cheatgrass varies in density and has been observed to be dominant on large acreages as early as 1986. Halogeton and Russian thistle are also invasive species that occur commonly in the allotment.

Ecological condition studies yield mixed results as related to the appropriate amount of litter to stabilize soils. The low production recorded at Study Site BK-01 on 6/27/2008 equates to low amounts of litter to protect soils. The production results are more favorable for Study Sites BK-03 and 04, however much of the production is accounted for by the invasive species Russian thistle and halogeton. Russian thistle was found to be producing 300 pounds per acre and halogeton 109 pounds per acre at Study Site BK-03. The ecological condition studies also indicate that Study Site BK-04 is very shrub dominant, which may contribute towards infiltration and permeability rates that are inappropriate to this soil type. There have been no observances of plant pedestalling or excess surface compaction or trampling of soils in the allotment.

Significant progress is not being made towards the Upland Sites Standard achievement because plant community trend has been recorded as not apparent or declining and because licensed use records indicate that grazing during the spring season has occurred during the critical growth period of key forage species. In general, the season of use and cattle numbers have varied during the spring grazing period. Cattle use has mainly occurred in the western portions of the allotment. However, soils are often wet or soft during this time period and are susceptible to disturbance that leads to the germination and establishment of invasive species that do not contribute to appropriate soil function. Basically the grazing management practices in place over the 13 years since the FMUD of February 1997 have not resulted in appropriate soil functions. Some older range data for the Brown Knoll Allotment (1986-1996) presented in this SDD supports the conclusion that soils were already unstable and not functioning properly during the 1980s, as cheatgrass was dominant in different areas of the allotment. Currently, appropriate vegetative cover and/or litter is not present to maintain soil function. Drought, historical inappropriate livestock management practices, and the occurrence of wildfires in this allotment are also contributing factors to the lack of achievement of the Upland Sites Standard.

***Standard #2. Riparian and Wetland Sites***

Riparian and wetland areas exhibit a properly functioning condition and achieve State water quality criteria

***Conclusion: Not Applicable***

This Standard was not evaluated since there are no public land riparian systems present in the Brown Knoll Allotment.

***Standard #3. Habitat***

Habitats exhibit a healthy, productive, and diverse population of native and/or desirable plant species, appropriate to the site characteristics, to provide suitable feed, water, cover and living space for animal species and maintain ecological processes. Habitat conditions meet the life cycle requirements of threatened and endangered species.

Habitat indicators:

- ❖ Vegetation composition (relative abundance of species); vegetation structure (life forms, cover, height, or age classes); vegetation distribution (patchiness, corridors); vegetation productivity; and vegetation nutritional value.

***Determination:***

- Achieving the Standard
- Not achieving the Standard, but making significant progress towards
- X Not achieving the Standard, not making significant progress towards**

***Guidelines Conformance:***

- In conformance with the Guidelines
- X Not in conformance with the Guidelines**

***Livestock As A Causal Factor:***

- X Livestock are a contributing factor to not achieving the Standard**
- Livestock are not a contributing factor to not achieving the Standard
- X Failure to achieve the Standard is also related to other issues or conditions**

***Conclusion: Not achieving the Standard, not making significant progress towards.***

Habitats in the Brown Knoll Allotment do not exhibit a healthy, productive, and diverse population of native and/or desirable plant species, appropriate to the site characteristics, to provide suitable feed, water, cover and living space for animal species and maintain ecological processes.

Ecological condition studies, vegetation cover studies, utilization studies, observed apparent trend studies, professional observations, and photographs indicate that much of the Brown Knoll Allotment are shrub dominant, with a plant *composition* inappropriate to ecological site potential. This is true at Key Areas BK-01, BK-02, and at Study Site BK-04, where black sagebrush dominates the landscape. At these areas, which are representative of allotment conditions, the native understory of cool season perennial bunchgrasses and forbs are infrequent and far below site potential. The frequency of cheatgrass occurrence was 25 times that of Indian

ricegrass according to a trend study completed at Key Area BK-01 in July, 1989. The range has lost resiliency and is prone to invasive species spread.

Study Sites BK-01 and BK-03, which occur in burn areas, are more diverse, with native grasses present. However cheatgrass, Russian thistle, and halogeton also occur on these former burned areas. Cheatgrass is dense in places and has been observed to be dominant on the landscape both during and prior to the evaluation period of 1999 to 2009. These sites have also lost range resiliency and are prone to further invasive species spread.

Vegetation **structure** is inappropriate in the Brown Knoll Allotment to the extent that portions of the black sagebrush plant communities are in a shrub dominant state with a native grass and forb component that is below ecological site potential. The shrub life form is over abundant and the native perennial grass life form or forb life form is lacking. Also, young plants of the more desired native grasses and forbs have generally not been present. Vegetation **distribution** over the allotment as a whole is good, as indicated by the topographic diversity and the variation in soil mapping units and rangeland ecological sites.

Vegetation **productivity** has been recorded at below unfavorable year levels at Study Site BK-01 in June 2008. Vegetation productivity is weighted towards invasive species at Study Site BK-03. There was no production of native perennial grasses and minimal production of native forbs at Study Site BK-04 in June, 2008. Productivity along with plant vigor have generally been unfavorable throughout the area during the evaluation period, as can be ascertained from the precipitation data gathered for this analysis combined with notes from utilization forms (see precipitation information on page 9 above).

Vegetation **nutritional value** (see page 10).

Threatened and endangered species are not known to occur on the Brown Knoll Allotment. Historic habitat for one Endangered Species, the White River spinedace (*Lepidomeda albivallis*), is located within one mile of the allotment on private land.

No Sensitive species are known within the allotment but Preston White River springfish (*Crenichthys baileyi albivalis*), White River speckled dace (*Rhinichthys osculus ssp unnamed*) and White River desert sucker (*Catostomus clarki intermedius*) are within one mile, on private land. The White River wood nymph butterfly (*Cercyonis pegala pluvialis*) is known from within three miles. There is some potential pygmy rabbit habitat, but no known occurrences.

There are no known leks in or within three miles of the above mentioned allotment according to the NDOW data used by BLM. The allotment contains nesting, summer brood rearing and winter habitat. Sage grouse often nest in suitable habitat within three miles of a lek site. One of the three key areas within the Brown Knoll allotment is a black sagebrush ecological type. As such it is in current or potential sage-grouse habitat. This site is not meeting the herbaceous understory requirements set forth within the sage-grouse guidelines, as all grasses and forbs combined comprised only 1.3% cover at BK-4. Black sagebrush cover was 98.2% at BK-4

Site potentials as described in the ESD for the key areas named are more than adequate to meet the sage-grouse habitat standards. Because the Brown Knoll allotment is not meeting the desired

vegetative composition for Standard 3 or the guidelines for sage-grouse habitat in some key areas, the allotment partially fail to meet the needs of the key “umbrella” species for sagebrush habitats identified in the Ely District Resource Management Plan (2008).

There is elk, deer and pronghorn antelope range with deer crucial summer range, deer winter range and migration corridors, and desert bighorn sheep unoccupied habitat.

Significant progress is not being made towards achievement of the Habitat Standard either in terms of vegetative change or the grazing management system in place. Due to shrub dominance, lack of vegetation production, lack of appropriate structure, and the risk of invasive species spread, the vegetative resources lack the resiliency once present in the Brown Knoll Allotment. Only limited progress towards Habitat Standard achievement can be expected because of the shrub dominant ecological state in this allotment. The herbaceous component of native grasses and forbs is limited, but can improve with careful livestock management practices.

The grazing system in place over the last thirteen year period since the FMUD of February, 1997 has not resulted in appropriate habitat or vegetative conditions. The interpretation of the rangeland monitoring data is that drought and inappropriate historical livestock practices are the primary factors that have led to inappropriate plant composition (shrub dominance), lack of appropriate vegetation structure, and both the recorded increase and further future increased risk of invasive species spread. The cattle management practices implemented from 1997 to 2007 are a secondary factor, that when combined with drought, historical inappropriate livestock practices, and undesirable vegetation recovery following wildfire, have resulted in non-achievement of the Habitat Standard. Cattle have used this allotment during 7 spring seasons from 1999 to 2007. Soils are often wet or soft during this time period and are susceptible to disturbance that leads to the germination and establishment of invasive species, rather than the germination of native grasses and forbs. Some older range data for the Brown Knoll Allotment (1986-1996) presented in this SDD supports the conclusion that the Habitat Standard was already not achieved in 1986 due to inappropriate plant composition (dominance of cheatgrass). There is some indication that the livestock practices implemented from 2008 to 2011, including resting the allotment and changing the season of use on the allotment, are making some progress towards Habitat Standard achievement.

The Vegetation Guidelines (Appendix A to the Standards and Guidelines) Desired Conditions for Salt Desert Shrublands and Sagebrush/Bunchgrass Rangelands states that “Communities will exhibit or be progressing towards a healthy, productive, diverse population of native and/or desirable plant species, and functioning disturbance processes appropriate to the site characteristics.” This does not describe conditions in the Brown Knoll Allotment.

### **3. CATTLE CAMP/CAVE VALLEY (WHITE PINE COUNTY – NORTHEAST RAC)**

#### ***Standard # 1. Upland Sites***

Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate and land form.

Soils indicators:

- ❖ Canopy and ground cover, including litter, live vegetation and rock, appropriate to the

potential of the site.

***Determination:***

**X Achieving the Standard**

- Not achieving the Standard, but making significant progress towards
- Not achieving the Standard, not making significant progress towards

***Guidelines Conformance:***

**X In conformance with the Guidelines**

- Not in conformance with the Guidelines

***Conclusion: Achieving the Standard.***

Upland soils in the Cattle Camp/Cave Valley Allotment exhibit infiltration and permeability rates that are appropriate to soil type, climate and land form. Canopy and ground cover, including litter, live vegetation and rock, are appropriate to the potential of the site.

Line intercept vegetation cover data was obtained for 23 rangeland ecological sites in the Cattle Camp/Cave Valley Allotment from 2003 to 2008. Fourteen sites were located in the Cattle Camp Pasture and nine sites were located in the Bullwhack Pasture. Of the 23 total studies, 19 were within or exceeded the appropriate basal and crown ground cover as listed by the ecological site descriptions. Litter measurements for these studies indicate appropriate litter is present to stabilize soils and contribute towards appropriate infiltration and permeability rates. In general, live vegetation, litter, surface fragments, rock, and biotic crusts where present are stabilizing the soils. The soils are functioning properly. There were no recordings of plant pedestaling, excess trampling, excess surface soil compaction, or soil erosion for any areas. There were no recordings of soil rills or gullies in the area. Photographs indicate healthy, diverse, productive, vigorous sagebrush/ native perennial grass plant communities that are contributing lots of plant litter to protect soils. The deeper rooted native grasses are present to contribute towards good soil – water relations. Utilization data has varied during the evaluation period. The data generally shows moderate or less use recorded. Use has often been slight or less during the growing season. This also tends to promote appropriate litter to protect soil stability. The vegetation and soils in this allotment get rested from cattle grazing every year during the critical growing period.

***Standard #2. Riparian and Wetland Sites***

Riparian and wetland areas exhibit a properly functioning condition and achieve State water quality criteria

Riparian and Wetland Sites Indicators:

- ❖ Stream side riparian areas are functioning properly when adequate vegetation, large woody debris, or rock is present to dissipate stream energy associated with high water flows. Elements indicating proper functioning condition such as avoiding accelerated erosion, capturing sediment, and providing for groundwater recharge and release are determined by the following measurements as appropriate to the site characteristics: Width/Depth ratio; Channel roughness; Sinuosity of stream channel; Bank stability; Vegetative cover (amount, spacing, life form); and Other cover (large woody debris,

rock).

- ❖ Natural springs, seeps, and marsh areas are functioning properly when adequate vegetation is present to facilitate water retention, filtering, and release as indicated by plant species and cover appropriate to the site characteristics.
- ❖ Chemical, physical, and biological water constituents are not exceeding the State water quality standards.

***Determination:***

Achieving the Standard

**X Not achieving the Standard, but making significant progress towards**

Not achieving the Standard, not making significant progress towards

***Guidelines Conformance:***

In conformance with the Guidelines

**X Not in conformance with the Guidelines** (See Part 3. Guideline Conformance Review)

***Livestock As A Causal Factor:***

**X Livestock are a contributing factor to not achieving the Standard**

Livestock are not a contributing factor to not achieving the Standard

**X Failure to achieve the Standard is also related to other issues or conditions**

***Conclusion: Standard not achieved, but making significant progress towards.*** Overall, riparian and wetland areas in the Cattle Camp/Cave Valley Allotment do not exhibit a properly functioning condition. Adequate vegetation is not present to facilitate water retention, filtering, and release as indicated by plant species and cover appropriate to the site characteristics. Flow patterns have been altered by cattle use (hoof action). Some spring enclosures have broken down and allowed cattle and/or elk access to trample and over graze sensitive riparian vegetation that is needed to stabilize the riparian system and provide cover and forage for wildlife.

Seven cool water spring systems were evaluated in Cattle Camp/Cave Valley Allotment during the summer of 2008. These spring systems are all developed water sources located within the Cattle Camp Pasture of the allotment. Each spring source has a protective enclosure around it. Photographs were taken of the spring systems. Three of these systems were also evaluated in August, 2003. Of the seven systems looked at in 2008, three were non-functional, two were functional at risk with a downward trend, one was functional at risk with trend not apparent, and one was in proper functioning condition. Of the three systems looked at in August, 2003, all three were rated functional at risk. One spring was rated in a downward trend while two were rated as trend not apparent. Adequate vegetation is generally not present at six riparian systems to facilitate water retention, filtering, and release as indicated by plant species and cover appropriate to the site characteristics. Adequate native riparian vegetation is not present to maintain the soils associated with the riparian vegetation. Invasive annual species are abundant in some of the spring enclosures. Flow patterns have been altered by hoof disturbance which has promoted invasive species spread. State water quality criteria has generally not been measured, however none of the water sources are on the State of Nevada 303(d) list of impaired water

bodies.

Basically the grazing management practices in place over the last 13 years has not resulted in appropriate riparian/wetland conditions. Lack of enclosure maintenance, drought, elk, and historical inappropriate livestock management practices are also considered factors in the non-achievement of this Standard.

Significant progress is being made towards achievement of the Riparian and Wetland Sites Standard both in terms of vegetative condition and the grazing management system in place. The spring enclosures around Monument Spring and Summit Spring were repaired during the fall of 2010. There are plans to repair the enclosure around John Spring during the fall of 2011. Sensitive riparian vegetation needed to stabilize the spring systems and provide cover and forage for wildlife is recovering in these enclosed areas that were formerly observed to be trampled by cattle and/or elk. Also, the grazing permittee has been actively herding cattle away from riparian areas.

***Standard #3. Habitat***

Habitats exhibit a healthy, productive, and diverse population of native and/or desirable plant species, appropriate to the site characteristics, to provide suitable feed, water, cover and living space for animal species and maintain ecological processes. Habitat conditions meet the life cycle requirements of threatened and endangered species.

Habitat indicators:

- ❖ Vegetation composition (relative abundance of species); vegetation structure (life forms, cover, height, or age classes); vegetation distribution (patchiness, corridors); vegetation productivity; and vegetation nutritional value.

***Determination:***

**X Achieving the Standard**

- Not achieving the Standard, but making significant progress towards
- Not achieving the Standard, not making significant progress towards

***Guidelines Conformance:***

**X In conformance with the Guidelines**

- Not in conformance with the Guidelines

***Conclusion: Achieving the Standard***

Habitats in the Cattle Camp/Cave Valley Allotment exhibit a healthy, productive, and diverse population of native and/or desirable plant species, appropriate to the site characteristics, to provide suitable feed, water, cover and living space for animal species and maintain ecological processes.

The Cattle Camp/Cave Valley Allotment exhibits a healthy, productive, and diverse population of native plant species appropriate to rangeland ecological site potential. Vegetation *production* is above normal year levels at 8 of 10 ecological condition studies accomplished in the

Bullwhack and Cattle Camp Pastures in 2003, 2005, and 2008. Vegetation *production* was observed to be excellent in native range and in the North/South Seeding in July, 2009. Photographs confirm this observation. Plant *composition* in native range is diverse. The percent native grass composition varies from 0 to 56% and averages 16% for the ten ecological condition studies. On July 21, 2009 notes from utilization forms indicate native grass *composition* averaging about 25% in sagebrush rangelands for seven key areas or study sites in the two native pastures of the allotment. Forbs are also abundant in the two native pastures. Vegetation *structure* (life forms, cover, height, or age classes) is also appropriate to the potential of the ecological sites in the allotment. Vegetation *distribution* is excellent as indicated by the diversity of soil mapping units and ecological sites. The allotment is characterized by hills and slopes with north, south, east, and west aspects as opposed to a continuous broad alluvial fan. Small valleys and canyons run in all directions. Vegetation *nutritional* value has not been monitored, however nutritious, palatable plant species are present to meet the physiological requirements of livestock and wildlife, even during the winter period.

Threatened and endangered species are not known to occur in the Cattle Camp/Cave Valley Allotment.

No Sensitive Species are known within or near the Cattle Camp/Cave Valley allotment with the exception of greater sage grouse as discussed below.

There are six known leks within and seven within three miles of the allotment according to the NDOW data used by BLM. The allotment contains nesting, summer brood rearing, and winter habitat. Sage grouse often nest in suitable habitat within three miles of a lek site. Seventeen of the key areas or study sites within the Cattle Camp/Cave Valley allotment are black or Wyoming big sagebrush ecological sites. As such they are in current or potential sage-grouse habitat. Twelve of these sites are meeting and 5 are not meeting the herbaceous understory requirements of 15% as set forth within the sage-grouse guidelines (see Appendix I, the monitoring data section, below on page 131).

Site specific evaluation of sage-grouse habitat guidelines should be tempered with consideration of site potentials described in the ESD.

Because the Cattle Camp/Cave Valley allotment is meeting the desired vegetative composition for Standard 3, and is meeting the guidelines for sage-grouse habitat in 12 of 17 key areas or study sites, the allotment meets the needs of the sage grouse, which is the key “umbrella” species for sagebrush habitats as identified in the Ely District Resource Management Plan (2008).

There is elk crucial summer range, deer crucial summer range and migration corridors, and pronghorn antelope year-long range within the allotment. Desert bighorn sheep occupied habitat occurs from 2 to 3 miles south of the Cattle Camp Pasture of the Cattle Camp/Cave Valley Allotment. Desert bighorn sheep unoccupied habitat occurs within the Cattle Camp Pasture.

The Habitat Standard is being achieved, and progress towards achievement of the Habitat Standard continues in terms of vegetative change and the grazing management system in place. In the case of this allotment, the grazing system in place over the last thirteen year period has

resulted in appropriate habitat or vegetative conditions. Current cattle management practices combined with other factors such as rest every year during the critical growing period, vegetation treatments that have been resounding successes, higher precipitation, and the predominance of sagebrush rather than salt desert shrub plant communities, have led to appropriate plant **composition, structure, production, and nutrition**. The risk of invasive species spread has declined. Some older range data for the Cattle Camp/Cave Valley Allotment Allotment presented in this SDD supports the conclusion that range conditions have improved. The vegetative resources display resiliency in the Cattle Camp/Cave Valley Allotment.

#### **4. DEE GEE SPRING (NYE COUNTY – SOUTHERN MOJAVE RAC)**

##### ***Standard # 1. Soils:***

Watershed soils and stream banks should have adequate stability to resist accelerated erosion, maintain soil productivity, and sustain the hydrologic cycle

Soils indicators:

❖ Ground cover (vegetation, litter, rock, bare ground); Surfaces (e.g., biological crusts, pavement); and Compaction/infiltration.

Riparian soil indicators:

❖ Stream bank stability.

All of the above indicators are appropriate to the potential of the ecological site.

##### ***Determination:***

Achieving the Standard

Not achieving the Standard, but making significant progress towards

**X Not achieving the Standard, not making significant progress towards**

##### ***Guidelines Conformance:***

In conformance with the Guidelines

**X Not in conformance with the Guidelines**

##### ***Livestock As A Causal Factor:***

**X Livestock are a contributing factor to not achieving the Standard**

Livestock are not a contributing factor to not achieving the Standard

**X Failure to achieve the Standard is also related to other issues or conditions**

***Conclusion:* Not achieving the Standard, not making significant progress towards.**

In the Dee Gee Spring Allotment, watershed soils do not have adequate stability to resist accelerated erosion, maintain soil productivity, and sustain the hydrologic cycle. Ground cover (vegetation, litter, rock, bare ground); Surfaces (e.g., biological crusts, pavement); and Compaction/infiltration are not appropriate to ecological site potential.

For purposes of clarification, the Dee Gee Allotment consists of three fenced pastures. These are the Ruppes or north pasture, the middle pasture, and the south pasture. The Dee Gee Seeding, a

crested wheatgrass seeding of approximately 640 acres and completely fenced, occurs in the middle pasture. Key Area DG-01 occurs in the south pasture.

Much of the eastern and southern portions of the Dee Gee Spring Allotment within all three pastures are either severely depleted or have not recovered well from wildfires that occurred in 2006. Notes from May 12, 2009 indicate that 95% of shrubs in the historic “feed area” or “burn area” north of the Gibson Road, within the Ruppes pasture, have died. Cheatgrass was one of the dominant living plants in this area. There is much bare ground present, with very little native plant cover or litter present. Dried Russian thistle (invasive) was prominent throughout the area. The soil is very susceptible to wind or water erosion. The Dee Gee Seeding is also not achieving the Soils Standard. The seeding has become shrub dominant and the crested wheatgrass plants that were once 90% of the species composition in 1986 have declined dramatically. Shrubs and invasive species are now 98% of the species composition. Dried halogeton dominated much of the visual aspect of the seeding in May, 2009. Areas of bare ground are common. Photographs confirm these observations.

Portions of the Ruppes Pasture, the Middle Pasture, and the South Pasture native range (which did not burn in the Gubler Fire of 2006), as differentiated from the eastern and southern portions of the allotment, are marginally achieving the Soils Standard. These portions of the allotment have become shrub dominant, hence have not been grazed much by cattle over the past few years. There have been no observances of plant pedestaling or excess surface compaction or trampling of soils in these areas. Notes from utilization forms indicate soils in the west portion of the Ruppes Pasture to be stable, with no plant pedestaling, rills, or gullies. Good litter is present in the area. Biotic crusts are abundant. Allotment photographs from 2008 and 2009 show stable soils. Thus soils in this area are stabilized by live vegetation, litter, biotic crusts, and surface fragments. Few invasive species are present.

Vegetation cover studies show an appropriate *amount* of vegetative cover at Study Site DG-03 in 2008 and at DG-01 in 2002 (both in the south pasture). An inappropriate *amount* of vegetative cover was present at DG-01 in 2008. However vegetative *composition* is inappropriate to the ecological potential for these sites in that the range is extremely shrub dominant (see photo for DG-03 for 2008). Bottlebrush squirreltail, a former key species for cattle grazing, has declined dramatically at these key areas and throughout the allotment based on historical data (see section 4.8).

Utilization in the allotment by cattle has been recorded as light or less for the 2009 and 2008 growing seasons, as far less AUMs were activated compared to the historical norm. Use was measured for Sandberg’s bluegrass, cheatgrass, and Mormon tea (generally low value species). Slight use of these low value range species does not contribute much towards appropriate vegetative cover or litter. The grazing permit authorizes 200 AUMs for this allotment. From 1999 to 2007 (nine years), licensed use AUMs ranged from 283 to 864 AUMs and averaged 532 AUMs. Use occurred during the spring growing season 8 of those 9 years. The interpretation of this monitoring data indicates this has been far above the appropriate authorization for this allotment and has likely resulted in inappropriate key forage utilization and soil function.

For the allotment as a whole, significant progress is not being made towards achievement of the Soils Standard. Plant community trend has been recorded as declining on range inventory

worksheets, and professional observations confirm this finding. Licensed use records indicate that grazing during the spring season has occurred during 10 of the last 12 years and licensed use has been far above the authorized use for this allotment. Soils are often wet or soft during this time period and are susceptible to disturbance that leads to the germination and establishment of invasive species that do not contribute to appropriate soil function and stability. The grazing system in place over the last 13 year period since the FMUD of February 1997 has not resulted in appropriate soil stability and function. Under the current grazing management practices soils are not moving towards a healthier state characterized by adequate stability to resist accelerated erosion, maintain soil productivity, and sustain the hydrologic cycle. Drought, historical inappropriate livestock management practices, and the occurrence of wildfires in this allotment are also contributing factors to the lack of achievement of the Soils Standard.

***Standard #2. Ecosystem Components***

Watersheds should possess the necessary ecological components to achieve State water quality criteria, maintain ecological processes, and sustain appropriate uses. Riparian and wetlands vegetation should have structural and species diversity characteristic of the stage of stream channel succession in order to provide forage and cover, capture sediment, and capture, retain, and safely release water (watershed function).

Upland indicators:

Canopy and ground cover, including litter, live vegetation, biological crust, and rock appropriate to the potential of the ecological site. Ecological processes are adequate for the vegetative communities.

***Determination:***

- Achieving the Standard
- Not achieving the Standard, but making significant progress towards
- X Not achieving the Standard, not making significant progress towards**

***Guidelines Conformance:***

- In conformance with the Guidelines
- X Not in conformance with the Guidelines**

***Livestock As A Causal Factor:***

- X Livestock are a contributing factor to not achieving the Standard**
- Livestock are not a contributing factor to not achieving the Standard
- X Failure to achieve the Standard is also related to other issues or conditions**

***Conclusion: Not achieving the Standard, not making significant progress towards***

Watersheds in the Dee Gee Spring Allotment do not possess the necessary ecological components to maintain ecological processes, and sustain appropriate uses. Achieving State water quality criteria is not applicable to this allotment. There is no riparian vegetation or wetlands present in the allotment. As stated above for the Soils Standard, for the allotment as a whole, canopy and ground cover, including litter, live vegetation, biological crust, and rock are not appropriate to the potential of the ecological site. Ecological processes are not adequate for the vegetative communities.

Ecological processes are defined by the Standards and Guidelines for Nevada's Mojave-Southern Great Basin Area as "Natural functions including the hydrologic cycle, the nutrient cycle, and energy flow (see also 43 CFR 4180.1 (b))." Based on the areas of severely depleted range, invasive plant species, bare ground, or shrub dominant range in the Dee Gee Spring Allotment, the hydrologic cycle, nutrient cycle, and energy flow are not being maintained.

Significant progress is not being made towards achievement of the Ecosystem Components Standard either in terms of vegetation change or the grazing management practices in place over the last 13 year period. See the discussion above for grazing as related to the Soils Standard. Livestock management practices, drought, historical inappropriate livestock practices, and poor range recovery following wildfire are all contributing factors to the non-achievement of the Ecosystems Component Standard.

### ***Standard #3. Habitat and Biota***

Habitats and watersheds should sustain a level of biodiversity appropriate for the area and conducive to appropriate uses. Habitats of special status species should be able to sustain viable populations of those species.

Habitat indicators:

- ❖ Vegetation composition (relative abundance of species); vegetation structure (life forms, cover, height, or age classes); vegetation distribution (patchiness, corridors); vegetation productivity; and vegetation nutritional value.

Wildlife Indicators:

- ❖ Escape terrain; Relative abundance; Composition; Distribution; Nutritional Value; and Edge-patch snags.

The above Indicators shall be applied to the potential of the ecological site.

#### ***Determination:***

- Achieving the Standard
- Not achieving the Standard, but making significant progress towards
- X Not achieving the Standard, not making significant progress towards**

#### ***Guidelines Conformance:***

- In conformance with the Guidelines
- X Not in conformance with the Guidelines**

#### ***Livestock As A Causal Factor:***

- X Livestock are a contributing factor to not achieving the Standard**
- Livestock are not a contributing factor to not achieving the Standard
- X Failure to achieve the Standard is also related to other issues or conditions**

***Conclusion: Not achieving the Standard, not making significant progress towards***

Habitats and watersheds in the Dee Gee Spring Allotment are not sustaining a level of biodiversity appropriate for the area and conducive to appropriate uses.

Ecological condition studies, vegetation cover studies, composition by cover studies, utilization studies, professional observations, and photographs indicate that major portions of the Dee Gee Spring Allotment are shrub dominant, with a plant composition inappropriate to ecological site potential. This is confirmed by the range studies at Key Area DG-01 and at Study Site DG-03. The native understory of cool season perennial bunchgrasses and forbs are far below site potential. The range has lost resiliency and is prone to invasive species spread. Cheatgrass, Russian thistle, halogeton, mustards, and other invasive species dominate much of the landscape in the two burns in the allotment. This represents inappropriate vegetation **composition, cover, production, structure, and nutritional value**. The burns have also lost range resiliency and are prone to further invasive species spread. Historic data and photographs indicate that the native grass squirreltail has decreased dramatically in the allotment.

Vegetation **structure** is inappropriate in the Dee Gee Spring Allotment to the extent that portions of the salt desert shrub or sagebrush plant communities are in a shrub dominant state with a native grass and forb component that is below ecological site potential. The shrub life form is over abundant and the native perennial grass life form or forb life form is lacking. Also, young plants of the more desired native grasses and forbs have generally not been present. This is confirmed by the notes from utilization forms, and professional observations. Vegetation **distribution** over the allotment as a whole is good, as indicated by the topographic diversity and the variation in soil mapping units and rangeland ecological sites.

Vegetation **productivity** has been recorded at above favorable year levels at DG-01 in July 2008. However all the production was in shrubs. There was no production of native perennial grasses or native forbs. Productivity along with plant vigor have generally been unfavorable throughout the area during the evaluation period, as can be ascertained from the precipitation data gathered for this analysis combined with notes from utilization forms (see precipitation information on page 9 above).

Vegetation **nutritional value** (see page 10).

Significant progress is not being made towards achievement of the Habitat Standard either in terms of vegetative change or the grazing management system in place. Due to shrub dominance, lack of vegetation production, lack of appropriate structure, the risk of invasive species spread, declining range trend, and burns that do not recover, the vegetative resources lack the resiliency once present in the Dee Gee Spring Allotment.

Only limited progress towards Habitat Standard achievement can be expected because of the shrub dominant ecological state in this allotment. The herbaceous component of native grasses and forbs is limited, but can improve with careful livestock management practices.

Basically the grazing management practices in place over the last 13 year period since the FMUD of February, 1997 have not resulted in a level of biodiversity appropriate for the area and conducive to appropriate uses. The interpretation of the rangeland monitoring data is that drought and inappropriate historical livestock practices are the primary factors that have led to

inappropriate plant composition (shrub dominance), lack of appropriate vegetation structure, and both the recorded increase and further future increased risk of invasive species spread. The cattle management practices implemented from 1997 to 2007 are a secondary factor, that when combined with drought and historical inappropriate livestock practices, have resulted in non-achievement of the Habitat and Biota Standard. Spring use during 10 years of the evaluation period has occurred when soils are wet or soft and susceptible to disturbance that leads to germination and establishment of invasive species, rather than the germination and establishment of native grasses and forbs. Licensed use has been far above the appropriate level as authorized by the grazing permit. There is some indication that the livestock practices implemented from 2008 to 2011, including complete rest for this allotment as well as special management practices implemented in the Dee Gee Seeding (short duration feeding & seeding), are making some progress towards Habitat and Biota Standard achievement.

The Vegetation Guidelines (Appendix A to the Standards and Guidelines) Desired Conditions for Salt Desert Shrublands and Sagebrush/Bunchgrass Rangelands states that “Communities will exhibit or be progressing towards a healthy, productive, diverse population of native and/or desirable plant species, and functioning disturbance processes appropriate to the site characteristics.” This does not describe conditions in the Dee Gee Spring Allotment.

There are no Threatened, Endangered or Proposed species within or near the allotment.

No Sensitive species are known within the Dee Gee Spring Allotment but the sensitive plant species Sunnyside green gentian (*Frasera gypsicola*) and White River catseye (*Cryptantha welshii*) are within one mile. The sensitive animal species White River wood nymph butterfly (*Cercyonis pegala pluvialis*) and the White River Valley skipper (*Hesperia uncas grandiose*) are also known from within one mile. Host plants for the White River Valley skipper are Blue grama grass (*Bouteloua gracilis*) and needlegrass (*Stipa spp.*). There is no potential pygmy rabbit habitat, and no known occurrences.

There are no known leks in or within three miles of the Dee Gee Spring Allotment according to the NDOW data used by BLM. The allotment contains potential nesting, summer brood rearing, and winter habitat. Sage grouse often nest in suitable habitat within three miles of a lek site. Portions of the allotment are within the Butte Valley/ Buck Mountain/White Pine Range and the Quinn/Nye Population Management Units (PMU). Key area DG-03 within the Dee Gee Allotment is a Wyoming sagebrush ecological site. As such it is in current or potential sage-grouse habitat. This site is not meeting the herbaceous understory requirements set forth within the sage-grouse guidelines, as all grasses and forbs combined comprised only 1.7% cover at DG-03. Wyoming sagebrush cover was 98.2%.

Site potentials as described in the ESD for key areas in the allotment are more than adequate to meet the sage-grouse habitat standards. Because the Dee Gee Springs Allotment is not meeting the desired vegetative composition for Standard 3 or the guidelines for sage-grouse habitat in at least one key area, the allotment partially fails to meet the needs of the key “umbrella” species for sagebrush habitats identified in the Ely District Resource Management Plan (2008).

Pronghorn antelope use the Dee Gee Spring Allotment year-long, and elk range has been identified in the allotment on electronic maps developed by NDOW, however very little elk use has been observed in the allotment.

## **5. EAST WELLS (NYE COUNTY – SOUTHERN MOJAVE RAC)**

### ***Standard # 1. Soils:***

Watershed soils and stream banks should have adequate stability to resist accelerated erosion, maintain soil productivity, and sustain the hydrologic cycle

Soils indicators:

❖ Ground cover (vegetation, litter, rock, bare ground); Surfaces (e.g., biological crusts, pavement); and Compaction/infiltration.

Riparian soil indicators:

❖ Stream bank stability.

All of the above indicators are appropriate to the potential of the ecological site.

### ***Determination:***

Achieving the Standard

Not achieving the Standard, but making significant progress towards

**X Not achieving the Standard, not making significant progress towards**

### ***Guidelines Conformance:***

In conformance with the Guidelines

**X Not in conformance with the Guidelines**

### ***Livestock As A Causal Factor:***

**X Livestock are a contributing factor to not achieving the Standard**

Livestock are not a contributing factor to not achieving the Standard

**X Failure to achieve the Standard is also related to other issues or conditions**

***Conclusion: Not achieving the Standard, not making significant progress towards***

Watershed soils in the East Wells Allotment do not have adequate stability to resist accelerated erosion, maintain soil productivity, and sustain the hydrologic cycle. Ground cover (vegetation, litter, rock, bare ground); Surfaces (e.g., biological crusts, pavement); and compaction/infiltration are not appropriate to ecological site potential.

Monitoring data from Key Areas EW-01 and EW-02 indicate an amount of vegetation cover appropriate to site potential. However at EW-01, a great percentage of the cover consists of the invasive species Russian thistle or the annual forb mentzelia, which grows on disturbed areas. The winterfat plants are pedestalled at EW-01 and at other study sites that have been monitored closer towards Sorensen Well (EW-SS1). The fine textured soils in these areas are susceptible to disturbance. The invasive species mustard is also present at EW-01 and closer towards the well. Key Areas EW-01 and Study Site EW-SS1 occur in salt desert shrub plant communities and are

representative of an area of approximately 200 acres in the northwest portion of the allotment, a primary grazing area for cattle in this allotment. No biotic crust was noted at these areas. These areas have been observed to be trampled by cattle. Year-long use by herbivores of winterfat was heavy (65%) for the 2008 grazing year.

At Key Area EW-02, which occurs in the south portion of the allotment and is representative of about 3,000 acres of the allotment, and at other shrub dominant areas of the allotment, soils have been observed to be stabilized by abundant biotic crusts, litter, surface fragments, and live vegetation. No plant pedestaling occurred in these areas. Herbivores are generally not using these areas as there is none to very little herbaceous understory of native grasses or forbs.

Significant progress is not being made towards achievement of the Soils Standard either in terms of vegetative change or the grazing management practices in place. Range trend has been recorded as declining at EW-01 and EW-02, according to ecological condition studies and professional observations, and cattle grazing has occurred during several spring growing seasons during the evaluation period. The season of use, stocking level, and duration of use have varied. However, soils are often wet or soft during this time period and are susceptible to disturbance that has led to the germination and establishment of invasive species such as Russian thistle and mentzelia that do not contribute to appropriate soil function. Growing season use of winterfat has at times exceeded the recommended level of 35% as listed by the Best Management Practices of the Ely District Resource Management Plan (August, 2008 – Section A. 1-8). Use of Indian ricegrass has also been recorded as severe (86%). Cattle licensed use exceeded the grazing permit authorization of 122 AUMs every year from 1999 to 2008 and was as high as 325 AUMs. The interpretation of the monitoring data is that this stocking level was inappropriate to maintain soil function and stability.

***Standard #2. Ecosystem Components***

Watersheds should possess the necessary ecological components to achieve State water quality criteria, maintain ecological processes, and sustain appropriate uses. Riparian and wetlands vegetation should have structural and species diversity characteristic of the stage of stream channel succession in order to provide forage and cover, capture sediment, and capture, retain, and safely release water (watershed function).

Upland indicators:

Canopy and ground cover, including litter, live vegetation, biological crust, and rock appropriate to the potential of the ecological site. Ecological processes are adequate for the vegetative communities.

***Determination:***

- Achieving the Standard
- Not achieving the Standard, but making significant progress towards
- X Not achieving the Standard, not making significant progress towards**

***Guidelines Conformance:***

- In conformance with the Guidelines
- X Not in conformance with the Guidelines**

***Livestock As A Causal Factor:***

**X Livestock are a contributing factor to not achieving the Standard**

Livestock are not a contributing factor to not achieving the Standard

**X Failure to achieve the Standard is also related to other issues or conditions**

***Conclusion: Not achieving the Standard, not making significant progress towards***

The watershed in the East Wells Allotment does not possess the necessary ecological components to maintain ecological processes, and sustain appropriate uses. Achieving State water quality criteria is not applicable to this allotment. There is no riparian vegetation or wetlands present in the allotment. As stated above for the Soils Standard, canopy and ground cover, including litter, live vegetation, biological crust, and rock are not appropriate to the potential of the ecological site for the allotment as a whole. Ecological processes are not adequate for the vegetative communities.

Ecological processes are defined by the Standards and Guidelines for Nevada's Mojave-Southern Great Basin Area as "Natural functions including the hydrologic cycle, the nutrient cycle, and energy flow (see also 43 CFR 4180.1 (b))." Based on the area of shrub dominant range, invasive plant species, and excessive utilization of winterfat on sensitive soils in the East Wells Allotment, the hydrologic cycle, nutrient cycle, and energy flow are not being maintained.

Significant progress is not being made towards achievement of the Ecosystem Components Standard either in terms of vegetation change or the grazing management practices in place over the last 13 year period. See the discussion above for grazing as related to the Soils Standard. Current livestock management practices, drought, and historical inappropriate livestock practices are all contributing factors to the non-achievement of the Ecosystems Component Standard.

***Standard #3. Habitat and Biota***

Habitats and watersheds should sustain a level of biodiversity appropriate for the area and conducive to appropriate uses. Habitats of special status species should be able to sustain viable populations of those species.

Habitat indicators:

- ❖ Vegetation composition (relative abundance of species); vegetation structure (life forms, cover, height, or age classes); vegetation distribution (patchiness, corridors); vegetation productivity; and vegetation nutritional value.

Wildlife Indicators:

- ❖ Escape terrain; Relative abundance; Composition; Distribution; Nutritional Value; and Edge-patch snags.

The above Indicators shall be applied to the potential of the ecological site.

***Determination:***

Achieving the Standard

Not achieving the Standard, but making significant progress towards

**X Not achieving the Standard, not making significant progress towards**

***Guidelines Conformance:***

- In conformance with the Guidelines
- Not in conformance with the Guidelines**

***Livestock As A Causal Factor:***

- Livestock are a contributing factor to not achieving the Standard**
- Livestock are not a contributing factor to not achieving the Standard
- Failure to achieve the Standard is also related to other issues or conditions**

***Conclusion: Not achieving the Standard, not making significant progress towards***

Habitats and watersheds in the East Wells Allotment are not sustaining a level of biodiversity appropriate for the area and conducive to appropriate uses.

Vegetation ***composition*** is inappropriate to ecological site potential at Key Areas EW-01, EW-02, Study Site EW-SS1, and throughout the allotment. The range at EW-01 has transitioned to shrub dominance and is full of the invasive species Russian thistle, mustards, and the annual forb mentzelia. The invasive species and mentzelia extend towards Sorensen Well. There is none to very little herbaceous component of native grasses and forbs, which also means that vegetation ***structure*** is inappropriate to site potential. Ecological condition studies accomplished at EW-01, EW-02, and EW-SS1 show 99% shrubs, 96% shrubs, and 99% shrubs respectively. The range has lost resiliency in these areas, and is prone to further invasive species spread.

Vegetation ***productivity*** has been recorded at above normal year levels at EW-01 in July 2009. However 36% of the production was Russian thistle or mentzelia. The remaining production was solely winterfat. There was no production of native perennial grasses or native forbs. Productivity was also recorded at above normal year levels at EW-02 in July 2009, however 96% of the production was in shrubs. ***Production*** along with plant vigor have generally been below normal year levels throughout the area during the evaluation period, as can be ascertained from the precipitation data gathered for this analysis combined with notes from utilization forms (see precipitation information on page 11).

Vegetation ***nutritional value*** (see page 10).

Significant progress is not being made towards achievement of the Habitat Standard either in terms of vegetative change or the grazing management system in place. Due to declining range trend, shrub dominance, lack of vegetation production, lack of appropriate structure, and the risk of invasive species spread, the vegetative resources lack the resiliency once present in the East Wells Allotment. Only limited progress towards Habitat and Biota Standard achievement can be expected because of the shrub dominant ecological state in this allotment. The herbaceous component of native grasses and forbs is limited, but can improve with careful livestock management practices.

The grazing management practices in place over the last 13 year period since the FMUD of February 1997 have not resulted in appropriate habitat indicators and vegetative condition. The interpretation of the rangeland monitoring data is that drought and inappropriate historical

livestock practices are the primary factors that have led to inappropriate plant composition (shrub dominance), lack of appropriate vegetation structure, and both the recorded increase and further future increased risk of invasive species spread. The cattle management practices implemented from 1997 to 2007 are a secondary factor, that when combined with drought and historical inappropriate livestock practices, have resulted in non-achievement of the Habitat and Biota Standard. Utilization has at times exceeded Land Use Plan (LUP) recommended levels and has been recorded as severe. Utilization has occurred during the spring growing period when soils are wet or soft and susceptible to disturbance favoring invasive species germination and establishment and thus inappropriate habitat indicators. Winterfat plants are pedestalled and prone to mortality.

The Vegetation Guidelines (Appendix A to the Standards and Guidelines) Desired Conditions for Salt Desert Shrublands and Sagebrush/Bunchgrass Rangelands states that “Communities will exhibit or be progressing towards a healthy, productive, diverse population of native and/or desirable plant species, and functioning disturbance processes appropriate to the site characteristics.” This does not describe conditions in the East Wells Allotment.

No Threatened, Endangered or Proposed species are known within or near the allotment.

No Sensitive species are known within the East Wells Allotment but the sensitive plant species White River catseye (*Cryptantha welshii*) is known within one mile. There are no sage grouse leks in or within three miles of the allotment but there is some potential summer and winter range. There is no potential pygmy rabbit habitat, and no known occurrences.

There is pronghorn antelope range within the East Wells Allotment. Elk range has been mapped within the allotment however no elk have been observed using the allotment.

## **6. MAYBE SEEDING (NYE COUNTY – SOUTHERN MOJAVE RAC)**

### ***Standard # 1. Soils:***

Watershed soils and stream banks should have adequate stability to resist accelerated erosion, maintain soil productivity, and sustain the hydrologic cycle

Soils indicators:

❖ Ground cover (vegetation, litter, rock, bare ground); Surfaces (e.g., biological crusts, pavement); and Compaction/infiltration.

Riparian soil indicators:

❖ Stream bank stability.

All of the above indicators are appropriate to the potential of the ecological site.

### ***Determination:***

#### **X Achieving the Standard**

- Not achieving the Standard, but making significant progress towards
- Not achieving the Standard, not making significant progress towards

***Guidelines Conformance:***

**X In conformance with the Guidelines**

- Not in conformance with the Guidelines

***Conclusion: Achieving the Standard***

Watershed soils in the Maybe Seeding Allotment have adequate stability to resist accelerated erosion, maintain soil productivity, and sustain the hydrologic cycle. Ground cover is appropriate to ecological site potential. There are no areas of severely depleted rangelands or large areas of bare ground. There are no significant areas where plants are pedestalled or where trampling and compaction are occurring. Monitoring data including vegetation cover studies and notes from utilization forms generally indicates that soils are stabilized by live vegetation, litter, surface fragments, and biotic crusts. Soils are functioning properly. Litter measurements from the two vegetation cover studies were 21.50 feet and 15.28 feet, which are appropriate measurements. The 2009 growing season has been near average. Utilization during the critical growing periods of 2008 and 2009 has been slight. The seeding was completely rested during 2006 and 2003. The seeding was rested during the critical growing period of 2007, 2005, 2001, and 1999. This results in appropriate litter amounts to stabilize the sites. Late seral ecological condition has been observed for about 100 acres of native black sagebrush/bluegrass range within the seeding south of the county road. Black & white biotic crusts were abundant in this area. Winterfat use was slight in this area for the 2009 growing season.

About 10 acres of disturbed land occur in the northeast portion of the Maybe Seeding, where invasive species grow with crested wheatgrass, winterfat, or native perennial bunchgrasses. The area has been moderately trampled in the past and should continue to be monitored. The invasive species Russian thistle, cheatgrass, and mentzelia occur in varying amounts in the seeding. However these invasive species do not occur in densities that are considered a cause for non-achievement of the Soils Standard.

***Standard #2. Ecosystem Components***

Watersheds should possess the necessary ecological components to achieve State water quality criteria, maintain ecological processes, and sustain appropriate uses. Riparian and wetlands vegetation should have structural and species diversity characteristic of the stage of stream channel succession in order to provide forage and cover, capture sediment, and capture, retain, and safely release water (watershed function).

Upland indicators:

Canopy and ground cover, including litter, live vegetation, biological crust, and rock appropriate to the potential of the ecological site. Ecological processes are adequate for the vegetative communities.

***Determination:***

**X Achieving the Standard**

- Not achieving the Standard, but making significant progress towards
- Not achieving the Standard, not making significant progress towards

***Guidelines Conformance:***

**X In conformance with the Guidelines**

- Not in conformance with the Guidelines

***Conclusion: Achieving the Standard***

Watersheds in the Maybe Seeding Allotment do possess the necessary ecological components to maintain ecological processes, and sustain appropriate uses. Achieving State water quality criteria is not applicable to this allotment. There is no riparian vegetation or wetlands present in the Wells Station Allotment. As stated above for the Soils Standard, canopy and ground cover, including litter, live vegetation, biological crust, and rock are appropriate to the potential of the ecological site. Ecological processes are adequate for the vegetative communities.

Ecological processes are defined by the Standards and Guidelines for Nevada's Mojave-Southern Great Basin Area as "Natural functions including the hydrologic cycle, the nutrient cycle, and energy flow (see also 43 CFR 4180.1 (b))." Based on appropriate vegetative cover and ground cover, appropriate utilization, appropriate ecological condition, and relative absence of invasive species in the Maybe Seeding Allotment, the hydrologic cycle, nutrient cycle, and energy flow are being maintained.

***Standard #3. Habitat and Biota***

Habitats and watersheds should sustain a level of biodiversity appropriate for the area and conducive to appropriate uses. Habitats of special status species should be able to sustain viable populations of those species.

Habitat indicators:

- ❖ Vegetation composition (relative abundance of species); vegetation structure (life forms, cover, height, or age classes); vegetation distribution (patchiness, corridors); vegetation productivity; and vegetation nutritional value.

Wildlife Indicators:

- ❖ Escape terrain; Relative abundance; Composition; Distribution; Nutritional Value; and Edge-patch snags.

The above Indicators shall be applied to the potential of the ecological site.

***Determination:***

**X Achieving the Standard**

- Not achieving the Standard, but making significant progress towards
- Not achieving the Standard, not making significant progress towards

***Guidelines Conformance:***

**X In conformance with the Guidelines**

- Not in conformance with the Guidelines

***Conclusion: Achieving the Standard***

Habitats and the watershed within the Maybe Seeding Allotment are sustaining a level of biodiversity appropriate for the area and conducive to appropriate uses. Vegetation **composition** is appropriate to a crested wheatgrass seeding, as indicated by vegetation cover studies and notes from utilization forms. Vegetation **structure** is also appropriate, with a variation of life forms, cover, heights, and age classes of native vegetation. Both old and young juniper trees are present; shrubs of varying size, shape, and age class are present, native grasses of varying size and age class are present; and native forbs are present.

Vegetation **distribution** is appropriate in the Maybe Seeding in that there is variation in soil mapping units and the ecological sites within the mapping units. Crested wheatgrass forms nearly pure stands in areas, while in other areas it grows with Wyoming or black sagebrush, four wing saltbush, and other native grasses and forbs. In the south portion of the seeding south of the county road, there are 150 acres of black sagebrush range that occurs on the alluvial fan and also on different slopes of low hills. This range transitions into a mix of Wyoming sagebrush and juniper/pinyon trees in the higher elevations of the seeding. This type varies on different facing slopes. Small canyons occur in the higher elevations.

In general, 2009 was an average growth year for most areas in eastern Nevada. Vegetation **productivity** is appropriate as indicated by slight utilization, photographs, and litter measurements. Vegetation **nutritional value** is appropriate.

No Threatened, Endangered or Proposed species are known within or near the allotment.

No Sensitive species are known within the Maybe Seeding Allotment but the sensitive plant species Sunnyside green gentian (*Frasera gypsicola*) and White River catseye (*Cryptantha welshii*) are within one mile. The sensitive animal species White River wood nymph butterfly (*Cercyonis pegala pluvialis*) and the White River Valley skipper (*Hesperia uncas grandiose*) are known from within one mile. There are no sage grouse leks in or within three miles of the allotment but there is some nesting, summer and winter range. There is no potential pygmy rabbit habitat, and no known occurrences.

There is pronghorn antelope range, deer range and migration corridors, and elk range within the allotment.

## **7. NORTH COVE (NYE COUNTY – SOUTHERN MOJAVE RAC)**

### ***Standard # 1. Soils:***

Watershed soils and stream banks should have adequate stability to resist accelerated erosion, maintain soil productivity, and sustain the hydrologic cycle

Soils indicators:

❖ Ground cover (vegetation, litter, rock, bare ground); Surfaces (e.g., biological crusts, pavement); and Compaction/infiltration.

Riparian soil indicators:

❖ Stream bank stability.

All of the above indicators are appropriate to the potential of the ecological site.

***Determination:***

**X Achieving the Standard**

- Not achieving the Standard, but making significant progress towards
- Not achieving the Standard, not making significant progress towards

***Guidelines Conformance:***

**X In conformance with the Guidelines**

- Not in conformance with the Guidelines

***Conclusion: Achieving the Standard***

Watershed soils in the North Cove Allotment have adequate stability to resist accelerated erosion, maintain soil productivity, and sustain the hydrologic cycle. Ground cover is appropriate to ecological site potential. The land area of the allotment occurs on a broad gently sloping alluvial fan with a slight east aspect. Slopes are generally from 0 – 2%. Monitoring data including vegetation cover studies and notes from utilization forms generally indicates that soils are stabilized by live vegetation, litter, surface fragments, and biotic crusts. There are no large areas of bare ground in the allotment. There are no significant areas where plants are pedestaled or where trampling and compaction are occurring. Of the vegetation cover studies accomplished in the allotment from 2002 through 2009, three are within the appropriate ground cover (basal and crown) as listed by the ecological site descriptions. Seven are under the appropriate amount, however there are no severe departures from the normal range. Litter measurements have been appropriate to site potential. Utilization during the critical growing period has been moderate or less on winterfat, alkali sacaton, and basin wildrye during two years (2008 and 2009) of the ten year evaluation period. Use has often been slight. This results in good litter amounts to stabilize the sites. Use on a very limited amount of Indian ricegrass has sometimes been heavy or severe, which is a problem.

The North Cove Allotment is divided into the west, middle, and east pastures. A problem area that should continue to be monitored occurs in the West Pasture of the Cove Allotment, in T. 10N. R. 60 E., Section 6. Invasive species and depleted range are very apparent in a north/south canyon in this area. The area burned in 1986 (Fire K149) and has not recovered well. This area was rested from livestock grazing in 2009, but livestock have used the area in the past. Watershed soils in this area may not have adequate stability to resist accelerated erosion, maintain soil productivity, and sustain the hydrologic cycle.

***Standard #2. Ecosystem Components***

Watersheds should possess the necessary ecological components to achieve State water quality criteria, maintain ecological processes, and sustain appropriate uses. Riparian and wetlands vegetation should have structural and species diversity characteristic of the stage of stream channel succession in order to provide forage and cover, capture sediment, and capture, retain, and safely release water (watershed function).

Upland indicators:

Canopy and ground cover, including litter, live vegetation, biological crust, and rock appropriate to the potential of the ecological site. Ecological processes are adequate for the vegetative communities.

***Determination:***

**X Achieving the Standard**

- Not achieving the Standard, but making significant progress towards
- Not achieving the Standard, not making significant progress towards

***Guidelines Conformance:***

**X In conformance with the Guidelines**

- Not in conformance with the Guidelines

***Conclusion: Achieving the Standard***

Watersheds in the North Cove Allotment do possess the necessary ecological components to maintain ecological processes, and sustain appropriate uses. Achieving State water quality criteria is not applicable to this allotment. There is no riparian vegetation or wetlands present in the North Cove Allotment. As stated above for the Soils Standard, canopy and ground cover, including litter, live vegetation, biological crust, and rock are appropriate to the potential of the ecological site. Ecological processes are adequate for the vegetative communities.

Ecological processes are defined by the Standards and Guidelines for Nevada's Mojave-Southern Great Basin Area as "Natural functions including the hydrologic cycle, the nutrient cycle, and energy flow (see also 43 CFR 4180.1 (b))." Based on appropriate vegetative cover and ground cover, and appropriate utilization in the North Cove Allotment, the hydrologic cycle, nutrient cycle, and energy flow are being maintained.

***Standard #3. Habitat and Biota***

Habitats and watersheds should sustain a level of biodiversity appropriate for the area and conducive to appropriate uses. Habitats of special status species should be able to sustain viable populations of those species.

Habitat indicators:

- ❖ Vegetation composition (relative abundance of species); vegetation structure (life forms, cover, height, or age classes); vegetation distribution (patchiness, corridors); vegetation productivity; and vegetation nutritional value.

Wildlife Indicators:

- ❖ Escape terrain; Relative abundance; Composition; Distribution; Nutritional Value; and Edge-patch snags.

The above Indicators shall be applied to the potential of the ecological site.

***Determination:***

- Achieving the Standard
- Not achieving the Standard, but making significant progress towards
- X Not achieving the Standard, not making significant progress towards**

***Guidelines Conformance:***

- In conformance with the Guidelines

**X Not in conformance with the Guidelines**

***Livestock As A Causal Factor:***

**X Livestock are a contributing factor to not achieving the Standard**

Livestock are not a contributing factor to not achieving the Standard

**X Failure to achieve the Standard is also related to other issues or conditions**

***Conclusion: Not achieving the Standard, not making significant progress towards***

Habitats and watersheds within the North Cove Allotment are not sustaining a level of biodiversity appropriate for the area and conducive to appropriate uses. Ecological condition studies, range inventory worksheets, and the composition by cover indicate that rangeland ecological sites have transitioned to shrub dominance and lack an appropriate understory of native grasses and forbs. The invasive species halogeton is prominent throughout the area. Other invasive species such as Russian thistle, mentzelia, and annual mustards are also present. The range has become less resilient and is prone to invasive species spread. Thus vegetation ***composition*** and ***structure*** are inappropriate to ecological site potential.

Vegetation ***distribution*** is appropriate in the allotment in that there is variation in the salt desert shrub plant communities on the broad alluvial fan. The upper elevations of the allotment are characterized by some rolling hills and rocky ridges with variation in the plant communities on different facing slopes. Hills and small canyons occur in the upper elevations.

Vegetation ***productivity*** has been recorded as above normal at Key Area NC-01 (East Pasture) and below normal at Key Areas NC-03 (Middle Pasture) and NC-02 (West Pasture) in July 2009. Vegetation ***productivity*** has been recorded as above normal on a silty range site in the east pasture in 1995, above normal on a coarse silty range site in the middle pasture in 1994, and above normal on a shallow calcareous loam range site in the west pasture in 1995 (HRM range inventory worksheets). In general, 2010 was an average to below average growth year and 2009 was an average growth year for most areas in eastern Nevada. Vegetation ***nutritional value*** is appropriate, although key native grasses are generally absent.

A problem area that should continue to be monitored occurs in the West Pasture of the Cove Allotment, in T. 10N. R. 60 E., Section 6. Invasive species and depleted range are very apparent in a north/south canyon in this area. The area burned in 1986 and has not recovered well from the burn. Habitats and watersheds in this area are not sustaining a level of biodiversity appropriate for the area and conducive to appropriate uses. ***Cover, composition, structure, and production*** are not appropriate in the prominent north/south canyon. This area was rested from livestock grazing in 2009, but livestock have used the area in the past.

Significant progress is not being made towards achievement of the Habitat Standard either in terms of vegetative change or the grazing management system in place. Due to shrub dominance, lack of appropriate structure, some lack of vegetation production, and the risk of invasive species spread, the vegetative resources lack the resiliency once present in the North Cove Allotment. Only limited progress towards Habitat Standard achievement can be expected

because of the shrub dominant ecological state in this allotment. The herbaceous component of native grasses and forbs is limited, but can improve with careful livestock management practices.

The grazing management practices in place over the last 13 year period since the FMUD of February 1997 have not resulted in a level of biodiversity appropriate for the area and conducive to appropriate uses. The interpretation of the rangeland monitoring data is that drought, inappropriate historical livestock practices, and poor vegetative recovery following wildfire are the primary factors that have led to inappropriate plant composition (shrub dominance), lack of appropriate vegetation structure, and both the recorded increase and further future increased risk of invasive species spread. The cattle management practices implemented from 1997 to 2007 are a secondary factor, that when combined with drought and historical inappropriate livestock practices, have resulted in non-achievement of the Habitat and Biota Standard. Cattle licensed use has exceeded the grazing permit authorized AUM level of 1003 AUMs six of the 11 years for which there is monitoring data and was as high as 1637 AUMs during the spring of 2001. Licensed use was 1473 AUMs in 2000, 1450 AUMs in 2003, and 1470 AUMs in 2006. The interpretation of the licensed use and range monitoring data is that these stocking levels combined with spring grazing have favored the establishment of invasive species and has resulted in the decline of the herbaceous understory, thus inappropriate vegetation composition has resulted.

The Vegetation Guidelines (Appendix A to the Standards and Guidelines) Desired Conditions for Salt Desert Shrublands and Sagebrush/Bunchgrass Rangelands states that “Communities will exhibit or be progressing towards a healthy, productive, diverse population of native and/or desirable plant species, and functioning disturbance processes appropriate to the site characteristics.” This does not describe conditions in the North Cove Allotment.

No Threatened, Endangered or Proposed species are known within or near the allotment.

There are no sage grouse leks in or within three miles of the North Cove Allotment, but there is some summer and winter range. There is no potential pygmy rabbit habitat, and no known occurrences. There is one known ferruginous hawk (*Buteus regalis*) nest within the allotment, last checked in 1992. Within Nevada, most individual ferruginous hawks (*Buteo regalis*) are present as breeders during spring through fall, with a relatively low number of over-wintering individuals depending upon winter severity (Wildlife Action Team 2006). Breeding territories include nesting, post-fledging, and foraging areas surrounding nest sites, which are commonly located in a juniper tree at the interface between pinyon-juniper woodlands and sagebrush-steppe rangelands. Nesting areas often contain multiple nests used by the same breeding pair over successive years, and have been reported to range in size from 0.01 to 9.0 km<sup>2</sup> (Collins and Reynolds 2005). In contrast to other parts of its breeding range, suitable nest sites are not a limiting factor for ferruginous hawks within Nevada.

There is pronghorn antelope range, deer range and deer migration corridors, and elk winter range within the allotment. There is also desert bighorn sheep unoccupied habitat present.

## **8. PRESTON ALLOTMENT (WHITE PINE COUNTY – NORTHEAST RAC)**

### ***Standard # 1. Upland Sites***

Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate and land form.

Soils indicators:

- ❖ Canopy and ground cover, including litter, live vegetation and rock, appropriate to the potential of the site.

### ***Determination:***

- Achieving the Standard
- X Not achieving the Standard, but making significant progress towards**
- Not achieving the Standard, not making significant progress towards

### ***Guidelines Conformance:***

- X In conformance with the Guidelines**
- Not in conformance with the Guidelines

### ***Livestock As A Causal Factor:***

- Livestock are a contributing factor to not achieving the Standard
- X Livestock are not a contributing factor to not achieving the Standard**
- X Failure to achieve the Standard is related to other issues or conditions**

***Conclusion: Not achieving the Standard, but making significant progress towards.***

Upland soils in the Preston Allotment are not exhibiting infiltration and permeability rates that are appropriate to soil type, climate and land form. Canopy and ground cover, including litter, live vegetation and rock, are not appropriate to the potential of the site.

Permit #2703457 uses the north portion of the Preston Allotment and has used electric fencing to separate their use from that cattle use permitted to operator #2704619. A prominent winterfat dominated area of salt desert shrub range occurs in the western half of that portion of the Preston Allotment grazed by permit #2703457. This winterfat dominated area runs northwest to southeast. This area is approximately 250 acres, or roughly 5% of the land area of 3,000 acres of the Preston Allotment grazed by permit #2703457. This area is not achieving the Upland Sites Standard. Although the vegetation cover study of July 2008 indicates an amount of cover appropriate to site potential (10.73 feet), notes from utilization studies done in June 2009 indicates native plant pedestaling, “hummocky” terrain, and some surface soil erosion of a sensitive silty soil type. Also, halogeton is prominent in the area. Continued livestock use every year during the early spring grazing period would likely contribute to a decline in winterfat and an increase in halogeton. Also, ecological condition studies, vegetation cover studies, and utilization studies indicate this area is very shrub dominant, which may contribute towards infiltration and permeability rates that are inappropriate to this sensitive soil type. The black sagebrush range in that portion of the allotment grazed by permit #2703457 is achieving the Upland Sites Standard. Soils are stabilized by live vegetation, litter, surface fragments, and in some cases, by biotic crusts. There is generally no plant pedestaling or excess surface compaction or trampling of soils. Use of key native perennial bunchgrasses such as Indian

ricegrass in black sagebrush range has been light or less and has often been slight. The amount of vegetation cover was appropriate to site potential at Study Site PR-02 on July 31, 2008 (15.79 feet) and was inappropriate to site potential at Study Site PR-03 on July 31, 2008 (11.90 feet). The black sagebrush range in this portion of the allotment is shrub dominant, which may contribute towards infiltration and permeability rates that are inappropriate to this soil type.

Significant progress is being made towards the Upland Sites Standard achievement in terms of the current grazing management practices in place. The area was completely rested from grazing in 2004 and grazing was deferred until April 9 or later in 2005, 2007, 2008, and 2009. In 2010, cattle grazing occurred from March 15 to April 12. Utilization of winterfat during spring 2009 averaged 20% (slight) for five transects. This use achieved Resource Management Plan (RMP) utilization objectives. Licensed cattle use has been less than or near the permit authorization of 95 AUMs. For these reasons, cattle are not considered a contributing factor to the non-achievement of the Upland Sites Standard. Drought and historical inappropriate livestock management practices are considered to be contributing factors. Significant progress is not being made towards the Upland Sites Standard achievement in terms of vegetative change. Plant community trend has been recorded as not apparent. Winterfat plants are pedestalled and sensitive silty soils have been disturbed, primarily by historical impacts.

***Standard #2. Riparian and Wetland Sites***

Riparian and wetland areas exhibit a properly functioning condition and achieve State water quality criteria

***Conclusion: Not Applicable***

This Standard was not evaluated since there are no public land riparian systems present in the Preston Allotment.

***Standard #3. Habitat***

Habitats exhibit a healthy, productive, and diverse population of native and/or desirable plant species, appropriate to the site characteristics, to provide suitable feed, water, cover and living space for animal species and maintain ecological processes. Habitat conditions meet the life cycle requirements of threatened and endangered species.

Habitat indicators:

- ❖ Vegetation composition (relative abundance of species); vegetation structure (life forms, cover, height, or age classes); vegetation distribution (patchiness, corridors); vegetation productivity; and vegetation nutritional value.

***Determination:***

- Achieving the Standard
- Not achieving the Standard, but making significant progress towards**
- Not achieving the Standard, not making significant progress towards

***Guidelines Conformance:***

- In conformance with the Guidelines**
- Not in conformance with the Guidelines

***Livestock As A Causal Factor:***

- Livestock are a contributing factor to not achieving the Standard
- X Livestock are not a contributing factor to not achieving the Standard**
- X Failure to achieve the Standard is related to other issues or conditions**

**Conclusion: Not achieving the Standard, but making significant progress towards.**

Habitats in the Preston Allotment do not exhibit a healthy, productive, and diverse population of native and/or desirable plant species, appropriate to the site characteristics, to provide suitable feed, water, cover and living space for animal species and maintain ecological processes. Habitat indicators are not appropriate to ecological site potential.

Ecological condition studies, vegetation cover studies, utilization studies, photographs, and professional observations indicate that portion of the Preston Allotment grazed by Carter Cattle Company is shrub dominant, with a plant **composition** inappropriate to ecological site potential. The native understory of cool season perennial bunchgrasses and forbs are far below site potential. The range has lost resiliency and is prone to invasive species spread.

Vegetation **structure** is inappropriate in the Preston Allotment to the extent that the winterfat and black sagebrush plant communities are in a shrub dominant state with a native grass and forb component that is below ecological site potential. The shrub life form is over abundant and the native perennial grass life form or forb life form is lacking. Also, young plants of the more desired native grasses and forbs have generally not been present. This is confirmed by the notes from utilization forms, and professional observations. Vegetation **distribution** over the allotment as a whole is fair, as indicated by some topographic diversity and the variation in soil mapping units and rangeland ecological sites.

Vegetation **productivity** has been recorded at below unfavorable year levels for Study Sites PR-01 and PR-03 in 2008. **Productivity** along with plant vigor have generally been unfavorable throughout the area during the evaluation period, as can be ascertained from the precipitation data gathered for this analysis combined with notes from utilization forms (see precipitation information on page 9).

Vegetation **nutritional** value (see page 10).

Significant progress is being made towards the Habitat Standard achievement in terms of the current grazing management practices in place. As stated above, the area was completely rested from grazing in 2004 and grazing was deferred until April 9 or later in 2005, 2007, 2008, and 2009. Utilization of winterfat during spring 2009 averaged 20% (slight) for five transects. Licensed cattle use has been less than or near the permit authorization of 95 AUMs. 62 AUMs were licensed in 2010 and 62 AUMs were licensed in 2011. For these reasons, cattle are not considered a contributing factor to the non-achievement of the Habitat Standard. Drought and historical inappropriate livestock management practices are considered to be the contributing factors. Significant progress is not being made towards the Habitat Standard achievement in terms of vegetative change. Plant community trend has been recorded as not apparent. Shrubs dominate the landscape and the herbaceous understory of native grasses and forbs is far below ecological site potential. Winterfat plants are pedestalled and sensitive silty soils have been disturbed, primarily by historical impacts. There is a lack of vegetation **production**, lack of

appropriate *structure*, and the risk of invasive species spread in that portion of the allotment associated with this grazing permit.

The Vegetation Guidelines (Appendix A to the Standards and Guidelines) Desired Conditions for Salt Desert Shrublands and Sagebrush/Bunchgrass Rangelands states that “Communities will exhibit or be progressing towards a healthy, productive, diverse population of native and/or desirable plant species, and functioning disturbance processes appropriate to the site characteristics.” This does not describe conditions in the Preston Allotment.

Threatened and endangered species are not known to occur in the Preston Allotment. One Endangered Species, the White River spinedace (*Lepidomeda albivallis*), is known within one mile of the allotment, on private land.

No Sensitive species are known within the allotment but the sensitive fish species Preston White River springfish (*Crenichthys baileyi albivalis*), White River speckled dace (*Rhinichthys osculus ssp unnamed*), and White River desert sucker (*Catostomus clarki intermedius*) are within one mile, primarily on private land. There is some potential pygmy rabbit habitat, but no known occurrences.

There are no known leks within and four active leks within three miles of the Preston Allotment according to the NDOW data used by BLM. The allotment contains nesting, summer brood rearing and winter habitat. Sage grouse often nest in suitable habitat within three miles of a lek site. A portion of the allotment is within the Butte Valley/Buck Mountain/White Pine Range PMU. Two of the three key areas within the Preston allotment are black or Wyoming sagebrush ecological types. As such they are in current or potential sage-grouse habitat. These sites are not meeting the herbaceous understory requirements set forth within the sage-grouse guidelines, as all grasses and forbs combined comprised only 1.4% cover at PR-03 and 0% at PR-02. Wyoming or black sagebrush cover was 59.3% at PR-03 and 100% at PR-02.

Because the Preston allotment is not meeting the desired vegetative composition for Standard 3 or the guidelines for sage-grouse habitat in some key areas, the allotment partially fails to meet the needs of the key “umbrella” species for sagebrush habitats identified in the Ely District Resource Management Plan (2008).

There is deer crucial winter range and migration corridors, elk range, pronghorn antelope range, and unoccupied desert bighorn sheep range within the Preston Allotment. The crucial deer winter range occurs in that portion of the allotment grazed by permit #2704619 (southwest portion of the allotment).

## **9. ROCK CANYON (WHITE PINE COUNTY – NORTHEAST RAC)**

### ***Standard # 1. Upland Sites***

Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate and land form.

Soils indicators:

- ❖ Canopy and ground cover, including litter, live vegetation and rock, appropriate to the

potential of the site.

***Determination:***

- Achieving the Standard
- Not achieving the Standard, but making significant progress towards
- Not achieving the Standard, not making significant progress towards**

***Guidelines Conformance:***

- In conformance with the Guidelines
- Not in conformance with the Guidelines**

***Livestock As A Causal Factor:***

- Livestock are a contributing factor to not achieving the Standard**
- Livestock are not a contributing factor to not achieving the Standard
- Failure to achieve the Standard is also related to other issues or conditions**

***Conclusion: Not achieving the Standard, not making significant progress towards.***

Upland soils in the Rock Canyon Allotment do not exhibit infiltration and permeability rates that are appropriate to soil type, climate and land form. Canopy and ground cover, including litter, live vegetation and rock, are not appropriate to the potential of the site.

Three pastures are recognized in the Rock Canyon Allotment. The Rock Canyon Seeding and Seeding Extension occur in the central portions of the allotment, and compose approximately 50% of the land area of the allotment. The Jiggs Flat Pasture occurs in the west and northwest portions of the allotment. The South Pasture occurs in the south portion of the allotment.

Of seven vegetation cover studies accomplished in the allotment in June or July, 2008, four areas were found to be under the potential vegetative ground cover amount while three areas were found to be appropriate. Of the three appropriate amount areas, one area was dominated by Russian thistle (RCS-01 – south native range). Bluegrass plants were pedestalled and of poor vigor at RCS-01. Litter amounts at the seven areas were generally appropriate in 2008, however there was a low measurement of litter at RCS-01. Soils were not compacted or trampled at any of the seven areas. The presence of biotic crust varied at each area from abundant to none present. Range monitoring data shows there are approximately 300 acres of depleted range in the northwest portion of the allotment, in the Jiggs Flat Pasture, dominated by halogeton, Russian thistle, and mustard. This area is exposed to wind and water erosion. At RC-08, in the northwest portion of the allotment, halogeton was found to be producing 34.6% of the current annual growth, Russian thistle 19.4%, and other invasive species 3.3%. No native grasses or forbs were present. These invasive species are also present and dominant throughout the Jiggs Flat Pasture. In portions of the South Pasture in Wyoming sagebrush range, cheatgrass has been estimated to be producing from 15 to 25% of the current year's growth of the plant community. Key Area RCS-02 in the south native area, and another area monitored to the east of the seeded areas are sagebrush dominant, with a lack of a native herbaceous understory of grasses and forbs. Infiltration and permeability rates are appropriate when there is an appropriate understory of native grasses and forbs.

In general, the monitoring data indicates the crested wheatgrass seedings to be achieving the Upland Standard, while the native range is not achieving. This is confirmed by photographs.

Invasive vegetative species are either non-existent or far less dense in the crested wheatgrass seedings than in native range. Species composition by cover studies show crested wheatgrass to compose 100% of vegetative cover at Key Areas RC-01 and RC-03 in the seedings.

Significant progress is not being made towards achievement of the Upland Sites Standard in the native range of the Rock Canyon Allotment either in terms of vegetative change or the current grazing management practices in place. Apparent range trend has been recorded as declining at RCS-01 according to an ecological condition study completed in July, 2008. The plant community has changed radically from that measured in 1999. The current grazing system in place for the last 13 years has not resulted in appropriate vegetation cover or soil stability and function on native range. Utilization of bluegrass, Indian ricegrass, and winterfat has been recorded as heavy or severe in this allotment as recorded in April, 2008 for year-long use during 2007. This has not resulted in an appropriate amount of plant production, cover, or plant litter to maintain appropriate soil function. Invasive species are dense in many areas. Cattle licensed use exceeded the grazing permit spring season (3/15 – 5/15) authorization of 124 AUMs three years (1999, 2000, and 2002). Soils are often wet or soft during this time period and are susceptible to disturbance that leads to the germination and establishment of invasive species that do not contribute to appropriate soil function. The native range areas dominated by invasive species have lost resiliency and are prone to further invasive species spread and loss of soil function. Drought and inappropriate historical livestock practices are also considered factors in the non-achievement of the Upland Sites Standard.

***Standard #2. Riparian and Wetland Sites***

Riparian and wetland areas exhibit a properly functioning condition and achieve State water quality criteria

***Conclusion: Not Applicable***

This Standard was not evaluated since there are no public land riparian systems present in the Rock Canyon Allotment

***Standard #3. Habitat***

Habitats exhibit a healthy, productive, and diverse population of native and/or desirable plant species, appropriate to the site characteristics, to provide suitable feed, water, cover and living space for animal species and maintain ecological processes. Habitat conditions meet the life cycle requirements of threatened and endangered species.

Habitat indicators:

- ❖ Vegetation composition (relative abundance of species); vegetation structure (life forms, cover, height, or age classes); vegetation distribution (patchiness, corridors); vegetation productivity; and vegetation nutritional value.

***Determination:***

- Achieving the Standard
- Not achieving the Standard, but making significant progress towards
- X Not achieving the Standard, not making significant progress towards**

***Guidelines Conformance:***

- In conformance with the Guidelines
- X Not in conformance with the Guidelines**

***Livestock As A Causal Factor:***

- X Livestock are a contributing factor to not achieving the Standard**
- Livestock are not a contributing factor to not achieving the Standard
- X Failure to achieve the Standard is also related to other issues or conditions**

***Conclusion: Not achieving the Standard, not making significant progress towards***

Habitats in the Rock Canyon Allotment are not exhibiting a healthy, productive, and diverse population of native and/or desirable plant species, appropriate to the site characteristics, to provide suitable feed, water, cover and living space for animal species and maintain ecological processes. Vegetation **composition** is inappropriate in native range. To the extent that shrubs or invasive species dominate areas, vegetation **structure** is also inappropriate in that there is a lack of the understory of native grasses and forbs. In terms of age class, the range is characterized by older age class species without new plants growing. Vegetation is **distributed** across the landscape as appropriate to ecological site. Much of the allotment occurs on a broad alluvial fan, on gentle slopes, with a west facing aspect. In the upper elevations of the allotment, on the west side of the Egan Mountains, hills and canyons occur with different facing slopes and vegetative types. Vegetation **productivity** is less than appropriate in the native range. **Productivity** has been recorded as far less than normal at Key Area RCS-01 in 2008 and 1999 and at Key Areas RCS-02, and RC-10 in 2008. Based on notes from utilization forms and photographs, plant **productivity** is appropriate in the crested wheatgrass seedings. Vegetation **nutritional value** may be less than appropriate in native range based on the absence of an herbaceous understory of native grasses and forbs and the absence of key species production. However some nutritious, palatable plant species are present to meet the physiological requirements of livestock and wildlife, even during the winter period.

Significant progress is not being made towards achievement of the Habitat Standard in native range in terms of vegetative change or the grazing management system in place. Due to shrub dominance, lack of vegetation production, lack of appropriate composition and structure, and the presence and risk of invasive species spread, the vegetative resources lack the resiliency once present in the native range of the Rock Canyon Allotment. Only limited progress towards Habitat Standard achievement can be expected because of the shrub dominant ecological state in this allotment. The herbaceous component of native grasses and forbs is limited, but can improve with careful livestock management practices.

The grazing management practices in place over the last 13 year period have not resulted in appropriate vegetative indicators. The interpretation of the rangeland monitoring data is that drought and inappropriate historical livestock practices are the primary factors that have led to inappropriate plant composition (shrub dominance), lack of appropriate vegetation structure, and both the recorded increase and further future increased risk of invasive species spread. The cattle management practices implemented from 1997 to 2007 are a secondary factor, that when combined with drought and historical inappropriate livestock practices, have resulted in non-

achievement of the Habitat Standard. Although the native range has been rested some springs, use other springs above the grazing permit authorized AUM level has resulted in inappropriate vegetation *composition, cover, production*, and the spread of invasive species. Key forage utilization at times has been heavy or severe.

The Vegetation Guidelines (Appendix A to the Standards and Guidelines) Desired Conditions for Salt Desert Shrublands and Sagebrush/Bunchgrass Rangelands states that “Communities will exhibit or be progressing towards a healthy, productive, diverse population of native and/or desirable plant species, and functioning disturbance processes appropriate to the site characteristics.” This does not describe conditions in the native range of the Rock Canyon Allotment.

Threatened, Endangered or Proposed species are not known to occur in the Rock Canyon Allotment.

Regarding sensitive species, there is a large area of potential pygmy rabbit habitat and one known occurrence within the Rock Canyon Allotment. Pygmy rabbits (*Brachylagus idahoensis*) are found primarily in big sagebrush (*Artemisia tridentata*) habitat and secondarily in communities dominated by rabbitbrush (*Chrysothamnus* spp.). They are the only rabbit species in North America to dig their own burrows. Burrows are dug in deep loose soil and are extensive, with multiple, interconnecting chambers. They are herbivorous grazers that eat mostly sagebrush (*Artemisia* spp.). During winter months their diet consists of up to 98% sagebrush. In the summer and spring months their diet becomes more varied, including more grass and new foliage. The sensitive plant species White River catseye (*Cryptantha welshii*) is also known to occur within one mile of the Rock Canyon Allotment.

There are no known leks within and four active leks within three miles of the allotment according to the NDOW data used by BLM. The allotment contains nesting, summer brood rearing, and winter habitat. Sage grouse often nest in suitable habitat within three miles of a lek site. The allotment is within the Butte Valley Population Management Unit (PMU). Three of the key areas within the Rock Canyon Allotment are black or Wyoming sagebrush ecological sites. As such they are in current or potential sage-grouse habitat. These sites are not meeting the herbaceous understory requirements set forth within the sage-grouse guidelines, as all grasses and forbs combined comprised only 0.1% cover at RCS-02, 7.2% cover at RC-06 and 11.4% at RC-10. Wyoming sagebrush cover was 99.9% at RCS-02, 36% at RC-06 and 88.6% at RC-10.

Because the Rock Canyon allotment is not meeting the desired vegetative composition for Standard 3 or the guidelines for sage-grouse habitat in some key areas, the allotment partially fails to meet the needs of the key “umbrella” species for sagebrush habitats identified in the Ely District Resource Management Plan (2008).

There is deer crucial summer range and migration corridors, elk range, and pronghorn antelope range within the Rock Canyon Allotment. There is also unoccupied desert bighorn sheep range within the allotment.

## **10. SHEEP TRAIL SEEDING (NYE COUNTY – SOUTHERN MOJAVE RAC)**

### ***Standard # 1. Soils:***

Watershed soils and stream banks should have adequate stability to resist accelerated erosion, maintain soil productivity, and sustain the hydrologic cycle

Soils indicators:

❖ Ground cover (vegetation, litter, rock, bare ground); Surfaces (e.g., biological crusts, pavement); and Compaction/infiltration.

Riparian soil indicators:

❖ Stream bank stability.

All of the above indicators are appropriate to the potential of the ecological site.

### ***Determination:***

Achieving the Standard

**X Not achieving the Standard, but making significant progress towards**

Not achieving the Standard, not making significant progress towards

### ***Guidelines Conformance:***

**X In conformance with the Guidelines**

Not in conformance with the Guidelines

### ***Livestock As A Causal Factor:***

Livestock are a contributing factor to not achieving the Standard

**X Livestock are not a contributing factor to not achieving the Standard**

**X Failure to achieve the Standard is primarily related to other issues or conditions**

### ***Conclusion: Not achieving the Standard, but making significant progress towards***

Watershed soils in the Sheep Trail Seeding Allotment do not have adequate stability to resist accelerated erosion, maintain soil productivity, and sustain the hydrologic cycle. Ground cover (vegetation, litter, rock, and bare ground) is not appropriate for a crested wheatgrass seeding and/or appropriate to the former potential for the site. The middle portion of this seeding is characterized by invasive species, bare ground areas, and large decadent four wing saltbush shrubs. Russian thistle, mustards, cheatgrass, and mentzelia (a native annual plant that invades disturbed areas) are prevalent throughout the seeding. Dead crested wheatgrass plant crowns were abundant throughout the seeding on May 14, 2009. The frequency trend study at ST-01 indicates a significant decline in native plants or crested wheatgrass and an increase in invasive species. The decline in crested wheatgrass is confirmed by 2 HRM ecological condition studies completed on June 29, 1994. These conditions expose the range to drying and wind or water erosion and do not maintain site productivity. It is estimated approximately 400 of 564 acres in the seeding are not achieving the Soils Standard. An area of about 100 acres in the south portion of the seeding is characterized by soils stabilized by live vegetation (dense shrubs), biotic crusts, plant litter, and surface fragments. Light cow tracks were observed in the area from spring 2009 and use of Indian ricegrass was 17%. The area was shrub dominant, but achieving the Standard,

with minor amounts of native grasses and forbs. A nice area of productive and vigorous Indian ricegrass is present in this south portion of the seeding.

Significant progress is being made towards achievement of the Soils Standard in terms of current livestock grazing practices. The seeding has been completely rested 6 of the last 13 years. Short duration grazing has occurred during winter 5 of the last 13 years. Cows made spring use in only one year of the last 13 years (2002). The allotment was completely rested in 2010 and only 30 AUMs were activated for 3 days in January, 2011. In terms of vegetative cover, some progress is being made towards achievement in that native species production and vigor was observed to be good to excellent during a field trip to the allotment in July, 2011.

Range trend has been recorded as declining at Key Area ST-01. Invasive species and bare ground dominate the seeding. The areas dominated by invasive species have lost resiliency and are prone to further invasive species spread. Severe use of crested wheatgrass has been noted for the 17 days the cows used the seeding in 2002, and heavy use was recorded in 2008 and 2000. Rabbits contributed to this use. Slight use of crested wheatgrass (from 0 to 3%) was noted for early spring grazing that occurred for one day in March, 2009. Overall, then, not much use has been made by cows in terms of years of use or the spring season of use over the evaluation period, and current livestock management practices are not considered a contributing factor to not achieving the Soils Standard. Significant utilization by rabbits has been noted in this seeding. Historic monitoring memorandums show that invasive species such as Russian thistle and halogeton have been a problem in this seeding as early as 1991. Drought, historical inappropriate livestock practices, and rabbits are considered the main factors for non-achievement of the Upland Sites Standard.

***Standard #2. Ecosystem Components***

Watersheds should possess the necessary ecological components to achieve State water quality criteria, maintain ecological processes, and sustain appropriate uses. Riparian and wetlands vegetation should have structural and species diversity characteristic of the stage of stream channel succession in order to provide forage and cover, capture sediment, and capture, retain, and safely release water (watershed function).

Upland indicators:

Canopy and ground cover, including litter, live vegetation, biological crust, and rock appropriate to the potential of the ecological site. Ecological processes are adequate for the vegetative communities.

***Determination:***

- Achieving the Standard
- Not achieving the Standard, but making significant progress towards**
- Not achieving the Standard, not making significant progress towards

***Guidelines Conformance:***

- In conformance with the Guidelines**
- Not in conformance with the Guidelines

***Livestock As A Causal Factor:***

- Livestock are a contributing factor to not achieving the Standard
- X Livestock are not a contributing factor to not achieving the Standard**
- X Failure to achieve the Standard is primarily related to other issues or conditions**

***Conclusion: Not achieving the Standard, but making significant progress towards***

The watershed in the Sheep Trail Seeding Allotment does not possess the necessary ecological components to maintain ecological processes, and sustain appropriate uses. Achieving State water quality criteria is not applicable to this allotment. There is no riparian vegetation or wetlands present in the allotment. As stated above for the Soils Standard, canopy and ground cover, including litter, live vegetation, biological crust, and rock are not appropriate to the potential of the ecological site. Ecological processes are not adequate for the vegetative communities.

Ecological processes are defined by the Standards and Guidelines for Nevada's Mojave-Southern Great Basin Area as "Natural functions including the hydrologic cycle, the nutrient cycle, and energy flow (see also 43 CFR 4180.1 (b))." Based on the large area of invasive plant species and bare ground in this allotment, the hydrologic cycle, nutrient cycle, and energy flow are not being maintained.

Significant progress is being made towards achievement of the Ecosystem Components Standard in terms of the current livestock management practices and some progress is being made in terms of vegetative change. See the discussion above for the Soils Standard. In terms of current livestock management practices, the seeding has been rested many years and cattle use has occurred as short duration grazing primarily during the winter period. For these reasons, current livestock management practices are not considered a contributing factor to non-achievement of the Ecosystem Components Standard. Drought and historical inappropriate livestock grazing practices are considered factors contributing to non-achievement of this Standard.

***Standard #3. Habitat and Biota***

Habitats and watersheds should sustain a level of biodiversity appropriate for the area and conducive to appropriate uses. Habitats of special status species should be able to sustain viable populations of those species.

Habitat indicators:

- ❖ Vegetation composition (relative abundance of species); vegetation structure (life forms, cover, height, or age classes); vegetation distribution (patchiness, corridors); vegetation productivity; and vegetation nutritional value.

Wildlife Indicators:

- ❖ Escape terrain; Relative abundance; Composition; Distribution; Nutritional Value; and Edge-patch snags.

The above Indicators shall be applied to the potential of the ecological site.

***Determination:***

- Achieving the Standard
- X Not achieving the Standard, but making significant progress towards**
- Not achieving the Standard, not making significant progress towards

***Guidelines Conformance:***

- X In conformance with the Guidelines**
- Not in conformance with the Guidelines

***Livestock As A Causal Factor:***

- Livestock are a contributing factor to not achieving the Standard
- X Livestock are not a contributing factor to not achieving the Standard**
- X Failure to achieve the Standard is primarily related to other issues or conditions**

***Conclusion: Not achieving the Standard, but making significant progress towards***

Habitats and the watershed in the Sheep Trail Seeding Allotment do not sustain a level of biodiversity appropriate for the area and conducive to appropriate uses.

Frequency trend studies, utilization studies, professional observations, and photographs indicate that major portions of the Sheep Trail Seeding Allotment are either shrub dominant or invasive species dominant, with a plant ***composition*** inappropriate to ecological site potential. The understory of crested wheatgrass or cool season perennial bunchgrasses and forbs are far below site potential, and crested wheatgrass plants have declined dramatically. The range has lost resiliency and is prone to invasive species spread. Cheatgrass, Russian thistle, halogeton, mustards, and other invasive species dominate much of the landscape in the allotment. This represents inappropriate vegetation ***composition, cover, production, structure, and nutritional value***.

Vegetation ***structure*** is inappropriate in the Sheep Trail Seeding Allotment to the extent that the allotment is in a shrub dominant state or invasive species state with a grass and forb component that is below ecological site potential. The shrub and invasive plant life forms are over abundant and the crested wheatgrass and native perennial grass life forms or forb life form is lacking. Also, young plants of the more desired grasses and forbs have generally not been present. This is confirmed by the notes from utilization forms in April and May, 2009, and professional observations. Vegetation ***distribution*** over the allotment as a whole is fair, as indicated by topographic diversity and the variation in soil mapping units and rangeland ecological sites.

Vegetation ***productivity*** has been observed to be far below site potential. Crested wheatgrass has declined dramatically and four wing saltbush shrubs have been observed to be in poor vigor. Utilization has been recorded as heavy or severe on key forage plants during the 2000, 2002, and 2008 grazing years. ***Productivity*** along with plant vigor have generally been unfavorable throughout the area during the evaluation period, as can be ascertained from the precipitation data gathered for this analysis combined with notes from utilization forms (see precipitation information on page 9).

Vegetation *nutritional value* (see page 10).

Significant progress is being made towards achievement of the Habitat and Biota Standard in terms of the grazing system in place. The allotment was completely rested in 2010 and only 30 AUMs were activated for 3 days in January, 2011. In terms of vegetative change, some progress is being made towards achievement in that native species production and vigor was observed to be good to excellent during a field trip to the allotment in July, 2011. Due to shrub dominance, lack of vegetation production most years, lack of appropriate structure, the risk of invasive species spread, and declining range trend, the vegetative resources still lack the resiliency once present in the Sheep Trail Seeding Allotment. Only limited progress towards Habitat Standard achievement can be expected because of the shrub dominant or invasive species dominant ecological state in this allotment. The herbaceous component of crested wheatgrass, native grasses, and forbs is limited, but can improve with careful livestock management practices.

Although the grazing system in place over the last 13 year period since the FMUD of February 1997 has not resulted in appropriate habitat and vegetative conditions in the allotment, current livestock practices are not considered a contributing factor to non-achievement of the Habitat and Biota Standard. The allotment has been completely rested several years and cattle grazing has occurred primarily during the winter grazing period. The primary contributing factors are considered to be historical inappropriate livestock management practices and drought.

The Vegetation Guidelines (Appendix A to the Standards and Guidelines) Desired Conditions for Salt Desert Shrublands and Sagebrush/Bunchgrass Rangelands states that “Communities will exhibit or be progressing towards a healthy, productive, diverse population of native and/or desirable plant species, and functioning disturbance processes appropriate to the site characteristics.” This does not describe conditions in the Sheep Trail Seeding Allotment.

No Threatened, Endangered or Proposed species are known within or near the allotment.

No Sensitive species are known within the Sheep Trail Seeding Allotment but the sensitive plant species White River catseye (*Cryptantha welshii*) occurs within one mile. There are no sage grouse leks in or within three miles of the allotment but there is some summer and winter range according to recent broad mapping layers created by the Nevada Division of Wildlife. There is no potential pygmy rabbit habitat, and no known occurrences.

There is deer range, deer crucial winter range, pronghorn antelope range, and elk range in the allotment.

## **11. SORENSON WELL (NYE COUNTY – SOUTHERN MOJAVE RAC)**

### ***Standard # 1. Soils:***

Watershed soils and stream banks should have adequate stability to resist accelerated erosion, maintain soil productivity, and sustain the hydrologic cycle

Soils indicators:

- ❖ Ground cover (vegetation, litter, rock, bare ground); Surfaces (e.g., biological crusts,

pavement); and Compaction/infiltration.

Riparian soil indicators:

- ❖ Stream bank stability.

All of the above indicators are appropriate to the potential of the ecological site.

***Determination:***

**X Achieving the Standard**

- Not achieving the Standard, but making significant progress towards
- Not achieving the Standard, not making significant progress towards

***Guidelines Conformance:***

**X In conformance with the Guidelines**

- Not in conformance with the Guidelines

***Conclusion: Achieving the Standard***

Monitoring data indicates watershed soils have adequate stability to resist accelerated erosion, maintain soil productivity, and sustain the hydrologic cycle in the Sorenson Well Allotment. Ground cover is appropriate to ecological site potential. Key Area SW-02 (central allotment) and Study Site SS-1 (White River Wash) both had an amount of ground cover appropriate to site potential on June 30, 2008 (SW-02) and July 10, 2009 (SS-1). Key Area SW-01 (White River Wash) was found to have an amount of ground cover below site potential on June 29, 2008, however notes from utilization forms completed on July 10, 2009 shows that soils at SW-01 were stabilized by live vegetation and litter. No plant pedestals were observed and no trampling or compaction of soils was present. Ground cover is appropriate to ecological site potential and biological crusts are abundant in the shrub dominant range in the central and western portions of the allotment (Key Area SW-02 and nearby range). Notes from utilization forms indicate soils at SW-02 and nearby range are stabilized by live vegetation, litter, surface gravels, and abundant biotic crusts. During the evaluation period, key forage plant method utilization has generally been in conformance with the Guidelines for Rangeland Health, has been within the range that scientific literature and experience indicates should allow for maintenance or improvement of current conditions, and has been in accordance with Nevada Rangeland Monitoring Handbook Guidelines. Utilization has generally been in conformance with the new Ely District Resource Management Plan (August, 2008).

***Standard #2. Ecosystem Components***

Watersheds should possess the necessary ecological components to achieve State water quality criteria, maintain ecological processes, and sustain appropriate uses. Riparian and wetlands vegetation should have structural and species diversity characteristic of the stage of stream channel succession in order to provide forage and cover, capture sediment, and capture, retain, and safely release water (watershed function).

Upland indicators:

Canopy and ground cover, including litter, live vegetation, biological crust, and rock appropriate to the potential of the ecological site. Ecological processes are adequate for the vegetative communities.

***Determination:***

**X Achieving the Standard**

- Not achieving the Standard, but making significant progress towards
- Not achieving the Standard, not making significant progress towards

***Guidelines Conformance:***

**X In conformance with the Guidelines**

- Not in conformance with the Guidelines

***Conclusion: Achieving the Standard***

Watersheds in the Sorenson Well Allotment do possess the necessary ecological components to maintain ecological processes, and sustain appropriate uses. Achieving State water quality criteria is not applicable to this allotment. There is no riparian vegetation or wetlands present in the Sorenson Well Allotment. As stated above for the Soils Standard, canopy and ground cover, including litter, live vegetation, biological crust, and rock are appropriate to the potential of the ecological site. Ecological processes are adequate for the vegetative communities.

Ecological processes are defined by the Standards and Guidelines for Nevada's Mojave-Southern Great Basin Area as "Natural functions including the hydrologic cycle, the nutrient cycle, and energy flow (see also 43 CFR 4180.1 (b))." Based on appropriate vegetative cover and ground cover, and appropriate utilization in the Sorenson Well Allotment, the hydrologic cycle, nutrient cycle, and energy flow are being maintained.

***Standard #3. Habitat and Biota***

Habitats and watersheds should sustain a level of biodiversity appropriate for the area and conducive to appropriate uses. Habitats of special status species should be able to sustain viable populations of those species.

Habitat indicators:

- ❖ Vegetation composition (relative abundance of species); vegetation structure (life forms, cover, height, or age classes); vegetation distribution (patchiness, corridors); vegetation productivity; and vegetation nutritional value.

Wildlife Indicators:

- ❖ Escape terrain; Relative abundance; Composition; Distribution; Nutritional Value; and Edge-patch snags.

The above Indicators shall be applied to the potential of the ecological site.

***Determination:***

- Achieving the Standard

**X Not achieving the Standard, but making significant progress towards**

- Not achieving the Standard, not making significant progress towards

***Guidelines Conformance:***

**X In conformance with the Guidelines**

- Not in conformance with the Guidelines

***Livestock As A Causal Factor:***

- Livestock are a contributing factor to not achieving the Standard

**X Livestock are not a contributing factor to not achieving the Standard**

**X Failure to achieve the Standard is related to other issues or conditions**

***Conclusion: Not achieving the Standard, but making significant progress towards***

Monitoring data shows that habitats and watersheds within the Sorensen Well Allotment are not sustaining a level of biodiversity appropriate for the area and conducive to appropriate uses. Vegetation composition, structure, and nutritional value are inappropriate to site potential at Key Area SW-02 and throughout the central and western portions of the allotment (85% of the land area of the allotment). Photographs confirm this conclusion. The composition by cover study at Key Area SW-02 shows that shrubs are producing 99% of the current annual production. There are very few to no native perennial bunchgrasses throughout this area. Native forbs are producing less than 0.1% of the current annual plant community production in this area. The native shrubs big sagebrush and greasewood dominate the composition and structure in the area.

Vegetation composition, structure, production and nutritional value are appropriate to site potential at Key Area SW-01 and at Study Site SS-1 in White River Wash (15% of the land area of the allotment). These areas display a healthy diversity, composition, production, and structure of native grasses, forbs, and shrubs. Some poverty weed and thistle are present at Key Area SW-01.

Significant progress is being made towards achievement of the Habitat Standard because movement towards achieving the Habitat Standard is occurring in terms of the grazing management system in place. Monitoring data shows that cattle have generally not been grazing that portion of the allotment that is not achieving the Habitat and Biota Standard. White River Wash, where the cattle have been grazing, is achieving the Standard. White River Wash is resilient and has the capability to maintain or improve in the long term. Apparent trend is improving at SW-01. Licensed use records indicate cattle use has been short term in this allotment and has varied from late winter until spring. However, cattle use has occurred every year from 1999 to 2009 on this allotment and every year licensed use has exceeded the grazing permit authorization of 193 AUMs.

The Vegetation Guidelines (Appendix A to the Standards and Guidelines) Desired Conditions for Salt Desert Shrub lands and Sagebrush/Bunchgrass Rangelands states that "Communities will exhibit or be progressing towards a healthy, productive, diverse population of native and/or desirable plant species, and functioning disturbance processes appropriate to the site characteristics." This does not describe conditions over 85% of the land area of the Sorensen Well Allotment.

No Threatened, Endangered or Proposed species are known within or near the allotment.

No Sensitive species are known within the allotment but the sensitive fish species White River speckled dace (*Rhinichthys osculus ssp. (unnamed)*) occurs within one mile. There are no sage grouse leks in or within three miles of the allotment but there is some nesting, summer and winter range. There is no potential pygmy rabbit habitat, and no known occurrences.

Pronghorn antelope use the Sorensen Well Allotment year-long. There is very little deer or elk use expected on the allotment.

## **12. SWAMP CEDAR (WHITE PINE COUNTY – NORTHEAST RAC)**

### ***Standard # 1. Upland Sites***

Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate and land form.

Soils indicators:

- ❖ Canopy and ground cover, including litter, live vegetation and rock, appropriate to the potential of the site.

### ***Determination:***

#### **X Achieving the Standard**

- Not achieving the Standard, but making significant progress towards
- Not achieving the Standard, not making significant progress towards

### ***Guidelines Conformance:***

#### **X In conformance with the Guidelines**

- Not in conformance with the Guidelines

### ***Conclusion: Achieving the Standard***

Monitoring data for the Swamp Cedar Allotment indicates upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate and land form. Canopy and ground cover are appropriate to the potential of the site. The vegetative cover at Key Area SC-01 west of Ferra Well is within the potential basal and crown ground cover. The vegetative cover at Key Area SCV-02 in a saline meadow was measured at less than the potential in July 2008, however notes from utilization forms in March 2009 indicate adequate vegetative cover and litter were present, no invasive species were present, and little to no use was observed on alkali sacaton. Litter measurements in the allotment indicate adequate litter is present to stabilize soils and contribute towards appropriate infiltration and permeability rates. In general, live vegetation, litter, surface fragments, rock, and biotic crusts where present are stabilizing the soils. Soils are functioning properly. There were no recordings of plant pedestalling, excess trampling, excess surface soil compaction, or soil erosion for any areas. There were no recordings of soil rills or gullies in the area. Photographs indicate healthy, diverse, productive, vigorous sodic floodplain or saline meadow ecological sites. The deeper rooted native grasses are present to contribute towards good soil – water relations. Utilization data has varied during the evaluation period.

The data generally shows light or less use. Use has often been slight. This also tends to promote appropriate litter to protect soil stability and maintain soil function.

***Standard #2. Riparian and Wetland Sites***

Riparian and wetland areas exhibit a properly functioning condition and achieve State water quality criteria

***Conclusion: Not Applicable***

This Standard was not evaluated since there are no public land riparian systems present in the Swamp Cedar Allotment

***Standard #3. Habitat***

Habitats exhibit a healthy, productive, and diverse population of native and/or desirable plant species, appropriate to the site characteristics, to provide suitable feed, water, cover and living space for animal species and maintain ecological processes. Habitat conditions meet the life cycle requirements of threatened and endangered species.

Habitat indicators:

- ❖ Vegetation composition (relative abundance of species); vegetation structure (life forms, cover, height, or age classes); vegetation distribution (patchiness, corridors); vegetation productivity; and vegetation nutritional value.

***Determination:***

**X Achieving the Standard**

- Not achieving the Standard, but making significant progress towards
- Not achieving the Standard, not making significant progress towards

***Guidelines Conformance:***

**X In conformance with the Guidelines**

- Not in conformance with the Guidelines

***Conclusion: Achieving the Standard***

The Swamp Cedar Allotment exhibits a healthy, productive, and diverse population of native plant species appropriate to rangeland ecological site potential. Vegetation production was far above the normal year level at Key Area SC-01 in 2008. Key Area SC-01 is in late seral (good) ecological condition. The percent native grass composition is 44.8% at SC-01 and 36.2% at SC-02. Vegetation structure (life forms, cover, height, or age classes) is appropriate as indicated by the presence of native shrubs, grasses, and forbs in the allotment. Photographs confirm this observation. Vegetation distribution is appropriate as indicated by the diversity of soil mapping units and ecological sites. The allotment is characterized by alluvial fans and former lake bed terraces with varying aspects as opposed to a continuous broad alluvial fan. Vegetation nutritional value has not been monitored, however nutritious, palatable plant species are present to meet the physiological requirements of livestock and wildlife, even during the winter period. Suitable feed, water, cover and living space is provided for animal species. Ecological processes are being maintained. No threatened and endangered species are known to occur on the Swamp Cedar Allotment.

Cattle grazing is in conformance with the guidelines. Cattle use has been short duration, with some use taking place during the winter period, not the critical growing period. Cattle use has been well distributed as evidenced by the utilization studies showing light or slight use.

No Threatened, Endangered or Proposed species are known within the allotment.

Two sensitive plant species are known within the allotment, Sunnyside green gentian (*Frasera gypsicola*), and White River catseye (*Cryptantha welshii*). The sensitive animal species White River wood nymph butterfly (*Cercyonis pegala pluvialis*) and the White River Valley skipper (*Hesperia uncas grandiose*) are known from within one mile of the allotment boundary. There are no sage grouse leks in or within three miles of the allotment but there is some nesting, summer and winter range. There is no potential pygmy rabbit habitat, and no known occurrences. There is one ferruginous hawk (*Buteo regalis*) nest within the allotment, last checked in 1992.

There is pronghorn antelope range and elk range identified within the allotment.

### **13. WELLS STATION (NYE COUNTY – SOUTHERN MOJAVE RAC)**

#### ***Standard # 1. Soils:***

Watershed soils and stream banks should have adequate stability to resist accelerated erosion, maintain soil productivity, and sustain the hydrologic cycle

Soils indicators:

❖ Ground cover (vegetation, litter, rock, bare ground); Surfaces (e.g., biological crusts, pavement); and Compaction/infiltration.

Riparian soil indicators:

❖ Stream bank stability.

All of the above indicators are appropriate to the potential of the ecological site.

#### ***Determination:***

Achieving the Standard

Not achieving the Standard, but making significant progress towards

**X Not achieving the Standard, not making significant progress towards**

#### ***Guidelines Conformance:***

In conformance with the Guidelines

**X Not in conformance with the Guidelines**

#### ***Livestock As A Causal Factor:***

**X Livestock are a contributing factor to not achieving the Standard**

Livestock are not a contributing factor to not achieving the Standard

**X Failure to achieve the Standard is also related to other issues or conditions**

***Conclusion:* Not achieving the Standard, not making significant progress towards**

Range monitoring data for the Wells Station Allotment indicates that watershed soils do not have adequate stability to resist accelerated erosion, maintain soil productivity, and sustain the hydrologic cycle. Ground cover (vegetation, litter, rock, bare ground); Surfaces (e.g., biological crusts, pavement); and Compaction/infiltration are not appropriate to ecological site potential. In 2008 live vegetative canopy was within site potential at Key Areas WS-01 and WS-03 but below site potential at Key Areas WS-02 and WS-04. Key Area WS-01, which occurs on a sensitive soil type, has been observed to be used severely during the 2008 grazing year. The invasive species halogeton and cheatgrass are present at WS-01 (winterfat site). A second important area of winterfat north of Key Area WS-04 was also used severely for the 2008 grazing year. Severe or heavy use, trampling, and plant pedestalling have also been recorded at Key Area WS-03. Severe or heavy utilization has occurred at other locations in the allotment in both 2008 and 2000. Severe use does not maintain appropriate vegetative cover and litter. Monitoring data also indicates that all four key areas have transitioned to shrub dominance, and lack an appropriate understory of native grasses and forbs. These key areas have lost resiliency and are prone to invasive species spread. Watershed soils are best able to have adequate stability to resist accelerated erosion, maintain soil productivity, and sustain the hydrologic cycle if an herbaceous understory is present where the deeper rooted perennial grasses grow. Soils dominated by invasive species or with a significant component of invasive species do not function normally. It should be noted that the Soils Standard appears to be achieved at Key Area WS-02. In April 2009 the soils were observed to be stabilized by live vegetation, litter, several kinds of forbs, surface fragments, and biotic crusts. No excess trampling or compaction was observed and no plant pedestalling or surface soil erosion was observed.

Significant progress is not being made towards the Soils Standard achievement either in terms of vegetative change. Plant community trend has been recorded as declining at two key areas and not apparent at two key areas. Licensed use records indicate that some cattle grazing has occurred during the critical growth period of key forage species. Basically the grazing system in place over the last 13 year period since the FMUD of February 1997 has not resulted in appropriate soil stability, soil function, and ground cover. Key forage utilization has at times been recorded as heavy or severe. However, some progress towards Soils Standard achievement is being made in terms of the current grazing practices in that the allotment was grazed short duration during March of 2009, was completely rested in 2010, and was grazed during the winter of 2011 when active herding was used to keep cattle distributed in the higher country. Wild horses, drought, historical inappropriate livestock management practices, and possibly lack of natural wildfire are also considered factors in the non-achievement of the Soils Standard.

### ***Standard #2. Ecosystem Components***

Watersheds should possess the necessary ecological components to achieve State water quality criteria, maintain ecological processes, and sustain appropriate uses. Riparian and wetlands vegetation should have structural and species diversity characteristic of the stage of stream channel succession in order to provide forage and cover, capture sediment, and capture, retain, and safely release water (watershed function).

Upland indicators:

Canopy and ground cover, including litter, live vegetation, biological crust, and rock appropriate to the potential of the ecological site. Ecological processes are adequate for the vegetative communities.

***Determination:***

- Achieving the Standard
- Not achieving the Standard, but making significant progress towards
- X Not achieving the Standard, not making significant progress towards**

***Guidelines Conformance:***

- In conformance with the Guidelines
- X Not in conformance with the Guidelines**

***Livestock As A Causal Factor:***

- X Livestock are a contributing factor to not achieving the Standard**
- Livestock are not a contributing factor to not achieving the Standard
- X Failure to achieve the Standard is also related to other issues or conditions**

***Conclusion: Not achieving the Standard, not making significant progress towards***

Watersheds in the Wells Station Allotment do not possess the necessary ecological components to maintain ecological processes, and sustain appropriate uses. Achieving State water quality criteria is not applicable to this allotment. There is no riparian vegetation or wetlands present in the Wells Station Allotment. As stated above for the Soils Standard, canopy and ground cover, including litter, live vegetation, biological crust, and rock are not appropriate to the potential of the ecological site. Ecological processes are not adequate for the vegetative communities.

Ecological processes are defined by the Standards and Guidelines for Nevada's Mojave-Southern Great Basin Area as "Natural functions including the hydrologic cycle, the nutrient cycle, and energy flow (see also 43 CFR 4180.1 (b))." Based on inappropriate vegetative cover and ground cover, shrub dominance, presence of invasive species, and heavy or severe key forage utilization in the Wells Station Allotment, the hydrologic cycle, nutrient cycle, and energy flow are not being maintained.

Significant progress is not being made towards achievement of the Ecosystem Components Standard either in terms of vegetation change or the grazing management practices in place over the last 13 year period. See the discussion above for grazing as related to the Soils Standard. Livestock management practices, drought, wild horses, and historical inappropriate livestock practices are all contributing factors to the non-achievement of the Ecosystems Component Standard.

***Standard #3. Habitat and Biota***

Habitats and watersheds should sustain a level of biodiversity appropriate for the area and conducive to appropriate uses. Habitats of special status species should be able to sustain viable populations of those species.

Habitat indicators:

- ❖ Vegetation composition (relative abundance of species); vegetation structure (life forms, cover, height, or age classes); vegetation distribution (patchiness, corridors); vegetation productivity; and vegetation nutritional value.

Wildlife Indicators:

- ❖ Escape terrain; Relative abundance; Composition; Distribution; Nutritional Value; and Edge-patch snags.

The above Indicators shall be applied to the potential of the ecological site.

***Determination:***

- Achieving the Standard
- Not achieving the Standard, but making significant progress towards
- X Not achieving the Standard, not making significant progress towards**

***Guidelines Conformance:***

- In conformance with the Guidelines
- X Not in conformance with the Guidelines**

***Livestock As A Causal Factor:***

- X Livestock are a contributing factor to not achieving the Standard**
- Livestock are not a contributing factor to not achieving the Standard
- X Failure to achieve the Standard is also related to other issues or conditions**

***Conclusion: Not achieving the Standard, not making significant progress towards***

Range monitoring data for the Wells Station Allotment shows that habitats and watersheds are not sustaining a level of biodiversity appropriate for the area and conducive to appropriate uses. Vegetative ***composition*** is inappropriate to site potential. The allotment as a whole has transitioned to shrub dominance and lacks an appropriate understory of native grasses and forbs. Vegetation ***structure*** is also inappropriate to the extent that the shrub life form dominates the landscape. Vegetation ***distribution*** is appropriate in that there is variation in soils and ecological sites, with varying slopes and aspects. Hills and canyons characterize the upper elevations of the allotment. Vegetation ***production*** has been found to be below normal year levels at WS-01, WS-03, and WS-04 in 2008 and at WS-04 in 2002. Vegetation ***production*** was below unfavorable year levels at WS-01 in 2008. Vegetation ***nutritional value*** is below site potential to the extent that key palatable native grasses are largely absent, and the key half-shrub winterfat has been used heavily and severely, which limits the availability of this important species.

Significant progress is not being made towards achievement of the Habitat and Biota Standard in terms of vegetative change. Due to shrub dominance, lack of vegetation production, lack of appropriate structure, and the risk of invasive species spread, the vegetative resources lack the resiliency once present in the Wells Station Allotment.

Only limited progress towards Habitat Standard achievement can be expected because of the shrub dominant ecological state in this allotment. The herbaceous component of native grasses and forbs is limited, but can improve with careful livestock management practices.

Range trend has been recorded as declining at two key areas and not apparent at two key areas. Cattle grazing has occurred during the critical growth period, when soils are wet and soft and susceptible to disturbance that leads to invasive species spread. Basically the grazing system in place over the last 13 year period has not resulted in appropriate habitat or appropriate vegetative indicators. The interpretation of the rangeland monitoring data is that drought, inappropriate historical livestock practices, and wild horses are the primary factors that have led to inappropriate plant composition (shrub dominance), lack of appropriate vegetation structure, and both the recorded increase and further future increased risk of invasive species spread. The cattle management practices implemented from 1997 to 2007 are a secondary factor, that when combined with drought and historical inappropriate livestock practices, have resulted in non-achievement of the Habitat and Biota Standard. However, some progress towards the Habitat and Biota Standard achievement is being made in terms of the current grazing practices in that the allotment was grazed short duration during March of 2009, was completely rested in 2010, and was grazed during the winter of 2011 when active herding was used to keep cattle distributed in the higher country.

The Vegetation Guidelines (Appendix A to the Standards and Guidelines) Desired Conditions for Salt Desert Shrublands and Sagebrush/Bunchgrass Rangelands states that “Communities will exhibit or be progressing towards a healthy, productive, diverse population of native and/or desirable plant species, and functioning disturbance processes appropriate to the site characteristics.” This does not describe conditions in the Wells Station Allotment.

No Threatened, Endangered or Proposed species are known within or near the allotment.

The sensitive plant species White River catseye (*Cryptantha welshii*) is known within one mile of the allotment. There is no potential pygmy rabbit habitat, and no known occurrences.

The greater sage-grouse (*Centrocercus urophasianus*) is a high-profile Sensitive Species currently undergoing review for Threatened or Endangered Status (USDI 2008). It has been identified as an “umbrella” species by the Ely District BLM, and chosen to represent the habitat needs of the sagebrush (*Artemisia* spp.) obligate or sagebrush/woodland dependent guild (BLM 2007; p. 4.7-10). The White Pine County sage-grouse conservation plan (hereafter termed the Plan; 2004) identified approximately 51% (950,773 ac) of potential (1,870,317 ac) sage-grouse habitat within the Butte Valley/Buck Mountain PMU as not meeting the sage-grouse habitat guideline standards (Connelly et al. 2000). In the sagebrush habitat rating system used in the Plan, one category, termed “R2”, is defined as “Areas with inadequate grass/forb understory composition, adequate sagebrush cover”. The Plan estimated approximately 708,000 acres of sagebrush habitat in this category throughout the PMU. Those PMU’s located in Nye County (Butte Valley/Nye and Quinn/Nye) do not have a Sage Grouse Plan written for them as of yet. In the Wells Station allotment some of the sagebrush habitat communities at the key areas measured may fall under this “R2” category.

There are no known leks in or within three miles of the Wells Station Allotment according to the NDOW data used by BLM. The allotment contains summer brood rearing and winter habitat. Sage grouse often nest in suitable habitat within three miles of a lek site. A portion of the

allotment occurs within the Quinn/Nye Population Management Unit (PMU). Two of the key areas within the Wells Station Allotment are black sagebrush ecological sites. As such they are in current or potential sage-grouse habitat. One of these sites is not meeting the herbaceous understory requirements set forth within the sage-grouse guidelines, as all grasses and forbs combined comprised 17.8% cover at WS-02, and 4.8% at WS-04. Black sagebrush cover was 41.9% at WS-02, and 80.7% at WS-04.

Site specific evaluation of sage-grouse habitat guidelines should be tempered with consideration of site potentials described in the ESD.

Site potentials as described in the ESD for the key areas named are more than adequate to meet the sage-grouse habitat standards. Because the Wells Station allotment is not meeting the desired vegetative composition for Standard 3 or the guidelines for sage-grouse habitat in one key area, the allotment partially fails to meet the needs of the key “umbrella” species for sagebrush habitats identified in the Ely District Resource Management Plan (2008).

There is pronghorn antelope range, deer crucial winter range and migration corridors, elk range, and unoccupied desert bighorn sheep range identified within the Wells Station Allotment.

#### **14. WILLOW SPRINGS SEEDING ADDITION ALLOTMENT (WHITE PINE COUNTY – NORTHEAST RAC)**

##### ***Standard # 1. Upland Sites***

Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate and land form.

Soils indicators:

- ❖ Canopy and ground cover, including litter, live vegetation and rock, appropriate to the potential of the site.

##### ***Determination:***

- Achieving the Standard
- Not achieving the Standard, but making significant progress towards
- X Not achieving the Standard, not making significant progress towards**

##### ***Guidelines Conformance:***

- X In conformance with the Guidelines**
- Not in conformance with the Guidelines

##### ***Livestock As A Causal Factor:***

- Livestock are a contributing factor to not achieving the Standard
- X Livestock are not a contributing factor to not achieving the Standard**
- X Failure to achieve the Standard is primarily related to other issues or conditions**

***Conclusion:* Not achieving the Standard, not making significant progress towards**

Range monitoring data for the Willow Springs Seeding Addition Allotment indicates that upland

soils do not exhibit infiltration and permeability rates that are appropriate to soil type, climate and land form. Canopy and ground cover, including litter, live vegetation and rock, are not appropriate to the potential of the site. The amount of vegetative cover was inappropriate to site potential as measured on July 17, 2009. Approximately 500 of 602 acres in the allotment are dominated by bare ground, dried non-native annual invasive species, or live invasive species such as halogeton, Russian thistle, and cheatgrass. The allotment is severely depleted. Dead crested wheatgrass plants, where they occur, are pedestalled. Soils in the allotment are exposed to drying and wind or water erosion.

Significant progress is not being made towards achievement of the Upland Sites Standard in terms of vegetative change. Based on historical photos and notes, range trend is severely declining. The areas dominated by invasive species have lost resiliency and are prone to further invasive species spread. Although the grazing system in place over the last 13 year period (Carter Cattle Company) has not resulted in stable soils or appropriate soil quality or function, the allotment was rested from 1999 through 2005 (7years) and again in 2008 and 2009. Livestock are thus not a contributing factor to the non-achievement of the Upland Sites Standard. Winter use occurred for 8 days in December 2005, spring use occurred for 7 days in April 2006, and spring use occurred for 16 days in May 2007. Failure to achieve the Upland Sites Standard is primarily related to drought and inappropriate historical livestock management practices.

***Standard #2. Riparian and Wetland Sites***

Riparian and wetland areas exhibit a properly functioning condition and achieve State water quality criteria

***Conclusion: Not Applicable***

This Standard was not evaluated since there are no public land riparian systems present in the Willow Spring Seeding Addition Allotment.

***Standard #3. Habitat***

Habitats exhibit a healthy, productive, and diverse population of native and/or desirable plant species, appropriate to the site characteristics, to provide suitable feed, water, cover and living space for animal species and maintain ecological processes. Habitat conditions meet the life cycle requirements of threatened and endangered species.

Habitat indicators:

- ❖ Vegetation composition (relative abundance of species); vegetation structure (life forms, cover, height, or age classes); vegetation distribution (patchiness, corridors); vegetation productivity; and vegetation nutritional value.

***Determination:***

- Achieving the Standard
- Not achieving the Standard, not making significant progress towards**
- Not achieving the Standard, but making significant progress towards

***Guidelines Conformance:***

- In conformance with the Guidelines**

- Not in conformance with the Guidelines

***Livestock As A Causal Factor:***

- Livestock are a contributing factor to not achieving the Standard

**X Livestock are not a contributing factor to not achieving the Standard**

**X Failure to achieve the Standard is primarily related to other issues or conditions**

***Conclusion: Not achieving the Standard, not making significant progress towards.***

Rangeland monitoring data shows that habitats in the Willow Spring Seeding Addition are not exhibiting a healthy, productive, and diverse population of native and/or desirable plant species, appropriate to the site characteristics, to provide suitable feed, water, cover and living space for animal species and maintain ecological processes.

The allotment is severely depleted. Approximately 500 of 602 acres in the allotment are dominated by bare ground, dried invasive species, or live invasive species. Dead crested wheatgrass plants, where they occur, are pedestalled.

No threatened and endangered species are known to occur in the Willow Spring Seeding Addition Allotment but the White River spinedace (*Lepidomeda albivallis*), is known from within one mile of the allotment.

No special status plant species occur on public lands within the allotment. No sensitive species are known within the allotment, but the sensitive fish species Preston White River springfish (*Crenichthys baileyi albivalis*), White River speckled dace (*Rhinichthys osculus ssp unnamed*) and White River desert sucker (*Catostomus clarki intermedius*) are within one mile. There are no sage grouse leks in or within three miles of the allotment but summer and winter range both occur on the allotment. There is some potential pygmy rabbit habitat, but no known occurrences. The vegetation composition is not appropriate to meet the life cycle requirements for these plant and animal species.

Pronghorn antelope, deer, and elk range have been identified in the allotment.

Significant progress is not being made towards achievement of the Habitat Standard in terms of vegetative change. Movement towards achieving a healthy plant composition is not occurring. Licensed use records indicate cattle use has been short term in this allotment and has occurred only three of the last eleven years. Thus some progress may be occurring towards Standard achievement in terms of the current livestock practices. Yet despite this extensive rest, the seeding is not showing recovering from depleted conditions. Failure to achieve the Habitat Standard seems primarily related to drought, inappropriate historical livestock management practices, and rabbits.

## **PART 1.1 STANDARD CONFORMANCE REVIEW – SUMMARY**

### **A. Allotments in the Northeastern Great Basin Area RAC or the Mojave Southern Great Basin Area RAC that are achieving or not achieving the Upland Sites or Soils Standards (Standard #1).**

#### **A.1 Allotments achieving the Standard.**

Big Six Well  
Cattle Camp/Cave Valley (both native range and the North Seeding)  
Maybe Seeding  
North Cove  
Rock Canyon (seeded areas)  
Sorensen Well  
Swamp Cedar

#### **A.2 Allotments not achieving the Standard.**

Brown Knoll  
Dee Gee Spring (both native range and the Dee Gee Seeding)  
East Wells  
Preston  
Rock Canyon (native range)  
Sheep Trail Seeding  
Wells Station  
Willow Springs Seeding Addition

### **B. Allotments in the Northeastern Great Basin Area RAC or the Mojave Southern Great Basin Area RAC that are achieving or not achieving the Riparian/Wetlands or Ecosystem Components Standards (Standard #2).**

#### **B.1 Allotments achieving the Riparian/Wetland Sites Standard.**

None

#### **B.2 Allotments not achieving the Riparian/Wetland Sites Standard.**

Cattle Camp/Cave Valley

#### **B.3 Allotments achieving the Ecosystem Components Standard.**

Maybe Seeding  
North Cove  
Sorensen Well

#### **B.4 Allotments not achieving the Ecosystem Components Standard.**

Dee Gee Spring (both native range and the Dee Gee Seeding)  
East Wells  
Sheep Trail Seeding  
Wells Station

**C. Allotments in the Northeastern Great Basin Area RAC or the Mojave Southern Great Basin Area RAC that are achieving or not achieving the Habitat or Habitat and Biota Standards (Standard #3).**

**C.1 Allotments achieving the Standard.**

Cattle Camp/Cave Valley  
Maybe Seeding  
Rock Canyon (seeded areas)  
Swamp Cedar

**C.2 Allotments not achieving the Standard.**

Big Six Well  
Brown Knoll  
Dee Gee Spring  
East Wells  
North Cove  
Preston  
Rock Canyon (native range)  
Sheep Trail Seeding  
Sorensen Well  
Wells Station  
Willow Springs Seeding Addition

**D. Allotments in the Northeastern Great Basin Area RAC or the Mojave Southern Great Basin Area RAC that are not achieving one or more Rangeland Health Standards in which current livestock management practices are making significant progress towards Standards Achievement**

**D.1 Allotments – significant progress towards the Riparian/Wetland Standard**

Cattle Camp/Cave Valley

**D.2 Allotments – significant progress towards the Upland Sites/Soils and Habitat/Habitat and Biota Standards**

Preston (both Standards)  
Sorenson Well (Habitat & Biota Standard)

## **PART 2. ARE LIVESTOCK A CONTRIBUTING FACTOR TO NOT MEETING THE STANDARDS?**

*This section summarizes the above findings for the 14 allotments as to whether or not livestock are a contributing factor to not achieving the Standards for Rangeland Health. This section also identifies the other factors, issues, conditions, or causes for not achieving the Standards. This section will be summarized by RAC area, by allotment within the RAC area.*

*Mojave Southern Great Basin Area Standards & Guidelines – for spring grazing in primarily Nye County in White River Valley.*

### *Dee Gee Spring Allotment*

#### Grazing related questions as part of the determination process

Is it more likely than not that existing grazing management practices or levels of grazing use are significant factors in failing to achieve the Standards or conform with the Guidelines? Yes.

Is it more likely than not that existing grazing management needs to be modified to ensure that the Fundamentals of rangeland health are met, or making significant progress toward being met? Yes. The Dee Gee Spring Allotment is in need of a reduction in the authorized stocking level and/or other changes in livestock management practices. The season of use should be restructured.

#### Standard # 1. Soils

Yes. Livestock are a contributing factor to not achieving the Soils Standard. Licensed use records indicate that grazing during the spring season has occurred during 10 of the last 12 years and has also occurred during the critical growth period of key forage species, when soils are wet or soft and susceptible to impacts that have resulted in the germination and establishment of invasive species and the decline in native species. In recent years moisture has been unreliable to regrow native vegetation after May 15.

Where cattle have grazed in the allotment, in all three pastures, soils have not moved towards a healthy state characterized by adequate stability to resist accelerated erosion, maintain soil productivity, and sustain the hydrologic cycle.

Portions of the Ruppes Pasture, the Middle Pasture, and the South Pasture native range (which did not burn in the Gubler Fire of 2006), as differentiated from the eastern and southern portions of the allotment, are marginally achieving the Soils Standard. These portions of the allotment have become shrub dominant, and have not been grazed much by cattle over the past few years. Much of the eastern and southern portions of the Dee Gee Spring Allotment within all three pastures are either severely depleted or have not recovered well from wildfires that occurred in 2006.

Licensed use for the entire permit exceeded authorized active use for the 5 year period 1999 through 2003. During this 5 year time period, active use was 6,316 AUMs. Actual licensed use

averaged 7,451 AUMs. Licensed use in the Dee Gee Spring Allotment exceeded the grazing permit authorization of 200 AUMs every year from 1999 to 2007, and was as high as 757 AUMs.

Drought, wildfire, and heavy historical grazing from 1870-1996 are also considered factors in the non-achievement of the Soils Standard.

#### Standard # 2. Ecosystem Components

Yes. Livestock are a contributing factor to not achieving the Ecosystem Components Standard. Drought, wildfire, and heavy historical grazing from 1870-1996 are also considered factors in the non-achievement of the Ecosystem Components Standard.

#### Standard # 3. Habitat and Biota

Yes. Livestock are a contributing factor to the non-achievement of this Standard. Early spring grazing damages the ability of the native grasses to produce carbohydrate reserves necessary for plant maintenance and production. In recent years moisture has been unreliable to regrow native vegetation after May 15. See the discussion above for the Soils Standard.

The failure to achieve the Habitat and Biota Standard is also attributable to drought, historic heavy livestock grazing from 1870-1996, and natural wildfire that has not recovered well.

#### *East Wells Allotment*

#### Grazing related questions as part of the determination process

Is it more likely than not that existing grazing management practices or levels of grazing use are significant factors in failing to achieve the Standards or conform with the Guidelines? Yes.

Is it more likely than not that existing grazing management needs to be modified to ensure that the Fundamentals of rangeland health are met, or making significant progress toward being met? Yes.

#### Standard # 1. Soils

The primary grazing area for cattle in this allotment is the northwest portion.

Yes. Livestock are a contributing factor to the non-achievement of this Standard. Cattle grazing has occurred during several spring growing seasons during the evaluation period, when soils are wet or soft and are susceptible to impacts that have resulted in the germination and establishment of invasive species and the decline in native species. Use of key forage species has at times exceeded recommended levels. Range trend has been recorded as declining according to ecological condition studies and professional observations. The season of use, stocking level, and duration of use have varied. Licensed use for the entire permit exceeded authorized active use for the 5 year period 1999 through 2003. Licensed use in the East Wells Allotment exceeded

the grazing permit authorization of 122 AUMs every year the allotment was grazed from 1999 to 2008, and was as high as 325 AUMs.

Drought and historical grazing from 1870 – 1996 are also considered factors in the non-achievement of the Soils Standard.

### Standard # 2. Ecosystem Components

Yes. Livestock are a contributing factor to the non-achievement of the Ecosystem Components Standard. Drought and historical grazing from 1870 – 1996 are also considered factors in the non-achievement of the this Standard.

### Standard # 3. Habitat and Biota

Yes. Livestock are a contributing factor to the non-achievement of this Standard. Cattle use of the allotment has varied from spring use to late winter use to complete rest. Heavy use of winterfat or severe use of Indian ricegrass use has occurred in the allotment, which has exceeded recommended use levels. Cattle have used the allotment during the critical spring growth period when soils are wet or soft and susceptible to disturbance favoring invasive species germination and establishment (see discussion above for the Soils Standard). Early spring grazing damages the ability of the native grasses or winterfat to produce carbohydrate reserves necessary for plant maintenance and production. Basically the grazing management practices in place over the last 13 year period since the FMUD of February 1997 have not resulted in appropriate habitat improvement and vegetative condition. Due to declining range trend, shrub dominance, lack of vegetation production, lack of appropriate structure, and the risk of invasive species spread, the vegetative resources lack much resiliency in the East Wells Allotment.

Drought and historical grazing from 1870 – 1996 are also considered factors in the non-achievement of the Habitat and Biota Standard.

### *Maybe Seeding Allotment*

#### Grazing related questions as part of the determination process

Is it more likely than not that existing grazing management practices or levels of grazing use are significant factors in failing to achieve the Standards or conform with the Guidelines? No.

Is it more likely than not that existing grazing management needs to be modified to ensure that the Fundamentals of rangeland health are met, or making significant progress toward being met? No.

### Standard # 1. Soils

No. The Soils Standard is achieved for the Maybe Seeding Allotment.

### Standard # 2. Ecosystem Components

No. This Ecosystem Components Standard is achieved for the Maybe Seeding Allotment.

Standard # 3. Habitat and Biota

No. The Habitat and Biota Standard is achieved for the Maybe Seeding Allotment.

*North Cove Allotment*

Grazing related questions as part of the determination process

Is it more likely than not that existing grazing management practices or levels of grazing use are significant factors in failing to achieve the Standards or conform with the Guidelines? Yes.

Is it more likely than not that existing grazing management needs to be modified to ensure that the Fundamentals of rangeland health are met, or making significant progress toward being met? Yes.

Standard # 1. Soils

No. Livestock are not a contributing factor to the non-achievement of this Standard. The Soils Standard is achieved. However a small problem area in the overall large allotment exists, as stated in the Standard Conformance Review above for the North Cove Allotment.

Standard # 2. Ecosystem Components

No. The Ecosystem Components Standard is achieved for the North Cove Allotment.

Standard # 3. Habitat and Biota

Yes. Livestock are a contributing factor to the non-achievement of the Habitat and Biota Standard. Cattle use of the allotment has varied from late winter to spring use, and has occurred during the spring critical growing period. Use levels of key forage plants have generally been within recommended use levels, however use was severe on key grasses in the west pasture in 2008. Licensed use for the entire permit exceeded authorized active use for the 5 year period 1999 through 2003. Licensed use in the North Cove Allotment exceeded the grazing permit authorization of 1,003 AUMs six different years the allotment was grazed from 2000 to 2006, and was as high as 1,637 AUMs. The interpretation of the licensed use and range monitoring data is that cattle stocking levels combined with spring grazing have favored the establishment of invasive species and has resulted in the decline of the native herbaceous understory of grasses and forbs, thus inappropriate vegetation composition has resulted.

Drought, historical grazing from 1870 – 1996, and poor recovery of wildfire are also considered factors in the non-achievement of the Habitat and Biota Standard.

## ***Sheep Trail Seeding Allotment***

### Grazing related questions as part of the determination process

Is it more likely than not that existing grazing management practices or levels of grazing use are significant factors in failing to achieve the Standards or conform with the Guidelines? No

Is it more likely than not that existing grazing management needs to be modified to ensure that the Fundamentals of rangeland health are met, or making significant progress toward being met? Yes. The Sheep Trail Seeding Allotment is in need of a reduction in the authorized stocking level and/or other changes in livestock management practices. The cattle grazing season of use needs to be restructured.

### Standard # 1. Soils

No. Livestock are not a contributing factor to the non-achievement of this Standard. Very little use has occurred by cattle in the Sheep Trail Seeding Allotment. Grazing permit active use for the Sheep Trail Seeding is authorized at 200 AUMs. Licensed use in 2001 was 325 AUMs. Licensed use in 2002 was 210 AUMs. The seeding was completely rested from 2003 to 2006, used one day in winter of 2007, used one day in April of 2008, and used one day in March of 2009. Drought, and historical heavy grazing from 1870 – 1996 are considered the primary factors in the non-achievement of the Soils Standard.

### Standard # 2. Ecosystem Components

No. Livestock are not considered a contributing factor to the non-achievement of the Ecosystem Components Standard. Drought, and historical heavy grazing from 1870 – 1996 are considered the primary factors in the non-achievement of the Ecosystem Components Standard.

### Standard # 3. Habitat and Biota

No. Livestock are not a contributing factor to the non-achievement of the Habitat and Biota Standard. Drought and historical grazing from 1870 – 1996 are considered the primary factors in the non-achievement of the Habitat and Biota Standard.

## ***Sorensen Well Allotment***

### Grazing related questions as part of the determination process

Is it more likely than not that existing grazing management practices or levels of grazing use are significant factors in failing to achieve the Standards or conform with the Guidelines? No.

Is it more likely than not that existing grazing management needs to be modified to ensure that the Fundamentals of rangeland health are met, or making significant progress toward being met? No.

### Standard # 1. Soils

No. The Soils Standard is achieved for the Sorensen Well Allotment.

### Standard # 2. Ecosystem Components

No. The Ecosystem Components Standard is achieved for the Sorensen Well Allotment.

### Standard # 3. Habitat and Biota

No. Livestock are not a contributing factor to the non-achievement of the Habitat and Biota Standard. Progress is being made towards Standard achievement. Monitoring data shows that cattle use the White River Wash in this allotment. Key Area SW-01 and Study Site SS-1 are achieving the Habitat and Biota Standard in White River Wash. These areas are diverse and resilient and have the capability to maintain or improve in the long term. Apparent trend is improving at SW-01. Cattle utilization of key forage plants has been within recommended levels. Cattle use in the allotment has been short term and has varied from late winter until spring.

### ***Wells Station Allotment***

#### Grazing related questions as part of the determination process

Is it more likely than not that existing grazing management practices or levels of grazing use are significant factors in failing to achieve the Standards or conform with the Guidelines? Yes.

Is it more likely than not that existing grazing management needs to be modified to ensure that the Fundamentals of rangeland health are met, or making significant progress toward being met? Yes. The Wells Station Allotment is in need of a reduction in the authorized stocking level and/or other changes in livestock management practices. The season of use needs to be restructured.

### Standard # 1. Soils

Yes. Livestock are a contributing factor to the non-achievement of the Soils Standard. Cattle grazing has occurred during the spring critical growing period, when soils are wet or soft and are susceptible to disturbance that favors germination and establishment of invasive species and the decline of native plants. This has caused inappropriate soil function and stability. Under the current grazing management practices soils are not moving towards a healthier state characterized by adequate stability to resist accelerated erosion, maintain soil productivity, and sustain the hydrologic cycle. Use of winterfat during the critical growth period has exceeded recommended levels. Heavy and severe utilization of key grasses or shrubs has also occurred in portions of the allotment. Licensed use for the entire permit exceeded authorized active use for the 5 year period 1999 through 2003. Due to shrub dominance, lack of vegetation production, lack of appropriate structure, and the risk of invasive species spread, the vegetative resources lack much resiliency in the Wells Station Allotment.

Drought, wild horses, and historical grazing from 1870 – 1996 are also considered factors in the non-achievement of the Soils Standard.

### Standard # 2. Ecosystem Components

Yes. Livestock are a contributing factor to the non-achievement of the Ecosystem Components Standard. Drought, wild horses, and historical grazing from 1870 – 1996 are also considered factors in the non-achievement of the Ecosystem Components Standard.

### Standard # 3. Habitat and Biota

Yes. Livestock are a contributing factor to the non-achievement of this Standard. See the above discussion for the Soils Standard. Drought, wild horses, and historical grazing from 1870 – 1996 are also considered factors in the non-achievement of the Habitat and Biota Standard.

### ***Northeastern Great Basin Area Standards & Guidelines – for spring grazing in White Pine County in White River Valley or summer/fall grazing in White Pine County in South Steptoe Valley***

#### ***Big Six Well Allotment***

#### Grazing related questions as part of the determination process

Is it more likely than not that existing grazing management practices or levels of grazing use are significant factors in failing to achieve the Standards or conform with the Guidelines? Yes.

Is it more likely than not that existing grazing management needs to be modified to ensure that the Fundamentals of rangeland health are met, or making significant progress toward being met? Yes.

### Standard # 1. Upland Sites

No. The Upland Sites Standard is achieved for the Big Six Well Allotment.

### Standard # 2. Riparian and Wetland Sites

No. This Standard is not applicable to the Big Six Well Allotment, since there are no public land riparian systems on this portion of the permit renewal area.

### Standard # 3. Habitat

Yes. Livestock are a secondary contributing factor to the non-achievement of the Habitat Standard. Drought and historical grazing from 1870 – 1996 are considered the primary factors in the non-achievement of the Habitat Standard. Range monitoring data indicates the allotment was grazed every year from 1999 to 2008. Cattle used this allotment during six spring seasons from 1999 to 2007. Stocking levels and grazing dates have varied during spring, and use of winterfat

in the Big Six Well Allotment has been recorded as heavy. The interpretation of the rangeland monitoring data is that although utilization has often been recorded as moderate or less, with some heavy use recorded, cattle management practices from 1997 to 2007 when combined with the primary contributing factors such as drought and inappropriate historical livestock practices, have led to inappropriate plant composition (shrub dominance), lack of appropriate vegetation structure, and both the recorded increase and further future increased risk of invasive species spread. Licensed use for the entire permit exceeded authorized active use for the 5 year period 1999 through 2003. Licensed use in the Big Six Well Allotment exceeded the grazing permit authorization of 140 AUMs every year from 1999 to 2009, and was as high as 520 AUMs.

### ***Brown Knoll Allotment***

#### Grazing related questions as part of the determination process

Is it more likely than not that existing grazing management practices or levels of grazing use are significant factors in failing to achieve the Standards or conform with the Guidelines? Yes.

Is it more likely than not that existing grazing management needs to be modified to ensure that the Fundamentals of rangeland health are met, or making significant progress toward being met? Yes.

#### Standard # 1. Upland Sites

Yes. Livestock are a contributing factor in the non-achievement of the Upland Sites Standard. In general, the season of use and cattle numbers have varied during the spring grazing period. Cattle use has mainly occurred in the western portions of the allotment, and cattle have used this allotment during eight spring seasons from 1999 to 2008. Grazing during the spring season has occurred during the critical growth period when soils are wet or soft and susceptible to impacts that result in the spread of invasive species. Basically the grazing system in place over the last 13 years has not resulted in appropriate soil stability and function. Utilization has varied from slight to severe during the evaluation period. Severe use will not maintain appropriate soil conditions. Licensed use for the entire permit exceeded authorized active use for the 5 year period 1999 through 2003. Licensed use in the Brown Knoll Allotment exceeded the grazing permit authorization of 161 AUMs five different years from 1999 to 2009, and was as high as 373 AUMs. Some older range data for the Brown Knoll Allotment (1986-1996) presented in this SDD supports the conclusion that soils were already unstable and not functioning properly during the 1980s, as cheatgrass was dominant in different areas of the allotment. Currently, appropriate vegetative cover and/or litter is not present to maintain soil function.

Drought, inappropriate historical grazing from 1870 – 1996, and poor recovery of wildfires are also considered factors in the non-achievement of the Upland Sites Standard.

#### Standard # 2. Riparian and Wetland Sites

No. This Standard is not applicable to the Brown Knoll Allotment, since there are no public land riparian systems on this portion of the permit renewal area.

### Standard # 3. Habitat

Yes. Livestock are a contributing factor to the non-achievement of the Habitat Standard. See the above discussion for the Upland Sites Standard.

Drought, historical grazing from 1870 – 1996, and poor recovery of wildfires are also considered factors in the non-achievement of the Habitat Standard.

### ***Cattle Camp/Cave Valley Allotment***

#### Grazing related questions as part of the determination process

Is it more likely than not that existing grazing management practices or levels of grazing use are significant factors in failing to achieve the Standards or conform with the Guidelines? No

Is it more likely than not that existing grazing management needs to be modified to ensure that the Fundamentals of rangeland health are met, or making significant progress toward being met? Yes. Existing grazing management only needs to be modified to insure the proper functioning condition of riparian areas, which in this allotment are small developed spring sources. Existing spring fences (exclosures) need to be properly maintained.

### Standard # 1. Upland Sites

No. The Upland Sites Standard is achieved for the Cattle Camp/Cave Valley Allotment.

### Standard # 2. Riparian and Wetland Sites

Yes. Livestock are a contributing factor to the non-achievement of the Riparian and Wetland Sites Standard. Cattle use has occurred at riparian areas during the summer/fall grazing period and has at times been heavy or severe at small developed spring sources on public lands. Cattle and/or elk have trampled sensitive riparian vegetation needed to stabilize the riparian area and provide forage and cover for wildlife. Animal hoof impacts have altered surface water flows. Drought, and historical grazing from 1870 – 1996 are also considered factors in the non-achievement of the Riparian/Wetland Sites Standard.

### Standard # 3. Habitat

No. The Habitat Standard is achieved for the Cattle Camp/Cave Valley Allotment.

### ***Preston Allotment***

#### Grazing related questions as part of the determination process

Is it more likely than not that existing grazing management practices or levels of grazing use are significant factors in failing to achieve the Standards or conform with the Guidelines? No.

Is it more likely than not that existing grazing management needs to be modified to ensure that the Fundamentals of rangeland health are met, or making significant progress toward being met?  
No.

#### Standard # 1. Upland Sites

No. Livestock are not a contributing factor to the non-achievement of the Upland Sites Standard. The area was completely rested from grazing in 2004 and grazing was deferred until April 9 or later in 2005, 2007, and 2008. Utilization of winterfat during spring 2009 averaged 20% (slight) for five transects. This use achieved Resource Management Plan (RMP) utilization objectives. Licensed cattle use has been less than or near the permit authorization of 95 AUMs. For these reasons, cattle are not considered a contributing factor to the non-achievement of the Upland Sites Standard. However continued or repeated cattle concentrations in winterfat areas during the early spring grazing period could contribute to a decline in winterfat and an increase in halogeton. The area exhibits surface soil erosion, winterfat plants are pedestaled, and the area is prone to invasive species spread (halogeton). Drought and historical grazing from 1870 – 1996 are considered factors in the non-achievement of the Upland Sites Standard.

#### Standard # 2. Riparian and Wetland Sites

No. This Standard is not applicable to the Preston Allotment, since there are no public land riparian systems on this portion of the permit renewal area.

#### Standard # 3. Habitat

No. Livestock are not a contributing factor to the non-achievement of the Habitat Standard (see discussion above for the Upland Sites Standard).

Drought and historical grazing from 1870 – 1996 are also considered factors in the non-achievement of the Habitat Standard.

#### ***Rock Canyon Allotment***

#### Grazing related questions as part of the determination process

Is it more likely than not that existing grazing management practices or levels of grazing use are significant factors in failing to achieve the Standards or conform with the Guidelines? Yes.

Is it more likely than not that existing grazing management needs to be modified to ensure that the Fundamentals of rangeland health are met, or making significant progress toward being met?  
Yes.

#### Standard # 1. Upland Sites

Yes. Livestock are a contributing factor to the non-achievement of the Upland Sites Standard. In general, the monitoring data indicates the crested wheatgrass seedings to be achieving the Upland Standard, while the native range is not achieving. Range monitoring data shows there

are approximately 300 acres of depleted range in the northwest portion of the allotment dominated by halogeton, Russian thistle, and mustard.

This and other areas dominated by invasive species have lost resiliency and are prone to further invasive species spread. To the extent that shrubs or invasive species dominate areas, vegetation attributes such as composition, structure, and production are inappropriate in that there is a lack of the understory of native grasses and forbs.

The current grazing system in place over the last 13 years has not resulted in appropriate soil function and stability. Utilization of bluegrass, Indian ricegrass, and winterfat has at times been recorded as heavy or severe in this allotment. This does not result in an appropriate amount of plant production, cover, or plant litter to maintain appropriate soil function. Cattle licensed use exceeded the grazing permit spring season (3/15 – 5/15) authorization of 124 AUMs on the Rock Canyon Allotment three years (1999, 2000, and 2002).

Drought and historical grazing from 1870 – 1996 are also considered factors in the non-achievement of the Upland Sites Standard.

#### Standard # 2. Riparian and Wetland Sites

No. This Standard is not applicable to the Rock Canyon Allotment, since there are no public land riparian systems on this portion of the permit renewal area.

#### Standard # 3. Habitat

Yes. Livestock are a contributing factor to the non-achievement of the Habitat Standard. Use levels on key forage species have at times exceeded recommended levels. Heavy or severe grazing use has occurred during the critical spring growth period (see discussion above for the Upland Sites Standard). Drought and historical grazing from 1870 – 1996 are also considered factors in the non-achievement of the Habitat Standard.

#### *Swamp Cedar Allotment*

#### Grazing related questions as part of the determination process

Is it more likely than not that existing grazing management practices or levels of grazing use are significant factors in failing to achieve the Standards or conform with the Guidelines? No.

Is it more likely than not that existing grazing management needs to be modified to ensure that the Fundamentals of rangeland health are met, or making significant progress toward being met? No.

#### Standard # 1. Upland Sites

No. The Upland Sites Standard is achieved for the Swamp Cedar Allotment.

#### Standard # 2. Riparian and Wetland Sites

No. This Standard is not applicable to the Swamp Cedar Allotment, since there are no public land riparian systems on this portion of the permit renewal area.

### Standard # 3. Habitat

No. The Habitat Standard is achieved for the Swamp Cedar Allotment.

### *Willow Springs Seeding Addition Allotment*

#### Grazing related questions as part of the determination process

1. Is it more likely than not that existing grazing management practices or levels of grazing use are significant factors in failing to achieve the Standards or conform with the Guidelines? No.
2. Is it more likely than not that existing grazing management needs to be modified to ensure that the Fundamentals of rangeland health are met, or making significant progress toward being met? Yes. An option would be to eliminate all cattle active use in the Willow Springs Seeding Addition for a period of years since approximately 500 of 602 acres in the seeding are dominated by invasive annual species. Another option would be for BLM to cooperate with the grazing permittees to permit winter feeding of weed free hay or locally produced hay in the seeding and continue to monitor to determine if any new grass seedlings develop. The Willow Springs Seeding Addition Allotment is in need of a reduction in the authorized stocking level and/or other changes in livestock grazing management practices. The season of use needs to be restructured.

### Standard # 1. Upland Sites

No. Livestock are a not contributing factor to the non-achievement of the Upland Sites Standard. Basically not much cattle grazing use has occurred in this seeding since 1999. Cattle use occurred for 8 days in the winter of 2005, for 6 days in the spring of 2006, and for 16 days in the spring of 2007. Grazing permit #2704632 has not been activated on the Willow Springs Seeding Addition Allotment for the past twenty years. Grazing permit active use for the Willow Springs Seeding Addition is authorized at 103 AUMs. Licensed use in winter 2005 was 115 AUMs. Licensed use in 2006 was 46 AUMs and licensed use in 2007 was 56 AUMs. Drought, and historical heavy grazing from 1870 – 1996 are considered the primary factors in the non-achievement of the Soils Standard.

### Standard # 2. Riparian and Wetland Sites

No. This Standard is not applicable to the Willow Spring Seeding Addition Allotment, since there are no public land riparian systems on this portion of the permit renewal area.

### Standard # 3. Habitat

No. Livestock are not a contributing factor to the non-achievement of the Habitat Standard. The failure to achieve the Habitat Standard is primarily attributable to drought and historic inappropriate livestock management practices (heavy grazing).

### **PART 3. GUIDELINE CONFORMANCE REVIEW**

#### ***MOJAVE SOUTHERN GREAT BASIN AREA RAC – Dee Gee Spring, East Wells, Maybe Seeding, North Cove, Sheep Trail Seeding, Sorensen Well, and Wells Station Allotments***

##### ***STANDARD 1 (SOILS) GUIDELINES:***

1.1 Upland management practices should maintain or promote adequate vegetative ground cover to achieve the standard.

1.2 Riparian-wetland management practices should maintain or promote sufficient residual vegetation to maintain, improve, or restore functions such as stream flow energy dissipation, sediment capture, groundwater recharge, and stream bank stability.

1.3 When proper grazing practices alone are not likely to restore areas, land management practices may be designed and implemented where appropriate.

1.4 Rangeland management practices should address improvement beyond this standard, significant progress toward achieving standards, time necessary for recovery, and time necessary for predicting trends.

***1. Dee Gee Spring Allotment:*** Current livestock grazing management practices do not conform to Guidelines 1.1 and 1.4. Guideline 1.2 is not applicable. Land management practices (1.3) may be appropriate for portions of this allotment, for example, in old burn areas or in shrub dominant range on the alluvial fan.

***2. East Wells Allotment:*** Current livestock grazing management practices do not conform to Guidelines 1.1 and 1.4. Guideline 1.2 is not applicable. Land management practices (1.3) may be appropriate for portions of this allotment, for example, in winterfat dominant areas or in big sagebrush/shrub dominant areas.

***3. Maybe Seeding Allotment:*** Current livestock grazing management practices conform to Guidelines 1.1 and 1.4. Guideline 1.2 is not applicable. Land management practices (1.3) may be appropriate for this seeding.

***4. North Cove Allotment:*** Current livestock grazing management practices conform to Guidelines 1.1 and 1.4. Guideline 1.2 is not applicable. Land management practices (1.3) may be appropriate for portions of this allotment, for example, in the area of the 1986 burn in the west pasture.

***5. Sheep Trail Seeding Allotment:*** Current livestock grazing management conform to Guidelines 1.1 and 1.4. Guideline 1.2 is not applicable. Land management practices (1.3) may be appropriate for this seeding.

***6. Sorensen Well Allotment:*** Current livestock grazing management practices conform to Guidelines 1.1 and 1.4. Guideline 1.2 is not applicable. Land management practices (1.3) may be appropriate for portions of this allotment, for example in the large shrub dominant range west of white River Wash.

**7. Wells Station Allotment:** Current livestock grazing management practices do not conform to Guidelines 1.1 and 1.4. Guideline 1.2 is not applicable. Land management practices (1.3) may be appropriate for portions of this allotment, for example, in winterfat dominant areas or in big sagebrush/shrub dominant areas.

**STANDARD 2 (ECOSYSTEM COMPONENTS) GUIDELINES:**

2.1 Management practices should maintain or promote appropriate stream channel morphology and structure consistent with the watershed.

2.2 Watershed management practices should maintain, restore or enhance water quality and flow rate to support desired ecological conditions.

2.3 Management practices should maintain or promote the physical and biological conditions necessary for achieving surface characteristics and desired natural plant community.

2.4 Grazing management practices will consider both economic and physical environment, and will address all multiple uses including, but not limited to, (i) recreation, (ii) minerals, (iii) cultural resources and values, and (iv) designated wilderness and wilderness study areas.

2.5 New livestock facilities will be located away from riparian and wetland areas if they conflict with achieving or maintaining riparian and wetland functions. Existing facilities will be used in a way that does not conflict with achieving or maintaining riparian and wetland functions, or they will be relocated or modified when necessary to mitigate adverse impacts on riparian and wetland functions. The location, relocation, design and use of livestock facilities will consider economic feasibility and benefits to be gained for management of lands outside the riparian area along with the effects on riparian functions.

2.6 Subject to all valid existing rights, the design of spring and seep developments shall include provisions to protect ecological functions and processes.

2.7 When proper grazing practices alone are not likely to restore areas of low infiltration or permeability, land management practices may be designed and implemented where appropriate. Grazing on designated ephemeral rangeland watersheds should be allowed only if (i) reliable estimates of production have been made, (ii) an identified level of annual growth or residue to remain on site at the end of the grazing season has been established, and (iii) adverse effects on perennial species and ecosystem processes are avoided.

2.8 Rangeland management practices should address improvement beyond these standards, significant progress toward achieving standards, time necessary for recovery, and time necessary for predicting trends.

**1. Dee Gee Spring Allotment:** Current livestock grazing management practices do not conform to Guidelines 2.3 and 2.8. Grazing practices conform to Guideline 2.4. Guidelines 2.1, 2.2, 2.5, and 2.6 are not applicable. Land management practices (2.7) may be designed and implemented for portions of the Dee Gee Spring Allotment, for example, in the crested wheatgrass seeding.

**2. East Wells Allotment:** Current livestock grazing management practices do not conform to Guidelines 2.3 and 2.8. Grazing practices conform to Guideline 2.4. Guidelines 2.1, 2.2, 2.5, and 2.6 are not applicable. Land management practices (2.7) may be designed and implemented for portions of the East Wells Allotment, for example, in winterfat dominant areas or in big sagebrush/shrub dominant areas.

**3. Maybe Seeding Allotment:** Current livestock grazing management practices conform to Guidelines 2.3, 2.4, and 2.8. Guidelines 2.1, 2.2, 2.5, and 2.6 are not applicable. Land management practices (2.7) may be designed and implemented for portions of the Maybe Seeding Allotment.

**4. North Cove Allotment:** Current livestock grazing management practices conform to Guidelines 2.3, 2.4, and 2.8. Guidelines 2.1, 2.2, 2.5, and 2.6 are not applicable. Land management practices (2.7) may be designed and implemented for portions of the North Cove Allotment, for example, in the area of the 1986 burn in the west pasture.

**5. Sheep Trail Seeding Allotment:** Current livestock grazing management practices conform to Guidelines 2.3, 2.4, and 2.8. Guidelines 2.1, 2.2, 2.5, and 2.6 are not applicable. Land management practices (2.7) may be designed and implemented for the Sheep Trail Seeding Allotment.

**6. Sorensen Well Allotment:** Current livestock grazing management practices conform to Guidelines 2.3, 2.4, and 2.8. Guidelines 2.1, 2.2, 2.5, and 2.6 are not applicable. Land management practices (2.7) may be designed and implemented for portions of the Sorensen Well Allotment, for example in the large shrub dominant range west of White River Wash.

**7. Wells Station Allotment:** Current livestock grazing management practices do not conform to Guidelines 2.3 and 2.8. Grazing practices conform to Guideline 2.4. Guidelines 2.1, 2.2, 2.5, and 2.6 are not applicable. Land management practices (2.7) may be designed and implemented for portions of this allotment, for example, in winterfat dominant areas or in big sagebrush/shrub dominant areas.

### **STANDARD 3 (HABITAT AND BIOTA) GUIDELINES:**

3.1 Mosaics of plant and animal communities that foster diverse and productive ecosystems should be maintained or achieved.

3.2 Management practices should emphasize native species except when others would serve better for attaining desired communities.

3.3 Intensity, frequency, season of use and distribution of grazing use should provide for growth, reproduction, and when environmental conditions permit, seedling establishment of those plant species needed to reach long-term land use plan objectives. Measurements of ecological condition, trend, and utilization will be in accordance with techniques identified in the Nevada Rangeland Handbook.

3.4 Grazing management practices should be planned and implemented to provide for integrated use by domestic livestock and wildlife, as well as wild horses and burros inside Herd Management Areas (HMAs).

3.5 Management practices will promote the conservation, restoration and maintenance of habitat for special status species.

3.6 Livestock grazing practices will be designed to protect fragile ecosystems of limited distribution and size that support unique sensitive/endemic species or communities. Where these practices are not successful, grazing will be excluded from these areas.

3.7 Where grazing practices alone are not likely to achieve habitat objectives, land management practices may be designed and implemented as appropriate.

3.8 Vegetation manipulation treatments may be implemented to improve native plant communities, consistent with appropriate land use plans, in areas where identified standards cannot be achieved through proper grazing management practices alone. Fire is the preferred vegetation manipulation practice on areas historically adapted to fire; treatment of native

vegetation with herbicides or through mechanical means will be used only when other management techniques are not effective.

3.9 Rangeland management practices should address improvement beyond this standard, significant progress toward achieving standards, time necessary for recovery, and time necessary for predicting trends.

**1. Dee Gee Spring Allotment:** Current livestock grazing management practices do not conform to Guidelines 3.1, 3.3, 3.5, and 3.9. Current livestock grazing management practices conform to Guideline 3.4. Guidelines 3.2, 3.6 and 3.7 are not applicable. Vegetation manipulation treatments (3.8) may be appropriate for portions of this allotment.

**2. East Wells Allotment:** Current livestock grazing management practices do not conform to Guidelines 3.1, 3.3, and 3.9. Current livestock grazing management practices conform to Guidelines 3.4, 3.5, and 3.6. Guidelines 3.2 and 3.7 are not applicable. Vegetation manipulation treatments (3.8) may be appropriate for portions of this allotment.

**3. Maybe Seeding Allotment:** Current livestock grazing management practices conform to Guidelines 3.1, 3.3, 3.4, 3.5, and 3.9. Guidelines 3.2, 3.6, and 3.7 are not applicable. Vegetation manipulation treatments (3.8) may be appropriate for portions of this seeding.

**4. North Cove Allotment:** Current livestock grazing management practices do not conform to Guidelines 3.1, 3.3, and 3.9. Current livestock grazing management practices conform to Guidelines 3.4 and 3.5. Guidelines 3.2, 3.6, and 3.7 are not applicable. Vegetation manipulation treatments (3.8) may be appropriate for portions of this allotment.

**5. Sheep Trail Seeding Allotment:** Current livestock grazing management practices conform to Guidelines 3.1, 3.3, 3.4, 3.5, and 3.9. Current livestock grazing management practices conform to Guidelines 3.3, 3.4, and 3.9. Guidelines 3.2, 3.6, and 3.7 are not applicable. Vegetation manipulation treatments (3.8) may be appropriate for this seeding.

**6. Sorensen Well Allotment:** Current livestock grazing management practices conform to Guidelines 3.1, 3.3, 3.4, 3.5, and 3.9. Guidelines 3.2, 3.6, and 3.7 are not applicable. Vegetation manipulation treatments (3.8) may be appropriate for portions of this allotment.

**7. Wells Station Allotment:** Current livestock grazing management practices do not conform to Guidelines 3.1, 3.3, 3.5 and 3.9. Current livestock grazing management practices conforms to Guideline 3.4. Guidelines 3.2, 3.6, and 3.7 are not applicable. Vegetation manipulation treatments (3.8) may be appropriate for portions of this allotment.

## GUIDELINE CONFORMANCE REVIEW SUMMARY

### ***MOJAVE SOUTHERN GREAT BASIN AREA RAC – Dee Gee Spring, East Wells, Maybe Seeding, North Cove, Sheep Trail Seeding, Sorensen Well, and Wells Station Allotments***

***Livestock grazing is generally in conformance with the Guidelines on the following allotments:***

Maybe Seeding  
Sorensen Well  
Sheep Trail Seeding

***Livestock grazing is generally not in conformance with the Guidelines on the following allotments:***

Dee Gee Spring  
East Wells  
North Cove  
Wells Station

### ***NORTHEASTERN GREAT BASIN AREA RAC- Big Six Well, Brown Knoll, Cattle Camp/Cave Valley, Preston, Rock Canyon, Swamp Cedar, and Willow Springs Seeding Addition Allotments***

#### ***STANDARD 1 (UPLAND SITES) GUIDELINES:***

1.1 Livestock grazing management and wild horse and burro population levels are appropriate when in combination with other multiple uses they maintain or promote upland vegetation and other organisms and provide for infiltration and permeability rates, soil moisture storage, and soil stability appropriate to the ecological site within management units.

1.2 When livestock grazing management and wild horse and burro herd management alone are not likely to restore areas of low infiltration or permeability, land management treatments should be designed and implemented where appropriate.

1.3 Livestock grazing management and wild horse and burro herd management are adequate when significant progress is being made toward this Standard.

***1. Big Six Well Allotment:*** Current livestock grazing management practices conform to Guidelines 1.1 and 1.3. Land management treatments (1.2) may be appropriate for portions of this allotment.

***2. Brown Knoll Allotment:*** Current livestock grazing management practices do not conform to Guidelines 1.1 and 1.3. Land management treatments (1.2) may be appropriate for portions of this allotment.

**3. Cattle Camp/Cave Valley Allotment:** Current livestock grazing management practices conform to Guidelines 1.1 and 1.3. Land management treatments (1.2) may be appropriate for portions of this allotment.

**4. Preston Allotment:** Current livestock grazing management practices conform to Guidelines 1.1 and 1.3. Land management treatments (1.2) may be appropriate for portions of this allotment.

**5. Rock Canyon Allotment:** Current livestock grazing management practices do not conform to Guidelines 1.1 and 1.3. Land management treatments (1.2) may be appropriate for portions of this allotment.

**6. Swamp Cedar Allotment:** Current livestock grazing management practices conform to Guidelines 1.1 and 1.3. Land management treatments (1.2) may be appropriate for portions of this allotment.

**7. Willow Springs Seeding Addition Allotment:** Current livestock grazing management practices conform to Guidelines 1.1 and 1.3. Land management treatments (1.2) may be appropriate for portions of this seeding.

#### ***STANDARD 2 (RIPARIAN AND WETLAND SITES) GUIDELINES:***

2.1 Livestock grazing management and wild horse and burro population levels will maintain or promote sufficient vegetation cover, large woody debris, or rock to achieve proper functioning condition in riparian and wetland areas. Supporting the processes of energy dissipation, sediment capture, groundwater recharge, and stream bank stability will thus promote stream channel morphology (e.g., width/depth ratio, channel roughness, and sinuosity) appropriate to climate, landform, gradient, and erosional history.

2.2 Where livestock grazing management and wild horse herd management are not likely to restore riparian and wetland sites, land management treatments should be designed and implemented where appropriate to the site.

2.3 Livestock grazing management and wild horse and burro herd management will maintain, restore or enhance water quality and ensure the attainment of water quality that meets or exceeds state standards.

2.4 Livestock grazing management and wild horse and burro herd management are adequate when significant progress is being made toward this standard.

#### ***Standard 2 (Riparian and Wetland Sites) Guidelines are only applicable to the Cattle Camp/Cave Valley Allotment within the Northeast RAC area.***

**1. Cattle Camp/Cave Valley Allotment:** Current livestock grazing management practices do not conform to Guidelines 2.1 and 2.4. Current livestock management practices conform to Guideline 2.3. Land management treatments (2.2) may be appropriate for springs or seeps in this allotment.

### **STANDARD 3 (HABITAT) GUIDELINES:**

3.1 Livestock grazing management and wild horse and burro population levels will promote the conservation, restoration, and maintenance of habitat for threatened and endangered species, and other special status species as may be appropriate.

3.2 Livestock grazing intensity, frequency, season of use and distribution and wild horse and burro population levels should provide for growth and reproduction of those plant species needed to reach long-term land use plan objectives. Measurements of ecological condition and trend/utilization will be in accordance with techniques identified in the Nevada Rangeland Monitoring Handbook.

3.3 Livestock grazing management and wild horse and burro management should be planned and implemented to allow for integrated use by domestic livestock, wildlife, and wild horses consistent with land use plan objectives.

3.4 Where livestock grazing management and wild horse and burro herd management alone are not likely to achieve habitat objectives, land treatments may be designed and implemented as appropriate.

3.5 When native plant species adapted to the site are available in sufficient quantities, and it is economically and biologically feasible to establish or increase them to meet management objectives, they will be emphasized over non-native species.

3.6 Livestock grazing management and wild horse and burro herd management are adequate when significant progress is being made toward this Standard.

**1. Big Six Well Allotment:** Current livestock grazing management practices do not conform to Guidelines 3.2 and 3.6. Current livestock grazing management practices conform to Guidelines 3.1 and 3.3. Guideline 3.5 is not applicable. Land treatments (3.4) may be appropriate for portions of this allotment.

**2. Brown Knoll Allotment:** Current livestock grazing management practices do not conform to Guidelines 3.1, 3.2 and 3.6. Current livestock grazing management practices conform to Guideline 3.3. Guideline 3.5 is not applicable. Land treatments (3.4) may be appropriate for portions of this allotment.

**3. Cattle Camp/Cave Valley Allotment:** Current livestock grazing management practices conform to Guidelines 3.1, 3.2, 3.3, and 3.6. Guideline 3.5 is not applicable. Land treatments (3.4) may be appropriate for portions of this allotment.

**4. Preston Allotment:** Current livestock grazing management practices conform to Guidelines 3.1, 3.2, 3.3, and 3.6. Guideline 3.5 is not applicable. Land treatments (3.4) may be appropriate for portions of this allotment.

**5. Rock Canyon Allotment:** Current livestock grazing management practices do not conform to Guidelines 3.1, 3.2, and 3.6. Current livestock grazing management practices conform to Guideline 3.3. Guideline 3.5 is not applicable. Land treatments (3.4) may be appropriate for portions of this allotment.

**6. Swamp Cedar Allotment:** Current livestock grazing management practices conform to Guidelines 3.1, 3.2, 3.3, and 3.6. Guideline 3.5 is not applicable. Land treatments (3.4) may be appropriate for portions of this allotment.

**7. Willow Spring Seeding Addition Allotment:** Current livestock grazing management practices conform to Guidelines 3.1, 3.2, 3.3, and 3.6. Guideline 3.5 is not applicable. Land treatments (3.4) may be appropriate for portions of this seeding.

## **GUIDELINE CONFORMANCE REVIEW SUMMARY**

### ***NORTHEASTERN GREAT BASIN AREA RAC – Big Six Well, Brown Knoll, Cattle Camp/Cave Valley, Preston, Rock Canyon, Swamp Cedar, and Willow Springs Seeding Addition Allotments***

***Livestock grazing is generally in conformance with the Guidelines on the following allotments:***

Cattle Camp/Cave Valley (with the exception of Riparian/Wetland Guidelines)  
Preston  
Rock Canyon (seeded areas)  
Swamp Cedar  
Willow Springs Seeding Addition

***Livestock grazing is generally not in conformance with the Guidelines on the following allotments:***

Big Six Well  
Brown Knoll  
Rock Canyon (native range)

***NORTHEASTERN GREAT BASIN AREA STANDARDS AND GUIDELINES  
VEGETATION MANAGEMENT GUIDELINES—Approved in March 2004 and added as  
Appendix A.***

***Desired conditions: Communities will exhibit or be progressing toward a healthy, productive, diverse population of native and or desirable plant species, and functioning disturbance processes appropriate to the site characteristics.***

***SALT DESERT SHRUBLANDS:***

1. Grazing should generally be limited to very early season or dormant season rather than year round. If very early season grazing is permitted or prescribed to control cheatgrass early in spring, grazing should be terminated early enough to allow perennial plant species to set seed.
2. After disturbance such as fire, insect infestation, and periods of less than desirable grazing management, consider resting communities for an appropriate amount of time relative to moisture conditions.
3. All management and revegetation strategies must consider current site conditions and associated thresholds (i.e. current status in state-and-transition model appropriate for the site). In addition, factors such as ecological site, presence of undesirable species (e.g., invasive or noxious species), adjacent plant communities, current use or management status, and position in the watershed must be considered prior to treatment application.
4. Encourage research and field trials in salt desert shrub communities to determine the best effective methods of restoration.

**Strategies:**

- 1) Management practices to maintain healthy ecological sites should include: prescribed fire, prescribed natural fire, mechanical manipulations, specialized prescription herbivory, chemical treatments, re-seeding, or combinations of treatments.
- 2) Special emphasis must be placed on management activities where public safety at wildland-urban interfaces is jeopardized.

***SAGEBRUSH/BUNCHGRASS RANGELANDS:***

**Guidelines:**

- 1) Create and maintain a diversity of sagebrush age and cover classes on the landscape through the use of prescribed fire, prescribed natural fire, mechanical, biological, and/or chemical means to provide a variety of habitats and productivity conditions.
- 2) Vegetation treatments should be of appropriate size to meet land management objectives. Where possible, inclusions of intact sagebrush should be left scattered within the treated area or in relatively close proximity to provide a seed source for recruitment. Distribution of residual plants will determine in part, the time period required for the successional process to proceed toward sagebrush recolonization.
- 3) All treatments must consider current site conditions and associated thresholds (i.e., current status in state-and-transition model appropriate for the site). In addition, factors such as ecological site, presence of undesirable species (e.g., invasive or noxious species), adjacent plant

communities, current use or management status, and position in the watershed must be considered prior to treatment application.

4) Where initial condition has a depleted herbaceous understory, vegetation treatment should include seeding with desirable species suited or adapted to site conditions. Seeding methods and dates should be appropriate to the plant materials and site conditions.

5) Where a mosaic of age and cover classes already exists, maintain landscape diversity through fuels management and periodic disturbance. Recognize the system is dynamic, and suitability of the plant community for any given specie or group of species will change over time. Maintenance of diverse habitat conditions will provide a continuous suite of seasonal habitats over time.

6) Where pinyon pine and/or juniper trees have encroached into sagebrush communities, use best management practices to remove trees and re-establish understory species.

Strategies:

1) Management practices to maintain healthy ecological sites should include: prescribed fire, prescribed natural fire, mechanical manipulations, specialized prescription herbivory, chemical treatments, re-seeding, or combinations of treatments.

2) Special emphasis must be placed on management activities where public safety at wildland-urban interfaces is jeopardized.

### ***NON-INDIGENOUS ANNUAL GRASSLANDS***

#### ***DEFINITIONS:***

**Cheatgrass/Annual Grass Monoculture:** Areas dominated by cheatgrass or other non-indigenous annual grass species that have crossed a threshold and lost the ability to recover naturally due to lack of perennial species.

**Cheatgrass/Annual Grass Dominant:** Recently burned areas having native perennial species present with potential for natural recovery with appropriate management of non-indigenous annual grasses.

**Cheatgrass/Annual Grass Infested:** Shrub dominated communities with a limited understory of native perennial species, but a significant amount of annual grasses, exhibiting a high potential to be converted to non-indigenous annual grass dominated ranges.

**Desired Conditions:** Communities will exhibit or be progressing toward a healthy, productive, diverse population of native and or desirable plant species, and functioning disturbance processes appropriate to the site characteristics.

**Guidelines Common to All:**

1) Encourage research and field trials in all non-indigenous annual grass ranges to determine effectiveness of control on recovery and rehabilitation efforts in perennial plant communities.

2) Non-indigenous annual grass monoculture and dominated ranges must follow a successional process from annual/perennial grass mix to a shrub/grass community. Large scale seeding of shrubs should be discouraged, and small scale (islands), of intensively managed shrub seedings/transplants encouraged.

Guidelines for Cheatgrass/Annual Monoculture:

- 1) Break up the monoculture through the use of chemical, biological, and/or mechanical means to stop the spread of the effected area especially in areas that border critical habitat. Use native and non-native desirable species known to be fire tolerant and resistant during the late summer fire season.
- 2) Use the best available information to determine the most effective processes to break up the monoculture, reduce the cheatgrass seed bank, and restore native plant communities.

Guidelines for Cheatgrass Dominant and Cheatgrass infested ranges:

- 1) Encourage innovative approaches to control cheatgrass, such as, strategically controlled grazing and the use of prescribed fire to favor production of perennial species.
- 2) Seed areas with perennial grass species to reduce the dominance of cheatgrass.

Strategies:

- 1) Management practices to maintain healthy ecological sites should include: prescribed fire, prescribed natural fire, mechanical manipulations, specialized prescription herbivory, chemical treatments, re-seeding, or combinations of treatments.
- 2) Special emphasis must be placed on management activities where public safety at wildland-urban interfaces is jeopardized.

#### **PART 4. MANAGEMENT PRACTICES TO ACHIEVE STANDARDS AND CONFORM WITH GUIDELINES**

This SDD indicates that changes are needed to the current grazing permit. The Environmental Assessment (EA) for the permit renewal will identify and analyze a proposed action and grazing alternatives that address the need to make changes to livestock management practices and that achieve or make progress towards achievement of the Standards for Rangeland Health and that conform to the Guidelines. The EA will be developed based upon the recommended livestock management practices and general grazing options presented below. The EA will also be developed based upon permittee/public review and comment of the livestock management practices presented below. The new terms and conditions of grazing use resulting from the EA would be included in the term grazing permit for a period not to exceed ten years.

*The following livestock management practices are presented as recommendations and general grazing options in order to achieve or make progress towards achieving the Standards for Rangeland Health and conforming to the Guidelines.*

##### **Recommended Livestock Management Practices – Fourteen Allotments**

1. Continue to implement a Holistic Resource Management approach to cattle grazing in the White River Valley Allotments (winter/spring/early summer grazing) and in the Cattle Camp/Cave Valley Allotment (fall/early winter grazing) allowing the grazing permittee flexibility in cattle numbers, areas of use, season of use, and duration of use. Continue to authorize the use of temporary electric fencing in several allotments to provide for short term, high intensity grazing and the rotation of cattle within pastures created by the electric fencing.
2. Maintain the current permitted stocking level of 6,640 active AUMs (3,778 active AUMs Schell Field Office and 2,862 active AUMs Egan Field Office) while making changes to the season of use, establishing new allowable use levels for key forage species, and implementing other new livestock management practices that would achieve or make significant progress towards achievement of the Rangeland Health Standards and conform to the Guidelines.
3. Implement a reduction to the permitted stocking level in the White River Valley Allotments (in the Egan Field Office Area) for winter/spring/early summer grazing in order to achieve or make progress towards achievement of the Standards and conformance to the Guidelines. Average actual use in White River Valley for the winter/spring grazing period is 2678 AUMs for the 8 year period 2004 to 2011. These are the years licensed use for the entire permit was within the 6,316 authorized AUMs (2004, 2005) or the 6,640 AUMs (2006-2011). Develop an “actual use” or “reduced” grazing alternative in an environmental assessment to authorize about this level of active AUMs cattle use in the White River Valley Allotments. The reduction in AUMs would be placed in voluntary non-use for the duration of the new grazing permit, and would not be placed in permanent suspended use. Monitoring data indicates that four allotments in particular are in need of a reduction in the authorized stocking level. These are the Dee Gee Spring, Sheep Trail Seeding, Wells Station, and Willow Springs Seeding Addition Allotments. To provide a hypothetical example, these 4 allotments could be reduced 458 active AUMs proportioned as follows:

1. Dee Gee Spring - Active use reduced from 200 to 50 AUMs.
2. Sheep Trail Seeding - Active use reduced from 200 to 77 AUMs.
3. Wells Station - Active use reduced from 312 to 210 AUMs.
4. Willow Spring Addition – Active use reduced from 103 to 20 AUMs.

As part of an “actual use” or “reduced grazing” alternative, permit the flexibility to graze AUMs above the active permitted level on the above allotments at times if during the prior year the allotment is completely rested and HRM team monitoring shows there is forage available to support grazing above the active permitted level.

4. Implement a reduction to the authorized stocking level for the winter/spring/early summer grazing period and establish a deferred season of use beginning April 15. This would provide rest for key forage native grasses, forbs, and shrubs during the early part of the critical growing period. This would maintain or improve the native herbaceous component of grasses and forbs and provide for appropriate soil function and resilient, healthier range. This would not provide an option to graze native plant species or cheatgrass in late winter or early spring. Authorize a holistic resource management approach to grazing after April 15 allowing the permittee flexibility in cattle numbers, areas of use, season of use, and duration of use.

5. Implement a reduction to the authorized stocking level and continue to authorize cattle use during the winter period and early spring up to March 31 or April 15, or otherwise limit cattle use during the spring grazing period. The salt desert shrub plant communities are best used for maintenance of cattle during the winter period. Removing cattle by March 31 or April 15 will allow regrowth of key forage native grasses and shrubs during the latter part of the critical growing period and allow the plants to complete their physiological growth cycle. This option would provide for appropriate nesting/brooding or winter habitat for sage grouse in those allotments that are partially failing to meet the needs or the guidelines for sage grouse habitat (Brown Knoll, Dee Gee Spring, Preston, Rock Canyon, and Wells Station). This option would allow the targeted use of cheatgrass (special prescription herbivory) in spring for several allotments, especially for the Dee Gee Spring Allotment. Authorize a holistic resource management approach to grazing prior to March 31 or April 15 allowing the permittee flexibility in cattle numbers, areas of use, season of use, and duration of use.

6. Provide complete rest for the White River Valley Allotments every third year, every fourth year, or other appropriate time period to allow key plants to complete their physiological growth cycle. This would also provide for appropriate native herbaceous component cover, appropriate soil function, and resilient, healthier range. The Northeastern Great Basin Area RAC Vegetation Management Guidelines for salt desert shrublands (#2) states “After disturbance such as fire, insect infestation, and periods of less than desirable grazing management, consider resting communities for an appropriate amount of time relative to moisture conditions.”

7. Establish seasons of use for each allotment as listed on the current grazing permits, while continuing to authorize flexibility in the timing of grazing in each allotment according to a broad holistic resource management plan; or, set new seasons of use that will make progress towards achievement or continue to achieve Standards for Rangeland Health. In those allotments where key grazing areas are located in saline meadows (Big Six Well, North Cove, Sorensen Well, and

Swamp Cedar) provide for range rest during the late winter, early spring grazing period when these range sites are prone to trampling impacts.

8. Authorize specialized prescription herbivory (seeding and feeding) in crested wheatgrass seedings to promote the renovation of seeded areas by establishing native and/or introduced grasses and forbs in shrub dominant or invasive species dominant areas. This would be done in small areas of 20 acres or less. Specialized prescription herbivory was successful in getting grasses established in the Dee Gee Seeding and the Willow Spring Seeding Addition in 2011.

9. Establish new allowable use levels for key forage species for all allotments authorized by this grazing permit.

10. Renew the grazing permit stocking level as currently listed at 3,182 active AUMs for the Cattle Camp/Cave Valley Allotment. Maintain flexibility in the season of use for this allotment and identify a season of use that corresponds to how the grazing permittee has been using the allotment the last several years. Continue to require intensive herding using cowboys to keep the cattle distributed and located in the higher country. Identify a season of use and grazing management practices that will maintain or improve sage grouse habitat in this allotment. Average actual use for the 12 year period 1999 to 2010 was 2,090 active AUMs.

11. From the Resource Program Best Management Practices (Ely District BLM ROD/RMP – August, 2008) Livestock Grazing Section A. 1-8. Develop grazing systems to control or rest grazing use on winterfat sites after March 1 or when the critical growing season begins. Allow spring grazing use during the critical growing period if a grazing rotation system that provides rest from grazing during the critical growing period at least every other year for all areas is in place. Utilization during the critical growth period should not exceed 35% under any circumstances.

12. From the NORTHEASTERN GREAT BASIN AREA STANDARDS AND GUIDELINES VEGETATION MANAGEMENT GUIDELINES—Approved in March 2004 and added as Appendix A.

#### ***SALT DESERT SHRUBLANDS:***

“Grazing should generally be limited to very early season or dormant season rather than year round. If very early season grazing is permitted or prescribed to control cheatgrass early in spring, grazing should be terminated early enough to allow perennial plant species to set seed.”

13. Implement the recommended grazing management strategies from the State and Transition Model for salt desert shrub rangelands as listed in Appendix IV to this SDD (page 224).

14. BLM and Carter Cattle Company could seek opportunities to cooperate on a vegetation treatment project in suitable areas where pinyon and juniper trees have encroached on sagebrush habitat, or where sagebrush or other shrubs dominate the range with or without an appropriate herbaceous understory. Other stake holders or cooperators could be sought for help with funding. Water may be a limiting factor. Water hauls may need to be authorized. Treatment

could include mechanical treatment, hand thinning, or prescribed burning. The treatment would help make progress towards achievement of Rangeland Health Standards and would create vegetative attributes more appropriate to ecological site potential and fire regime condition class. The treatment would also benefit soils, watershed values, livestock, and wildlife.

15. Insure cooperative agreements are in place for the developed water sources in the Cattle Camp/Cave Valley Allotment and that proper maintenance of riparian exclosures is completed for these sources, so that appropriate riparian vegetative cover can be present to contribute to proper functioning condition of the spring sources. Consider reseeding those riparian areas that have become invasive species dominant with native riparian species.

### **RECOMMENDED PRACTICES - STATE AND TRANSITION MODEL**

The Eastern Nevada Landscape Restoration Project in cooperation with the University of Nevada has developed State and Transition Models for many rangeland ecological sites within the MLRA (Major Land Resource Area) 28B, the Central Nevada Basin and Range Area. MLRA 28B includes a great portion of those allotments authorized by permits #2703457 and #2703458.

The models do an excellent job of describing changes and transitions that have been taking place in native range sites throughout the Great Basin Area, and eastern Nevada in particular. The management keys for the State and Transition Models have presented management strategies for maintaining native ecological sites in healthy, resilient, productive states that are able to respond to natural disturbances such as fire, drought, flooding, insects, or disturbances such as herbivory in an appropriate way. The management strategies are designed to prevent further invasive species spread. Management strategies appropriate to those allotments permitted to #2703457 and #2703458 are presented in Appendix III.

#### **Prepared by:**

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Date

#### **Reviewed by:**

Mark D'Aversa  
Soil/water/air/floodplains/riparian/wetlands

Date

Mindy Seal  
Noxious and invasive non-native species

Date

Ruth Thompson  
Wild horses and burros

Date

Marian Lichtler Date  
Wildlife/migratory birds/special status animals and plants

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## **APPENDIX I MONITORING DATA SUMMARY**

### **PERMIT # 2703457 and #2703458 MULTIPLE ALLOTMENTS MONITORING DATA**

#### ***A.1 Major Land Resource Area and Soils***

The permit renewal area occurs within Major Land Resource Areas (MLRA) 028B, the Central Nevada Basin and Range Area, and MLRA 029, the Southern Nevada Basin and Range Area. That portion of the permitted area in White River Valley (White River Central Watershed- 13 allotments) occurs primarily on areas dominated by soils on flood plains, fan piedmonts, and stream terraces (General Soil Mapping Unit No. 2), and on areas dominated by soils on fan piedmonts (General Soil Mapping Unit No. 11). To a lesser degree, this portion of the permit renewal area also occurs in an area dominated by soils on hills and mountains (General Soil Mapping Units No. 20, 22, 24) – General Soil Map, Western White Pine County, 1990. Many soil associations have been identified by the Nye County Soil Survey of 2002.

That portion of the permitted area in White Pine County (South Steptoe Watershed –Cattle Camp/Cave Valley Allotment) occurs primarily on an area dominated by soils on fan piedmonts (General Soil Mapping Unit No. 11). To a lesser degree, this portion of the permit renewal area also occurs in an area dominated by soils on hills and mountains (General Soil Mapping Units No. 21, 22, 25) – General Soil Map, Western White Pine County, 1990. Soil types vary through the Cattle Camp/Cave Valley Allotment. Many soil associations have been identified by the Western White Pine County Soil Survey of 1998.

Many of the soil types may have hardpan or “caliche” layers beneath the soil surface that limit root growth and plant productivity. These types of soils are typical throughout several MLRAs in Nevada. There are also many “salty” saline or alkaline soils within the permit renewal area that are generally restrictive to plant growth and limit the types of native vegetation that grows. Soils vary through the area in soil stability and soil surface characteristics. There are many fine textured silty soils in the allotments associated with salt desert shrub range that have been eroded or are highly susceptible to or at risk of erosion and invasive species spread. There are also gravelly loam soils associated with sagebrush range that are relatively stable and not that susceptible to erosion. Detailed information on soils such as soil textures, soil depths, root restrictive layers, susceptibility to erosion, and associated vegetation is presented in the soil surveys.

#### ***A.2 Licensed Livestock Use – Summary of Overall Operation***

According to the 1995 grazing agreement, permit #2704605 was authorized to graze livestock on public lands not to exceed 6,316 AUMs active use in accordance with an annually submitted biological plan.

Permit #2704605 was renewed in September, 2006. At that time 95 AUMs of active cattle use was acquired on the Preston Allotment and 103 AUMs of active use was acquired on the Willow Spring Seeding Addition Allotment through a grazing transfer. The current grazing permits

#2703457 and #2703458 which have been issued for the period 5/1/2010 to 2/28/2015 authorize a total of 6,640 active AUMs on fourteen allotments which includes the two new allotments acquired in 2006.

The following Table illustrates the overall licensed cattle use for this grazing permit for all of the permitted allotments from 1999 – 2011. Each allotment summary section below (Section B – Individual Allotment Data – page 104) highlights licensed use by allotment.

**Table A.2-1 Permit #2704605 Licensed Use Summary 1999 -2010**

Season/Year	Season of Use	Active AUMs	Season/Year	Season of Use	Active AUMs
Spring 2011	1/17 – 6/20	2390			
Spring 2010	3/8 – 6/25	1723	Spring 2004	1/16 – 6/2	3163
Fall 2010	8/12 – 1/2/2011	<u>2237</u> 3960	Fall 2004	7/29 – 11/4	<u>2133</u> 5296
Spring 2009	1/26 – 6/10	1954	Spring 2003	1/14 – 6/23	4019
Fall 2009	8/03 – 1/8/2010	<u>1942</u> 4129	Fall 2003	7/29 – 11/3	<u>2575</u> 6594
Spring 2008	3/1 – 6/8	2681	Spring 2002	12/24/01 – 6/3	4473
Fall 2008	8/4 – 12/8	<u>2210</u> 4891	Fall 2002	6/12 – 11/6	<u>3074</u> 7547
Spring 2007	1/22 – 6/11	3024	Spring 2001	12/28/00 – 6/1	4573
Fall 2007	8/24 – 12/20	<u>1366</u> 4360	Fall 2001	8/1 – 10/30	<u>3219</u> 7797
Spring 2006	1/3 – 6/4	3487	Spring 2000	12/31/99 – 6/10	4186
Fall 2006	8/1 – 12/26	<u>1884</u> 5371	Fall 2000	8/1 – 10/30	<u>3184</u> 7370
Spring 2005	1/14 – 6/10	2768	Spring 1999	1/4 – 6/6	4452
Fall 2005	8/3/12/20	<u>2815</u> 5583	Fall 1999	7/26 – 11/19	<u>3494</u> 7946

The average annual active cattle use licensed by this permit for the 12 year period 1999 through 2010 is 5,904 AUMs. Use ranged from a high of 7,946 AUMs in 1999 to a low of 3,960 AUMs in 2010. Licensed use exceeded authorized active use for the 5 year period 1999 through 2003. During this 5 year time period, active use was 6,316 AUMs. Actual licensed use averaged 7,451 AUMs. Average annual active cattle use for the 7 year period 2004 through 2010 is 4,799 AUMs.

### ***A.3 Riparian Monitoring***

**Introduction:** Public land natural water sources such as streams, springs, and seeps are regionally scarce in White River Valley, where this permit grazes from late winter through early summer. In White River Valley cattle water exclusively at water wells and water hauling locations. Water wells occur on both public and private land.

Natural water sources are present in South Steptoe Valley and Cave Valley, where grazing occurs in late summer through fall and early winter. Most of these natural water sources are spring or seeps that have been developed and/or fenced to exclude grazing from impacting the water source area. Seven springs were evaluated in the Cattle Camp/Cave Valley Allotment in



***John Spring - Cattle Camp/Cave Valley Allotment***

Date of survey 08/5/2008  
Location of survey John Spring - T. 12N., R. 65E., Sec. 31, SW 1/4.  
Final riparian rating Non – functional.

**Survey remarks** The riparian team felt it was inappropriate to evaluate this Spring system since it is a developed spring without much surface water or riparian value. However, a PFC form was completed. No surface water was present. The spring has been altered by disturbance. The hydric soil area has shrunk and there is big rabbitbrush and sagebrush encroachment. Not many riparian species were present. Adequate cover was not present to protect the site or maintain hydric characteristics. A slow drip has filled the two powder river troughs outside the enclosure half full. Invasive species occurred throughout the broken down spring enclosure, including Canada thistle. Elk were using the invasive species little white top inside the enclosure.

John Spring was found to be functional at risk with a downward trend by a riparian assessment team on August 19, 2003. Many vegetation indicators were rated negative. Over use by cattle was listed as a factor contributing to unacceptable conditions.

***Cattle Camp Spring - Cattle Camp/Cave Valley Allotment***

Date of survey 08/5/2008  
Location of survey Cattle Camp Spring - T. 11N., R. 65E., Sec. 7, SE 1/4.  
Final riparian rating Functional at risk – trend not apparent.

**Survey remarks** The first 250 yards of this riparian area were assessed. Both Lentic (spring) and lotic (stream) forms were filled out by the assessment team. Flow patterns were altered by disturbance (hoof action). The upland watershed was contributing somewhat to wetland degradation as there were a few rills present. Big rabbitbrush has encroached on the floodplain. To a certain extent adequate riparian vegetation was not present to protect the soil surface of bare areas. This is a fairly straight channel with a headcut present. Overall the area was observed to be healing slowly and would probably heal faster were it not for the dominance of big rabbitbrush.

Upper Cattle Camp Spring was found to be functional at risk with trend not apparent by a riparian assessment team on August 19, 2003. Vegetation, hydrologic, and soils-erosion deposition indicators were rated positive. Cattle were listed as a factor contributing to unacceptable conditions.

***Lake Valley Summit Spring - Cattle Camp/Cave Valley Allotment***

Date of survey 08/5/2008  
Location of survey Lake Valley Summit Spring - T. 11N., R. 65E., Sec. 17, NE 1/4.  
Final riparian rating Proper functioning condition.

**Survey remarks** The vegetation indicators were all rated positive for the area of riparian vegetation (about 75 yards) below the water trough. Bare ground occurs between the spring enclosure and the water trough. This area could contribute sediment during intense weather events. Lots of Iva Axillaris (poverty weed) was present in the riparian system (low value native plant). Some upland plant species were encroaching into the riparian area. The water flow into the full trough was measured at a little over ½ gallon per minute.

***Burnt Knoll Spring - Cattle Camp/Cave Valley Allotment***

Date of survey 08/5/2008  
Location of survey Burnt Knoll Spring - T. 11N., R. 65E., Sec. 15, NW 1/4.  
Final riparian rating Non – functional.

**Survey remarks** The spring was dry & the assessment team determined it would not be appropriate to rate the system. Drought has affected this system. Within the ¼ acre enclosure fence there was less than 10% utilization by elk on combined riparian species. All the vegetation indicators would rate positive if this spring system was functioning. The photographs confirm this observation.

***Virginia Dale Spring - Cattle Camp/Cave Valley Allotment***

Date of survey 08/6/2008  
Location of survey Virginia Dale Spring - T. 12N., R. 65E., Sec. 35, W1/2.  
Final riparian rating Functional at risk – downward trend.

**Survey remarks** An area below Virginia Dale Spring was evaluated. Natural Surface flow patterns are altered by disturbance. Eroded banks & deposition of mud was apparent in the system. This is somewhat of an incised channel. Vegetation indicators all rated positive, and the area was observed to be looking good, but with erosion & hoof action is starting downward. Past trampling & hoof action near the start point was noted. ¼ to ½ half mile down gradient the road is washed & mud deposition was noted near the road from recent rain.

**Summit Spring - Cattle Camp/Cave Valley Allotment**

Date of survey 08/6/2008  
 Location of survey Summit Spring - T. 12N., R. 65E., Sec. 28, NE1/4.  
 Final riparian rating Functional at risk – downward trend.

**Survey remarks** A 75 yard area below the Summit Spring water development was evaluated. Natural surface flow patterns are altered by hoof action and road disturbance. Areas of bare soil are present. The area of hydric soils is shrinking. Adequate vegetation cover is not present to protect the area. The parking area near the water trough is enlarging. The water flow was measured at 1/10 gallon per minute flow. The area of riparian vegetation within the spring enclosure was not assessed by the team because it was a developed water source. However, a PFC form was filled out. The vegetation indicators all rated positive for riparian vegetation within the enclosure. Utilization of combined riparian grasses inside the enclosure was 55 – 70%. The enclosure needs work and elk passes may be appropriate.

**A.4 Holistic Resource Management Monitoring**

In March 2010 this permit submitted to BLM a packet of information and photos that included a three year monitoring plan, compilation of monitoring pictures, and monitoring sites summary for average plant spacings. The information submitted included an Average Plant Spacings Table and individual Key Area data compilations for plant spacings, ground cover, age classes of vegetation, and plant group composition (grass, shrub, or forb). The monitoring was accomplished by a holistic resources management team consisting of personnel from permit #2704605, BLM, NRCS, and NDOW.

The Average Plant Spacings Table includes data for 11 of the current 14 permitted allotments, and includes information from 1991 to 1998. Plant space distances are in inches. The type of plant, whether native, invasive, grass, shrub, forb, or tree, is not indicated. A photo trend is also indicated in the Table. The submitted Table is as follows:

**Table A.4-1. Average Plant Spacings – Permit # 2704605**

Key Area Number (#) and Name	Allotment	Plant Space & Begin Year (inches)	Plant Space & End Year (inches)	Photo Trend
#1. R.C.	Rock Canyon	2.85 (94)	2.14 (98)	Stable
#2. R.C. South	Rock Canyon	5.07 (93)	2.38 (98)	Stable
#3. R.C. Ext.	Rock Canyon	4.45 (94)	3.60 (97)	Improving
#4. Jiggs Flat	Rock Canyon	4.98 (97)	4.97 (97)	Stable
#5. Jakes Leap	Brown Knoll	6.05 (94)	3.39 (98)	Improving
#6. B.K. Wash	Brown Knoll	6.65 (94)	6.81 (98)	Stable
#7. D G South	Dee Gee Springs	5.10 (94)	4.20 (96)	Stable
#8. D G North	Dee Gee Springs	5.10 (95)	8.29 (96)	Stable
#9. Lower Gubler	Dee Gee Springs	12.65 (93)	6.51 (96)	Improving
#10. Swamp Cedar	Swamp Cedar	8.16 (94)	3.00 (96)	Improving
#11. Big Six #1	Big Six Well	5.57 (94)	2.82 (98)	Stable
#12. Big Six #2	Big Six Well	3.74 (95)	6.07 (98)	Stable
#13. Mid N. Cove #1	North Cove	5.50 (95)	5.00 (98)	Stable
#14. N. Cove West	North Cove	3.11 (94)	4.83 (98)	Stable
#15 N. Cove East	North Cove	5.16 (93)	5.72 (98)	Stable

#16 East Wells	East Wells	3.86 (94)	3.74 (96)	Stable
#17. Sheep Trail	Sheep Trail Seeding	3.19 (96)	1.64 (98)	Stable
#18. Maybe Seeding	Maybe Seeding	3.18 (94)	3.16 (98)	Stable
#19. Wells Station	Wells Station	4.56 (94)	3.54 (94)	Improving
#20. Bull Whack #3	Cattle Camp/Cave Valley	2.16 (93)	3.41 (94)	Improving
#21. Bull Whack Mid	Cattle Camp/Cave Valley	2.15 (93)	4.36 (94)	Stable
#22. Pop Up	Cattle Camp/Cave Valley	2.34 (92)	1.17 (98)	Improving
#23. Cattle Camp Mid	Cattle Camp/Cave Valley	2.22 (91)	1.25 (98)	Improving
#24. Weather Station	Cattle Camp/Cave Valley	1.11 (92)	1.06 (98)	Improving

## B. PERMITS #2703457 and #2703458 INDIVIDUAL ALLOTMENT MONITORING DATA

### 1. BIG SIX WELL ALLOTMENT

#### *Key Areas and Rangeland Ecological Sites*

A key area is a relatively small portion of a pasture or allotment selected because of its location, use, or grazing value as a monitoring point for grazing use. It is assumed that key areas, if properly selected, will reflect the current grazing management over the pasture or allotment as a whole (NRCS 1997). Key areas represent range conditions, trends, seasonal degrees of use, patterns of use, and resource production and values. Table 1.1-1 depicts key areas and their location within the Big Six Well Allotment, as well as the ecological site associated with the key area and soil associations of the Soil Mapping Unit (SMU) where the key area is located.

A rangeland ecological site is distinctive kind of land with specific physical characteristics that differs from other kinds of land in its ability to produce a distinctive kind and amount of vegetation (NRCS 1997). Ecological Site Descriptions (ESD) are used for inventory, evaluation, and management of native vegetation communities. The ecological site of a key area is determined based on several factors including soils, topography, and plant community.

**Table 1.1-1 Big Six Well Allotment Key Areas & Rangeland Ecological Sites**

Key Area*	Location	Ecological Site	Dominant Species of HCPC**	Soil Mapping Unit
BSW-01	T11N R61E S16 NE1/4 NW1/4	Silty 8-10" (028BY013NV)	Winterfat Indian ricegrass	642-Kunzler-Linoyer Association
BSW-02	T11N R61E S24 SE1/4	Saline meadow (028BY002NV)	Alkali sacaton	1130-Duffer-Equis Association
BSW-03	T11N R61E S25 SW1/4 NE1/4	Saline meadow (028BY002NV)	Alkali sacaton	1130-Duffer-Equis Association
BSW-04	T11N R61E S16 SW1/4 SW1/4	Silty 8-10" (028BY013NV)	Winterfat Indian ricegrass	642-Kunzler-Linoyer Association

\* BSW- 01 occurs in salt desert shrub range in the northwest portion of the allotment

BSW-02 occurs in the valley bottom west of White River Wash

BSW-03 also occurs in the valley bottom in the south portion of the allotment, west of White River Wash

BSW-04 occurs in salt desert shrub range in the west middle portion of the allotment  
 \*\* *HCPC* = Historic Climax Plant Community

### 1.2 Licensed Livestock Use

The following table illustrates the licensed cattle use in the Big Six Well Allotment from the spring of 1999 up to the present time. The season of use and active Animal Unit Months (AUMs) are presented. Licensed use averaged 311 AUMs per year for the 13 year period. Cattle numbers and the season of use varied. The allotment received critical growing season rest (March 1 – April 15) in 2000, 2001, 2002, 2004, and 2009.

**Table 1.2 Big Six Well Allotment Licensed Use 1999 – 2010**

Season/Year	Season of Use	Active AUMs
Spring 2011	3/14 – 3/23	158
Spring 2010	4/23 – 5/8	361
Spring 2009	1/26 – 2/3	189
Spring 2008	3/14 – 3/23	248
Spring 2007	3/7 – 4/16	167
	4/30 – 6/3	<u>140</u> 307
Spring 2006	1/3 – 1/30	413
	4/18 – 4/18	<u>8</u> 421
Spring 2005	3/17 – 3/20	47
	4/13 – 4/29	<u>173</u> 220
Spring 2004	1/26 – 2/16	392
Spring 2003	5/5 - 5/21	402
	5/30 – 6/8	<u>118</u> 520
Spring 2002	12/24/01 – 1/14/02	484
	1/9 – 1/14	<u>20</u> 514
Spring 2001	5/22 – 5/31	123
Spring 2000	12/31/99 – 1/16/00	425
Spring 1999	5/22 – 5/31	168

### 1.3 Utilization – Big Six Well Allotment

Utilization is the estimation of the proportion of annual production consumed or destroyed by animals (Swanson 2006). The general utilization objective for all allotments in the Ely BLM District according to the Ely District Record of Decision and Approved Resource Management Plan (ROD/RMP – August, 2008) is to “Manage livestock grazing on public lands to provide for a level of livestock grazing consistent with multiple use, sustained yield, and watershed function and health” (Ely RMP, p. 85). The Nevada Rangeland Monitoring Handbook gives guidelines to determine the proper use levels by plant category (grasses, forbs, and shrubs) and by grazing season (spring, summer, fall, winter, yearlong). Proper use levels for all allotments are also implied by the Standards and Guidelines for Rangeland Health and Grazing Administration (February 1997).

Key forage plant method (KFPM) utilization was used to collect utilization data at key areas and study sites on the native range of the Big Six Well Allotment. Use was recorded for all herbivores (i.e., cattle, wild horse, antelope, rabbit).

On March 19, 2009 four KFPM utilization transects were read in native range of the Big Six Well Allotment for use by all herbivores during the 2008 grazing year. Transects were read at Key Areas BSW 1, 2, 3, and 4. Photographs were taken. Professional observations were made at an additional five areas of the allotment during walking transects through native range. Year-long use of winterfat was 38% and 55% at two key areas. Year-long use of alkali sacaton was 35% and 48% at two key areas. Range notes recorded on the utilization forms included the following:

At BSW-04 in salt desert shrub range winterfat inside the use cage was of good vigor to 12" tall. Few to no cool season native perennial bunchgrasses were present. Dried Russian thistle was abundant in the area. Small dried halogeton plants were also present. Abundant old rabbit pellets were also noted. On a walking transect east of BSW-04 the area was composed of 100% shrubs, with big sagebrush and greasewood dominant. A stable gravel soil was present with abundant white and black biotic crusts in the shrub interspaces. No invasive species were present. No more than slight use of any type of shrub was noted.

At BSW-01 in winterfat dominant salt desert shrub range winterfat inside the use cage was of good vigor to 10" tall. The area was a winterfat monoculture with no bud sagebrush, shadscale, small rabbitbrush, or native grasses present. A baked "blocky" silt soil type was present. Some black, orange, or white biotic crusts were present between shrubs. Winterfat seedlings were noted. To the east of BSW-01 there was an area of mixed salt desert shrub range with greasewood and winterfat dominant & minor components of bud sagebrush and shadscale. A stable gravel soil was present with biotic crusts and light cow sign from last year. A very minor component of native grasses was noted. Further to the east was an area dominated by small rabbitbrush. Again, a stable gravel soil was present with biotic crusts abundant. Moderate cow sign was noted, with evidence that cows are using rabbitbrush. Indian ricegrass composed less than 1/10 of 1% of the current production by weight of the plant community. Many "patches" averaging about 20 feet in diameter were present that were bare ground with halogeton growing. Light or less use of winterfat was noted in both of the walking transects mentioned above. A small rill about 200 yards east of BSW-01 appears to provide temporary surface water for grazing in the area.

West of the county road, west of the well there was not enough Indian ricegrass present to obtain ten utilization samples. Here the salt desert shrub range transitions to a black sagebrush monoculture with an occasional shadscale shrub or ricegrass plant. Slight or less use of shadscale was noted. A stable gravel soil was present with biotic crusts between & under shrubs.

At 0.7 miles southeast on the two track from the well a walking transect was made through big sagebrush/greasewood range. The area was a decadent shrub plant community with no herbaceous understory of native grasses or forbs. No invasive species were present. A stable gravel soil was observed with biotic crusts abundant. At 0.8 miles easterly on the south fence line again no herbaceous understory & no invasive species were noted in shrub dominant range. Also, no plant pedestalling. A stable gravel soil was noted with abundant litter & biotic crusts. Slight cow sign, lots of old rabbit pellets. Primarily older shrubs.

At BSW-03 in a saline meadow alkali sacaton inside the use cage was of good vigor to 14" tall. A good native grass component and litter component was observed. Use of alkali sacaton was 35% for the grazing year. At BSW-02 in another area of saline meadow alkali sacaton inside the use cage was of fair cured vigor. Use of sacaton was 48% for the grazing year.

On July 7, 2008 two KFPM utilization transects was read at Key Areas BSW-03 and BSW-04 for use to date during the 2008 growing season. Use of sedge at BSW-03 was 4% and use of alkali sacaton was 3%. Use of winterfat at BSW-04 was 4%.

On March 29, 2002 a KFPM utilization transect was read at Key Area BSW-01 for yearlong use during the 2001 grazing year. Use of winterfat was 62%. Cattle use occurred in late December, 2001. Perennial grasses were noted as infrequent.

On February 8, 2000 a KFPM utilization transect was read at Key Area BSW-01 for yearlong use during the 1999 grazing year. Use of winterfat was 34%, use of Indian ricegrass was 70% (4 samples) and use of bottlebrush squirreltail was 50% (1 sample). There were not enough samples to gain a utilization reading for Indian ricegrass or bottlebrush squirreltail. Rabbit use was noted in addition to cattle use.

### ***1.3.1 Utilization – Big Six Well Allotment – Historic***

On June 26, 1998 four KFPM utilization transects were read in native range of the Big Six Well Allotment for use to date by herbivores. Transects were read at Key Areas BSW 1, 2, and 3 and at a fourth site typical of the plant communities and grazing patterns in the allotment. Use of winterfat at BSW-01 was 0%. Use of native alkali grasses at BSW-02 and 03 was 30% and 50%. Use of bottlebrush squirreltail at a study site was 30%. Range notes recorded on the utilization forms included the following:

At BSW-01 winterfat vigor & leader growth was excellent. Numerous winterfat seedlings were observed. Very little cheatgrass was present. At BSW-02 (saline meadow) lots of trampling was noted. It was observed that there was more impact from trampling than from utilization. The same observation was made at BSW-03. Lots of cheatgrass was present at the study site where utilization was read for squirreltail.

A use pattern map drawn for grazing use during the 1998 growing season shows an area of no use of about 2,000 acres in the middle portions of the allotment, an area of slight and light use of about 1,600 acres in the western portion of the allotment, and an area of slight, light, and moderate use of about 700 acres in the saline meadows of the eastern allotment.

A use pattern map completed for grazing use for 10 days in February, 1995 ( Feb. 1 -10) resulted in slight use over about 4,516 acres and light use over about 339 acres.

### ***1.4 Line Intercept Cover Studies***

Vegetation cover data was gathered at Key Area BSW-01 in the Big Six Well Allotment on July 7, 2008, July 31, 2002, and July 8, 1998 and at BSW-02 on July 7, 2008. This cover study measures the foliar (canopy) cover of shrubs and forbs and the basal crown cover of native grasses. Vegetation cover is a linear measure, expressed in feet, along a 100 foot tapeline. A linear measurement of plant litter is also normally made. Observations are recorded on the cover study form regarding the presence or absence of biological surfaces, whether or not the soils are compacted or trampled by animals, and whether cheatgrass or other invasive annual species may be present. Photographs are normally taken for this study.

Vegetation canopy cover is the percent of ground covered by a vertical projection of the outermost perimeter of the natural spread of foliage, including small openings (Swanson 2006). The Line Intercept Method is a commonly used method of determining the relative percent live foliar or canopy cover of a range site by plant class (tree, shrub, grass, forb, or annual). The

method also estimates the percent live foliar cover by plant species. The results are then compared to the appropriate cover for each ecological site as indicated by the Natural Resources Conservation Service (NRCS) Rangeland Ecological Site Descriptions. Results are also compared to general known healthy rangelands. The results are presented in Table 1.4-1:

**Table 1.4-1. Line Intercept Vegetation Cover Data – Big Six Well Allotment**

Key Area/ Date	Location	Ecological Site	Vegetation * Cover/Litter	Biological Surfaces	Soil Compaction/ Infiltration.
BSW-01/ 7/7/2008	N: 4298623 E: 0663071	Silty 8-10” (028BY013NV)	10.51 feet/ 8.46 feet Potential cover = 10-20 ft	Not recorded	Not recorded. Use was 18% of winterfat.
BSW-02 7/7/2008	N: 4295906 E: 0668200	Saline meadow (028BY002NV)	19.11 feet/ 7.59 feet Potential cover = 15-25 ft	Not recorded	Not recorded. Use was 13% of sedge, by cows & rabbits.
BSW-01 7/31/2002	N: 4295906 E: 0668200	Silty 8-10” (028BY013NV)	26.16 feet/ Litter not record. Potential cover = 15-25 ft	Not recorded	Not recorded. Eula dry & brittle. No native grasses measured.
BSW-01 7/8/1998	N: 4295906 E: 0668200	Silty 8-10” (028BY013NV)	45.79 feet/ Litter not record. Potential cover = 15-25 ft	Not recorded	Not recorded.

\* The Potential listed in each field below the Vegetation Cover/Litter heading represents the approximate ground cover (basal and crown) as listed by the Rangeland Ecological Site Description.

Photographs at BSW-02 on 7/7/2008 indicate a healthy saline meadow with a good component of alkali sacaton. Some hoof disturbance is indicated.

**1.4-2. Composition by Cover**

**Species composition by cover at Study Sites BSW-01 & BSW-02 on July 7, 2008 is as follows:**

<b>BSW-01</b>		<b>BSW-02</b>	
Winterfat	99.6%	Sacaton	89.6%
Halogeton	0.4%	Sedge	4.8%
		Perennial forb	3.1%
Shrubs	100%	Pickleweed*	2.4%
		Saltgrass	0.1%
		Shrubs	0%

\* Pickleweed is a native forb in the Chenopodiaceae family. It is also called swamp firestorm.

**1.5 Ecological Condition Information Including Similarity Index**

A similarity index is the percentage of a specific vegetation state plant community that is presently on the site (NRCS 1997). Similarity index is usually computed in reference to the historic climax plant community (HCPC) and is an expression of how similar the existing plant community is to HCPC. HCPC is also referred to as ecological site potential.

When the similarity index is computed, a seral stage can be derived. Seral stages are the developmental stages of an ecological succession (NRCS 1997). A similarity index of 0 to 25 percent represents an early seral plant community (poor), 26 to 50 percent represents a mid-seral plant community (fair), 51 to 75 percent represents a late seral plant community (good), and 76 to 100 percent represents a climax plant community (excellent).

Similarity index is calculated as a percent composition by air dry weight. The site is inventoried to determine the current percent composition by weight on an air dry basis. These numbers are then compared to the percent composition by weight on an air dry basis of the HCPC in the Rangeland Ecological Site Description for the site. To calculate the similarity index, current composition cannot exceed that of HCPC. This yields percent allowable. The sum of all allowable percentages equals the similarity index.

Tables 1.5-1 and 1.5-2 summarize ecological condition data gathered for the Big Six Well Allotment.

**Table 1.5-1. Total Annual Yield and Composition of BSW-01 Key Area**

Key Area: BSW-01				
Date: 7/17/2008				
Range Site: Silty 8-10" (028BY013NV)				
Plant Common Name	Plant symbol	Current % Composition by Weight (air dry)	HCPC % Composition by Weight (air dry)*	% Allowable
Winterfat	KRLA	100%	40-50%	50%
<p>Similarity Index: 50% (mid seral stage or "fair") Trend was recorded as not apparent.</p> <p>Overall Production: 349 pounds per acre (air dry wt.). Normal year plant production is about 500 pounds per acre. Unfavorable year production is about 350 pounds per acre. Potential vegetative composition is about 30% grasses, 5% forbs, and 65% shrubs. Current composition is 100% shrubs.</p> <p>Plant Community Dynamics: As ecological condition declines, bottlebrush squirreltail &amp; shadscale increase as winterfat and Indian ricegrass decrease. With further site deterioration, cheatgrass, halogeton, &amp; annual mustards invade between shrub species. On heavily disturbed sites, these annual species, particularly halogeton, become dominant. Soils of this site are easily eroded and gullies often form.</p> <p>*from Ecological Site Description</p>				

A range inventory worksheet form completed for Key Area BSW-01 in July 2002 resulted in air dry weight of 200 pounds per acre (very dry year). Winterfat composed 175 pounds, bottlebrush squirreltail 15 pounds, and shadscale 10 pounds.

A range inventory worksheet form completed for Key Area BSW-01 in June 1995 resulted in air dry weight of 993 pounds per acre (very productive year). Winterfat composed 854 pounds, bottlebrush squirreltail 23 pounds, shadscale 116 pounds, and halogeton 19 pounds.

A range inventory worksheet form completed for Key Area BSW-01 in June 1994 resulted in air dry weight of 100 pounds per acre (very dry year). Winterfat composed 57 pounds, bottlebrush squirreltail 1 pound, shadscale 29 pounds, and halogeton 10 pounds.

**Table 1.5-2. Total Annual Yield and Composition of BSW-02 Key Area**

Key Area: BSW-02 Date: 7/17/2008 Range Site: Saline meadow (028BY002NV)				
Plant Common Name	Plant symbol	Current % Composition by Weight (air dry)	HCPC % Composition by Weight (air dry)*	% Allowable
Alkali sacaton	SPAI	30%	40-50%	30%
Sedge	CAREX	16.3%	5-10%	10%
Saltgrass	DISP	0.1%	2-5%	0%
Poverty weed	IVAX	2.6%	0-2%	2%
Pickleweed	SALIC	47.3%	0-2%	2%
Perennial forb	PPFF	2.5%	0-2%	2%
Groundsel	SENEC	T	0-2%	2%
Black greasewood	SAVE4	1.2%	0-2%	1%
Similarity Index: 49% (mid seral stage or “fair”) Apparent trend was recorded as improving Overall Production: 810 pounds per acre (air dry wt.). Normal year plant production is about 1000 pounds per acre. Unfavorable year production is about 700 pounds per acre. Potential vegetative composition is about 85% grasses and grass-likes, 10% forbs, and 5% shrubs. Plant Community Dynamics: As ecological condition declines, inland saltgrass & Baltic rush increase, as alkali sacaton & alkali bluegrass decrease. Where severe stream entrenchment occurs, the potential for this site is lost due to change in soil moisture balance. *from Ecological Site Description				

### ***1.6 Holistic Resource Management Team Key Areas and Study Sites***

The holistic resources management team has established key areas and study sites in the Big Six Well Allotment for monitoring range condition and trend. Permit #2704605 submitted monitoring information to BLM in March, 2010 and March, 2011 that included monitoring information for this allotment. This monitoring data is as follows:

#### **1.6.1 Big Six East Meadow Key Area – T. 11N., R. 61E., Section 25 midsection.**

This key area was monitored in 1998. The monitoring consists of a photo trend plot. The photo from 1998 shows a saline meadow dominated by native grass species. Shrubs are also present.

#### **1.6.2 Big Six West Key Area – T. 11N., R. 61E., Section 16 NW ¼.**

This key area has been monitored from 1994 to 2010. This is the same study location as BLM Key Area BSW-01. The photo from 1995 shows a winterfat plant community in good production and vigor. No native grasses are shown. Plant spacing and plant composition data from 1994 to 2010 is indicated in Table 1.6.2:

Table 1.6.2 – Big Six Well West Plant Spacing, Composition, and Number of Plant Species

<i>Year</i>	<i>Plant Spacing (inches)</i>	<i>Grass</i>	<i>Brush</i>	<i>Forbs</i>	<i>Number Of Species</i>
1994	5.57		100	43	1
1995	5.88	22	78	38	4
1996	4.98	11	89	11	3
1997	4.91	2	98	4	5
1998	2.82	3	97	0	3
2002	4.55	0	100	0	1
2005	6.48	0	100	58	1
2008	5.42	6	94	0	2
2010	3.38	0	100	0	2

The HRM team completed an observed apparent trend study at Key Area BSW-01 on June 28, 1994. Range trend was rated as static. A concern observed was the infrequency or absence of native grasses. Few if any seedlings or young individuals of desirable grasses, forbs, and shrubs were noted as establishing.

### ***1.7 Frequency Trend Study***

A frequency trend study for Key Area BSW-01 was established on the allotment in August 1987. Studies were completed and are on file for June 20, 1995 and July 9, 1998. Studies were completed by the HRM Resources Team. Tables 1.7.1 and 1.7.2 list the results:

**Table 1.7.1 – BSW-01 Frequency Trend Study Results -1995**

<b>Plant Species</b>	<b>Frame Size</b>	<b>Frequency of Occurrence</b>
Sihy	10''	29%
Hagl	10''	19%
Ppff	10''	6%
Aaff	10''	5%
Eula	10''	47%
Atco	20''	13%

**Table 1.7.2 – BSW-01 Frequency Trend Study Results -1998**

<b>Plant Species</b>	<b>Frame Size</b>	<b>Frequency of Occurrence</b>
Sihy	10''	15%
Hagl	10''	3%
Ppff	10''	Not recorded
Aaff	10''	3%
Eula	10''	43%
Atco	20''	9%

## **2. BROWN KNOLL ALLOTMENT**

### ***2.1 Key Areas and Rangeland Ecological Sites***

**Table 2.1-1 Brown Knoll Allotment, Key Areas, Study Sites, & Rangeland Ecological Sites**

Key Area*	Location	Ecological Site	Dominant Species of HCPC	Soil Mapping Unit
BK-01	T11N R62E S11 NW1/4 NW1/4	Shallow calcareous loam 8-10" (028BY011NV)	Black sagebrush Indian ricegrass needleandthread	282-Palino very gravelly loam
BK-02	T11N R62E S16 NE1/4 NE1/4	Loamy 8-10" (028BY010NV)	Wyoming sagebrush Indian ricegrass needleandthread	189-Pyrat-Linoyer Association
BK-01 Study site	T11N R62E S3 SE1/4 NW1/4	Shallow calcareous loam 8-10" (028BY011NV)	Black sagebrush Indian ricegrass needleandthread	573-Yody-Palino- Shabliss Association
BK-03 Study site	T11N R62E S15 SE1/4 SE1/4	Coarse Gravelly Loam 6-8" (028BY075NV)	Indian ricegrass shadscale	373-Automal- Wintermute Association
BK-04 Study site	T12N R62E S34 NE1/4 NE1/4	Shallow calcareous slope 8-10" (028BY016NV)	Black sagebrush Indian ricegrass needleandthread	1151-Zimbov-Rock Outcrop Association

\* BK-01 Key Area occurs on the alluvial fan about 1 mile west of Ab Well.

BK-02 Key Area occurs on the alluvial fan about 0.6 miles west of Albert Well.

BK-01 Study site occurs on a mild open slope southeast of Lund Spring in the Lund Burn (1985).

BK-03 Study site occurs on the alluvial fan in the Six Mile Burn (2001) in the south portion of the allotment.

BK-04 Study site occurs on a mild sagebrush slope in the north portion of the allotment.

## 2.2 Licensed Livestock Use

The following table illustrates the licensed cattle use in the Brown Knoll Allotment from the spring of 1999 up to the present time. The season of use and active Animal Unit Months (AUMs) are presented. Licensed use averaged 217 AUMs per year for the 9 years the allotment was grazed. Cattle numbers and the season of use varied. The allotment received complete spring season rest in 2000, 2003, 2009, and 2011.

**Table 2.2 Brown Knoll Allotment Licensed Use 1999 – 2010**

Season/Year	Season of Use	Active AUMs
Spring 2011	Rest	
Spring 2010	2/26 – 3/11	157
Spring 2009	Rest	
Spring 2008	5/20 – 6/1	41
Spring 2007	5/22 – 6/4	121
Spring 2006	5/15 – 6/2	137
Spring 2005	4/30 – 5/31	373
Spring 2004	5/5 – 6/2	329
Spring 2003	Rest	
Spring 2002	3/29 – 5/12	176
Spring 2001	4/26 – 6/1	229

Spring 2000	Rest	
Spring 1999	3/27 – 5/14	394

### 2.3 Utilization – Brown Knoll Allotment

On March 31, 2009 a KFPM transect was completed at Key Area BK-02 west of Albert Well, and a photograph was taken. Year-long use of bluegrass was not tallied, because it was difficult to determine the level of use. There was no stubble height remaining on native grass plants in the area. Native grasses were observed to be of poor vigor and dead in the grass crowns. Bluegrass inside the use cage had greened up to about 2” and had a 6’ cured growth height. The photograph indicated a heavily used range.

On June 27, 2008 growing season use of needleandthread grass at Study Site BK-1 (former burned area) was 4%. Growing season use of bluegrass at Key Area BK-02 in native range was 5%. Growing season use of bluegrass at Study Site BK-3 (former burned area) was 12%. Use of squirreltail at BK-3 was 23%.

On March 25, 2008 fourteen KFPM utilization transects were read in native range of the Brown Knoll Allotment for yearlong use during the 2007 grazing year. Photographs were also taken. Transects were read at Key Areas BK-01 and BK-02 and at other areas typical of the plant communities and grazing patterns in the allotment. Use of bluegrass ranged from 22 to 88% and averaged 65% (heavy) for nine transects. Use of Indian ricegrass ranged from 19% to 64% and averaged 40% (light) for four transects. Use of bitterbrush ranged from slight to moderate. Use of bottlebrush squirreltail was 62% at one transect, use of needleandthread was 8% at one transect, and use of fourwing saltbush was 58% at one transect. Range notes recorded on the utilization forms included the following:

At the first transect in the south native pasture, cow sign was abundant from last year. Globemallow present was used heavily. Use of shadscale was noted. Degraded openings or “pockets” of halogeton & Russian thistle were present. Minor amounts of bluegrass were present. At Key Area BK-2 west of Albert Well the use cage had not been moved in a while. Caked cheatgrass was present in the use cage & no native grass was inside the cage. Green cheatgrass to 2” was growing beneath the caked mass. No build up of cheatgrass was present in the native range. Halogeton & Russian thistle were common in the area. Pretty much uniform severe use for the year. Stable gravel soils. Native grasses greening well. No stubble height at all – no cured growth. At 0.6 miles past Albert Well in native sagebrush range, bluegrass was used 82%. Primarily cow use, a little deer & elk use. Cheatgrass was growing in infrequent small patches, < ½ of 1% of current annual growth (estimate for past years). Use of sagebrush slight or less. At the forks in the SW ¼ of section 14 a diverse plant community was present with forbs & biotic crusts common. Stable gravel soils. Widely scattered pinyon & juniper trees. Slight or less use of sagebrush noted. Very little cheatgrass was present, again < ½ of 1% of current annual growth. In an old burn area in the south portion of the allotment sihy was used 62% & poa 82%. Four wing saltbush shrubs were present in good vigor, used light or less. About 80 acres of burned area were present. Cheatgrass varied in density in the burned area. A good native grass component was present. A diversity of forbs was present. This area needs to be used or it will burn again. Little to no rabbitbrush was present. At 0.6 miles northwesterly from Albert Well, bluegrass was used 68% in native sagebrush range. Black & whioite biotic crusts were abundant. Sagebrush was used slight or less. On the track towards Ab Well in sagebrush/poa range small “pockets” of halogeton + Russian thistle + poa + shadscale + bud sagebrush were present. Black & white biotic crusts were common. At Key Area BK-01 west of Ab Well in native sagebrush range stable, gravel soils were present with abundant biotic crusts. Forbs were present. Poa was used 22% while sagebrush was used slight or less. Some use of rabbitbrush noted. Cattle, deer, & elk use. At 0.5 miles east from Ab Well pinyon & juniper trees appeared to be encroaching on sagebrush range. Black sagebrush was the dominant shrub beneath the trees. Bitterbrush was used 20%. Native grasses were almost non-existent. At 1.2 miles past Ab Well older decadent four wing saltbrush shrubs were present, with good leader growth from last year.

Saltbush was used 58% & ricegrass 23%. Biotic crusts were abundant. Cheatgrass in the area was all matted over, none standing. Brte < 1% of the current annual growth of the plant community. Cow, deer, elk, rabbit use. At 2.3 miles past Ab Well bitterbrush was used 46% & needlegrass 8%.

East of the Lund School in an old burn (about 200 acres) cheatgrass was dense in spots & growing with Russian thistle & a good native component of plants. Good diversity. Old cow sign was common. Native forbs were common. Ricegrass was used 52% and bitterbrush 15%. In an area of black sagebrush range that was not burned, bluegrass was used 42%. Use of black sage was slight or less. Shrubs were very dominant. Bluegrass was < 2% of the plant community production. Deer, antelope, cow use. In another area of the burn, Indian ricegrass was used heavily (62%). Cows favor the area. Lots of cow sign. Stubble height of Orhy averages 1.5". No cheatgrass was present, just native grass on a gravelly stable soil.

### ***Historical Utilization – Brown Knoll Allotment***

#### ***1996 Utilization***

Eight Key forage Plant Method utilization transects were completed on September 24, October 4 and 15, 1996 and a use pattern map was drawn for grazing use to date during the 1996 grazing year. Cattle used the allotment from April 13 to May 30. Use of Indian ricegrass ranged from 2 to 70% and averaged 56% (moderate) for 8 transects. Use of bluegrass also ranged from 2 to 70% and averaged 35% (light) for 7 transects. Use of bottlebrush squirreltail also ranged from 2 to 70% and averaged 56% (moderate) for 5 transects.

Although the levels of grazing use were not tabulated by acres, the use pattern map shows slight, light, or moderate use recorded for the east, central, and northern portions of the allotment while heavy use is shown in the west portions of the allotment. Range notes recorded on the utilization forms included the following:

Extremely dry conditions were noted, with no regrowth on native plants observed allotment wide. The burn area by Lund near T. 11N., R. 62E., Section 3 NW1/4 was dominated by cheatgrass.

#### ***1994 Utilization***

Five Key forage Plant Method utilization transects were completed on July 6 and 8, 1994 and a use pattern map was drawn for grazing use to date during the 1994 grazing year. Cattle used the allotment from May 1 to May 31. Use of Indian ricegrass ranged from 6 to 25% and averaged 16% (slight) for 2 transects. Use of bluegrass ranged from 2 to 58% and averaged 22% (light) for 4 transects. Use of bottlebrush squirreltail ranged from 0 to 51% and averaged 18% (slight) for 4 transects.

Although the levels of grazing use were not tabulated by acres, the use pattern map shows no use, slight, or light use recorded for the east, central, and northern portions of the allotment while moderate use is shown in the west portions of the allotment. Range notes recorded on the use pattern map or utilization forms included the following:

Extremely dry conditions were noted, with no apparent regrowth observed since the grasses were grazed. Native grasses were frequent and cheatgrass present at Key Area BK-02 west of Albert Well. Some of the sagebrush shrubs in the allotment may be a hybrid between Wyoming sagebrush and black sagebrush. Sagebrush shrubs in the area of transect #3 show a hedged growth form from use by mule deer. In the burn area by Lund both the native grass stipa and cheatgrass were abundant. Overall this area is in good condition with native grasses that have responded well from the burn. The area has potential for improvement regardless of the established cheatgrass.

### ***1989, 1988, 1987, 1986 Utilization***

Key forage plant method utilization transects were conducted, use pattern maps were drawn, and rangeland memorandums were written for use in the Brown Knoll Allotment in 1989, 1988, 1987, and 1986. Photographs were taken in 1986. This information is available for review in the Egan Field Office. A basic summary of the findings of this four year work follows:

#### ***1989 Utilization***

Cattle grazed the allotment from April 1 to May 31. Eight KFPM transects were completed in native range on May 30 and June 1, 1989. Approximately 11,000 acres were mapped in the no use, slight, and light grazing use classes. Approximately 700 acres were mapped in the moderate use class in the burn area near Lund. The dominant grass in the burn area near Lund was cheatgrass. A substantial amount of Indian ricegrass was observed about 0.75 miles west of Ab Well. Trees were observed to be encroaching quite densely on the chained/seeded area and sagebrush range south of Brown Knoll Reservoir. A new chaining and seeded were recommended. It was a poor year for cheatgrass growth. Winter deer use was observed at multiple transect locations.

#### ***1988 Utilization***

Cattle grazed the allotment up until June 1. Eleven KFPM transects were completed in native range on June 1 and 6, 1988. Observations were recorded for both year-long use during the 1987 growth year and for spring use up till June 1, 1988. Approximately 7,000 acres were mapped in the no use, slight, and light grazing use classes in the northern and eastern portions of the allotment. Approximately 4,600 acres were mapped in the moderate and heavy use classes in the western portion of the allotment. The heavy use occurred primarily in the area of Albert Well.

#### ***1987 Utilization***

Cattle grazed the allotment from April 15 to June 9 (88 cows/calves). Six KFPM transects were completed in native range on June 11, 1987. Slight and light use was recorded throughout the allotment, with the majority of use occurring in the western portion of the allotment. The Brown Knoll Reservoir was dry, and cattle distribution was limited due to lack of water. Cheatgrass dominated the visual range aspect near Albert Well and the south half of the allotment also had a considerable cheatgrass component. There was no use by cattle on crested wheatgrass in the old chaining/seeding near Brown Knoll Reservoir.

**1986 Utilization**

The allotment was grazed by cattle through June 1 (88 cows/calves). Seven KFPM transects were completed in native range on June 3, 1986. Approximately 6,000 acres in the eastern and portions of the allotment were not used. Approximately 5,700 acres in the central and western portions of the allotment were used slight and light. The range was dominated by cheatgrass in the burn east of Lund Spring. The majority of cow use occurred in the western portion of the allotment near the boundary fence by Highway 318, where use occurred primarily on cheatgrass and squirreltail. Relative plant composition was estimated at three transect locations in the allotment as follows:

Plant Species	Transect #2 Composition	Transect #4 Composition	Transect #5 Composition
Black sagebrush	40%	50%	70%
Shadscale	40%	25%	
Squirreltail	5%	10%	5%
Cheatgrass	15%	5%	20%
Indian ricegrass		10%	
Bluegrass			5%

Transect #2 was completed about 0.5 miles west of Albert Spring.

Transect #4 was completed about 1 mile west of Ab Well.

Transect #5 was completed about 1 mile southeast of Albert Well.

**2.4 Line Intercept Cover Studies**

Vegetation cover data was gathered at three study sites in the Brown Knoll Allotment on June 27, 2008 (BK-01, BK-03, & BK-04), and at an HRM monitoring site east of the Lund burn (Jake’s Leap) on July 25, 2002. The results are presented in Table 2.4-1:

**Table 2.4-1. Line Intercept Vegetation Cover Data – Brown Knoll Allotment**

Study Site/ Date	Location	Ecological Site	Vegetation Cover/Litter	Biological Surfaces	Soil Compaction/ Infiltration.
BK-01/ 6/27/2008	N: 4301452 E: 674260	28BY011NV Shallow Calcareous loam 8-10”	2.05 feet/ 14.32 feet Potential cover = 15-20 ft*	No crusts observed	Soil not trampled or compacted. Use of needlegrass was 4%.
BK-03/ 6/27/2008	N: 4297560 E: 674897	28BY075NV Coarse gravelly loam 6-8”	8.57 feet/ 8.00 feet Potential cover = 15-25 ft	No crusts	Soil not excessively trampled or compacted.
BK-04/ 6/27/2008	N: 4303526 E: 674618	28BY016NV Shallow Calcareous slope 8-10”	19.47 feet/ 16.94 feet Potential cover = 5-10 ft	Crusts between & under shrubs	Soil is loose, not trampled or compacted.
Jake’s Leap (burn area)**	T. 11N., R. 62E., Sec. 3	Burn area 28BY011NV	23.52 feet Potential cover = 15-20 ft*	No observation	No observation

\* The potential feet listed represents the potential vegetative canopy cover as listed by the ecological site description (ESD).

Photographs at BK-01 indicate a healthy mix of native shrubs and grasses on a stable soil on a burned area.

Photographs at BK-03 indicate a mix of invasive & native species on a burned area in the south portion of the allotment.

Photographs at BK-04 indicate a sagebrush dominant landscape.

A photograph at Jake’s Leap (north aspect) indicates an area of native grass that has been grazed.

**2.4-2. Composition by Cover**

*Species composition by cover at Study Sites BK-01, BK-03, and BK-04 is as follows:*

<b>BK-01</b>	<b>BK-03</b>	<b>BK-04</b>
Black sagebrush 20.5%	Shadscale 6.8%	Black sagebrush 98.2%
Rabbitbrush 11.7%	4 wing saltbush 22.6%	Rabbitbrush 0.5%
Needleandthread 13.2%	Bluegrass 12.5%	Phlox 1.3%
Bluegrass 4.4%	Squirreltail 5.1%	Shrubs 99%
Indian ricegrass 3.9%	Cheatgrass 1.5%	
Cheatgrass 6.3%	Halogeton 8.1%	
Globemallow 30.2%	Russian thistle 39.6%	
Daisy 3.4%	Stickseed 2.3%	
Groundsmoke 0.5%	Erigeron 1.5%	
Russian thistle 5.9%	Shrubs 29%	
Shrubs 32%		

**2.5 Ecological Condition Information Including Similarity Index**

Tables 2.5-1 through 2.5-3 summarize ecological condition data gathered for the Brown Knoll Allotment.

**Table 2.5-1.Total Annual Yield and Composition of BK-01 Study Site**

Study Site: BK-01				
Date: 06/27/2008				
Range Site: Shallow calcareous loam 8-10" (028BY011NV)				
Plant Common Name	Plant symbol	Current % Composition by Weight (air dry)	HCPC % Composition by Weight (air dry)*	% Allowable
Indian ricegrass	ACHY	Trace	20-35%	0%
Needleandthread	HECO26	42.4%	5-15%	15%
Sandberg's bluegrass	POSE	1.5%	2-8%	2%
Globemallow	SPAM	2.0%	2%	2%
Phlox	PHLO	Trace	2%	0%
Astragalus	ASTRA	Trace	2%	0%
Aster	ASTER	1%	0%	1%
Daisy	MACA2	1%	0%	1%
Buckwheat	ERIOG	0.5%	0%	1%
Russian thistle	SATR12	1%	0%	0%
Black sagebrush	ARARN	39.4%	25-35%	35%
Downy rabbitbrush	CHVIP4	11.1%	2-5%	5%
<p>Similarity Index: 62% (late seral stage) Trend was recorded as not apparent.</p> <p>Overall Production: 198 pounds per acre (air dry wt.). This did not include 20 pounds per acre cheatgrass production. Normal year plant production is about 450 pounds per acre. Unfavorable year production is about 250 pounds per acre. Potential vegetative composition is about 50% grasses, 5% forbs, and 45% shrubs. Current composition is 44% grasses, 5% forbs, and 50% shrubs.</p> <p>Plant Community Dynamics: As ecological condition declines, black sagebrush, rabbitbrush, &amp; shadscale increase, while perennial grass, palatable shrubs &amp; forbs decrease. Cheatgrass and halogeton are species likely to invade this site. Rodent activity is typically evidenced by small patches dominated by spiny hopsage. Utah juniper readily invades this site where it occurs adjacent to woodlands. When Utah juniper occupies this site, it competes with other species for available light, moisture, and nutrients. If tree canopies are allowed to close, they can eliminate all understory vegetation.</p> <p>*from Ecological Site Description</p>				

A range inventory worksheet form completed for **Key Area** BK-01 on July 5, 1994 resulted in air dry weight of 400 pounds per acre (dry spring). Black sagebrush composed 60% of the plant composition, Indian ricegrass 11%, squirreltail 10%, small rabbitbrush 8%, bluegrass 5%, unidentified annual forb 4%, shadscale 1%, and spiny hopsage 1%.

A range inventory worksheet form completed in the burn area east of Lund (T. 12N., R. 62E., Section 35 SW1/4 of the NE1/40 also on July 5, 1994 on a shallow calcareous loam 8-12" p.z. range site (028BY016NV). An air dry weight of 400 pounds per acre was recorded. Indian ricegrass composed 14% of the plant composition, needleandthread 14%, squirreltail 9%, sand dropseed 9%, galleta grass 7%, bluegrass 5%, cheatgrass 24%, Russian thistle 10%, perennial forbs 7%, and small rabbitbrush 1%.

**Table 2.5-2.Total Annual Yield and Composition of BK-03 Study Site**

Study Site: BK-03				
Date: 06/27/2008				
Range Site: Coarse gravelly loam 6-8" (028BY075NV)				
Plant Common Name	Plant symbol	Current % Composition by Weight (air dry)	HCPC % Composition by Weight (air dry)*	% Allowable
Indian ricegrass	ACHY	Trace	40-50%	0%
Bottlebrush squirrel	ELEL5	3.8%	2-5%	4%
Sandberg's bluegrass	POSE	4.6%	0-3%	3%
Phlox	PHLO	0.8%	1%	1%
Buckwheat	ERIOG	1.1%	0%	1%
Shadscale	ATCO	89.7%	25-35%	35%
<p>Similarity Index: 44% (mid seral stage) Apparent trend was recorded as declining.</p> <p>Overall Production: 263 pounds per acre (air dry wt.). This did not include 300 pounds per acre Russian thistle, 109 pounds per acre halogeton, 6 pounds per acre cheatgrass, and 3 pounds per acre stickseed production.</p> <p>Production including invasive species was 678 pounds per acre. Normal year plant production is about 500 pounds per acre. Unfavorable year production is about 300 pounds per acre. Potential vegetative composition is about 50% grasses, 5% forbs, and 45% shrubs. Current composition is 9% grasses, 2% forbs, and 90% shrubs.</p> <p>Plant Community Dynamics: As ecological condition declines, shadscale and rabbitbrush will increase in density, while Indian ricegrass composition will be reduced. With further degradation, shadscale may become dominant to the extent of a nearly pure stand. After a major disturbance such as fire, rabbitbrush may become dominant on this site. Cheatgrass, halogeton &amp; mustards are the likely species to invade this site.</p> <p>*from Ecological Site Description</p>				

**Table 2.5-3.Total Annual Yield and Composition of BK-04 Study Site**

Study Site: BK-04				
Date: 06/27/2008				
Range Site: Shallow calcareous slope 8-10" (028BY016NV)				
Plant Common Name	Plant symbol	Current % Composition by Weight (air dry)	HCPC % Composition by Weight (air dry)*	% Allowable
Phlox hoodi	PHLOX	0.8%	0-2%	1%
Phlox longifolia	PHLOX	0.8%	0-2%	1%
Black sagebrush	ARARN	81%	35-45%	45%
Douglas rabbitbrush	CHVI8	17.4%	0-3%	3%
<p>Similarity Index: 50% (mid seral stage) Trend was recorded as not apparent.</p> <p>Overall Production: 259 pounds per acre (air dry wt.). Normal year plant production is about 225 pounds per acre. Unfavorable year production is about 100 pounds per acre. Potential vegetative composition is about 40% grasses, 5% forbs, and 55% shrubs. Current composition is 0% grasses, 2% forbs, and 98% shrubs.</p> <p>Plant Community Dynamics: As ecological condition declines, black sagebrush, shadscale and rabbitbrush will increase while perennial grasses &amp; forbs are reduced in the understory. Cheatgrass, Russian thistle, and halogeton are the likely species to invade this site. Utah juniper readily invades this site where it occurs adjacent to woodlands. When Utah juniper occupies this site, it competes with other species for available light, moisture, and nutrients. If tree canopies are allowed to close, they can eliminate all understory vegetation.</p> <p>*from Ecological Site Description</p>				

**2.6 Holistic Resource Management Team Key Areas and Study Sites**

The holistic resources management team has established key areas and study sites in the Brown Knoll Allotment for monitoring range condition and trend. Permit #2704605 submitted monitoring data to BLM in March, 2010 and March, 2011 that included monitoring information for this allotment. This monitoring data is as follows:

**2.6.1 Jakes Leap Key Area – T. 11N., R. 62E., Section 3 SE ¼.**

This key area has been monitored from 1994 to 2010. The photo plots from 2008 and 2009 show a native grass dominant rangeland with Douglas rabbitbrush and black sagebrush present. The photo from 2009 shows the native grass to be in excellent production. Plant spacing and plant composition data from 1994 to 2010 is indicated in Table 2.6.1:

Table 2.6.1 – Jakes Leap Plant Spacing, Composition, and Number of Plant Species

<i>Year</i>	<i>Plant Spacing (inches)</i>	<i>Grass</i>	<i>Brush</i>	<i>Forbs</i>	<i>Number Of Species</i>
1994	6.04	96	4	84	2
1996	4.75	88	11	9	5
1997	4.83	99	1	46	4
1998	3.39	100	0	Na	Na
2002	3.48	100	0	Na	Na
2008	3.75	90	10	Na	4
2010	2.84	98	2	0	2

2.6.2 Brown Knoll South Key Area – T. 11N., R. 62E., Section 14 SW ¼.

This key area has been monitored from 2002 to 2007. The photo plot from 2007 is inconclusive. Plant spacing and plant composition data from 2002 is indicated in Table 2.6.2

Table 2.6.2 – Brown Knoll South Plant Spacing, Composition, and Number of Plant Species

<i>Year</i>	<i>Plant Spacing (inches)</i>	<i>Grass</i>	<i>Brush</i>	<i>Forbs</i>	<i>Number Of Species</i>
2002	5.41	30	40	22	4

The HRM team completed an observed apparent trend study at Key Area BK-01 on July 5, 1994. Range trend was rated as static. Native grasses were observed to be infrequent. Few if any seedlings or young individuals of desirable grasses, forbs, and shrubs were noted as establishing.

The HRM team also completed an observed apparent trend study at Key Area BK-02 on July 5, 1994. Range trend was rated as static. The presence of native grasses was noted as patchy or infrequent. Few if any seedlings or young individuals of desirable grasses, forbs, and shrubs were noted as establishing.

The HRM team in the mid 1990s recommended a pasture division fence in the Brown Knoll Allotment for improved cattle and forage management. This fence was also suggested by Jacob Carter during the field tour held in March, 2010. A fence has not been planned or constructed to date.

### 3. CATTLE CAMP/CAVE VALLEY ALLOTMENT

#### 3.1 Key Areas and Rangeland Ecological Sites

**Table 3.1-1 Cattle Camp/Cave Valley Allotment Key Areas & Rangeland Ecological Sites**

Key Area*	Location	Ecological Site	Dominant Species of HCPC	Soil Mapping Unit
CC-01 or BW-01 (BW)	T12N R64E S31 NE1/4 NE1/4	Shallow calcareous loam 10-14" (028BY006NV)	Black sagebrush Bluebunch wheatgrass	126-Tecomar-Xine-Pookaloo Association
CC-04 (CC)	T12N R65E S33 SW1/4	Loamy bottom 10-14" (028BY003NV)	Basin wildrye	179-Tulase-Pern Association
CC-05 (CC)	T12N R65E S28 SE1/4 SW1/4	Mountain Ridge 12-14" (028BY034NV)	Bluebunch wheatgrass Low sagebrush and/or black sage	1222-Grink-Amelar-Xine Association
CC-06 (BW)	T11N R64E S6 NE1/4 NW1/4	Loamy 10-12" (028BY007NV)	Thurber needlegrass Bluebunch Big sagebrush	1580-Wredah-Selti-Tulase Association
CC-08 (BW)	T11N R64E S7 SE1/4 SW1/4	Loamy 10-12" (028BY007NV)	Thurber needlegrass Bluebunch Big sagebrush	1580-Wredah-Selti-Tulase Association

\* (BW) = *Bullwhack Pasture* (CC) = *Cattle Camp Pasture*

CC-01 occurs in sagebrush range north of Jones Spring Wash, about 1 mile west of Lund Group Well

CC-04 occurs in a loamy bottom in upper Cattle Camp Wash near the main two track road

CC-05 also occurs in upper Cattle Camp Wash north of the main two track road, towards Summit Spring

CC-06 occurs in sagebrush range about 0.75 miles north of Bullwhack Summit

CC-08 occurs in sagebrush range south of Bullwhack Summit

### 3.2 Licensed Livestock Use

The following table illustrates the licensed cattle use in the Cattle Camp/Cave Valley Allotment from the spring of 1999 up to 2010. The season of use and active Animal Unit Months (AUMs) are presented. Trailing use is not included in the table. Cattle numbers and the season of use varied. There are three pastures in the allotment – Cattle Camp, Bullwhack, and the North/South Seeding.

**Table 3.2 Cattle Camp/Cave Valley Allotment Licensed Use 1999 – 2010**

Season/Year/ Pasture	Season of Use	Active AUMs	Season/ Year	Season of Use	Active AUMs
Fall 2010 Cattle Camp Bullwhack North/South S.	8/14 – 10/18 10/30 – 11/12 10/19 – 11/18	1163 235 <u>220</u> 1618	Fall 2004 Cattle Camp North/South S.	7/29 – 10/18 9/27 – 10/28	1720 <u>215</u> 1935
Fall 2009 Cattle Camp Bullwhack Cattle Camp North/South S.	8/5 – 11/14 9/30 – 10/21 10/22 – 11/14 11/15 – 11/27	553 268 292 <u>229</u> 1342	Fall 2003 Cattle Camp Bullwhack North/South S.	8/14 – 9/26 7/31 – 8/14 9/9 – 11/2 9/9 – 10/7	1083 258 1064 <u>175</u> 2580

Fall 2008 Cattle Camp Bullwhack North/South S.	8/6 – 9/30 10/11 – 10/31 10/1 – 10/10	1059 397 <u>194</u> 1650	Fall 2002 Cattle Camp Bullwhack North/South S.	6/17 – 11/6 6/16 – 6/16 8/20 – 9/19 8/7 – 8/19	2088 28 374 <u>81</u> 2571
Fall 2007 Bullwhack	9/15 – 10/31 11/1 – 11/28	552 <u>138</u> 690	Fall 2001 Cattle Camp Bullwhack North/South S.	8/10 – 10/15 10/8 – 11/5 9/23 – 10/7	1566 671 <u>285</u> 2522
Fall 2006 Cattle Camp	8/2 – 11/5	1884	Fall 2000 Cattle Camp  Bullwhack North/South S.	8/3 – 10/3 10/9 – 10/27 10/4 – 10/30 9/18 – 10/3	1747 145 632 <u>210</u> 2734
Fall 2005 Cattle Camp Bullwhack North/South S.	8/5 – 10/18 11/12 – 11/30 9/26 – 11/11	1268 270 <u>893</u> 2431	Fall 1999	8/2 – 11/4	3124

Average licensed use for all pastures in the CCCV Allotment for the 12 year period 1999 to 2010 was 2,090 AUMs. The North/South Seeding was rested in 1999, 2006, and 2007. The Bullwhack Pasture was rested in 2004 and 2006. The Cattle Camp Pasture was rested in 2007.

### **3.3 Utilization – Cattle Camp/Cave Valley Allotment**

#### **3.3-1 Use Pattern Mapping**

A Use Pattern Map was created for herbivory use in the allotment during the summer of 2005. The map was created for use up to October 10, 2005. In the Bullwhack Pasture, use was mapped on the Bullwhack Summit Topographic Quad Map in the area of Jones Spring Wash and Bullwhack Summit. Use was light and moderate in Jones Spring Wash. Only 3 of 21 observances resulted in heavy use in the area. Along the county road about ½ mile south of Jones Spring Wash, there were 11 observances of light use. Of 13 observances of use along the two track road south of the main county road, 4 were light, 7 were moderate, and 2 were heavy. In and around Bullwhack Summit and for about 2 miles of the main county road north of Bullwhack Summit, there were 15 observances of light use and 1 observance of moderate use.

In the Cattle Camp Pasture (Cattle Camp Spring Topographic Map), use was mapped in the main Cattle Camp Wash, in other sagebrush canyon bottoms, in some uplands, and near developed springs. In Cattle Camp Wash, use varied from light to heavy. Nine observances of heavy use were recorded in a 150 acre area that starts about 1 mile northeast of Cattle Camp Spring. Seven observances of heavy use were recorded in the canyon towards Virginia Dale Spring. Light and moderate use was recorded in the canyon that is about 1 mile west of Virginia Dale Spring. There were 15 observances of moderate use in the north area of Cattle Camp Wash, and 2 observances of heavy use in a 20 acre area of that wash. About 250 acres were mapped as light use in the area of Lake Valley Summit Spring, with 12 observances of moderate use along the two tracks in the area. A small area of about 5 acres was mapped as heavy use by Burnt Knoll Spring. An undefined area of light use was recorded north of Burnt Knoll Spring, with 16 observances of light use in the area. About 160 acres were mapped as moderate use in the uplands northeast of Cattle Camp Spring.

In the Cattle Camp Pasture (Horse Camp Springs Topographic Map), use was mapped near the main county road south of South Horse Camp Spring. About 120 acres were mapped as heavy, with 7 observances of heavy use, in the range south of South Horse Camp Spring. There were 3 other observances of moderate use along the county road and 2 observances of moderate use in the nearby uplands. There were 7 observances of moderate use and 1 of heavy use near a camp site on the very south part of the topographic map.

A KFPM utilization transect was conducted at Study Site CC-15 about 2 miles northeast of Cattle Camp Spring in the main Cattle Camp Wash on October 31, 2005. Use of western wheatgrass was 88% while use of Basin wild rye was 82% (severe). Range notes from the use form indicate a lot of cow pies were on site and even the rabbitbrush showed moderate use.

### ***North/South Seeding Utilization – Key Forage Plant Method Utilization (KFPM)***

On July 21, 2009 three KFPM utilization transects were read in the North/South Seeding for use to date during the 2009 growing season. Use was read prior to cattle grazing in the seeding. At North Seeding # 1 use of crested wheatgrass was 8%. At North Seeding # 2 use of crested wheatgrass was 11%. At North Seeding #3 use of crested wheatgrass was 1%. Use was by elk. Photographs indicated a productive and vigorous seeding with wheatgrass to 28” tall, producing abundant seed. No invasive species were present. Range notes from the use forms indicated soils stabilized by live vegetation and litter. Over the seeding as a whole crested wheatgrass was estimated to be producing about 88% of the current annual growth by weight. Sagebrush was producing about 10%, while other native shrubs, grasses, and forbs were producing about 2%. There was no plant pedestalling and no surface compaction or trampling of soils.

On June 18, 2008 two KFPM utilization transects were read in the North/South Seeding for use to date during the growing season by herbivores. At North Seeding # 2 use of crested wheatgrass was 1%. At North Seeding #3 use of crested wheatgrass was also 1%. Photographs indicate a crested wheatgrass seeding in excellent vigor and production.

On July 21, 2004 one KFPM utilization transect was read in the North/South Seeding for use to date during the 2004 growing season. The transect was read near the witness post of one of the key areas in the seeding. Use of crested wheatgrass was 10%.

On July 22, 2003 two KFPM utilization transects were read in the North/South Seeding for use to date during the growing season by herbivores. Use was 5% (slight) and 0% of crested wheatgrass at the two transects. Use was primarily by elk. Utilization was read before cattle turnout, however 20 head of stray cattle were observed in the seeding.

On April 24, 2002 two KFPM utilization transects were read in the North/South Seeding for year-long use during the 2001 grazing year. Use of crested wheatgrass at Key Areas 1 and 2 was 70% at both locations. Notes from utilization forms indicate tiller growth was apparent, with lots of elk sign (trampling) in the adjacent Cattle Camp Wash.

On March 30, 2000 three KFPM utilization transects were read in the North/South Seeding for year-long use during the 1999 grazing year. Use of crested wheatgrass at Key Areas 1 and 2 was 58% at both locations. Use of wheatgrass at Key Area 3 was 70%. Notes from utilization forms indicate the 58% use and 70% use was by cattle. Elk pellet groups were observed at #1, while no elk sign was observed at #2 or #3.

***Native Range Utilization – Cattle Camp Pasture – Key Forage Plant Method Utilization (KFPM)***

On July 21, 2009 four KFPM utilization transects were completed in the Cattle Camp Pasture for use to date by herbivores during the 2009 growth year. Transects were read at key areas and study sites typical of the grazing patterns and vegetation communities in the pasture. Use was read prior to cattle grazing in the area. Use of sedge at Cattle Camp Spring within the riparian protection fence was 29% (light) by elk. In mountain sagebrush range about 0.9 miles from the spring use of Indian ricegrass and needleandthread was 0%. Use of wild rye at the use cage in Cattle Camp Wash was 4% (slight), by elk. At stop #4 in a prominent big sagebrush draw, use of western wheatgrass was 4%, use of Thurber needlegrass was 0%, use of basin wildrye was 0%, and use of needleandthread was 1%.

Photographs indicate diverse, productive range sites with good native grass components. Soils were stabilized by live vegetation, litter, and surface fragments. There was no plant pedestalling and no surface compaction or trampling of soils.

On July 29, 2008 a KFPM utilization transect was conducted at Key Area CC-05 in the Cattle Camp Pasture (mountain ridge site), for use to date by herbivores during the 2008 growing season. Use of Indian ricegrass was 9% while use of squirreltail was 4%. Photographs show a low sage range site with abundant native grass present.

On July 29, 2008 a KFPM utilization transect was conducted at Study Site CCCV-SS-01 in the Cattle Camp Pasture, for use to date by herbivores during the 2008 growing season. Use of bluebunch wheatgrass was 6% while use of Indian ricegrass was 9%. Photographs show a healthy diversity of sagebrush and native grasses.

On June 12, 2008 a KFPM utilization transect was conducted near Cattle Camp Spring in the main Cattle Camp Wash. Use to date by herbivores on Nebraska sedge was 6%. Photos indicate a healthy riparian area, well covered with native meadow grasses. Use of Nebraska Sedge at Study Site CCCV-14 in the main Cattle Camp Wash was 0%. Photos again indicate a healthy riparian area well covered with native riparian vegetation. The vegetation inside the use cage is rank with non-use.

On August 10, 2007 a KFPM utilization transect was conducted at Study Site CCCV-03 in the Cattle Camp Pasture, for use to date by herbivores during the 2007 growing season. Use of bluebunch wheatgrass was 29% while use of Indian ricegrass was 25%. Use of Sandberg's bluegrass was 2%.

On July 21, 2004 a KFPM utilization transect was conducted near Cattle Camp Spring in the main Cattle Camp Wash. Use to date by herbivores on combined riparian grasses was 72%. Use was made prior to cattle turnout.

On July 22, 2003, use to date in the dry meadow of upper Cattle Camp Spring was 53% on sedge and 48% on western wheatgrass. Use was by elk, and was read prior to cattle turnout. On August 1, 2001 use to date in the dry meadow of upper Cattle Camp Spring was 60% on sedge, 30% on squirreltail and 30% on Kentucky bluegrass. Use was by elk, and was read prior to cattle turnout. On June 14, 2000 use to date in the dry meadow of upper Cattle Camp Spring was 95% on Kentucky bluegrass. Use was by elk, and was read prior to cattle turnout.

On July 22, 2003, use to date in upper Cattle Camp Wash near Summit Spring was 30% of needleandthread 10% of basin wildrye. Use was by elk, and was read prior to cattle turnout.

On July 8, 2003 a KFPM utilization transect was conducted at Key Area CCCV-04 in upper Cattle Camp Wash, for use to date by herbivores during the 2003 growing season. Use of western wheatgrass 0%, use of basin wildrye was 0%, and use of Nevada bluegrass was 1%. Notes from the use form indicated that basin wildrye showed excellent production and a few scattered elk droppings were present. A photo of CCCV-04 on June 26, 2003 shows excellent basin wildrye production.

#### ***Native Range Utilization – Bullwhack Pasture – Key Forage Plant Method Utilization (KFPM)***

On July 21, 2009 four KFPM transects were read in the native range of the Bullwhack Pasture for use to date by herbivores during the 2009 growing season. Use was read at key areas and study sites typical of the grazing patterns and plant communities in the pasture. Use was read prior to cattle grazing in the area. Use of Indian ricegrass ranged from 0% to 4% and averaged 2% for three transects. Use of bluebunch wheatgrass also ranged from 0% to 4% and averaged 2% for three transects. Use of Nevada bluegrass was 0% and 3% at two transects. Use of needleandthread was 0% at one transect. Photographs indicated diverse, productive, vigorous range sites with good native grass components. Soils were stabilized by live vegetation, litter, and surface fragments. There was no plant pedestalling or surface compaction or trampling of soils.

On August 21, 2008 a KFPM transect was read in Jones Spring Wash about 1/3 mile from the western allotment boundary. Use was read for herbivory to date during the 2008 growing year. Use of western wheatgrass was 17% and use of Nevada bluegrass was 5%. Use was primarily by elk. Professional observations recorded on the use form indicated that basin big sagebrush and big rabbitbrush dominated much of the wash land area. Poverty weed was common in the wash area. Much shallow rooted bluegrass was present and it was noted that vegetation cover was probably inappropriate to site potential due to shrub dominance.

On July 31, 2008 a KFPM utilization transect was conducted at CCCV-SS-02 in the Bullwhack Pasture, for use to date by herbivores during the 2008 growing season. Use of Indian ricegrass 7%. Photographs indicate a healthy sagebrush plant community with abundant native grasses present.

On July 17, 2008 five KFPM utilization transects were conducted in the Bullwhack Pasture, in the area of Jones Spring Wash and Bullwhack Summit, for use to date by herbivores during the 2008 growing season. Use of Indian ricegrass ranged from 2 to 6% and averaged 5% for four transects. Use of bluebunch wheatgrass ranged from 4 to 9% and averaged 6% for three transects. Use of needleandthread was 0% at one transect. Photographs indicate a healthy sagebrush plant community with abundant native grasses present.

On June 18, 2008 a KFPM utilization transect was conducted at CCCV-SS-18 in the Bullwhack Pasture, for use to date by herbivores during the 2008 growing season. The transect was read near Key Area CVC-01. Use of bluebunch wheatgrass was 0%. Use of needlegrass was 0%. Photographs indicate a healthy sagebrush plant community with abundant native grasses present.

On June 25, 2003 a KFPM utilization transect was conducted at Key Area CC-08 in the Bullwhack Pasture, for use to date by herbivores during the 2003 growing season. Use of muttongrass was 0%, use of needleandthread was 0%, and use of Thurber's needlegrass was 0%.

On June 24, 2003 a KFPM utilization transect was conducted at Key Area CC-06 in the Bullwhack Pasture, for use to date by herbivores during the 2003 growing season. Use of Nevada bluegrass was 0%, use of squirreltail was 0%, and use of Thurber's needlegrass was 0%. Photographs show a healthy mix of Wyoming sagebrush and native perennial bunchgrasses.

### ***3.4 Line Intercept Cover Studies***

Vegetation cover data was gathered at two key areas in the Cattle Camp/Cave Valley Allotment in June 2003, at one study site in August 2007, at eleven study sites in August 2005, and at five key areas or study sites in June or July 2008. The results are presented in Table 3.4-1:

**Table 3.4-1. Line Intercept Vegetation Cover Data – Cattle Camp/Cave Valley Allotment**

Key Area/ Date*	Location/ Pasture	Ecological Site	Vegetation Cover/Litter	Biological Surfaces	Soil Compaction/ Infiltration.
Study Site CCCV-03/ 8/10/2007	N: 4299663 E: 0699433 Cattle Camp	28BY088NV Calcareous loam 14-16"	44.31 feet/ 42.80 feet Potential cover = 25-35 ft.	Cryptogamic crusts present	No recent use by cattle
CCCV-04/ "Weather Station" 7/11/2008	N: 4303600 E: 701231 Cattle Camp	28BY003NV Loamy bottom 10- 14"	47.70 feet/ 27.9 feet Potential cover = 30-50 ft.	Not recorded	Not recorded
CCCV-05/ 7/29/2008	N: 4304838 E: 0701261 Cattle Camp	28BY034NV Mountain ridge 12-14"	26.54 feet/ 3.61 feet Potential cover = 15-20 ft.	Not recorded	Not recorded. Pinyon & juniper trees encroaching on site.
CC-06/ 6/24/2003	N: 4302108 E: 0688485 Bullwhack	28BY007NV Loamy 10- 12"	19.51 feet/Litter not measured Potential cover = 20-30 ft.	A few cryptogamic crusts present	Not much soil compaction or trampling
CC-08/ 6/25/2003	N: 4299276 E: 0688656 Bullwhack	28BY007NV Loamy 10- 12"	15.03 feet/ Litter not measured Potential cover = 20-30 ft.	Absence of cryptogamic structure	No soil compaction or trampling
CCV-SS1/ 7/29/2008	N: 4301531 E: 701322 Cattle camp	28BY088NV Calcareous loam 14-16"	24.77 feet/ 3.86 feet Potential cover = 25-35 ft.	Not recorded	Not recorded
CCV-SS2 7/31/2008	N: 4301603 E: 688897 Bullwhack	28BY010NV Loamy 8-10"	36.77 feet/ 10.54 feet Potential cover = 10-20 ft.	Not recorded	Not recorded
CCCV Study 19 6/18/2008	N: 4303804 E: 0689246 Bullwhack	28BY094NV Calcareous loam 10-14"	26.55 feet/ 8.66 feet Potential cover = 20-30 ft.	Not recorded	Not recorded
EC Site 12 8/22/2005	N: 4306905 E: 0699656 Cattle Camp	28BY088NV Calcareous loam 14-16"	41.52 feet/ Litter unrecorded Potential cover = 25-35 ft.	Not recorded	Not recorded
EC Site 13 8/22/2005	N: 4305352 E: 0699637 Cattle Camp	28BY043NV Calcareous mahogany savanna	22.41 feet/ 2.77 feet Potential cover = 20-40 ft.	Not recorded	Not recorded
EC Site 14 8/23/2005	N: 4303562 E: 0703622 Cattle Camp	28BY088NV Calcareous loam 14-16"	65.27 feet/ 3.22 feet Potential cover = 25-35 ft.	Not recorded	Not recorded.
EC Site 15 8/23/2005	N: 4303129 E: 0702468 Cattle Camp	28BY088NV Calcareous loam 14-16"	42.47 feet/ 5.48 feet Potential cover = 25-35 ft.	Not recorded	Not recorded
EC Site 16 8/22/2005	N: 4300005 E: 0699291 Cattle Camp	28BY088NV Calcareous loam 14-16"	39.63 feet/ 8.70 feet Potential cover	Not recorded	Not recorded

			= 25-35 ft.		
EC Site 17 8/23/2005	N: 4301057 E: 0699291 Cattle Camp	28BY060NV PIMO-JUOS woodland	11.29 feet/ 17.28 feet	Not recorded	Not recorded
EC Site 18 8/4/2005	N: 4304002 E: 0689227 Cattle Camp	28BY088NV Calcareous loam 14-16"	38.76 feet/ 5.74 feet Potential cover = 25-35 ft.	Not recorded	Not recorded
EC Site 19 8/4/2005	N: 4303817 E: 0689265 Cattle Camp	28BY008NV Shallow calcareous Slope 10-14"	26.70 feet 2.90 feet Potential cover = 5-15 ft.	Not recorded	Not recorded
EC Site 20 8/24/2005	N: 4299649 E: 0688142 Cattle Camp	28BY086NV Gravelly clay 10-12"	26.16 feet 3.47 feet Potential cover = 20-40 ft.	Not recorded	Not recorded
EC Site 22 8/25/2005	N: 4310842 E: 0691059 Cattle Camp	28BY008NV Shallow calcareous Slope 10-14"	26.53 feet/ 1.38 feet Potential cover = 5-15 ft.	Not recorded	Not recorded
EC Site 23 8/25/2005	N: 4310658 E: 0691508 Cattle Camp	28BY007NV Loamy 10- 12"	24.96 feet/ 5.40 feet Potential cover = 20-30 ft.	Not recorded	Not recorded

\* CCCV-03 occurs about 0.4 miles southeast of Cattle Camp Spring.  
 CCCV-04 occurs in the main Cattle Camp Wash near the "weather station."  
 CCCV-05 occurs on a mountain ridge east of the main Cattle Camp Wash.  
 CC-06 occurs north of Bullwhack Summit about 1 mile & west of the county road about 0.5 miles.  
 CC-08 occurs about 0.75 miles south of Bullwhack Summit.  
 CCCV-SS1 occurs near the main Cattle Camp Wash about 1.5 miles northeast of Cattle Camp Spring.  
 CC-SS2 occurs north of Bullwhack Summit about 0.8 miles, just west of the county road.  
 CCCV Study Site 19 occurs in the very north portion of the Bullwhack Pasture.

EC Site 12 occurs in the north portion of the Cattle Camp Pasture, south of South Horse Camp Spring about 1 mile.  
 EC Site 13 occurs in the north portion of the main Cattle Camp Wash.  
 EC Sites 14 & 15 occur in the east portion of the Cattle Camp Pasture towards Virginia Dale Spring.  
 EC Site 16 occurs about 0.4 miles southeast of Cattle Camp Spring.  
 EC Site 17 occurs just west of the north/south track to John Spring.  
 EC Sites 18 & 19 occur in the very north portion of the Bullwhack Pasture north of Jones Spring Wash.  
 EC Site 20 occurs about 0.5 miles south of Bullwhack Summit.  
 EC Sites 22 & 23 occur near Basque Canyon, east of Cattle Camp Wash Well.  
 Photographs were taken of all EC Sites in August 2005.

Photos of EC Site 18 on 8/4/2005 show a healthy sagebrush/native grass plant community with little use of native grasses indicated.  
 Photos of EC Site 17 on 8/23/2005 show a black sagebrush dominant landscape beneath a pinyon and juniper tree overstory. Portions of the area appear to be tree dominant.  
 Photos of EC Site 16 on 8/22/2005 show a healthy sagebrush/native grass plant community with little use of native grasses indicated.  
 Photos of EC Site 15 on 8/23/2005 show a healthy sagebrush/native grass plant community with little use of native grasses indicated.  
 Photos of EC Site 14 on 8/23/2005 show a healthy mountain sagebrush plant community with a diversity of shrubs present.

Photos of EC Site 13 on 8/22/2005 show a mountain mahogany area with a diversity of shrubs and native grasses present, with slight use of native grasses indicated.

Photos of EC Site 12 on 8/22/2005 show a healthy sagebrush/native grass plant community with little use of key native grasses.

Photos of EC Site 19 on 8/4/2005 show a healthy black sagebrush/native grass plant community with little use of key native grasses.

Photos of EC Site 20 on 8/24/2005 show a healthy sagebrush/native grass plant community with slight use of key native grasses.

Photos of EC Site 23 on 8/25/2005 show a healthy sagebrush/native grass plant community with slight use of key native grasses.

**Table 3.4-2. Line Intercept Vegetation Cover Data – Cattle Camp/Cave Valley Allotment – Bullwhack Pasture – July 17, 2008**

Key Area/ Date*	Location	Ecological Site	Vegetation Cover/Litter	Biological Surfaces	Soil Compaction/ Infiltration.
SS-01 – Jones Wash #1	N: 4302915 E: 0687627	28BY 007NV Loamy 10- 12”	20.37 feet/ 13.88 feet Potential cover = 20-30 ft.	Biotic crusts not native to deep loamy soil	No excess trampling or compaction
SS 02 – Jones Wash #2	N: 4303253 E: 0687810	28BY008NV Shallow calcareous slope 10-14”	17.39 feet/ 12.90 feet Potential cover = 5-15 ft.	Soil stabilized by gravel, forbs, litter, live canopy	No plant pedestalling or soil erosion
BWW 01 – Wilderness	N: 4300525 E: 0688768	28BY086NV Gravelly clay 10-12”	20.29 feet/ 13.00 feet Potential cover = 20-40 ft.	No biotic crusts on loamy soil. Soils stable	No plant pedestalling. No erosion
SS 04 – Mountain sage	N: 4302010 E: 068079	28BY 007NV Loamy 10- 12”	25.15 feet/ 28.99 feet Potential cover = 20-30 ft.	No biotic crust. Soil stabilized by forbs, litter, surface fragments, grasses	No trampling or compaction. No pedestalling, no erosion
SS 05 – Burn area	N: 4302014 E: 687157	28BY 007NV Loamy 10- 12”	16.40 feet/ 2.59 feet Potential cover = 20-30 ft.	No biotic crust. Forb rich, stable soils	No compaction or trampling of soils

\* SS 01 occurs in Jones Spring Wash about 1.5 miles east of Jones Spring.

SS 02 occurs on the ridgetop about 0.2 miles north of SS 01.

BWW 01 occurs about 0.25 miles northeast of Bullwhack Summit in the Mt. Grafton Wilderness.

SS 04 occurs south of the track to Bullwhack Spring about 0.5 miles south of Jones Spring Wash.

SS 05 occurs in a burn area about 0.4 miles west of SS 04.

Seventeen of the key areas or study sites within the Cattle Camp/Cave Valley allotment as listed in Tables 3.4-1 and 3.4-2 above are black or Wyoming big sagebrush ecological sites. As such they are in current or potential sage-grouse habitat. Five of these sites are not meeting the herbaceous understory requirements of 15% as set forth within the sage-grouse guidelines, as indicated by an asterisk below. Percentages indicated below are for the herbaceous understory percent cover (grasses and forbs combined).

CC-01 – 23.7%

\*CC-02 – 11.7%

\*CC-05 – 2%

CC-06 – 45.4%

CC-08 – 45.6%                      Jones Wash-1 – 30.3%  
 SS-04 – 52%                              BWW-1 – 32.9%  
 CCV-SS1 – 29.25%                      CCCV12 – 41.3%  
 CCCV19 – 26.1%                      CCCV20 – 33%  
 \*CCCV22 – 2.4%                      \*CCCV23 – 3.5%  
 \*CCC03 – 13.7%                      CC04 – 27.69%  
 CCSS2 – 29.1%  
 \* = not meeting guidelines

**3.5 Ecological Condition Information Including Similarity Index**

Tables 3.5-1 through 3.5-11 summarize ecological condition data gathered for the Cattle Camp/Cave Valley Allotment in the Cattle Camp and Bullwhack Pastures.

**Table 3.5-1.Total Annual Yield and Composition of Key Area CC-04**

Key Area: CC-04 (Weather Station – Cattle Camp Pasture)				
Date: 07/8/2003				
Range Site: Loamy bottom 10-14" (028BY003NV)				
Plant Common Name	Plant symbol	Current % Composition by Weight (air dry)	HCPC % Composition by Weight (air dry)*	% Allowable
Basin wildrye	ELCI	43.6%	70-80%	44%
Big sagebrush	ARTR	19.2%	5-10%	10%
Western wheatgrass	AGSM	5.3%	0-2%	2%
Nevada bluegrass	PONE	6.6%	0-2%	2%
Small rabbitbrush	CHVI	14.5%	0-2%	2%
Tumblemustard	SIAL2	10.2%	0%	0%
Perennial forb	PPFF2	0.4%	0-2%	0%
Perennial forb	PPFF1	0.1%	0-2%	0%
Desert stickseed	LARE	0.1%	0%	0%
<p>Similarity Index: 60% (late seral stage) Trend was recorded as not apparent.</p> <p>Overall Production: 3,358 pounds per acre (air dry wt.). Normal year plant production is about 4000 pounds per acre. Unfavorable year production is about 2000 pounds per acre. Potential vegetative composition is about 85% grasses, 5% forbs, and 10% shrubs. Current composition is 56% grasses, 1% forbs, and 34% shrubs.</p> <p>Plant Community Dynamics: As ecological condition declines, basin big sagebrush and rabbitbrush increase within the plant community as basin wildrye and Nevada bluegrass decrease. With further site degradation, rubber rabbitbrush becomes the dominant plant. Species most likely to invade this site are cheatgrass, annual mustards and thistle.</p> <p>*from Ecological Site Description</p>				

**Table 3.5-2.Total Annual Yield and Composition of Key Area CC-05**

Key Area: CC-05 (Mountain Ridge – Cattle Camp Pasture)				
Date: 07/3/2008				
Range Site: Mountain Ridge 12-14" (028BY034NV)				
Plant Common Name	Plant symbol	Current % Composition by Weight (air dry)	HCPC % Composition by Weight (air dry)*	% Allowable
Indian ricegrass	ACHY	4.5%	0-3%	3%
Squirreltail	ELEL5	0.2%	0-3%	0%
Bluebunch wheatgrass	PSSP	1.3%	20-40%	1%
Phlox	PHLOX	14.9%	0-2%	2%
Black sagebrush	ARNO4	18.4%	35-45%	18%
Wyoming sagebrush	ARTRW	50.4%	0-2%	2%
Perennial forb	PPFF	3.5%	0-2%	2%
Small rabbitbrush	CHVI	6.9%	0-2%	2%
<p>Similarity Index: 30% (mid seral stage) Trend was recorded as improving.</p> <p>Overall Production: 538 pounds per acre (air dry wt.). Normal year plant production is about 200 pounds per acre. Favorable year production is about 350 pounds per acre. Potential vegetative composition is about 45% grasses, 10% forbs, and 45% shrubs. Current composition is 7% grasses, 19% forbs, and 76% shrubs.</p> <p>Plant Community Dynamics: As ecological condition declines, black &amp; low sagebrush and Douglas rabbitbrush become dominant with increases of Sandberg's bluegrass and phlox species in the understory. Phlox, goldenweed and other low, mat forming, forbs are usually dominant on sites in lower ecological condition. Cheatgrass is the species most likely to invade this site.</p> <p>*from Ecological Site Description</p>				

**Table 3.5-3.Total Annual Yield and Composition of Key Area CC-06**

Key Area: CC-06 (Bullwhack Pasture)				
Date: 06/24/2003				
Range Site: Loamy 10-12" (028BY007NV)				
Plant Common Name	Plant symbol	Current % Composition by Weight (air dry)	HCPC % Composition by Weight (air dry)*	% Allowable
Small rabbitbrush	CHVI	12.6%	0-3%	3%
Nevada bluegrass	PONE	6.2%	2-8%	6%
Wyoming sagebrush	ARTRW	39.9%	15-25%	25%
Lupine	LUPIN	2.8%	0-2%	2%
Sedge	CAREX	7.2%	0-3%	3%
Buckwheat	ERIOG	1.2%	0-2%	1%
Penstemon	PENST	1.0%	0-2%	1%
Squirreltail	ELEL5	8.3%	0-3%	3%
Thurber's needlegrass	STTH	10.5%	30-40%	11%
Desert parsley	LOMAT	1.5%	0-2%	2%
Thickspike wheat	ELMA7	5.0%	0-3%	3%
Tapertip hawksbeard	CRAC	0.7%	2-5%	1%
Poverty weed	IVAX	0.5%	0-2%	1%
Phlox	PHLOX	2.4%	0-2%	2%

Similarity Index: 64% (late seral stage) Trend was recorded as not apparent.  
 Overall Production: 581 pounds per acre (air dry wt.). Normal year plant production is about 800 pounds per acre. Unfavorable year production is about 600 pounds per acre. Potential vegetative composition is about 65% grasses, 10% forbs, and 25% shrubs. Current composition is about 37% grasses, 11% forbs, and 52% shrubs.  
 Plant Community Dynamics: Where management results in abusive livestock use, big sagebrush, rabbitbrush, bottlebrush squirreltail, and Sandberg's bluegrass increase, while Thurber needlegrass, bluebunch wheatgrass and other desirable forages decrease. Cheatgrass readily invades this site following disturbances. Singleleaf pinyon and Utah juniper invade this site where it occurs adjacent to pinyon-juniper woodlands.  
 \*from Ecological Site Description

**Table 3.5-4. Total Annual Yield and Composition of Key Area CC-08**

Key Area: CC-08 (Bullwhack Pasture)				
Date: 06/25/2003				
Range Site: Loamy 10-12" (028BY007NV)				
Plant Common Name	Plant symbol	Current % Composition by Weight (air dry)	HCPC % Composition by Weight (air dry)*	% Allowable
Wyoming sagebrush	ARTRW	70.3%	15-25%	25%
Muttongrass	POFE	7.1%	2-8%	7%
Indian paintbrush	CASTI	1.0%	0-2%	1%
Tapertip hawksbeard	CRAC	0.7%	2-5%	1%
Thurber's needlegrass	STTH	1.0%	30-40%	1%
Phlox	PHLOX	0.2%	0-2%	0%
Bitterbrush	PUTR	12.6%	2-10%	10%
Buckwheat	ERIOG	0.3%	0-2%	0%
Squirreltail	ELEL5	2.3%	0-2%	2%
Sandberg's bluegrass	POSE	0.3%	2-8%	0%
Needleandthread	STCO4	2.0%	2-8%	2%
	CRBR	0.2%	0-2%	0%
Milkvetch	ASTRA	0.5%	0-2%	1%
Lupine	LUPI	1.7%	0-2%	2%

Similarity Index: 52% (late seral stage) Trend was recorded as not apparent.  
 Overall Production: 1180 pounds per acre (air dry wt.). Normal year plant production is about 800 pounds per acre. Favorable year production is about 1000 pounds per acre. Potential vegetative composition is about 65% grasses, 10% forbs, and 25% shrubs. Current composition is about 13% grasses, 4% forbs, and 83% shrubs.  
 Plant Community Dynamics: Where management results in abusive livestock use, big sagebrush, rabbitbrush, bottlebrush squirreltail, and Sandberg's bluegrass increase, while Thurber needlegrass, bluebunch wheatgrass and other desirable forages decrease. Cheatgrass readily invades this site following disturbances. Singleleaf pinyon and Utah juniper invade this site where it occurs adjacent to pinyon-juniper woodlands.  
 \*from Ecological Site Description

**Table 3.5-5. Total Annual Yield and Composition of Key Area EC Site 13**

Key Area: EC Site 13 (Cattle Camp Pasture)				
Date: 8/22/2005				
Range Site: Calcareous mahogany savanna (028BY043NV)				
Plant Common Name	Plant symbol	Current % Composition by Weight (air dry)	HCPC % Composition by Weight (air dry)*	% Allowable
Snowberry	SYOR	25.3%	2-8%	8%
Needleandthread	STCO4	4.0%	5-15%	4%
Serviceberry	AMUT	0.8%	0-2%	1%
Bluegrass	POA	1.1%	2-8%	1%
Western wheatgrass	AGSM	2.2%	0-2%	2%
Oregon grape	PHLOX	3.0%	0-3%	3%
Penstemon	PENST	4.7%	0-3%	3%
Mtn. big sagebrush	ARTRVA	58.9%	15-25%	25%
<p>Similarity Index: 47% (mid seral stage). Several other native grasses, forbs, or shrubs were recorded in the ecological condition study, indicating species diversity and slightly higher production.</p> <p>Overall Production: 931 pounds per acre (air dry wt.). Normal year plant production is about 800 pounds per acre. Favorable year production is about 1000 pounds per acre. Potential vegetative composition for the understory is about 55% grasses, 10% forbs, and 35% shrubs. Current composition is about 8% grasses, 8% forbs, and 84% shrubs.</p> <p>Plant Community Dynamics: As ecological condition declines, understory grasses and forbs are reduced as mountain big sagebrush and Douglas' rabbitbrush increase. Heavy utilization by livestock and wildlife will result in most of the foliage of the mountain mahogany growing above the reach of the browsing animals and will severely limit production. Cheatgrass is the species most likely to invade this site.</p> <p>*from Ecological Site Description</p>				

**Table 3.5-6. Total Annual Yield and Composition of Key Area EC Site 14**

Key Area: EC Site 14 (Cattle Camp Pasture)				
Date: 8/23/2005				
Range Site: Calcareous loam 14-16" (028BY088NV)				
Plant Common Name	Plant symbol	Current % Composition by Weight (air dry)	HCPC % Composition by Weight (air dry)*	% Allowable
Snowberry	SYOR	5.8%	2-5%	5%
Mtn. big sagebrush	ARTRVA	68.3%	10-20%	20%
Serviceberry	AMUT	16.8%	0-5%	5%
Bitterbrush	PUTR	8.9%	2-10%	9%
Perennial grass	PPGG	0.1%	0-2%	0%
Douglas' rabbitbrush	CHVI8	0.1%	0-2%	0%
<p>Similarity Index: 39% (mid seral stage). Several other native grasses, forbs, or shrubs were recorded in the ecological condition study, indicating species diversity and slightly higher production.</p> <p>Overall Production: 4,100 pounds per acre (air dry wt.). Normal year plant production is about 1,100 pounds per acre. Favorable year production is about 1500 pounds per acre. Potential vegetative composition is about 60% grasses, 10% forbs, and 30% shrubs. Current composition is about 0% grasses, 0% forbs, and 100% shrubs.</p> <p>Plant Community Dynamics: As ecological condition declines, understory grasses and forbs are reduced as mountain big sagebrush and Douglas' rabbitbrush increase. Heavy utilization by livestock and wildlife will result in most of the foliage of the mountain mahogany growing above the reach of the browsing animals and will severely limit production. Cheatgrass is the species most likely to invade this site.</p> <p>*from Ecological Site Description</p>				

**Table 3.5-7. Total Annual Yield and Composition of Key Area EC Site 16**

Key Area: EC Site 16 (Cattle Camp Pasture)				
Date: 8/23/2005				
Range Site: Calcareous loam 14-16" (028BY088NV)				
Plant Common Name	Plant symbol	Current % Composition by Weight (air dry)	HCPC % Composition by Weight (air dry)*	% Allowable
Bluegrass	POA	0.4%	5-10%	0%
Mtn. big sagebrush	ARTRVA	99.1%	10-20%	20%
Squirreltail	ELEL5	0.2%	0-2%	0%
Western wheatgrass	AGSM	0.1%	0-2%	0%
Lupine	LUPIN	0.1%	0-2%	0%
<p>Similarity Index: 39% (mid seral stage). Several other native grasses, forbs, or shrubs were recorded in the ecological condition study, indicating species diversity and slightly higher production.</p> <p>Overall Production: 4,146 pounds per acre (air dry wt.). Normal year plant production is about 1,100 pounds per acre. Favorable year production is about 1500 pounds per acre. Potential vegetative composition is about 60% grasses, 10% forbs, and 30% shrubs. Current composition is about 1% grasses, 0% forbs, and 99% shrubs.</p> <p>Plant Community Dynamics: As ecological condition declines, understory grasses and forbs are reduced as mountain big sagebrush and Douglas' rabbitbrush increase. Heavy utilization by livestock and wildlife will result in most of the foliage of the mountain mahogany growing above the reach of the browsing animals and will severely limit production. Cheatgrass is the species most likely to invade this site.</p> <p>*from Ecological Site Description</p>				

**Table 3.5-8. Total Annual Yield and Composition of Key Area EC Site 18**

Key Area: EC Site 18 (Bullwhack Pasture)				
Date: 8/4/2005				
Range Site: Calcareous loam 14-16" (028BY088NV)				
Plant Common Name	Plant symbol	Current % Composition by Weight (air dry)	HCPC % Composition by Weight (air dry)*	% Allowable
Mtn. big sagebrush	ARTRVA	82.5%	10-20%	20%
Douglas rabbitbrush	CHVI8	7.0%	0-2%	2%
Thurber needlegrass	STTH	1.3%	0-2%	1%
Sandberg's bluegrass	POSE	0.7%	0-2%	1%
Bluegrass	POA	2.6%	5-10%	3%
Hawthorne	CRFL	1.0%	0-2%	1%
Thickspike wheatgrass	ELMA7	1.2%	0-2%	1%
Lupine	LUPIN	2.7%	5-15%	3%
Squirreltail	ELEL5	0.3%	0-2%	0%
Indian ricegrass	ACHY	0.2%	0-2%	0%
Larkspur	DELPH	0.6%	0-2%	1%
<p>Similarity Index: 33% (mid seral stage). Several other native grasses, forbs, or shrubs were recorded in the ecological condition study, indicating species diversity and slightly higher production.</p> <p>Overall Production: 2,300 pounds per acre (air dry wt.). Normal year plant production is about 1,100 pounds per acre. Favorable year production is about 1500 pounds per acre. Potential vegetative composition is about 60% grasses, 10% forbs, and 30% shrubs. Current composition is about 7% grasses, 5% forbs, and 89% shrubs.</p> <p>Plant Community Dynamics: As ecological condition declines, understory grasses and forbs are reduced as mountain big sagebrush and Douglas' rabbitbrush increase. Heavy utilization by livestock and wildlife will result in mpost of the foliage of the mountain mahogany growing above the reach of the browsing animals and will severely limit production. Cheatgrass is the species most likely to invade this site.</p> <p>*from Ecological Site Description</p>				

**Table 3.5-9. Total Annual Yield and Composition of Key Area EC Site 23**

Key Area: EC Site 23 (Cattle Camp Pasture)				
Date: 08/25/2005				
Range Site: Loamy 10-12" (028BY007NV)				
Plant Common Name	Plant symbol	Current % Composition by Weight (air dry)	HCPC % Composition by Weight (air dry)*	% Allowable
Big sagebrush	ARTRW	66.8%	15-25%	25%
Douglas rabbitbrush	CHVI8	28.0%	0-3%	3%
Indian ricegrass	ACHY	0.6%	2-5%	1%
Sandberg's bluegrass	POSE	0.6%	2-8%	1%
Thickspike wheatgrass	ELMA7	3.2%	0-3%	3%
Crested wheatgrass	AGCR	1.0%	0-3%	1%
<p>Similarity Index: 34% (mid seral stage). Overall Production: 1234 pounds per acre (air dry wt.). Normal year plant production is about 800 pounds per acre. Favorable year production is about 1000 pounds per acre. Potential vegetative composition is about 65% grasses, 10% forbs, and 25% shrubs. Current composition is about 6% grasses, 0% forbs, and 85% shrubs.</p> <p>Plant Community Dynamics: Where management results in abusive livestock use, big sagebrush, rabbitbrush, bottlebrush squirreltail, and Sandberg's bluegrass increase, while Thurber needlegrass, bluebunch wheatgrass and other desirable forages decrease. Cheatgrass readily invades this site following disturbances. Singleleaf pinyon and Utah juniper invade this site where it occurs adjacent to pinyon-juniper woodlands.</p> <p>*from Ecological Site Description</p>				

**Table 3.5-10. Total Annual Yield and Composition of Key Area EC Site 20**

Key Area: EC Site 20 (Bullwhack Pasture)				
Date: 08/24/2005				
Range Site: Gravelly clay 10-12" (028BY086NV)				
Plant Common Name	Plant symbol	Current % Composition by Weight (air dry)	HCPC % Composition by Weight (air dry)*	% Allowable
Wyoming sagebrush	ARTRW	76.6%	20-30%	30%
Needleandthread	STCO4	1.8%	5-10%	2%
Thurber needlegrass	STTH	3.1%	20-40%	3%
Bluegrass	POA	13.9%	2-5%	5%
Indian ricegrass	ACHY	1.0%	5-10%	1%
Crested wheatgrass	AGCR	3.5%	0%	0%
<p>Similarity Index: 41% (mid seral stage). Overall Production: 796 pounds per acre (air dry wt.). Normal year plant production is about 600 pounds per acre. Favorable year production is about 800 pounds per acre. Potential vegetative composition is about 55% grasses, 10% forbs, and 35% shrubs and trees. Current composition is about 23% grasses, 0% forbs, and 77% shrubs.</p> <p>Plant Community Dynamics: As ecological condition declines, Wyoming big sagebrush, rabbitbrush, and bottlebrush squirreltail increase, while Thurber needlegrass and Indian ricegrass decrease. Cheatgrass and Utah juniper are the species most likely to invade this site.</p> <p>*from Ecological Site Description</p>				

### **3.6 Holistic Resource Management Team Key Areas and Study Sites**

The holistic resources management team has established key areas and study sites in the Cattle Camp/Cave Valley Allotment in the Cattle Camp, Bullwhack, and North/South Seeding Pastures for monitoring range condition and trend. Permit #2704605 submitted a monitoring packet to BLM in March, 2010 that included monitoring information for several of these sites within the allotment. This monitoring data is as follows:

#### **3.6.1 Cattle Camp Pasture**

A. Horse Camp Key Area #1 – T. 12N., R. 65E., Section 20 NE ¼.

This key area is located just south of private ground, and has been monitored from 1990 to 2008. Monitoring consists of a photo trend plot. A photo from 2008 shows a big sagebrush and big rabbitbrush dominant rangeland.

B. Horse Camp Key Area #2 – T. 12N., R. 65E., Section 17 SE ¼.

This key area appears to be located on private ground, and has been monitored from 1992 to 2008. Monitoring consists of a photo trend plot. A photo from 2008 shows a private meadow that has been grazed.

C. Weather Station Key Area #1 – T. 12N., R. 65E., Section 33 NW ¼.

This key area has been monitored from 1992 to 2008. The photo plot for 2008 shows a basin big sagebrush rangeland with basin wildrye and/or other native grasses in the shrub interspaces. Plant spacing and plant composition data from 1992 to 2008 is indicated in Table 3.6.1C

Table 3.6.1C – Weather Station Plant Spacing, Composition, and Number of Plant Species

<i>Year</i>	<i>Plant Spacing (inches)</i>	<i>Grass</i>	<i>Brush</i>	<i>Forbs</i>	<i>Number Of Species</i>
<i>1992</i>	<i>1.11</i>	<i>52</i>	<i>6</i>	<i>42</i>	
<i>1996</i>	<i>0.70</i>	<i>98</i>	<i>2</i>	<i>5</i>	<i>5</i>
<i>1998</i>	<i>1.06</i>	<i>93</i>	<i>7</i>	<i>0</i>	<i>4</i>
<i>2001</i>	<i>0.71</i>	<i>92</i>	<i>8</i>	<i>4</i>	<i>5</i>
<i>2003</i>	<i>1.02</i>	<i>96</i>	<i>4</i>	<i>0</i>	<i>5</i>
<i>2006</i>	<i>0.84</i>	<i>96</i>	<i>4</i>	<i>22</i>	<i>6</i>
<i>2007</i>	<i>1.56</i>	<i>84</i>	<i>16</i>	<i>0</i>	<i>5</i>
<i>2008</i>	<i>1.30</i>	<i>86</i>	<i>14</i>	<i>0</i>	<i>5</i>

D. Weather Station Key Area #2 – T. 12N., R. 65E., Section 33 NW ¼.

This key area has been monitored from 1990 to 2008. Monitoring consists of a photo trend plot. A photo from 2008 shows big sagebrush and rabbitbrush shrubs in the foreground and a Wyoming sagebrush rangeland with scattered pinyon or juniper trees in the background. Native grasses or forbs do not appear in the photo.

E. Virginia Dale Key Area #1 – T. 11N., R. 65E., Section 4 NE ¼.

This key area has been monitored from 1990 to 2008. Monitoring consists of a photo trend plot. A photo from 2008 shows a Douglas rabbitbrush dominant range with western wheatgrass and/or invasive species in the shrub interspaces.

F. Pop Up Key Area #1 – T. 11N., R. 65E., Section 4 SW ¼.

This key area has been monitored from 1992 to 2008. The photo plot shows a sagebrush and rabbitbrush dominant rangeland. Plant spacing and plant composition data from 1992 to 2008 is indicated in Table 3.6.1F`

Table 3.6.1F – Weather Station Plant Spacing, Composition, and Number of Plant Species

<i>Year</i>	<i>Plant Spacing (inches)</i>	<i>Grass</i>	<i>Brush</i>	<i>Forbs</i>	<i>Number Of Species</i>
1992	2.34	74	18	8	Na
1994	1.43	97	3	7	Na
1996	1.25	94	6	2	8
1998	1.17	92	8	0	4
2001	0.82	88	12	1	4
2003	1.22	76	20	0	4
2006	0.97	92	8	0	6
2007	1.52	92	8	4	6
2008	1.57	86	14	0	5

G. Pop Up Key Area #2 – T. 11N., R. 65E., Section 5 SE ¼.

This key area has been monitored from 1992 to 2008. Monitoring consists of a photo trend plot. A photo from 2008 shows a sagebrush dominant rangeland with invasive species in the shrub interspaces.

H. Mid Point Key Area – T. 11N., R. 65E., Section 4 NW ¼.

This key area has been monitored from 1991 to 2008. The photo plot shows a Douglas rabbitbrush dominant rangeland with western wheatgrass and/or invasive species in the shrub interspaces. Plant spacing and plant composition data from 1991 to 2008 is indicated in Table 3.6.1H

Table 3.6.1H – Weather Station Plant Spacing, Composition, and Number of Plant Species

<i>Year</i>	<i>Plant Spacing (inches)</i>	<i>Grass</i>	<i>Brush</i>	<i>Forbs</i>	<i>Number Of Species</i>
1991	2.22	61	9	27	2
1996	2.02	89	11	0	5
1998	1.25	95	5	0	4
2001	0.71	94	6	0	4
2006	0.91	92	8	4	6
2008	1.04	90	10	0	4

### 3.6.2 Bullwhack Pasture

A. Bullwhack Wash Key Area – T. 11N., R. 64E., Section 6 NW ¼.

This key area occurs in a former burned area. Monitoring has occurred from 2001 to 2009. The photo plot from 2008 shows a Wyoming sagebrush rangeland with a mix of shrubs, native grasses, and forbs present. Plant spacing and plant composition data from 2001 to 2008 is indicated in Table 3.6.2A

Table 3.6.2A – Bullwhack Wash Plant Spacing, Composition, and Number of Plant Species

<i>Year</i>	<i>Plant Spacing (inches)</i>	<i>Grass</i>	<i>Brush</i>	<i>Forbs</i>	<i>Number Of Species</i>
2001	1.48	62	10	26	14
2006	3.62	45	5	35	7
2007	4.24	88	12	27	8
2008	3.26	98	2	0	5

B. Bullwhack South Key Area – T. 11N., R. 64E., Section 19 NE ¼.

Monitoring has occurred from 1993 to 2000. Monitoring was established to show water haul animal impact. The photo plot from 2000 shows a Sagebrush rangeland with native perennial grasses in the shrub interspaces. Plant spacing and plant composition data from 1993 and 1994 is indicated in Table 3.6.2B

Table 3.6.2B – Bullwhack South Plant Spacing, Composition, and Number of Plant Species

<i>Year</i>	<i>Plant Spacing (inches)</i>	<i>Grass</i>	<i>Brush</i>	<i>Forbs</i>	<i>Number Of Species</i>
1993	2.16	68	8	24	7
1994	3.41	88	4	8	7

### 3.6.3 North/South Seeding

A. North Seeding North Key Area – T. 12N., R. 64E., Section 17 SE ¼.

Monitoring has occurred from 1998 to 2008. The photo plot from 2008 shows a crested wheatgrass seeding in good production and vigor. Plant spacing and plant composition data from 2007 is indicated in Table 3.6.3A

Table 3.6.3A – North Seeding North Plant Spacing, Composition, and Number of Plant Species

<i>Year</i>	<i>Plant Spacing (inches)</i>	<i>Grass</i>	<i>Brush</i>	<i>Forbs</i>	<i>Number Of Species</i>
2007	2.24	100	0	0	1

B. North Seeding South Key Area – T. 12N., R. 64E., Section 29NE ¼.

Monitoring has occurred from 1993 to 2007. Monitoring consists of a photo trend plot. A photo from 1998 shows crested wheatgrass seeding in good production and vigor.

### 3.7 Bullwhack Vegetation Treatment

In 2004 and 2005, the Ely District BLM completed a vegetation treatment project in the Bullwhack Pasture of the Cattle Camp/Cave Valley Allotment. The “Bullwhack Treatment” occurred in Wyoming sagebrush, basin big sagebrush, and mountain sagebrush habitats in the pasture. The purpose of the project was to improve vegetation composition, cover, and production in sagebrush habitats, improve watershed conditions, and improve forage cover and availability for livestock and wildlife including sage grouse. The treatment included 1,006 acres of prescribed burning, and 361 acres of brush mowing in sagebrush communities.

Approximately 20 acres of pinyon and juniper trees were masticated within the mowing areas using a dozer mounted tree grinder. Mowing and mastication was completed in summer of 2004. Prescribed burning was conducted in 2004 and 2005 with 725 acres being treated in 2004, and 281 acres treated in 2005 (See Map, Appendix VI, page 197).

The livestock grazing agreement with Carter Cattle Company required deferment and avoidance of the treatment areas for three years. Rangeland monitoring studies, professional observations, and photographs indicate that the Bullwhack Treatment has been a success, with excellent recovery of native vegetative cover, composition, diversity, production, and vigor. This Bullwhack Pasture was used by Carter Cattle Company from September 30 through October 21, 2009 with 370 cattle.

#### 4. DEE GEE SPRING ALLOTMENT

##### 4.1 Key Areas and Rangeland Ecological Sites

**Table 4.1-1 Dee Gee Spring Allotment, Key Areas, Study Sites, & Rangeland Ecological Sites**

Key Area*	Location	Ecological Site	Dominant Species of HCPC	Soil Mapping Unit
DG-01 Key Area	N: 4282130 E: 667443	Loamy 5-8” (029XY017NV)	Shadscale Bud sagebrush Indian ricegrass	3210- Kunzler-Sycomat Association
DG-02 Key Area	T. 10N., R. 61E., Sec. 36 NE 1/4	Seeded area	Crested wheatgrass	3210- Kunzler-Sycomat Association
DG-03 Study Site	N: 4280138 E: 668467	Loamy 8-10” (028BY010NV)	Wyoming sagebrush Indian ricegrass needleandthread	3400- Parisa gravelly loam
DG-04 Key Area	N: 4283316 E: 0666372	Saline meadow (028BY002NV)	Alkali sacaton	3280 – Duffer-Equis Association

\* DG-01 occurs in salt desert shrub range in the south portion of the allotment, about 1.2 miles southwest of Dee Gee Spring. It occurs in the south pasture.

DG-02 occurs in the crested wheatgrass seeded area, in the middle pasture, about 0.3 miles westerly from Dee Gee Spring.

There is no DG-03 Key Area in the allotment, however there is a DG-03 Study Site, which occurs in the southeast portion of the allotment, in the south pasture, in Wyoming sagebrush range.

DG-04 occurs in a saline meadow on the west side of the middle pasture.

##### 4.2 Licensed Livestock Use

The following table illustrates the licensed cattle use in the Dee Gee Spring Allotment from the spring of 1999 up to the present time. The season of use and active Animal Unit Months (AUMs) are presented. Licensed use averaged 434 AUMs per year for the 12 years the allotment was grazed. Cattle numbers and the season of use varied. The allotment received critical growing season rest (March 1 – April 15) in 2004, 2006, 2008, and 2010. Licensed cattle use is for the allotment as a whole, not by pasture.

**Table 4.2 Dee Gee Spring Allotment Licensed Use 1999 – 2010**

Season/Year	Season of Use	Active AUMs
Spring 2011	2/3 – 3/9	232
Spring 2010	Rest	
Spring 2009	4/6 – 4/8	63
	5/12 – 5/26	<u>45</u> 108
Spring 2008	5/30 – 6/2	49
	5/31 – 6/1	<u>26</u> 75
Spring 2007	4/3 – 4/20	326
Spring 2006	5/4 – 5/24	435
Spring 2005	4/2 – 5/13	556
Spring 2004	5/6 – 5/21	283
Spring 2003	2/7 – 3/3	672
Spring 2002	1/31 – 3/14	306
	5/15 – 5/23	<u>227</u> 533
Spring 2001	3/3 – 3/19	360
Spring 2000	4/5 – 5/8	864
Spring 1999	2/20 – 3/26	344
	3/19 – 5/5	<u>413</u> 757

### 4.3 Utilization

On May 12, 2009 three KFPM utilization transects were completed in the Dee Gee Allotment for use to date by herbivores. Cattle did not use the Dee Gee Seeding in early spring. Use was 0% of crested wheatgrass. The crested wheatgrass plants in the seeding were dead. In the burn area in the Ruppes (North) Pasture use of Cheatgrass was 17%. About 30 cattle were currently grazing the area. Use of a very minor component of Sandberg’s bluegrass was 5%. In the west portion of the Ruppes Pasture, use of a very minor component of Torrey’s saltbush was 0%. Notes from utilization forms indicated the following:

In the Dee Gee Seeding soils were stabilized by a physical crust, invasive species sprouts (mentzelia, mustard, halogeton), and halogeton litter. A few biological crusts were present. The seeding was sagebrush & greasewood dominant, and has passed a threshold to shrub dominance. Big rabbitbrush was also present. Crested wheatgrass plant crowns were all dead. Dried halogeton from 2008 dominated the visual aspect in areas. Old cow & rabbit sign was present. The old DG-02 key area utilization cage could not be located. In the burned area, cheatgrass had grown 3 to 4” and had seeded out. Cattle were grazing this resource. 95% of the native shrubs in the burn area were dead. Very little live vegetation was present. Dried Russian thistle shrubs were prominent. An abundance of old cow droppings covered the area. The soil was somewhat stabilized by surface fragments and decayed invasive plant litter. There was no excess trampling or compaction. A surface physical crust was present. No biotic crusts were present. Range conditions were similar on about 20 acres south of the county road that was also a burned area. In

the west portion of the Ruppel Pasture, soils were stabilized by abundant black biotic crusts, live shrub cover, and litter. Shrubs are dense, dominant, and decadent. There was no understory whatsoever of native grasses and forbs.

On March 31, 2009 a utilization transect was read at Key Area DG-04 in a saline meadow in the west portion of the middle pasture. Use of alkali sacaton was 3% for year-long use during the 2008 grazing year. Notes from utilization forms indicated the following:

East of the Gubler Well (T. 10N., R. 61E., Sec. 13 W1/2), the range was very shrub dominant in the Ruppel Pasture. There was no understory of native grasses or forbs. Black or white biotic crusts were abundant. Lots of old rabbit pellets were present, & few old cow droppings. The soils were stable with no plant pedestalling, rills, or gullies. A good litter component was observed. Shrubs were estimated to be producing 99% of the current annual growth of the plant community. Some torrey saltbush was noted about 1.0 miles northerly from the well. At 2.0 miles north in the middle of the Ruppel Pasture (T. 10N., R. 61E., Sec. 12 SE1/4 of the NE1/4) the range was again shrub dominant with many dead & decadent shrubs present. Soils were very stable with abundant biotic crusts present. A good litter component was present, no plant pedestalling was observed, and there was no understory of native grasses or forbs. Shrubs were estimated to be producing 99.9% of the current annual growth of the plant community.

On July 2, 2008 a KFPM transect was read at Study Site DG-03 in the South Pasture of the allotment, for use to date by herbivores. Use of Sandberg's bluegrass was 16% while use of the shrub Mormon tea was 31%. Notes indicate the area was lightly to moderately grazed.

On July 1, 2008 a KFPM transect was read at Key Area DG-01 in the South Pasture of the allotment, for use to date by herbivores. Use of Indian ricegrass was 12% while use of fourwing saltbush was 9%.

#### ***4.4 Line Intercept Cover Studies***

Vegetation cover data was gathered in the Dee Gee Spring Allotment on July 25, 2002 and July 1 and 2, 2008. The results are presented in Table 4.4-1:

**Table 4.4-1. Line Intercept Vegetation Cover Data – Dee Gee Spring Allotment**

Key Area/ Date	Location	Ecological Site	Vegetation Cover/Litter	Biological Surfaces	Soil Compaction/ Infiltration.
DG-01/ 7/25/2002	N: 4282130 E: 667443	Loamy 5-8" (029XY017NV)	26.63 feet/ Not measured Potential cover = 15-25 ft.	Not recorded	Not recorded
DG-01 7/1/2008	N: 4282130 E: 667443	Loamy 5-8" (029XY017NV)	7.88 feet/ 24.31 feet Potential cover = 15-25 ft	Not recorded.	Not recorded.
DG-03 7/2/2008/ Study Site	N: 4280138 E: 668467	Loamy 8-10" (028BY010NV)	23.27 feet/ 7.01 feet Potential cover = 10- 20 ft	Not recorded.	Not recorded.

**4.4-2. Composition by Cover – Dee Gee Spring Allotment**

*Species composition by cover at Key Areas DG-01 and DG-03 is as follows:*

<b>DG-01(7/1/2008)</b>		<b>DG-01 (7/25/2002)</b>		<b>DG-03</b>	
Bud sagebrush	43.8%	Wyoming sagebrush	1.7%	Wyoming sagebrush	98.2%
Wyoming sagebrush	33.8%	Shadscale	53.9%	Sandberg's bluegrass	1.3%
Shadscale	20.9%	Bud sagebrush	24.2%	Squirreltail	0.3%
Stickseed	0.8%	Squirreltail	17.0%	Phlox	0.1%
Mustard	0.5%	Rabbitbrush	3.2%		
Squirreltail	0.3%			Shrubs	98%
Shrubs	99%	Shrubs	83%		

**4.5 Ecological Condition Information Including Similarity Index**

Table 4.5-1 summarizes the ecological condition data gathered for the Dee Gee Spring Allotment on July 1, 2008.

**Table 4.5-1.Total Annual Yield and Composition of Key Area DG-01**

Key Area: DG-01				
Date: 07/01/2008				
Range Site: Loamy 5-8" (029XY017NV)				
<b>Plant Common Name</b>	<b>Plant symbol</b>	<b>Current % Composition by Weight (air dry)</b>	<b>HCPC % Composition by Weight (air dry)*</b>	<b>% Allowable</b>
Shadscale	ATCO	75.5%	20-35%	35%
Bud sagebrush	PIDE5	13.2%	5-15%	13%
Wyoming sagebrush	ARTRW	11.1%	0%	0%
Halogeton	HAGL	0.3%	0%	0%
Similarity Index: 48% (mid seral stage) Apparent trend was recorded as declining.				
Overall Production: 669 pounds per acre (air dry wt.). Normal year plant production is about 450 pounds per acre.				
Favorable year production is about 700 pounds per acre. Potential vegetative composition is about 45% grasses, 5% forbs, and 50% shrubs. Current composition is 100% shrubs.				
Plant Community Dynamics: See the NRCS Rangeland Ecological Site Description.				
*from Ecological Site Description				

A range inventory worksheet form completed for **Key Area** DG-01 on June 29, 1994 resulted in air dry weight of 350 pounds per acre. The range was rated as late seral with trend not apparent to improving. Shadscale composed 44% of the plant composition, bud sagebrush 30%, halogeton 15%, squirreltail 4%, Indian ricegrass 2%, cheatgrass 2%, perennial forbs 2%, and annual forb 1%. An observed apparent trend study completed at this key area on the same day resulted in a slightly upward rating with a note that the area previously had abundant squirreltail.

#### **4.6 Holistic Resource Management Team Key Areas and Study Sites**

The holistic resources management team has established key areas and study sites in the Dee Gee Spring Allotment for monitoring range condition and trend. Permit #2704605 submitted monitoring data to BLM in March, 2010 and March, 2011 that included monitoring information for these sites within the allotment. This monitoring data is as follows:

##### **4.6.1 Dee Gee Meadow Key Area – T. 10N., R. 61E., Section 35SE ¼.**

This key area is located in the west portion of the allotment and is representative of about 5 acres in the allotment. This key area has been monitored from 1992 to 2008. The monitoring consists of a photo trend plot. The photo from 2008 shows an area of alkali sacaton grass in good production and vigor.

##### **4.6.2 Dee Gee South Key Area – T. 9N., R. 61E., Section 1 NW ¼.**

This key area has been monitored from 1994 to 2010. The photo for 2006 shows a rangeland dominated by shadscale shrubs with no apparent grasses or forbs in the shrub interspaces. Plant spacing and plant composition data from 1994 to 2010 is indicated in Table 4.6.2

Table 4.6.2 – Dee Gee South Plant Spacing, Composition, and Number of Plant Species

<i>Year</i>	<i>Plant Spacing (inches)</i>	<i>Grass</i>	<i>Brush</i>	<i>Forbs</i>	<i>Number Of Species</i>
<b>1994</b>	<b>5.10</b>	<b>9</b>	<b>89</b>	<b>30</b>	<b>5</b>
<b>1996</b>	<b>4.20</b>	<b>16</b>	<b>84</b>	<b>1</b>	<b>4</b>
<b>2001</b>	<b>3.31</b>	<b>66</b>	<b>34</b>	<b>16</b>	<b>6</b>
<b>2002</b>	<b>4.43</b>	<b>44</b>	<b>56</b>	<b>0</b>	<b>5</b>
<b>2010</b>	<b>4.32</b>	<b>18</b>	<b>82</b>	<b>0</b>	<b>4</b>

##### **4.6.3 Dee Gee Ruppe Key Area – T. 10N., R. 61E., Section 13 NW ¼.**

This key area has been monitored from 1995 to 2005. The photo for 2005 shows a saline meadow rangeland dominated by native grasses with a few shrubs present. This key area may be located on private ground. Plant spacing and plant composition data from 1995 and 1996 is indicated in Table 4.6.3

Table 4.6.3 – Dee Gee Ruppe Plant Spacing, Composition, and Number of Plant Species

<i>Year</i>	<i>Plant Spacing (inches)</i>	<i>Grass</i>	<i>Brush</i>	<i>Forbs</i>	<i>Number Of Species</i>
<b>1995</b>	<b>5.51</b>	<b>65</b>	<b>35</b>	<b>100</b>	<b>7</b>
<b>1996</b>	<b>8.29</b>	<b>30</b>	<b>70</b>	<b>63</b>	<b>10</b>

#### **4.7 Project Inspection Record**

A project inspection was completed for the Dee Gee Spring Seeding Fence (Lafe Fence) on March 16, 2007. Forty photographs were taken. The photographs display a shrub dominant landscape.

#### **4.8 Historical Data**

Livestock use patterns have been mapped for the Dee Gee Allotment in 1986, 1995, 1996, 1997, and 1998. The maps and associated KFPM utilization transects are available for review in the Ely BLM District Office. Notes and photographs from the 1986 use pattern map bring out some interesting points as follows:

A KFPM transect read in the north portion of the allotment indicated bottlebrush squirreltail to be about 10% of the relative composition and growing to 12 – 13” ungrazed height. Spring runoff was providing a water source throughout the width of the Dee Gee Allotment in the north (Ruppess) Pasture.

Much cheatgrass was present near the boundary of the Ruppess and Middle Pastures. Relative composition in this area was about - shadscale 60%; cheatgrass 10%; squirreltail 15%; bud sagebrush 15%. West of Blind Spring about 0.6 miles the composition was about - shadscale 10%; squirreltail 20%; greasewood 55%; and rubber rabbitbrush 15%.

Use in the Dee Gee Seeding had been very slight. Relative composition was about – Wyoming sagebrush 10%; crested wheatgrass 90%. Photographs show a very healthy seeded area.

A KFPM transect read in the south portion of the allotment indicated bottlebrush squirreltail to be about 20% of the relative composition. Indian ricegrass was less than 1%. Squirreltail was the dominant native grass present.

A KFPM transect read in the southwest portion of the allotment indicated bottlebrush squirreltail to be about 15% of the relative composition and was the key species observed.

Notes and photographs from the use pattern maps from 1995 – 1998 bring out some interesting points as follows:

Very few native grasses grow in the North (Ruppess) Pasture, and in general native grasses are infrequent in the allotment. Cheatgrass is abundant throughout the eastern portions of the allotment.

Greasewood & sagebrush are identified as having encroached on crested wheatgrass in the Dee Gee Seeding in 1996. A large area of halogeton (dense) and mustard is identified in the Dee Gee Seeding. Cattle were recorded to have used shadscale in the allotment one year that it became productive.

#### **4.9 Specialized Prescription Herbivory**

The Northeastern Great Basin Area Standards and Guidelines (2004) list specialized prescription herbivory as one method or strategy to maintain healthy sagebrush ecological sites. Specialized herbivory was authorized in the Dee Gee Seeding for 6 days during March, 2011.

Approximately 8 acres of land area were broadcast seeded by hand. Crested wheatgrass, Russian wildrye, and Siberian wheatgrass were seeded into an area where large shrubs and a few grasses grew in the seeding. Following seeding, approximately 320 cattle grazed the general area and were tractor fed local meadow hay within the seeded area. Vegetation cover studies were conducted both prior to and after this specialized herbivory, and photographs were taken. The results of the studies are indicated in Table 4.9:

Study Area/ Date	UTM Location	Crested Wheatgrass Cover percent	Professional Observations
Dee Gee #A/ 2/15/2011	N: 4284306 E: 0668606	2%	Basin sagebrush/greasewood/ shadscale area. Biotic crusts abundant. Rabbit use.
Dee Gee #A/ 7/11/2011	N: 4284306 E: 0668606	12%	Young seedlings of seeded species were numerous

The HRM team made a field tour of the Dee Gee Seeding on July 13, 2011. The team agreed that the specialized prescription herbivory was a success, and that this type of treatment should be authorized in other portions of crested wheatgrass seedings.

## 5. EAST WELLS ALLOTMENT

### 5.1 Key Areas and Rangeland Ecological Sites

**Table 5.1-1 East Wells Allotment, Key Areas, Study Sites, & Rangeland Ecological Sites**

Key Area*	Location	Ecological Site	Dominant Species of HCPC	Soil Mapping Unit
EW-01 Key Area	N: 4278847 E: 656780	Silty 8-10" (028BY013NV)	Winterfat Indian ricegrass	3972-Linoyer very fine sandy loam
EW-02 Key Area	N: 4277542 E: 658723	Loamy 8-10" (028BY010NV)	Wyoming sagebrush Indian ricegrass needleandthread	3211-Kunzler, Dry- Sycomat Association
EW-SS1 Study Site	N: 4279336 E: 657976	Silty 8-10" (028BY013NV)	Winterfat Indian ricegrass	3972-Linoyer very fine sandy loam

\* EW-01 occurs in a winterfat meadow in the northwest portion of the allotment about 1.5 miles west of Sorensen Well.

EW-02 occurs on the alluvial fan in the middle portion of the allotment about 1.4 miles southwest of Sorensen Well.

EW-SS1 occurs in the north central portion of the allotment about 1.0 miles west of Sorensen Well.

### 5.2 Licensed Livestock Use

The following table illustrates the licensed cattle use in the East Wells Allotment from the spring of 1999 up to the present time. The season of use and active Animal Unit Months (AUMs) are presented. Licensed use averaged 165 AUMs per year for the 11 years the allotment was grazed. Cattle numbers and the season of use varied. The allotment was completely rested in 2000 and 2003.

**Table 5.2 East Wells Allotment Licensed Use 1999 – 2010**

Season/Year	Season of Use	Active AUMs
Spring 2011	1/17 – 1/25	89
Spring 2010	3/8 – 3/12	58
Spring 2009	3/20 – 3/23	84
Spring 2008	4/26 – 5/6	141

Spring 2007	1/22 – 1/30 3/15 – 3/15	163 <u>18</u> 181
Spring 2006	4/19 – 5/12	180
Spring 2005	2/22 – 3/9	212
Spring 2004	4/9 – 4/26	133
Spring 2003	Rest	
Spring 2002	4/21 – 5/3	228
Spring 2001	1/29 – 2/8	325
Spring 2000	Rest	
Spring 1999	2/21 – 2/28	190

### 5.3 Utilization

Six KFPM utilization transects were conducted in the allotment on April 30, 2009 for year-long use by herbivores during the 2008 grazing year ending February 28, 2009. Transects were read at Key Areas EW-01 and EW-02 and at four other locations typical of the grazing patterns and plant communities of the allotment. Use of winterfat ranged from 54% to 78% and averaged 65% (heavy) for four transects. Use of winterfat at EW-01 was 54%. Use of Indian ricegrass at EW-02 was 86%. Use of basin wildrye was 12% at one transect and use of four wing saltbush west of Sorensen Well was 56%. Range notes from the utilization forms included the following:

At EW-01 a caked mass of Russian thistle was present inside the use cage. Winterfat was observed to be dry & brittle, with little new growth yet. Lots of mustard or Russian thistle was observed to be sprouting. No biotic crust was present. Lots of Russian thistle litter was present, and many dead winterfat stalks. Winterfat plants were pedestalled. A silty fine textured soil was present. Not achieving Upland Sites Standard. Russian thistle and mustard seed is probably being worked into the soil by cattle. Cattle use for the year.

About 0.3 miles further east towards Sorensen Well winterfat plants were also pedestalled. Dead native grass plants were present. No winterfat seedlings. A few mustard, Russian thistle, cheatgrass sprouts were present. Quite a few dried Russian thistle plants averaging 5” tall were present. About an additional 0.4 miles towards Sorensen Well a four wing saltbush component grew with winterfat and other plants. The area was observed to be trampled by cattle, as at the last two transects. Winterfat was greening up much better at this location than at the last two transects. Mild plant pedestalling was observed. Russian thistle & mustard sprouts were less dense in this area. No native grass was present. Some black biotic crusts were present near winterfat shrub bases or saltbush bases, or on shrub crowns. A good four wing saltbush component was present.

At EW-02 soils were stabilized by abundant biotic crusts, litter, surface fragments, and live vegetation. No plant pedestalling. Bud sagebrush was very vigorous in the area this spring. Current year’s use of small rabbitbrush was noted. No forbs were sprouting. Indian ricegrass was estimated to be producing less than 0.1% of the current annual growth of the loamy 8-10” plant community. Severe year-long use of Indian ricegrass was by rabbits & cows.

About 0.7 miles north towards Sorensen Well on the two track the range was shrub dominant. Big sagebrush was clearly increasing in density. The area has transitioned to the shrub dominant state. No herbaceous understory of native grasses or forbs was present. The soils were observed to be very stable with abundant biotic crusts and vegetation litter. No herbivore use was observed, and no plant pedestalling or cattle trampling. Along the county road & south of the county road basin wild rye was used 12% for the year. Soils were stabilized by biotic crusts & litter & live vegetation. Blocky crust soil, no animal tracks. No trampling or compaction. No invasive species. Native forbs were present, but little native grass other than basin wildrye. The area is shrub dominant.

Four KFPM utilization transects were conducted in the allotment on July 2, 2008. Utilization was recorded for use to date by herbivores. Transects were read at EW-01 and at three other locations typical of the grazing patterns and plant communities of the allotment. At EW-01 winterfat was used 3%. At EW-02 winterfat was used 46% and Indian ricegrass 21%. At Study Sites EW-03 & EW-04 squirreltail was used 4% and 3%.

**5.4 Line Intercept Cover Studies**

Vegetation cover data was gathered at two sites in the East Wells Allotment on July 2, 2008. The results are presented in Table 5.4-1:

**Table 5.4-1. Line Intercept Vegetation Cover Data – East Wells Allotment**

Key Area/ Date	Location	Ecological Site	Vegetation Cover/Litter	Biological Surfaces	Soil Compaction/ Infiltration.
EW-01/ 7/2/2008	N: 4278847 E: 656780	Silty 8-10” (028BY013NV)	22.39 feet/ 14.88 feet Potential cover = 10-20 ft	Not recorded	The site is inundated with Russian thistle.
EW-02/ 7/2/2008	N: 4277542 E: 658723	Loamy 8-10” (028BY010NV)	32.19 feet/ 7.85 feet Potential cover = 10-20 ft	Not recorded.	Not recorded.

**5.5 Ecological Condition Information Including Similarity Index**

Tables 5.5-1 through 5.5-3 summarize ecological condition data gathered for the East Wells Allotment.

**Table 5.5-1.Total Annual Yield and Composition of EW-01 Key Area**

Key Area: EW-01 Date: 06/17/2009 Range Site: Silty 8-10” (028BY013NV)				
Plant Common Name	Plant symbol	Current % Composition by Weight (air dry)	HCPC % Composition by Weight (air dry)*	% Allowable
Winterfat	KRLA	63.6%	40-50%	50%
Mentzelia	MENTZ	21.0%	1%	1%
Russian thistle	SATR12	15.4%	0%	0%
Similarity Index: 51% (late seral stage) Trend was recorded as declining. Overall Production: 618 pounds per acre (air dry wt.). 95 pounds of that was Russian thistle and 130 pounds was Mentzelia. Normal year plant production is about 500 pounds per acre. Favorable year production is about 700 pounds per acre. Potential vegetative composition is about 30% grasses, 5% forbs, and 65% shrubs. Current composition is 0% grasses, 1% forbs, and 99% shrubs. Plant Community Dynamics: See the ecological site description *from Ecological Site Description				

On July 1, 2008 an ecological condition study was completed at EW-01 showing 1,800 pounds per acre Russian thistle, and 153 pounds per acre winterfat. The study was not summarized

because Russian thistle was not clipped and weighed. Cheatgrass, stickseed, and mustard were also documented as present.

A range inventory worksheet form was completed by the HRM team for an area of range about 1 mile east of Key Area EW-01 on June 30, 1994. The form indicated the study appeared to be in an ecotone, or an area of transitional range between the silty and sodic terrace range sites. The study rated as mid to late seral, resulting in air dry weight of 400 pounds per acre. Winterfat composed 67% of the plant composition, four wing saltbush 18%, Russian thistle 9%, Indian ricegrass 3%, and squirreltail 3%. Winterfat was used 75%, prior to the growing season. The form stated few grass plants were present and that the grass percentage might increase with cattle deferment.

**Table 5.5-2.Total Annual Yield and Composition of EW-02 Key Area**

Key Area: EW-02 Date: 06/17/2009 Range Site: Loamy 8-10" (028BY010NV)				
Plant Common Name	Plant symbol	Current % Composition by Weight (air dry)	HCPC % Composition by Weight (air dry)*	% Allowable
Big sagebrush	ARTR	15.6%	25-35%	16%
Douglas rabbitbrush	CHVI8	13.9%	2-5%	5%
Bud sagebrush	PIDE5	4.1%	0-3%	3%
Winterfat	KRLA	61.9%	0-3% %	3%
Mentzelia	MENTZ	0.9%	1%	1%
Indian ricegrass	ACHY	0.9%	20-30%	1%
Shadscale	ATCO	0.9%	0-3%	1%
Erigeron (daisy)	ERIGER	1.2%	0-2%	1%
Eriogonum	ERIOG	0.6%	0-2%	1%
Cheatgrass	BRTE	Trace		0%
Similarity Index: 32% (mid seral stage) Trend was recorded as declining. Overall Production: 678 pounds per acre (air dry wt.). Normal year plant production is about 600 pounds per acre. Favorable year production is about 800 pounds per acre. Potential vegetative composition is about 50% grasses, 5% forbs, and 45% shrubs and trees . Current composition is 1% grasses, 3% forbs, and 96% shrubs. Plant Community Dynamics: See the ecological site description *from Ecological Site Description				

Key Area EW-02 most closely resembles the Loamy 8-10" rangeland ecological site. More winterfat was present than is normally associated with the loamy 8-10" site. Within the Soil Mapping Unit (SMU) 3211, there were no winterfat dominant sites listed and none were observed during range monitoring within the SMU.

**Table 5.5-3.Total Annual Yield and Composition of EW-SS1 Study Site**

Key Area: EW-SS1				
Date: 06/17/2009				
Range Site: Silty 8-10" (028BY013NV)				
Plant Common Name	Plant symbol	Current % Composition by Weight (air dry)	HCPC % Composition by Weight (air dry)*	% Allowable
Winterfat	KRLA	72.6%	40-50%	50%
Mentzelia	MENTZ	3.9%	1%	1%
Four wing saltbush	ATCA2	22.7%	2-5%	5%
Sandberg's bluegrass	POSE	0.2%	0-2%	0%
Russian thistle	SATR12	0.6%	0%	0%
Similarity Index: 56% (late seral stage) Trend was recorded as declining.				
Overall Production: 825 pounds per acre (air dry wt.). Normal year plant production is about 500 pounds per acre.				
Favorable year production is about 700 pounds per acre. Potential vegetative composition is about 30% grasses, 5% forbs, and 65% shrubs. Current composition is 0% grasses, 1% forbs, and 99% shrubs.				
Plant Community Dynamics: See the ecological site description				
*from Ecological Site Description				

**5.6 Holistic Resource Management Team Key Areas and Study Sites**

The holistic resources management team has established a key area in the East Wells Allotment for monitoring range condition and trend. Permit #2704605 submitted monitoring data to BLM in March, 2010 and march, 2011 that included monitoring information for a key area within the allotment. This monitoring data is as follows:

**5.6.1 East Wells Key Area – T. 9N., R. 60E., Section 12 SW ¼.**

This key area is located in the north portion of the allotment, southwest of Sorenson Well. This key area has been monitored from 1992 to 2010. The photo for 2005 shows a winterfat plant community in good production and vigor with four wing saltbush shrubs also present. Plant spacing and plant composition data from 1994 to 2010 is indicated in Table 5.6.1

**Table 5.6.1 – East Wells Plant Spacing, Composition, and Number of Plant Species**

<i>Year</i>	<i>Plant Spacing (inches)</i>	<i>Grass</i>	<i>Brush</i>	<i>Forbs</i>	<i>Number Of Species</i>
<i>1994</i>	<i>3.86</i>	<i>0</i>	<i>100</i>	<i>1</i>	<i>1</i>
<i>1996</i>	<i>3.74</i>	<i>18</i>	<i>82</i>	<i>0</i>	<i>3</i>
<i>2001</i>	<i>4.17</i>	<i>0</i>	<i>100</i>	<i>52</i>	<i>1</i>
<i>2010</i>	<i>3.89</i>	<i>0</i>	<i>100</i>	<i>0</i>	<i>3</i>

**6. MAYBE SEEDING ALLOTMENT**

**6.1 Key Areas and Rangeland Ecological Sites**

**Table 6.1-1 Maybe Seeding Allotment, Key Areas & Rangeland Ecological Sites**

Key Area*	Location	Ecological Site	Dominant Species of HCPC	Soil Mapping Unit
MS-01 Key Area	N: 4277114 E: 654990	Crested wheatgrass seeding	Crested wheatgrass	3300- Palnor very gravelly loam
MS-02 Key Area	N: 4278541 E: 656128	Crested wheatgrass seeding	Crested wheatgrass	3211-Kunzler, Dry-Sycomat Association

\* MS-01 occurs in the southwest portion of the seeding near the county road.  
MS-02 occurs in the east portion of the seeding east of the seeding well.

The Maybe Seeding Allotment is divided in to two pastures – north and south – by an electric fence. MS-01 occurs in the south pasture and MS-02 occurs in the north pasture.

### 6.2 Licensed Livestock Use

The following table illustrates the licensed cattle use in the Maybe Seeding Allotment from the spring of 1999 up to the present time. The season of use and active Animal Unit Months (AUMs) are presented. Licensed use averaged 234 AUMs for the 11 years the allotment was grazed. Cattle numbers and the season of use varied. The allotment was completely rested in 2003 and 2006.

**Table 6.2 Maybe Seeding Allotment Licensed Use 1999 -2010**

Season/Year	Season of Use	Active AUMs
Spring 2011	2/14 – 3/14	286
Spring 2010	3/14 – 3/18	56
Spring 2009	3/3 - 3/5	63
	3/17 – 3/18	42
		105
Spring 2008	4/15 – 4/24	129
Spring 2007	2/1 – 2/11	199
	3/2 – 3/14	<u>235</u> 434
Spring 2006	Rest	
Spring 2005	2/4 – 2/21	239
Spring 2004	4/6 – 4/8	20
Spring 2003	Rest	
Spring 2002	3/31 – 4/2	39
	4/8 – 4/13	143
	4/3 – 4/7	<u>115</u> 297
Spring 2001	1/3 – 1/6	7
	1/7 – 1/17	<u>325</u> 332
Spring 2000	4/26 – 6/10	67
Spring 1999	1/4 – 2/12	607

### ***6.3 Maybe Seeding Utilization***

Four KFPM utilization transects were read in the Maybe Seeding on June 3, 2009 for use to date by herbivores for the 2009 growth year. Studies were read at MS-01, MS-02, and at two other study sites representative of the grazing patterns in the seeding. Use of crested wheatgrass ranged from 0 to 5% and averaged 2% (slight) for the four transects. Use of winterfat at MS-02 was 40%. Notes from use forms indicated the following:

Crested wheatgrass in the use cage at MS-02 north of the electric fence was of good vigor, with seedheads to 20" tall, producing abundant seed. Plants were still very green. Soils were stabilized by surface fragments, litter, and live vegetation. No biotic crusts were present. Slight plant pedestalling was noted. Many old dead grass crowns were present. Russian thistle sprouts were common in the area. Also mentzelia. Essentially there was no detectable use of current year's growth. About 10 acres of disturbed land occur in the northeast portion of the Maybe Seeding where the land is bare or winterfat, mentzelia, crested wheatgrass, stickseed, Russian thistle, a few native perennial bunchgrasses, and a little cheatgrass grow. The area has been moderately trampled in the past affecting soil stability. Throughout the area north of the electric fence, Wyoming sagebrush composes about 2 to 5% of the vegetation composition by weight. At MS-01, black biotic crusts were common in the grass interspaces. The soils were stabilized by live vegetation, surface fragments, biotic crust, and a good litter component. No plant pedestalling, trampling, or surface soil compaction was noted. Crested wheatgrass in the use cage was of good vigor and producing seedstalks. Black sagebrush in the area composed about 2.5% of the vegetative composition. Several four wing saltbush shrubs in the area were unused for the current year. Very minor amounts of cheatgrass, Russian thistle, and mentzelia were present. Late seral ecological condition was observed for about 100 acres of black sagebrush/bluegrass range south of the county road within the Maybe Seeding fenced area. Black & white biotic crusts were abundant. Winterfat in this area was used slight or less for the current grazing year. Cheatgrass composed less than 1/10 of 1% of the current plant community production in the area. About 0.9 miles east of the west cattleguard was a 10 acre area of sparse crested wheatgrass, dead grass crowns, Russian thistle skeletons, older age class four wing saltbush shrubs, and cheatgrass composing about 3% of the current plant community production in this area.

Four KFPM utilization studies were read in the Maybe Seeding on June 26, 2008 for use to date by herbivores. Studies were read at MS-01, MS-02, and at two other study sites representative of grazing patterns in the seeding. Use of crested wheatgrass ranged from 7 to 23% and averaged 15% (slight) for the four transects. Use was by cattle, rabbits, antelope, and grasshoppers. Notes from use forms indicated the following:

MS-01 was moderately used due to the amount of herbivore usage and lack of precipitation. At MS-02, additional plants growing on the site included Indian ricegrass, globemallow, winterfat, Wyoming sagebrush, rabbitbrush, cheatgrass, Russian thistle, and stickseed.

### ***6.4 Line Intercept Cover Studies***

Vegetation cover data was gathered at Key Areas MS-01 and MS-02 in the Maybe Seeding Allotment on June 26, 2008. The results are presented in Table 6.4-1:

**Table 6.4-1. Line Intercept Vegetation Cover Data – Maybe Seeding Allotment**

Key Area/ Date	Location	Ecological Site	Vegetation Cover/Litter	Biological Surfaces	Soil Compaction/ Infiltration.
MS-01/ 6/26/2008	N: 4277114 E: 654990	Crested wheatgrass seeding	10.52 feet/ 21.50 feet	Not recorded	Not observed
MS-02/ 6/26/2008	N: 4278541 E: 656128	Crested wheatgrass seeding	3.42 feet/ 15.28 feet	Not recorded	Not observed

**6.4-2. Composition by Cover – Maybe Seeding Allotment**

*Species composition by cover at Key Areas MS-01 and MS-02 is as follows:*

<b>MS-01</b>		<b>MS-02</b>	
Crested wheatgrass	90.0%	Crested wheat	52.9%
Sandberg’s bluegrass	10.0%	Wyoming sagebrush	45.3%
		Russian thistle	1.2%
		Globemallow	0.6%

Photographs of MS-01 from 6/26/2009 indicate a healthy crested wheatgrass component in fair vigor. Photographs of MS-02 indicate a healthy mix of both crested wheatgrass and Wyoming sagebrush.

**6.5 Holistic Resource Management Team Key Areas and Study Sites**

The holistic resources management team has established a key area in the Maybe Seeding Allotment for monitoring range condition and trend. Permit #2704605 submitted a monitoring packet to BLM in March, 2010 that included monitoring information for a key area within the allotment. This monitoring data is as follows:

**6.5.1 Maybe Seeding Key Area – T. 9N., R. 60E., Section 22 NE ¼.**

This key area has been monitored from 2001 to 2010. The photo for 2008 shows a grass dominant seeding in the foreground that has been grazed. A mix of grasses and shrubs is shown in the background. The original transect location may have been moved. Plant spacing and plant composition data from 1994 to 2010 is indicated in Table 6.5.1

Table 6.5.1 – Maybe Seeding Plant Spacing, Composition, and Number of Plant Species

<i>Year</i>	<i>Plant Spacing (inches)</i>	<i>Grass</i>	<i>Brush</i>	<i>Forbs</i>	<i>Number Of Species</i>
<i>1994</i>	<i>3.18</i>	<i>100</i>	<i>0</i>	<i>0</i>	<i>1</i>
<i>1996</i>	<i>2.33</i>	<i>99</i>	<i>1</i>	<i>0</i>	<i>2</i>
<i>1998</i>	<i>3.16</i>	<i>95</i>	<i>5</i>	<i>0</i>	<i>4</i>
<i>2008</i>	<i>3.38</i>	<i>100</i>	<i>0</i>	<i>0</i>	<i>2</i>
<i>2010</i>	<i>3.66</i>	<i>88</i>	<i>12</i>	<i>0</i>	<i>4</i>

### 6.6 Historic Data – Range Inventory Worksheet

A Range Inventory Worksheet was completed by the HRM team in the Maybe Seeding Allotment on June 29, 1994. The study was located at T. 9N., R. 60E., Section 23. Vegetation production was rated at 600 pounds per acre. Vegetation composition was rated at crested wheatgrass 85%, Russian thistle 8%, four wing saltbush 5%, and winterfat 2%.

## 7. NORTH COVE ALLOTMENT

### 7.1 Key Areas and Rangeland Ecological Sites

Table 7.1-1 North Cove Allotment, Key Areas & Rangeland Ecological Sites – Middle Pasture

<b>Key Area</b>	<b>Location</b>	<b>Ecological Site</b>	<b>Dominant Species of HCPC</b>	<b>Soil Mapping Unit</b>
NC-01 Key Area Middle Pasture	N: 4291267 E: 658085	Silty 5-8” (029XY020NV)	Winterfat	3972 – Linoyer Very Fine Sandy Loam
NC-02 Key Area Middle Pasture	N: 4287733 E: 656738	Coarse silty 5-8” (029XY042NV)	Indian ricegrass winterfat	3091-Univega-Clowfin- Molion Association
NC-03 Key Area Middle Pasture	N: 4289985 E: 656730	Coarse silty 5-8” (029XY042NV)	Indian ricegrass winterfat	3091-Univega-Clowfin- Molion Association
NC-04 Key Area Middle Pasture	N: 4286351 E: 655050	Silty 8-10” 028BY013NV	Winterfat Indian ricegrass	3091-Univega-Clowfin- Molion Association

**Table 7.1-2 North Cove Allotment, Key Areas & Rangeland Ecological Sites – East Pasture**

Key Area	Location	Ecological Site	Dominant Species of HCPC	Soil Mapping Unit
NC-01 Key Area East Pasture	N: 4304431 E: 676849	Silty 5-8” (029XY020NV)	Winterfat	3972 – Linoyer Very Fine Sandy Loam
NC-02 Key Area East Pasture	N: 4289936 E: 659248	Silty 5-8” (029XY020NV)	Winterfat	3972 – Linoyer Very Fine Sandy Loam
NC-03 Key Area East Pasture	N: 4287387 E: 665032	Saline meadow (028BY002NV)	Alkali sacaton	3280 – Duffer-Equis Association
NC-04 Key Area East Pasture	N: 4286653 E: 665133	Saline meadow (028BY002NV)	Alkali sacaton	3280 – Duffer-Equis Association

**Table 7.1-3 North Cove Allotment, Key Areas & Rangeland Ecological Sites – West Pasture**

Key Area	Location	Ecological Site	Dominant Species of HCPC	Soil Mapping Unit
NC-01 Key Area West Pasture	N: 4304431 E: 676849	Transition area	Black sagebrush Indian ricegrass Needleandthread	3091-Univega-Clowfin- Molion Association
NC-02 Key Area West Pasture	N: 4289509 E: 650496	Shallow calcareous loam 8-10” (028BY011NV)	Black sagebrush Indian ricegrass Needleandthread	3091-Univega-Clowfin- Molion Association
NC-03 Key Area West Pasture	N: 4287528 E: 653455	Shallow calcareous loam 8-10” (028BY011NV)	Black sagebrush Indian ricegrass Needleandthread	3091-Univega-Clowfin- Molion Association

## 7.2 Licensed Livestock Use

The following table illustrates the licensed cattle use in the North Cove Allotment from the spring of 1999 up to the present time. The season of use and active Animal Unit Months (AUMs) are presented. Licensed use averaged 973 AUMs per year for the 13 years the allotment was grazed. Licensed use is for the allotment as a whole, not by pasture. The North Cove Allotment is sub divided into the east, middle, and west pastures. Cattle numbers and the season

of use varied. The allotment received critical growing season rest (3/1 – 4/15) in 2005, 2007, and 2009.

**Table 7.2 North Cove Allotment Licensed Use 1999 -2010**

Season/Year	Season of Use	Active AUMs
Spring 2011	3/27 – 4/28	629
	5/14 – 5/31	<u>30</u>
		659
Spring 2010	3/19 – 4/16	653
	6/3 – 6/8	<u>56</u>
		709
Spring 2009	4/21 – 5/18	546
Spring 2008	3/31 – 5/29	788
Fall 2007	8/25 – 9/14	249 707
Spring 2007	4/21 – 5/31	458
Spring 2006	2/23 – 5/3	1470
Spring 2005	5/14 – 5/22	119
Spring 2004	3/8 – 5/5	1044
Spring 2003	3/4 – 4/27	1450
Spring 2002	2/1 – 4/7	1223
Spring 2001	3/15 – 5/15	1637
Spring 2000	2/7 – 4/4	1473
Spring 1999	4/8 – 5/12	819

### **7.3 Utilization Data – North Cove Allotment**

On June 3, 2009 five KFPM utilization transects were completed in the native range of the North Cove Allotment for use to date by herbivores during the 2009 growing season. Transects were read at Key Areas NC-03 (East), NC-01 through 03 (West), and at one other study site typical of the vegetation communities and grazing patterns in the allotment. At NC-03 in the saline meadow of the East Pasture use of alkali sacaton was 0% and use of basin wildrye was 4% (slight). At NC-01 in black sagebrush range in the West pasture use of winterfat was 4% (slight). At NC-02 in black sagebrush range use of Indian ricegrass was 0%. Use of crested wheatgrass and Indian ricegrass 0.5 miles west of NC-02 was 0%. At NC-03 use of winterfat was 2% (slight). The West Pasture was essentially rested from cattle grazing during the spring 2009. Notes from utilization forms are as follows:

The area at NC-01 (West) is black sagebrush dominant range. Indian ricegrass inside the use cage was of fair vigor & droughty. No seed stalks were being produced. Indian ricegrass was very infrequent in the area. Only one sample was obtained in the use transect. At NC-02 (West) the soils were stabilized by surface fragments, live vegetation, biotic crusts, and litter. There was no excess trampling or compaction. The range is black sagebrush dominant. Indian ricegrass composes less than 2% of the current annual growth of the plant community. Shadscale < 0.5%. Small rabbitbrush < 1.0%. Winterfat < 0.1%. Mormon tea < 0.1%. All forbs combined < 0.5%. 0.5 miles west of NC-02 soils were again stabilized by abundant black & white biotic crusts, live vegetation, litter, and surface fragments. No excess trampling or surface compaction of soils. No plant pedestalling. A trace of winterfat & cheatgrass was present in the area. Composition was estimated to be 80% black sagebrush, 10% combined shrubs Mormon tea, small rabbitbrush, horsebrush, and spiny hopsage, 8% Indian ricegrass and crested wheatgrass, and 1% native forbs. At NC-03 (West) there was a fair component of winterfat however Indian ricegrass was very infrequent in the area.

On May 12, 2009 three KFPM utilization transects were read in the native range of the North Cove Allotment for use to date by herbivores during the 2009 growth year. Transects were read in the Middle Pasture at Key Area NC-04 and at two other locations typical of the plant communities and grazing patterns in the use area. Cattle had just finished grazing this pasture two days earlier. Use of winterfat ranged from 40 to 54% and averaged 47% (moderate) for three transects. Use of bud sagebrush was 6% and 10% (slight) at two transects. Notes from utilization forms are as follows:

At 0.75 miles west of Cabin Well plants were not pedestalled & there was no excess trampling or compaction. Biotic crusts were abundant. Soils were stabilized by surface fragments, live vegetation, & biotic crusts. This was rabbitbrush dominated salt desert shrub range. Many 20 foot diameter “pockets” of bare ground were present in the area with dried halogeton & halogeton sprouts starting. No native perennial bunchgrass was present. At NC-04 in winterfat dominant range winterfat + mentzelia grew. Slight plant pedestalling & moderate trampling was noted. Few biotic crusts were present. Soils were borderline stabilized by surface fragments, mentzelia sprouts, and live vegetation. At transect # 3 biotic crusts were abundant. Soils were stabilized by crusts, surface fragments, live vegetation, & litter. No plant pedestalling and no excess trampling or compaction.

On July 10, 2008 five KFPM utilization transects were read in the native range of the North Cove Allotment for use to date by herbivores during the 2008 growth year. Transects were read at Key Areas NC-01 through NC-04 in the East Pasture and at one other typical location. Use of winterfat ranged from 21 to 54% and averaged 36% (light) at three transects. Use of alkali sacaton was 5% and 8% (slight) at two transects. Use of basin wildrye was 27% (light) at one transect. Notes from utilization forms are as follows:

At NC-01 rabbitbrush & winterfat were co-dominant. Winterfat seedlings were common. Indian ricegrass was very infrequent. A few poor vigor plants were grazed heavily to severely. At NC-02 southeast of the DLE Well there was a mix of winterfat and halogeton. The range had the overall look of moderate use. At transect # 3 in rabbitbrush/winterfat dominant range the stubble height of Indian ricegrass was ½ to 1". Ricegrass was of poor vigor with dead centers. Biotic crusts were very common in the area. No cheatgrass was present and halogeton was limited in the area. At NC-03 alkali sacaton inside the use cage was of good vigor with leaves to 10" and seedstalks to 24". At NC-04 alkali sacaton in the use cage was again of good vigor with leaves to 8" and seedstalks to 28". Poverty weed, Baltic rush, and a few other native increasers were common in the area.

On June 17 and 19, 2008 six KFPM utilization transects were read in the native range of the North Cove Allotment for use to date by herbivores during the 2008 growth year. Transects were read at Key Areas NC-01 through NC-04 in the Middle Pasture and at two other locations in the pasture typical of the range sites and grazing patterns. Use of winterfat ranged from 5 to 54% and averaged 32% (light) for six transects. Use of Indian ricegrass was 74% (heavy) at one transect. Notes from utilization forms are as follows:

At NC-04 west of Cabin Well winterfat inside the use cage was of good vigor to 18" tall producing many seed heads. A good winterfat component was present. Russian thistle & halogeton were common to the area. Indian ricegrass was infrequent & of low vigor. A few four wing saltbush shrubs in the area were used moderately. Throughout the middle pasture there was much small rabbitbrush dominated range and many patches of low growing halogeton. West of Cabin Well about 1.1 miles there were little to no native grasses, less than 1/10 of 1% of the current plant community production. A stable gravel soil with biotic crusts was present. At NC-01 in the Middle Pasture a degraded winterfat area growing with lots of halogeton was present. There was about a 20 acre area with 85% halogeton, 15% winterfat. Dead winterfat stalks were numerous. The live plants in the area were of good vigor to 11" tall. At transect #4 in salt desert shrub range black biotic crusts were abundant in the shrub interspaces. Halogeton & Russian thistle were common to the area. No cheatgrass was present. At NC-02 in the Middle Pasture little to no Indian ricegrass was present. Cows had made light to moderate use of a good bud sagebrush component. At the new key Area NC-03 in mixed salt desert shrub range winterfat was used 30%.

At NC-01 in the West Pasture there was no perennial native grass growth to measure. Pretty much a black sagebrush/Douglas rabbitbrush monoculture. Sandberg's bluegrass was cured, dry, of poor vigor. A very dry site, with a small area near the utilization cage degraded.

On June 17, 2008 four KFPM utilization transects were read in the native range of the West Pasture of the North Cove Allotment for use to date by herbivores during the 2008 growth year. Transects were read at Key Area NC-02 and at three other locations in the pasture typical of the range sites and grazing patterns. Use of Indian ricegrass ranged from 61 to 85% and averaged 75% (heavy) for four transects. Use of crested wheatgrass was 84% and 85% (severe) at two transects. Use of black sagebrush at NC-02 was 5% and use of Mormon tea was 20%.

#### ***7.4 Line Intercept Cover Studies***

Vegetation cover data has been gathered at six key areas and one study site in the North Cove Allotment. Data has been gathered on July 14, 2009, June 3, 2009, July 10, 2008, June 17 and 19, 2008, and July 31, 2002. The results are presented in Table 7.4-1:

**Table 7.4-1. Line Intercept Vegetation Cover Data – North Cove Allotment**

Key Area/ Date*	Location	Ecological Site	Vegetation Cover/Litter	Biological Surfaces	Soil Compaction/ Infiltration
NC-01/ Middle Pasture/ 6/17/2008	N: 4291267 E: 658085	Silty 5-8" (029XY020NV)	15.88 feet/ 17.32 feet Potential cover = 10-20 ft	Black, white, & orange biotic crusts common in shrub interspaces	Not trampled or compacted. Many dead winterfat shrubs present
NC-01/ Middle Pasture/ 7/31/2002	N: 4291267 E: 658085	Silty 5-8" (029XY020NV)	40.26 feet/ Not measured Potential cover = 10-20 ft	Not recorded. Winterfat plants are drought stressed & brittle	Not recorded
NC-02/ Middle Pasture/ 6/19/2008	N: 4287733 E: 656738	Coarse silty 5-8" (029XY042NV)	8.32 feet/ 8.01 feet Potential cover = 15-30 ft	Black biotic crusts present in shrub interspaces. Stable gravel soil	No excess trampling or compaction
NC-03/ Middle Pasture/ 6/19/2008	N: 4289985 E: 656730	Coarse silty 5-8" (029XY042NV)	11.36 feet/ 9.52 feet Potential cover = 15-30 ft	Biotic crusts abundant in shrub interspaces	No excess trampling or compaction
NC-01/ East Pasture/ 7/10/2008	N: 4304431 E: 676849	Silty 5-8" (029XY020NV)	6.89 feet/ 4.30 feet Potential cover = 10-20 ft	Not recorded	Not recorded
NC-01/ East Pasture/ 7/31/2002	N: 4304431 E: 676849	Silty 5-8" (029XY020NV)	6.73 feet/ Not measured Potential cover = 10-20 ft	Not recorded. Winterfat & shadscale plants are drought stressed. No 2002 growth.	Not recorded
NC-03/ East Pasture/ 6/3/2009	N: 4287385 E: 665032	Saline meadow (028BY002NV)	13.41 feet/ 7.03 feet Potential cover = 15-25 ft	No biotic crust – not native to the site	No excess trampling or compaction
NC-02/ West Pasture/ 7/14/2009	N: 4289506 E: 650510	Shallow calcareous loam 8-10" (028BY011NV)	17.12 feet/ 8.76 feet Potential cover = 15-20 ft	Black & white biotic crusts abundant on soil surface. Stable soils	No excess trampling or compaction
NC-03/ West Pasture/ 6/3/2009	N: 4287528 E: 653455	Shallow calcareous loam 8-10" (028BY011NV)	9.10 feet/ 2.57 feet Potential cover = 15-20 ft	Black & white biotic crusts abundant on soil surface	No excess trampling or compaction
NC-SS02 Study site/ West Pasture 7/14/2009	N: 4289614 E: 649475	Shallow calcareous loam 8-10" (028BY011NV)	14.93 feet/ 7.87 feet Potential cover = 15-20 ft	Biotic crusts & surface fragments are common. Stable soils	No excess trampling or compaction

Photographs of Key Area NC-01 (East Pasture) on July 14, 2009 show salt desert shrub range dominated by winterfat or small rabbitbrush with lots of halogeton present. Those of Key Area NC-03 (Middle Pasture) show mixed salt desert shrub range with halogeton present.

Photographs of Key Area NC-02 (West Pasture) on July 14, 2009 show a sagebrush dominant plant community. Those of Study Site NC-SS02 show a sagebrush/rabbitbrush plant community with interspaces occupied by some understory of grasses and forbs.

Photographs of Key Area NC-01 (Middle Pasture) on July 31, 2002 show a fairly tall and dense winterfat plant community. The shrubs appear dry. Photographs of Key Area NC-01 (East Pasture) on July 31, 2002 show a drier and less productive plant community.

**7.4-2. Composition by Cover**

***Species composition by cover for the North Cove Allotment at Key Areas NC-01 (middle), NC-02 (middle), NC-03 (middle), NC-01 (east), NC-03 (east), NC-02 (west), NC-03 (west), and NC-SS02 (Study site/west) on June 17, June 19, July 10, 2008 and June 3 and July 14, 2009 is as follows (the shrub totals do not include invasive plant species):***

<b><i>NC-01(Middle Pasture)</i></b>		<b><i>NC-02(Middle Pasture)</i></b>		<b><i>NC-03 (Middle Pasture)</i></b>	
Halogeton	58.1%	Rabbitbrush	60.7%	Bud sagebrush	39.9%
Winterfat	35.1%	Halogeton	23.9%	Shadscale	32.6%
Russian thistle	4.6%	Winterfat	10.8%	Rabbitbrush	13.5%
Stickseed	2.1%	Bud sagebrush	4.6%	Winterfat	10.1%
Cheatgrass	0.2%			Halogeton	4.0%
Shrubs	100%	Shrubs	99%	Shrubs	96%
<b><i>NC-01 (East Pasture)</i></b>		<b><i>NC-03 (East Pasture)</i></b>		<b><i>NC-03 (West Pasture)</i></b>	
Winterfat	73.3%	Alkali sacaton	49.5%	Black sagebrush	44.3%
Halogeton	26.7%	Alkali rabbitbrush	31.0%	Small rabbitbrush	27.3%
		Thelypody	6.3%	Shadscale	10.2%
Shrubs	100%	Seepweed	5.4%	Galleta grass	0.3%
		Alkali poa	4.2%	Winterfat	6.0%
		Salt grass	2.9%	Bud sagebrush	5.9%
		Arrow grass	0.6%	Halogeton	5.2%
		Shrubs	31%	Squirreltail	0.9%
				Shrubs	94%
<b><i>NC-02 (West Pasture)</i></b>		<b><i>NC-SS02 (West Pasture)</i></b>			
Black sagebrush	98.0%	Black sagebrush	74.5%		
Small rabbitbrush	2.0%	Small rabbitbrush	16.0%		
		Crested wheatgrass	7.2%		
Shrubs	100%	Indian ricegrass	1.8%		
		Cryptantha	0.5%		
		Shrubs	91%		

***Notes to amend the above table:***

1. There was just winterfat recorded as cover for NC-01 (Middle) in July 2002. In July 1998, a little ricegrass was recorded, otherwise just winterfat. No invasive species were recorded either year.
2. Winterfat, shadscale, and squirreltail were recorded as vegetation cover at NC-01 (East) in July 2002. No halogeton was recorded. At NC-01 (East) in July 1998 winterfat, shadscale,

squirreltail, and bud sagebrush were recorded as vegetation cover. It was noted that halogeton and a few other annual weeds were present but not measured for cover.

3. Crested wheatgrass was planted by the grazing permit holder's ancestors in the 1960's at Study Site NC-SS02. No invasive species are present in this location.

**7.5 Ecological Condition Information Including Similarity Index**

Tables 7.5-1 through 7.5-3 summarize ecological condition data gathered for the North Cove Allotment on July 14, 2009.

**Table 7.5-1. Total Annual Yield and Composition of Key Area NC-01 (East Pasture)**

Key Area: NC-01 (East Pasture)				
Date: 07/14/2009				
Range Site: Silty 5-8" (029XY020NV)				
Plant Common Name	Plant symbol	Current % Composition by Weight (air dry)	HCPC % Composition by Weight (air dry)*	% Allowable
Indian ricegrass	ACHY	0.1%	5-15%	0%
Halogeton	HAGL	36.1%	0%	0%
Winterfat	KRLA	50.3%	70-80%	50%
Bud sagebrush	PIDE	0.5%	2-8%	1%
Douglas rabbitbrush	CHVI8	10.6%	0-3%	3%
Shadscale	ATCO	1.0%	0-3%	1%
Mentzelia	MENTZ	1.4%	0-2%	1%
Similarity Index: 56% (late seral stage) Trend was recorded as declining.				
Overall Production: 736 pounds per acre (air dry wt.). Production excluding halogeton is 470 pounds per acre.				
Normal year plant production is about 350 pounds per acre. Favorable year production is about 500 pounds per acre. Potential vegetative composition is about 25% grasses, 5% forbs, and 70% shrubs. Current composition is 0% grasses, 1% forbs, and 99% shrubs.				
Plant Community Dynamics: See the ecological site description.				
*from Ecological Site Description				

A Range Inventory Worksheet was filled out for an HRM range study on a silty 5-8" range site in the east pasture of the Cove Allotment on June 28, 1994. The study was located at T. 10N., R. 61E., Section 6 SE1/4. The study resulted in production of 400 pounds per acre. Trend was rated as not apparent. Plant community composition was as follows: winterfat 90%, halogeton 8%, Indian ricegrass 1%, and squirreltail 1%. Notes on the form indicated the grasses were grazed but light use of winterfat was noted.

**Table 7.5-2.Total Annual Yield and Composition of Key Area NC-03 (Middle Pasture)**

Key Area: NC-03 (Middle Pasture)				
Date: 07/14/2009				
Range Site: Coarse Silty 5-8" (029XY042NV)				
Plant Common Name	Plant symbol	Current % Composition by Weight (air dry)	HCPC % Composition by Weight (air dry)*	% Allowable
Winterfat	KRLA2	18.1%	25-35%	18%
Bud sagebrush	PIDE5	8.6%	5-15%	9%
Shadscale	ATCO	32.7%	0-5%	5%
Rabbitbrush	CHVI	4.2%	0-5%	4%
Halogeton	HAGL	36.5%	0%	0%
<p>Similarity Index: 36% (mid seral stage) Trend was recorded as declining.</p> <p>Overall Production: 502 pounds per acre (air dry wt.). Production excluding halogeton is 319 pounds per acre.</p> <p>Normal year plant production is about 450 pounds per acre. Unfavorable year production is about 300 pounds per acre. Potential vegetative composition is about 55% grasses, 5% forbs, and 40% shrubs. Current composition is 0% grasses, 0% forbs, and 100% shrubs.</p> <p>Plant Community Dynamics: See ecological site description.</p> <p>*from Ecological Site Description</p>				

A Range Inventory Worksheet was filled out for an HRM range study on a coarse silty 5-8" range site in the middle pasture of the Cove Allotment on June 21, 1995. The study was located at T. 10N., R. 60E., Section 14 NW1/4. The study resulted in production of 509 pounds per acre. Trend was rated as not apparent. Plant community composition was as follows: small rabbitbrush 72%, bud sagebrush 19%, squirreltail 5%, winterfat 3%, bluegrass 1%, and globemallow 1%.

**Table 7.5-3.Total Annual Yield and Composition of Key Area NC-02 (West Pasture)**

Key Area: NC-02 (West Pasture)				
Date: 07/14/2009				
Range Site: Shallow Calcareous Loam 8-10" (028BY011NV)				
Plant Common Name	Plant symbol	Current % Composition by Weight (air dry)	HCPC % Composition by Weight (air dry)*	% Allowable
Black sagebrush	ARNO4	100%	25-35%	35%
Cheatgrass	BRTE	Trace	0%	0%
Mentzelia	MENTZ	Trace	0%	0%
Similarity Index: 35% (mid seral stage) Trend was recorded as not apparent.				
Overall Production: 254 pounds per acre (air dry wt.). Normal year plant production is about 450 pounds per acre. Unfavorable year production is about 250 pounds per acre. Potential vegetative composition is about 50% grasses, 5% forbs, and 45% shrubs. Current composition is 0% grasses, 0% forbs, and 100% shrubs.				
Plant Community Dynamics: See ecological site description.				
*from Ecological Site Description				

A Range Inventory Worksheet was filled out for an HRM range study on a shadscale dominant shallow calcareous loam 8-10" range site in the west pasture of the Cove Allotment on June 21, 1995. The study was located at T. 10N., R. 60E., Section 8 NE1/4. The study resulted in production of 1,031 pounds per acre. Trend was rated as improving. Plant community composition was as follows: shadscale 43%, squirreltail 16%, small rabbitbrush 12%, Indian ricegrass 9%, needleandthread 9%, daisy 6%, stickseed 4%, bluegrass 3%, bud sagebrush 2%, and Wyoming sagebrush 1%. Cheatgrass was not averaged into the composition, however it was noted that cheatgrass composed 30% of the vegetation production.

**7.6 Holistic Resource Management Team Key Areas and Study Sites**

The holistic resources management team has established key areas and study sites in the North Cove Allotment for monitoring range condition and trend. Permit #2704605 submitted monitoring data to BLM in March, 2010 and March, 2011 that included monitoring information for key areas within the allotment. This monitoring data is as follows:

**7.6.1 North Cove East Meadow Key Area – T. 10N., R. 61E., Section 15 SE ¼.**

This key area has been monitored from 2006 to 2008. The monitoring consists of a photo trend plot. The photo for 2008 shows a healthy rangeland with a mix of native grasses and shrubs.

7.6.2 North Cove East Pasture Key Area – T. 10N., R. 61E., Section 6 SE ¼. This key area has been monitored from 1993 to 2010. The photo for 2005 shows winterfat and halogeton growing together in an area. Plant spacing and plant composition data from 1993 to 2010 is indicated in Table 7.6.2

Table 7.6.2 – North Cove East Pasture Plant Spacing, Composition, and Number of Plant Species

<i>Year</i>	<i>Plant Spacing (inches)</i>	<i>Grass</i>	<i>Brush</i>	<i>Forbs</i>	<i>Number Of Species</i>
<i>1993</i>	<i>5.16</i>	<i>28</i>	<i>72</i>	<i>19</i>	<i>6</i>
<i>1995</i>	<i>5.95</i>	<i>21</i>	<i>79</i>	<i>0</i>	<i>5</i>
<i>1996</i>	<i>7.00</i>	<i>7</i>	<i>93</i>	<i>7</i>	<i>5</i>
<i>1998</i>	<i>5.72</i>	<i>26</i>	<i>74</i>	<i>0</i>	<i>8</i>
<i>2002</i>	<i>5.68</i>	<i>16</i>	<i>84</i>		<i>6</i>
<i>2010</i>	<i>6.67</i>	<i>6</i>	<i>94</i>	<i>0</i>	<i>5</i>

7.6.3 North Cove Middle North Key Area – T. 10N., R. 61E., Section 6 SE ¼. This key area has been monitored from 1995 to 2010. The photo for 2000 shows a salt desert shrub plant community in good production and vigor with both winterfat and native grasses present. The key area was moved west in 2010. Plant spacing and plant composition data from 1995 to 2010 is indicated in Table 7.6.3

Table 7.6.3 – North Cove Middle North Plant Spacing, Composition, and Number of Plant Species

<i>Year</i>	<i>Plant Spacing (inches)</i>	<i>Grass</i>	<i>Brush</i>	<i>Forbs</i>	<i>Number Of Species</i>
<i>1995</i>	<i>5.55</i>	<i>30</i>	<i>70</i>	<i>20</i>	<i>7</i>
<i>1996</i>	<i>6.41</i>	<i>3</i>	<i>97</i>	<i>0</i>	<i>3</i>
<i>1998</i>	<i>5.00</i>	<i>6</i>	<i>94</i>	<i>5</i>	<i>3</i>
<i>2002</i>	<i>6.98</i>	<i>4</i>	<i>96</i>	<i>2</i>	<i>2</i>
<i>2008</i>	<i>6.45</i>	<i>4</i>	<i>96</i>	<i>0</i>	<i>2</i>
<i>2010</i>	<i>2.81</i>	<i>20</i>	<i>80</i>	<i>0</i>	<i>2</i>

7.6.4 North Cove West Cove Key Area – T. 10N., R. 60E., Section 9 NW ¼. This key area has been monitored from 1994 to 2010. The key area is in or near the old Currant Creek Canyon Seeding. The photo for 2000 shows a healthy rangeland with a mix of Wyoming sagebrush and crested wheatgrass and native grass. Plant spacing and plant composition data from 1994 to 2010 is indicated in Table 7.6.4

Table 7.6.4 – North Cove West Cove Plant Spacing, Composition, and Number of Plant Species

<i>Year</i>	<i>Plant Spacing (inches)</i>	<i>Grass</i>	<i>Brush</i>	<i>Forbs</i>	<i>Number Of Species</i>
1994	3.11	72	28	23	10
1995	3.27	59	41	29	11
1996	3.85	46	54	39	9
1998	4.83	47	53	6	8
2002	5.63	56	44	8	7
2008	9.09	40	58	0	4
2010	7.56	24	76	0	9

## 8. PRESTON ALLOTMENT

### 8.1 Key Areas and Rangeland Ecological Sites

Table 8.1-1 Preston Allotment, Key Areas, Study Sites, & Rangeland Ecological Sites

<b>Key Area**</b>	<b>Location</b>	<b>Ecological Site</b>	<b>Dominant Species of HCPC*</b>	<b>Soil Mapping Unit</b>
PR-01 Study site	N: 4312578 E: 665657	Coarse silty 6-8” (028BY084NV)	Winterfat Indian ricegrass	1280-Palino-Molion-Broland Association
PR-02 Study site	N: 4315661 E: 663167	Shallow calcareous loam 8-10” (028BY011NV)	Wyoming sagebrush Indian ricegrass needleandthread	1280-Palino-Molion-Broland Association
PR-03 Study site	N: 4312111 E: 664239	Shallow calcareous loam 8-10” (028BY011NV)	Black sagebrush Indian ricegrass needleandthread	1280-Palino-Molion-Broland Association

\* HCPC = Historic climax plant community

\*\* PR-01 occurs in a winterfat meadow about 0.8 miles south from Blackjack Reservoir..

PR-02 occurs on the alluvial fan in black sagebrush range about 1.5 miles northwest of Blackjack reservoir.

PR-03 occurs on the alluvial fan in black sagebrush range in the south portion of the grazing area near the middle of section 34.

### 8.2 Licensed Livestock Use

The following table illustrates the licensed cattle use in the Preston Allotment by permit #2704605 from the spring of 2004 up to the present time. The season of use and active Animal Unit Months (AUMs) are presented. Licensed use averaged 78 AUMs for the 7 years the

allotment was grazed. Cattle numbers and the season of use varied. The allotment was completely rested in 2004.

**Table 8.2 Preston Allotment Licensed Use 1999 -2010**

Season/Year	Season of Use	Active AUMs
Spring 2011	3/13 – 4/18	61
Spring 2010	3/15 – 4/12	62
Spring 2009	4/10 – 5/13	53
Spring 2008	4/9 – 5/8	86
Spring 2007	5/8 – 5/14	66
Spring 2006	3/30 – 4/11	99
Spring 2005	4/22 – 5/18	120
Spring 2004	Rest	

### **8.3 Utilization –Preston Allotment**

On June 30, 2009, eight KFPM utilization transects were completed in the Preston Allotment for use to date during the 2009 growing season by herbivores. Transects were read at eight areas typical of the plant communities and grazing patterns in the allotment. Photographs were taken at five transect locations. Use of Indian ricegrass ranged from 4 to 16% and averaged 8% (slight) for six transects. Use of winterfat ranged from 8 to 32% and averaged 20% (slight) for five transects. Use of needleandthread was 0% at one transect. Range notes from the utilization forms included the following:

At transect #1 by Preston Big Springs, winterfat grew with bud sagebrush, rabbitbrush, and Indian ricegrass. Plants were pedestalled, indicating some surface soil erosion. No biotic crusts were present. New winterfat seedlings were observed. The plant community composition by weight was estimated to be about 95% winterfat, 3% bud sagebrush, 1% halogeton, 0.5% rabbitbrush, and 0.5% Indian ricegrass and native forbs. At transect # 2 in black sagebrush range, the soil was stabilized by live vegetation, surface fragments, and litter. No recent cow sign was present and there was no excess trampling or compaction. There was no plant pedestalling. Use of Indian ricegrass was 5%. The plant community composition by weight was estimated to be about 87% black sagebrush, 11% small rabbitbrush, 1% other shrubs such as Mormon tea and shadscale, 1/10 of 1% Indian ricegrass, and 1/10 of 1% eriogonum. At transect # 3 in black sagebrush range, very little cow sign was present. The soil was stabilized by live vegetation, surface fragments, litter, and biotic crusts. There was no plant pedestalling & no surface compaction or trampling. About 2/10 acre of halogeton was present growing in a nearby winterfat inclusion range site. In the black sage range, The plant community composition by weight was estimated to be about 92% black sagebrush, 5% small rabbitbrush, 1% other shrubs such as Mormon tea and shadscale, 1% Indian ricegrass, and 0.4% eriogonum. At transect # 4 in black sagebrush range, the same range conditions were observed as at the last transect. At transect #5 in black sagebrush range, very little recent cow sign was present. Soils were stabilized by live vegetation, surface fragments, litter, and a few biotic crusts. There was no plant pedestalling. There was no excess trampling or compaction. Use of Indian ricegrass was 5% & needleandthread 0%. The plant community composition by weight was estimated to be about 95% black sagebrush, 2% small rabbitbrush, 0.5% winterfat, 0.5% Indian ricegrass, 0.5% needleandthread, 0.5% horsebrush, 0.8% other shrubs such as shadscale, Mormon tea, and bud sagebrush, and 0.2% eriogonum. A couple of acres of galleta grass occurred in the area. At transect #6 in winterfat dominated salt desert shrub range, winterfat plants were pedestalled. Soils appeared impacted by historic grazing. There was light current cow sign in the area. There was no current excess trampling or compaction. Some biotic crusts were present in the shrub interspaces. The terrain was hummocky. Cattle made about 24% use of bud sagebrush in the area. The plant community composition by weight was estimated to be about 80% winterfat, 15% bud sagebrush, 2% big sagebrush (in the channel) 1% small rabbitbrush, 1% halogeton, 0.1% Indian ricegrass, and 0.1% native forbs. At transect #7 in black sagebrush range, soils were stabilized by live vegetation, surface fragments, rock, and biotic crusts. No plant pedestalling, soil compaction, or trampling was present. Some pygmy sagebrush and galleta grass were present in the area. Galleta grass was of good vigor and producing much seed. The plant community composition

by weight was estimated to be about 90% black sagebrush, 4% small rabbitbrush, 2% pygmy sagebrush, 1% galleta grass, 1% Indian ricegrass, 1% other shrubs such as shadscale and Mormon tea, 0.5% winterfat, and 0.5% native forbs. At transect #8, a mix of winterfat & halogeton was growing. Four photos were taken. The range immediately near the gravel pit has been impacted & dense halogeton grows on about 5 acres in the area.

On July 31, 2008 a KFPM utilization transect read at Study Site PR-02 for use to date by herbivores for the 2008 growth year resulted in 6% use of Indian ricegrass (slight) and 3% use of black sagebrush (slight).

**8.4 Line Intercept Cover Studies**

Vegetation cover data was gathered at three study sites in the Preston Allotment on July 31, 2008. The results are presented in Table 8.4-1:

**Table 8.4-1. Line Intercept Vegetation Cover Data – Preston Allotment**

Key Area/ Date*	Location	Ecological Site	Vegetation Cover/Litter	Biological Surfaces	Soil Compaction/ Infiltration.
PR-01/ 7/31/2008	N: 4312578 E: 665657	28BY084NV Coarse silty 6-8"	10.73 feet/ 3.40 feet Potential cover = 10-20 ft	Some crusts around shrubs. Soils are loose	Not trampled or compacted.
PR-02/ 7/31/2008	N: 4315661 E: 663167	28BY011NV Shallow Calcareous loam 8-10"	15.79 feet/ 10.36 feet Potential cover = 15-20 ft	Not recorded. Rocks on surface between shrubs.	Not recorded. Use of ricegrass was 6% & use of Arno was 3%.
PR-03/ 7/31/2008	N: 4312111 E: 664239	28BY011NV Shallow Calcareous loam 8-10"	11.90 feet/ 6.16 feet Potential cover = 15-20 ft	Not recorded. Rocks on surface between shrubs.	Not recorded.

**Photographs**

Photographs at PR-01 indicate a healthy monoculture of winterfat with no discernible invasive species in the understory.

Photographs at PR-02 indicate a healthy black sagebrush stand on a healthy soil with little to no herbaceous understory of native grasses and forbs.

Photographs at PR-03 indicate a shrub dominant landscape with black sagebrush the dominant shrub on a healthy soil.

**8.4-2. Composition by Cover**

*Species composition by cover at Study Sites PR-01, PR-02, and PR-03 is as follows:*

<i>PR-01</i>	<i>PR-02</i>	<i>PR-03</i>
Winterfat 94.8%	Black sagebrush 100%	Black sagebrush 59.3%
Bud sagebrush 5.2%		Rabbitbrush 22.0%
		Horsebrush 10.5%
Shrubs 100%	Shrubs 100%	Morman tea 6.8%
		Indian ricegrass 0.7%
		Cryptantha 0.7%
		Shrubs 98%

**8.5 Ecological Condition Information Including Similarity Index**

Tables 8.5-1 and 8.5-2 summarize ecological condition data gathered for the Preston Allotment on July 31, 2008.

**Table 8.5-1. Total Annual Yield and Composition of PR-01 Study Site**

Key Area: PR-01				
Date: 07/31/2008				
Range Site: Coarse silty 6-8" (028BY084NV)				
<b>Plant Common Name</b>	<b>Plant symbol</b>	<b>Current % Composition by Weight (air dry)</b>	<b>H CPC % Composition by Weight (air dry)*</b>	<b>% Allowable</b>
Indian ricegrass	ACHY	Trace	40-50%	0%
Halogeton	HAGL	Trace	2-5%	0%
Winterfat	KRLA	98.1%	20-30%	30%
Bud sagebrush	PIDE	1.9%	5-15%	2%
<p>Similarity Index: 32% (mid seral stage or "fair") Trend was recorded as not apparent.</p> <p>Overall Production: 159 pounds per acre (air dry wt.). Normal year plant production is about 700 pounds per acre. Unfavorable year production is about 400 pounds per acre. Potential vegetative composition is about 55% grasses, 10% forbs, and 35% shrubs. Current composition is 0% grasses, 0% forbs, and 100% shrubs.</p> <p>Plant Community Dynamics: As ecological condition declines, shadscale and rabbitbrush increase, while winterfat and Indian ricegrass decrease. With further site degradation, cheatgrass, halogeton, &amp; annual mustards invade the interspace areas between shrub species. On heavily disturbed sites, annual species, particularly halogeton, become dominant. Following wildfire, particularly through communities in lower ecological condition, snakeweed often becomes the dominant plant.</p> <p>*from Ecological Site Description</p>				

**Table 8.5-2.Total Annual Yield and Composition of PR-03 Study Site**

Key Area: PR-03				
Date: 07/31/2008				
Range Site: Shallow calcareous loam 8-10" (028BY011NV)				
Plant Common Name	Plant symbol	Current % Composition by Weight (air dry)	HCPC % Composition by Weight (air dry)*	% Allowable
Indian ricegrass	ACHY	1.1%	20-35%	1%
Buckwheat	ERIOG	1.1%	0-2%	1%
Black sagebrush	ARNO4	91.0%	25-35%	35%
Rabbitbrush	CHVI	4.5%	2-5%	5%
Horsebrush	TEGL	2.3%	0%	2%
<p>Similarity Index: 44% (mid seral stage or "fair") Trend was recorded as not apparent.</p> <p>Overall Production: 177 pounds per acre (air dry wt.). Normal year plant production is about 450 pounds per acre. Unfavorable year production is about 250 pounds per acre. Potential vegetative composition is about 50% grasses, 5% forbs, and 45% shrubs. Current composition is 1% grasses, 1% forbs, and 98% shrubs.</p> <p>Plant Community Dynamics: As ecological condition declines, black sagebrush, rabbitbrush, &amp; shadscale increase, while perennial grass, palatable shrubs &amp; forbs decrease. Cheatgrass and halogeton are species likely to invade this site. Rodent activity is typically evidenced by small patches dominated by spiny hopsage. Utah juniper readily invades this site where it occurs adjacent to woodlands. When Utah juniper occupies this site, it competes with other species for available light, moisture, and nutrients. If tree canopies are allowed to close, they can eliminate all understory vegetation.</p> <p>*from Ecological Site Description</p>				

## 9. ROCK CANYON ALLOTMENT

### 9.1 Key Areas and Rangeland Ecological Sites

**Table 9.1-1 Rock Canyon Allotment, Key Areas, Study Sites, & Rangeland Ecological Sites**

Key Area**	Location	Ecological Site	Dominant Species of HCPC*	Soil Mapping Unit
RCS-01 South Native	N: 4305114 E: 673517	28BY075NV Coarse gravelly loam 6-8"	Indian ricegrass shadscale	162-Broyles-Kunzler-Heist Association
RCS-02 South Native	N: 4305238 E: 675611	28BY010NV Loamy 8-10"	Wyoming sagebrush Indian ricegrass needleandthread	1340-Pyrat-Tulase Association
RC-01 Seeding	N: 4307031 E: 674585	28BY010NV Loamy 8-10"	Wyoming sagebrush Indian ricegrass needleandthread	334-Parisa-Palinor-Shabliss Association
RC-03/ Seeding	N: 4307154 E: 675272	28BY010NV Loamy 8-10"	Wyoming sagebrush Indian ricegrass needleandthread	334-Parisa-Palinor-Shabliss Association
RC-06/ Seeding	N: 4308404 E: 675298	28BY011NV Shallow calcareous Loam 8-10"	Wyoming sagebrush Indian ricegrass needleandthread	334-Parisa-Palinor-Shabliss Association
RC-08/ Native	N: 4308928 E: 673205	28BY045NV Loamy fan 8-12"	Wyoming sagebrush Basin wildrye Indian ricegrass	162-Broyles-Kunzler-Heist Association
RC-10/ Native	N: 4308550 E: 676357	28BY080NV Shallow loam 8-10"	Indian ricegrass Needleandthread Wyoming sagebrush	334-Parisa-Palinor-Shabliss Association

\* HCPC = Historic climax plant community

\*\* RCS-01 South occurs on a flat in the southwest portion of the allotment.

RCS-02 South occurs on the alluvial fan in the south middle of the allotment.

RC-01 occurs in the west Rock Canyon Seeding.

RC-03 occurs in the east Rock Canyon Seeding.

RC-06 occurs in the Rock Canyon Extension Seeding.

RC-08 occurs in the "Jiggs Flat" area in the northwest portion of the allotment.

RC-10 occurs on the alluvial fan in sagebrush range in the northeast portion of the allotment.

### 9.2 Licensed Livestock Use

The following table illustrates the licensed cattle use in the Rock Canyon Allotment from the spring of 1999 up to the present time. Licensed use is for the allotment as a whole, not by individual pasture. Use has occurred during both the spring and fall/winter seasons of use. The season of use and active Animal Unit Months (AUMs) are presented. Cattle numbers varied during the season of use. Licensed use averaged 528 AUMs per year for the 12 year period 1999 to 2010. The allotment was rested in the spring of 2001, 2005, 2006, and 2011.

**Table 9.2 Rock Canyon Allotment Licensed Use 1999 – 2010**

Season/ Year	Season of Use	Active AUMs	Season/ Year	Season of Use	Active AUMs
Fall 2010	8/12 – 8/13 11/13 – 1/2/11	8 <u>580</u> 588	Spring 2011	Rest	
Spring 2010	4/28 – 6/7	81			
Fall 2009	8/3 – 8/4 8/30 – 8/31 11/27 – 1/8/10	11 24 <u>565</u> 600	Spring 2004	4/17 – 6/2	47
Spring 2009	5/14 – 5/31	41	Fall 2003	7/29 – 7/30 8/13 – 8/13 10/13 – 10/20 10/31 – 11/11	30 11 36 <u>120</u> 197
Fall 2008	8/4 – 8/5 11/1 – 12/28	38 <u>522</u> 560	Spring 2003	4/22 – 4/24 4/25 – 5/30	8 <u>102</u> 110
Spring 2008	4/17 – 6/8	106	Fall 2002	6/12 – 6/14 10/1 – 10/29	85 <u>373</u> 458
Fall 2007	8/24 – 8/24 11/1 – 12/9 11/29 -12/20	12 219 <u>166</u> 397	Spring 2002	5/13 – 6/2 4/6 -6/3	82 <u>145</u> 227
Spring 2007	5/18 – 6/11	115	Fall 2001	8/6 – 8/9 10/16 – 10/18 11/5 – 11/9 11/8 – 1/6/02	39 20 82 <u>469</u> 610
Fall 2006	8/1 – 8/1 11/6 – 11/7 11/20 – 12/26	20 40 <u>397</u> 457	Spring 2001	Rest	
Spring 2006	Rest		Fall 2000	8/1 – 8/1 10/31 – 11/18	32 <u>386</u> 418
Fall 2005	8/3 – 8/3 11/24 – 12/14	22 <u>214</u> 236	Spring 2000	4/19 – 4/19 4/20 – 5/31	3 <u>235</u> 238
Spring 2005	Rest		Fall 1999	7/26 – 8/1 10/29 – 11/4 11/9 – 11/19	121 132 <u>117</u> 370
Fall 2004	7/27 – 7/28 10/13 – 10/18 10/29 – 11/4	48 94 <u>56</u> 198	Spring 1999	5/1 – 6/6	282

### **9.3 Utilization – Rock Canyon Allotment**

Key forage plant method (KFPM) utilization was used to collect utilization data at key areas and study sites on the Rock Canyon Allotment. Utilization data was gathered for both native range and crested wheatgrass seedings.

On April 1 and 4, 2008 sixteen KFPM utilization transects were read in both native range and the crested wheatgrass seedings of the Rock Canyon Allotment for yearlong use during the 2007 grazing year. Transects were read at Key Areas RC-01 through 09 and at study sites in the native sagebrush range of the allotment. Use of crested wheatgrass ranged from 14 to 84% and averaged 55% (moderate) for seven transects. Use of Indian ricegrass ranged from 5% to 72% and averaged 45% (moderate) at four transects. Use of Sandberg's bluegrass ranged from 41% to 84% and averaged 60% at five transects. Use of winterfat was 54% and 74% at two transects. Use of black sagebrush was 4% at one transect. Range notes recorded on the utilization forms included the following:

In native black sagebrush range in the south portion of the allotment a very stable gravel soil was present with abundant biotic crusts between shrubs. No cheatgrass or halogeton were present. Native forbs were present. Cow sign from last year & a little deer or antelope use noted. At the second stop in the south native sagebrush range again biotic crusts were abundant, & no cheatgrass or halogeton present. Cow sign from last year was noted. In Wyoming sage range 0.6 miles east of the Well biotic crusts were again abundant, however cheatgrass in the form of cured matted "bunches" under shrubs was present & estimated to be producing about 15 – 25% of the current annual growth of the plant community (for 2005). Cheatgrass was beginning to sprout. A very limited native perennial cool season grass component was noted. At RC-01 South (or RC-07) the range had the overall look of heavy to severe use. Cow + rabbit use. Bluegrass inside the use cage was of good cured vigor to 7" high cured growth. New seedlings were present in the use cage. Russian thistle was common to the area.

In the Rock Canyon Seeding Extension in the northwest pasture crested wheatgrass inside the use cage was of good vigor with cured leaves to 18" and green leaves 7". No cheatgrass, Russian thistle, or halogeton present. A good ricegrass and bluegrass component was present growing with crested wheatgrass. Many plants used heavily were greening up well. In the Rock Canyon Seeding west pasture, lots of seed was produced last year. Abundant litter and biotic crust was present. The pasture looked good, and must have been rested last year. Green growth was coming up beneath cured in the use cage. No cheatgrass, Russian thistle, or halogeton was present. In the south portion of the west seeding at the key cage use was a little heavier than at the north end.

In native Wyoming sage range east of the seeded areas a stable gravel soil was present with abundant black/white biotic crusts present. Native grasses were infrequent. Not 10 samples. Area would need to be seeded if burned, because cheatgrass was common under shrubs from 2005 or 2006 but not sprouting much this year. Along the north fenceline & into the hills a little in Wyoming sagebrush range with scattered pinyon/juniper native grasses were abundant & relatively unused. Very slight cow & deer use was noted. In another area of native sagebrush range east of the seeded area a fair amount of bluegrass was present, and no cheatgrass beneath the shrubs. The area was heavily shrub dominant.

In the northeast portion of the Rock Canyon Extension biotic crusts were present & no cheatgrass was present. He seeding was very brushy further north & east. In the middle portion of "the triangle" a good mix of shrubs & grass was present, with wheatgrass greening up well. A variety of use levels was recorded. At a key area cage in the north portion of the east seeding lots of cured & woolly litter was on the ground. The area needed to be used. In the south portion of the east seeding at a key cage location pretty uniform heavy to severe use was noted. In the northwest portion of the allotment up to 300 acres of degraded sagebrush range were present with the range full of halogeton, Russian thistle, and mustard. Remnants of old dead grass crowns were present. A 1996 use pattern map stated this area had "lots of grass". At a key cage in the "Jiggs Flat" area between the two fence lines degraded sagebrush range with lots of halogeton, Russian thistle, and mustard was present. The area was observed to be droughty with winterfat in bad shape, not greening, & small native grasses were infrequent & dying.

#### 9.4 Line Intercept Cover Studies

Vegetation cover data was gathered at Key Area RCS-01 and RCS-02 (native range), RC-01, RC-03, and RC-06 (crested wheatgrass seedings), and RC-08 and RC-10 (native) in the Rock Canyon Allotment on June 26 and July 17, 2008. Stella Carter participated in the monitoring. No utilization data was gathered in association with the cover studies. The results are presented in Table 9.4-1:

**Table 9.4-1. Line Intercept Vegetation Cover Data – Rock Canyon Allotment**

Key Area/ Date*	Location	Ecological Site	Vegetation Cover/Litter	Biological Surfaces	Soil Compaction/ Infiltration.
RCS-01/ 7/17/2008	N: 4305114 E: 673517	28BY075NV Coarse gravelly loam 6-8"	15.19 feet/ 4.39 feet Potential cover = 15-25 ft	Occasional black & orange crusts.	Soil not excessively trampled or compacted
RCS-02/ 7/17/2008	N: 4305238 E: 675611	28BY010NV Loamy 8-10"	13.59 feet 12.19 feet Potential cover = 10-20 ft	Abundant black crusts present between & under shrubs	Soil not trampled or compacted
RC-01/ 6/26/2008	N: 4307031 E: 674585	28BY010NV Loamy 8-10"	5.23 feet/ 33.17 feet Potential cover = 10-20 ft	No crusts	Soils not trampled or compacted
RC-03/ 6/26/2008	N: 4307154 E: 675272	28BY010NV Loamy 8-10"	3.91 feet/ 20.30 feet Potential cover = 10-20 ft	Not recorded.	Soil not compacted or trampled
RC-06/ 6/26/08	N: 4308404 E: 675298	28BY011NV Shallow calcareous Loam 8-10"	17.4 feet/ 16.25 feet Potential cover = 15-20 ft	Not recorded	Soil not compacted or trampled
RC-08/ 6/26/2008	N: 4308928 E: 673205	28BY045NV Loamy fan 8- 12"	17.4 feet/ 10.45 feet Potential cover = 20-30 ft	Crusts in interspaces	Soils not compacted or trampled. Not grazed for 2 seasons
RC-10/ 6/26/08	N: 4308550 E: 676357	28BY080NV Shallow loam 8-10"	8.74 feet/ 10.74 feet Potential cover = 10-20 feet	Crusts in interspaces	Soils not compacted or trampled

#### Photographs

Photographs from Key Area RCS-01 show a range full of Russian thistle with bluegrass plants pedestaled and of poor vigor.

Photographs from Key Area RCS-02 show a sagebrush range without an understory of native perennial grasses and forbs.

Photographs from Key Area RC-01 show a seeded area in good condition with plants that have been allowed to set seed.

Photographs from Key Area RC-03 also show a seeded area in good condition.

Photographs from Key Area RC-06 show a sagebrush range with native grasses or crested wheatgrass in the understory.

Photographs from RC-08 show a degraded rangeland with invasive species dominant.

Photographs from RC-10 show sagebrush shrubs dominating the landscape.

**9.4-2. Composition by Cover**

*Species composition by cover at Key Areas or Study Sites in the Rock Canyon Allotment is as follows:*

<b><i>RCS-01 (South Native)</i></b>	<b><i>RC-01 (Seeding)</i></b>	<b><i>RC-03 (Seeding)</i></b>
Russian thistle 82.2% Bluegrass 16.3% Stickseed 1.5%  Shrubs 0%	Crested wheat 100%	Crested wheat 100%
<b><i>RC-06 (Seeding)</i></b>	<b><i>RC-08 (North native)</i></b>	<b><i>RC-10 (Native)</i></b>
Black sagebrush 36.0% Rabbitbrush 56.1% Crested wheat 3.0% Bluegrass 2.8% Squirreltail 0.6% Phlox 0.8%  Shrubs 92%	Big sagebrush 42.8% Halogeton 34.6% Russian thistle 19.4% Cheatgrass 0.1% Stickseed 2.2% Mustard 0.1% Mentzelia 0.9%  Shrubs 43%	Wyoming sagebrush 88.6% Squirreltail 0.2% Indian ricegrass 0.2% Phlox 11.0%  Shrubs 89%
<b><i>RCS-02 (South Native)</i></b>		
Wyoming sagebrush 99.9% Bluegrass 0.1%  Shrubs 100%		

**9.5 Ecological Condition Information Including Similarity Index**

Tables 9.5-1 through 9.5-3 summarize ecological condition data gathered for the Rock Canyon Allotment on June 26 and July 17, 2008.

**Table 9.5-1.Total Annual Yield and Composition of Key Area RCS-01**

Key Area: RCS-01- Native range				
Date: 07/17/2008				
Range Site: Coarse gravelly loam 6-8" (028BY075NV)				
Plant Common Name	Plant symbol	Current % Composition by Weight (air dry)	HCPC % Composition by Weight (air dry)*	% Allowable
Russian thistle	SATR12	77.9%	0%	0%
Bluegrass	PONE	20.6%	0-3%	3%
Squirreltail	ELEL5	0.4%	2-5%	0%
Stickseed		1.1%	1%	0%
<p>Similarity Index: 3% (early seral stage or "poor") Apparent trend was recorded as declining.</p> <p>Overall Production: 267 pounds per acre (air dry wt.). Russian thistle was producing 208 pounds per acre. Normal year plant production is about 500 pounds per acre. Unfavorable year production is about 300 pounds per acre. Potential vegetative composition is about 50% grasses, 5% forbs, and 45% shrubs. Current composition is 21% grasses, 0% forbs, and 0% shrubs.</p> <p>Plant Community Dynamics: As ecological condition declines, shadscale and rabbitbrush will increase in density, while Indian ricegrass composition will be reduced. With further site degradation, shadscale may become dominant to the extent of a nearly pure stand. After a major disturbance such as fire, Douglas rabbitbrush may become dominant on this site. Cheatgrass, halogeton, &amp; mustards are the likely species to invade this site.</p> <p>*from Ecological Site Description</p>				

**Table 9.5-2.Total Annual Yield and Composition of Key Area RCS-02**

Key Area: RCS-02				
Date: 07/17/2008				
Range Site: Loamy 8-10" (028BY010NV)				
Plant Common Name	Plant symbol	Current % Composition by Weight (air dry)	HCPC % Composition by Weight (air dry)*	% Allowable
Wyoming sagebrush	ARTRW	98.0%	25-35%	35%
Sandberg's bluegrass	POSE	1.0%	2-5%	1%
Squirreltail	ELEL5	1.0%	2-8%	1%
Cheatgrass	BRTE	0.5%	0%	0%
<p>Similarity Index: 37% (mid seral stage or "fair") Trend was recorded as not apparent.</p> <p>Overall Production: 198 pounds per acre (air dry wt.). Normal year plant production is about 600 pounds per acre. Unfavorable year production is about 400 pounds per acre. Potential vegetative composition is about 50% grasses, 5% forbs, and 45% shrubs. Current composition is 2% grasses, 0% forbs, and 98% shrubs.</p> <p>Plant community dynamics: As ecological condition declines, Wyoming sagebrush and Douglas' rabbitbrush increase, while Indian ricegrass and needleandthread decrease. Various annual species are likely to invade this site. Utah juniper readily invades this site where it occurs adjacent to this woodland.</p> <p>*from Ecological Site Description</p>				

**Table 9.5-3.Total Annual Yield and Composition of Key Area RC-10**

Key Area: RC-10				
Date: 6/26/2008				
Range Site: Shallow loam 8-10" (028BY080NV)				
Plant Common Name	Plant symbol	Current % Composition by Weight (air dry)	HCPC % Composition by Weight (air dry)*	% Allowable
Wyoming sagebrush	ARTRW	84.2%	25-35%	35%
Phlox	PHLOX	5.4%	0-2%	2%
Squirreltail	ELEL5	3.3%	2-5%	3%
Eriogonum	ERIOG	1.1%	0-2%	2%
ASTER	MACA	1.6%	0-2%	2%
Cryptantha	CRYPT	3.3%	0-2%	2%
Loco	ASTRAG	1.1%	0-2%	2%
<p>Similarity Index: 48% (mid seral stage or "fair") Apparent trend was recorded as improving.</p> <p>Overall Production: 184 pounds per acre (air dry wt.). Normal year plant production is about 400 pounds per acre. Unfavorable year production is about 200 pounds per acre. Potential vegetative composition is about 55% grasses, 10% forbs, and 35% shrubs and trees. Current composition is 3% grasses, 10% forbs, and 84% shrubs.</p> <p>Plant community dynamics: As ecological condition declines, Wyoming sagebrush, rabbitbrush, and Sandberg's bluegrass increase, while Indian ricegrass and needleandthread decrease. Cheatgrass and Utah juniper are the species most likely to invade this site. Utah juniper readily invades this site where it occurs adjacent to this woodland. When Utah juniper occupies this site it competes with other species for available light, moisture, and nutrients.</p> <p>*from Ecological Site Description</p>				

## **9.6 Holistic Resource Management Team Key Areas and Study Sites**

The holistic resources management team has established key areas and study sites in the Rock Canyon Allotment for monitoring range condition and trend. Permit #2704605 submitted monitoring data to BLM in March, 2010 and March, 2011 that included monitoring information for key areas within the allotment. This monitoring data is as follows:

### **9.6.1 Rock Canyon Jiggs Flat Key Area – T. 12N., R. 62E., Section 10 SW ¼.**

This key area has been monitored from 1997 to 2005. The photo from 2005 shows a rangeland of sagebrush shrubs and invasive species. Plant spacing and plant composition data from 1997 is indicated in Table 9.6.1

Table 9.6.1 – Rock Canyon Jiggs Flat Plant Spacing, Composition, and Number of Plant Species

<i>Year</i>	<i>Plant Spacing (inches)</i>	<i>Grass</i>	<i>Brush</i>	<i>Forbs</i>	<i>Number Of Species</i>
<b>1997</b>	<b>4.97</b>	<b>61</b>	<b>39</b>	<b>59</b>	<b>7</b>

9.6.2 Rock Canyon South Key Area – T. 12N., R. 62E., Section 27 NW ¼. This key area has been monitored from 1993 to 2010. The photo (no year labeled) shows a rangeland of bluegrass and sagebrush shrubs. Plant spacing and plant composition data from 1993 to 2010 is indicated in Table 9.6.2

Table 9.6.2 – Rock Canyon South Plant Spacing, Composition, and Number of Plant Species

<i>Year</i>	<i>Plant Spacing (inches)</i>	<i>Grass</i>	<i>Brush</i>	<i>Forbs</i>	<i>Number Of Species</i>
<b>1993</b>	<b>5.07</b>	<b>83</b>	<b>6</b>	<b>27</b>	<b>3</b>
<b>1994</b>	<b>3.00</b>	<b>98</b>	<b>2</b>	<b>66</b>	<b>3</b>
<b>1995</b>	<b>1.99</b>	<b>95</b>	<b>5</b>	<b>20</b>	<b>2</b>
<b>1996</b>	<b>2.19</b>	<b>95</b>	<b>5</b>	<b>0</b>	<b>3</b>
<b>1997</b>	<b>2.59</b>	<b>90</b>	<b>5</b>	<b>3</b>	<b>4</b>
<b>1998</b>	<b>2.38</b>	<b>92</b>	<b>8</b>	<b>15</b>	<b>5</b>
<b>2002</b>	<b>2.45</b>	<b>98</b>	<b>2</b>	<b>0</b>	<b>2</b>
<b>2010</b>	<b>2.24</b>	<b>100</b>	<b>0</b>	<b>0</b>	<b>3</b>

9.6.3 Rock Canyon Seeding West Key Area – T. 12N., R. 62E., Section 23 NW ¼. This key area has been monitored from 1994 to 2010. The photo from 2005 shows a crested wheatgrass seeding in good production and vigor. Plant spacing and plant composition data from 1994 to 2010 is indicated in Table 9.6.3:

Table 9.6.3 – Rock Canyon Seeding West Plant Spacing, Composition, and Number of Plant Species

<i>Year</i>	<i>Plant Spacing (inches)</i>	<i>Grass</i>	<i>Brush</i>	<i>Forbs</i>	<i>Number Of Species</i>
<i>1994</i>	<i>2.85</i>	<i>99</i>	<i>1</i>	<i>0</i>	<i>3</i>
<i>1995</i>	<i>1.50</i>	<i>99</i>	<i>1</i>	<i>0</i>	<i>3</i>
<i>1996</i>	<i>3.54</i>	<i>99</i>	<i>1</i>	<i>0</i>	<i>3</i>
<i>1997</i>	<i>2.54</i>	<i>98</i>	<i>2</i>	<i>0</i>	<i>3</i>
<i>1998</i>	<i>2.14</i>	<i>100</i>	<i>0</i>	<i>0</i>	<i>3</i>
<i>2010</i>	<i>0.94</i>	<i>100</i>	<i>0</i>	<i>0</i>	<i>2</i>

9.6.4 Rock Canyon Seeding Extension Key Area – T. 12N., R. 62E., Section 15 NE ¼. This key area has been monitored from 1994 to 2010. The photo from 2005 shows a crested wheatgrass seeding in good production and vigor. Plant spacing and plant composition data from 1994 to 2010 is indicated in Table 9.6.4:

Table 9.6.4 – Rock Canyon Seeding Extension Plant Spacing, Composition, and Number of Plant Species

<i>Year</i>	<i>Plant Spacing (inches)</i>	<i>Grass</i>	<i>Brush</i>	<i>Forbs</i>	<i>Number Of Species</i>
<i>1994</i>	<i>4.45</i>	<i>76</i>	<i>24</i>	<i>26</i>	<i>4</i>
<i>1995</i>	<i>4.50</i>	<i>52</i>	<i>48</i>	<i>34</i>	<i>8</i>
<i>1996</i>	<i>4.52</i>	<i>73</i>	<i>27</i>	<i>13</i>	<i>7</i>
<i>1997</i>	<i>3.60</i>	<i>82</i>	<i>18</i>	<i>20</i>	<i>7</i>
<i>2008</i>	<i>4.97</i>	<i>76</i>	<i>24</i>	<i>0</i>	<i>7</i>
<i>2010</i>	<i>2.25</i>	<i>100</i>	<i>0</i>	<i>0</i>	<i>2</i>

### **9.7 Historical Data - Observed Apparent Trend Studies**

An observed apparent trend study rated upward (32) at Key Area RCS-01 south on July 5, 1994.

### **9.8 Historical Data – Range Inventory Worksheet**

A range inventory worksheet form completed for **Key Area** RCS-01 on July 27, 1999 resulted in air dry weight of 162 pounds per acre. Bluegrass composed 89% of the plant composition, Indian ricegrass 10%, and squirreltail 1%. Trend was rated as not apparent. The area was rated as in mid seral ecological condition (fair). The area was noted to be a former desert land entry. Russian thistle was listed as composing 1% of the vegetation cover.

## 10. SHEEP TRAIL SEEDING ALLOTMENT

### 10.1 Key Areas and Rangeland Ecological Sites

**Table 10.1-1 Sheep Trail Seeding Allotment, Key Areas and Study Sites**

Key Area**	Location	Ecological Site	Dominant Species of HCPC*	Soil Mapping Unit
ST-01 Northeast seeding	N: 4305114 E: 673517	Crested wheatgrass seeding	Wyoming sagebrush Indian ricegrass needleandthread	3211-Kunzler-Dry-Sycomat Association
ST-02 Middle seeding	N: 4305238 E: 675611	Crested wheatgrass seeding	Black greasewood Basin sagebrush Basin wildrye	3211-Kunzler-Dry-Sycomat Association
ST-03 North seeding	N: 4307031 E: 674585	Crested wheatgrass seeding	Black greasewood Basin sagebrush Basin wildrye	3211-Kunzler-Dry-Sycomat Association

\* HCPC = Historic climax plant community. Prior to this being converted to a seeding in the 1960s, the two main rangeland ecological sites in the conversion area were a loamy 8-10" (028BY010NV), with Wyoming sagebrush, Indian ricegrass, and needleandthread dominant, and a sodic terrace 8-10" (028BY028NV), with black greasewood, basin sagebrush, and basin wildrye dominant.

### 10.2 Licensed Livestock Use

The following table illustrates the licensed cattle use in the Sheep Trail Seeding Allotment from the spring of 1999 up to the present time. The season of use and active Animal Unit Months (AUMs) are presented. Licensed use averaged 116 AUMs for the 7 years the seeding was grazed. Cattle numbers and the season of use varied. The allotment was completely rested 6 of 12 years.

**Table 10.2 Sheep Trail Seeding Allotment Licensed Use 1999 – 2010**

Season/ Year	Season of Use	Active AUMs
Spring 2011	1/26 – 1/28	30
Spring 2010	Rest	
Spring 2009	3/19 – 3/19	21
Spring 2008	4/25 – 4/25	13
Spring 2007	1/31 – 1/31	18
Spring 2006	Rest	
Spring 2005	Rest	
Spring 2004	Rest	
Spring 2003	Rest	
Spring 2002	4/14 – 4/30	210
Spring 2001	1/18 – 1/28	325
Spring 2000	Rest	
Spring 1999	2/13 – 2/20	190

### 10.3 Utilization – Sheep Trail Seeding Allotment

Key forage plant method (KFPM) utilization was used to collect utilization data at key areas and utilization cage locations on the Sheep Trail Seeding Allotment.

Four KFPM transects were read in the allotment on May 14, 2009. Current year's use on crested wheatgrass ranged from 0 to 3%. There was not enough crested wheatgrass left at Key Area ST-01 to obtain ten samples. Use of the current year's growth of Indian ricegrass in black sagebrush range in the southwest portion of the seeded area was 17%. Use on the previous year's growth of four wing saltbush was 40% at one transect. Range notes from utilization forms are as follows:

A half mile walking transect was completed in the southwest portion of the seeding. Black sagebrush dominated the area. Soils were stabilized by biotic crusts, live vegetation (dense shrubs), surface fragments, and plant litter. Light cow tracks from earlier in spring were observed. Down gradient from the black sagebrush range big sagebrush was dominant with minor amounts of Douglas rabbitbrush, shadscale, and bud sagebrush present. Big sagebrush was increasing in this area that is already shrub dominant. A diversity of native grasses and forbs were present, however the proportion by weight of native grasses and forbs combined was less than 1% of the current annual growth of the plant community. It was estimated that in the overall area approximately 67% of the current growth weight was black sagebrush, 17% big sagebrush, 10% shadscale, 4% bud sagebrush, 0.5% spiny hopsage, 0.5% or less native grasses, 0.5% or less native forbs, and 0.5 % or less cheatgrass.

In the middle western portion of the seeding near the new Key Area ST-02 there were about 10 acres of healthy crested wheatgrass plants. A large area of degraded winterfat of about 30 acres was present now dominated by mentzelia (blazingstar—a native annual that invades disturbed areas), mustard, dried Russian thistle, and cheatgrass. Many large, dry, widely spaced decadent four wing saltbush shrubs were present, towards the middle of the seeding. Many dead crested wheatgrass crowns or native bunchgrass crowns were present.

Other than at Key Area ST-02, crested wheatgrass was either dead or occurred as a sparse component of a few plants growing between widely spaced shrubs in this seeding. Dried Russian thistle was prevalent throughout the seeding, however few new sprouts were noted. Mentzelia and cheatgrass dominated several degraded areas. Mustard sprouts were also common. Wherever four wing saltbush occurred, it was a large shrub producing few new leaves this year, and very dry appearing. Few new four wing sprouts and no young shrubs were noted. At Key Area ST-01, crested wheatgrass has disappeared from the scene. This area has also degraded to an invasive annual dominated degraded area. Cow droppings from the last three years covered the area.

On April 30, 2009 a KFPM transect was completed at the utilization cage (ST-03) in the north portion of the seeding. Use was 76% for the 2008 grazing year, through February 28, 2009. Notes from the utilization form indicate the following:

Use was by rabbits for the grazing year. Winterfat was dry & decadent without cured or new leaves. Mustard or mentzelia sprouts were common in the area. No native grasses or crested wheatgrass were present. About 20 acres of winterfat was present. No plant pedestalling was noted. Soils were stabilized by biotic crusts, litter, surface fragments, rabbit pellets, and decadent winterfat plants. The stubble height of winterfat averaged 3 inches, but the stalks did not have cured or new leaves.

On March 21, 2001 two KFPM transects were completed in mid north portion of the Sheep Trail Seeding Allotment for year-long use during the 2000 grazing year. Use was 70% for crested wheatgrass and 70% for Indian ricegrass. A use pattern map also showed 70% use of winterfat in the northeast portion of the seeding. Notes from the utilization form indicate the following:

Crested wheatgrass regrowth was apparent. Lots of cattle sign was present from the January use period. This seeding has greatly improved since the early 1990s due to rest alternated with heavy cattle grazing during the dormant period.

**10.4 Frequency Trend – Sheep Trail Seeding Allotment**

A frequency trend study was established at Key Area ST-01 in the Sheep Trail Seeding Allotment on August 25, 1995. This study was read again on May 14, 2009. Frequency trend studies involve measuring the frequency of occurrence of plant species that occur in a rectangular sampling area. A sampling frame divided into 3”, 10”, 20”, or 30” square plots is placed at 200 sampling locations within the overall rectangular area. The presence of plant species is recorded as a dot tally on a standardized form.

**Table 10.4-1. Frequency Trend Data - Sheep Trail Seeding**

<u>Key Area</u>	<u>Years Read</u>	<u>Significant Changes</u>	<u>Indicated Trend</u>
ST-01	1995/2009	Less crested wheatgrass Less bluegrass Less winterfat More cheatgrass More mentzelia More mustard	Downward

In 1995, 80 observances of crested wheatgrass were recorded in the 3” frame. Photographs indicate a healthy component of cured crested wheatgrass, producing much seed. Photographs also indicate a vigorous healthy four wing saltbush component. In 2009, 2 observances of crested wheatgrass were recorded in the 20” frame. Photographs indicate a degraded plant community with large, dry, decadent four wing saltbush present.

**10.5 Holistic Resource Management Team Key Areas and Study Sites**

The holistic resources management team has established a key area in the Sheep Trail Seeding Allotment for monitoring range condition and trend. Permit #2704605 submitted a monitoring packet to BLM in March, 2010 that included monitoring information for a key area within the allotment. This monitoring data is as follows:

**10.5.1 Sheep Trail Key Area – T. 9N., R. 60E., Section 24 midsection.**

This key area has been monitored from 1996 to 2005. The photo from 2005 shows a rangeland of crested wheatgrass, sagebrush shrubs, and four wing saltbush shrubs. Plant spacing and plant composition data from 1996 to 2001 is indicated in Table 10.5.1

Table 10.5.1 – Sheep Trail Plant Spacing, Composition, and Number of Plant Species

<i>Year</i>	<i>Plant Spacing (inches)</i>	<i>Grass</i>	<i>Brush</i>	<i>Forbs</i>	<i>Number Of Species</i>
1996	3.19	99	1	2	2
1998	1.64	96	4	4	3
2001	3.43	98	2	26	2

**10.6 Historic Data – Range Inventory Worksheet**

Two range inventory worksheets were completed by the HRM team in the Sheep Trail Seeding on June 29, 1994. The studies were completed in T. 9N., R. 60E., Section 24. At the first study,

vegetation production was rated at 550 pounds per acre. Composition was rated at crested wheatgrass 70%, four wing saltbush 15%, Russian thistle 8%, winterfat 5%, Indian ricegrass 1%, and bluegrass 1%. The study form noted that four wing saltbush and winterfat seedlings and young plants were common. At the second study, vegetation production was rated at 400 pounds per acre. Composition was rated at winterfat 55%, crested wheatgrass 25%, Russian thistle 8%, bottlebrush squirreltail 6%, Indian ricegrass 2%, bluegrass 2%, and globemallow 2%. The second study form noted that the area was heavily grazed in March and April, and that winterfat was reproducing well with several age classes of seedlings present.

### ***10.7 Photographs – Recent & Historic – Sheep Trail Seeding***

Photographs from September, 1978 indicate a healthy cured component of crested wheatgrass in the northwest portion of the seeding. A photograph from September, 1987 indicates a healthy cured component of crested wheatgrass in the northwest portion of the seeding. A photograph from May, 1993 shows a good vigorous component of crested wheatgrass. The photograph noted that the seeding has an encroachment problem of halogeton & Russian thistle. Photos from August, 1995 indicate healthy components of crested wheatgrass (Key Area ST-01) and winterfat in the seeding. Photos from April, 1996 indicate a healthy component of crested wheatgrass at ST-01 and moderately grazed winterfat at ST-03 in the northeast portion of the allotment. Photographs from August, 1998 indicate a healthy cured component of crested wheatgrass in the northwest portion of the seeding. The photographs noted that the seeding had been restored due to a wet spring. Photos from July, 2001 show good summer regrowth of crested wheatgrass. Native perennial grasses such as Indian ricegrass were noted as increasing. Invasive weeds (Russian thistle) were not as numerous as in years past. A photo from March, 2003 shows a lot of plant litter on the ground remaining after severe grazing during the spring, 2002. The seeding was put in voluntary non-use for the winter/spring 2003 grazing period. A photo from May 2003 shows a bare ground area where numerous dead crested wheatgrass plants were noted.

### ***10.8 Monitoring Memorandums – Historic – Sheep Trail Seeding***

A monitoring memorandum from a BLM range specialist dated October 5, 1988 indicates the seeding to be in good or better condition, with good crested wheatgrass density and vigor. The seeding was observed to be encroached with four wing saltbush, winterfat, and horsebrush.

A monitoring memorandum from a BLM range specialist dated June 26, 1991 indicates crested wheatgrass plants showed an extremely stressful condition due to droughty conditions. Living plants showed poor vigor. Large areas of dead crested wheatgrass plants were noted. Grasshoppers and rabbit pellets were abundant. High density halogeton occurred growing with greasewood shrubs. Four wing saltbush shrubs were noted as invading the seeding, with some shrubs dead. Numerous dead big sagebrush and greasewood shrubs were noted.

A monitoring memorandum from a BLM range specialist dated August 12, 1992 indicates poor production for the 1992 grazing year. Overall the seeding was in poor shape. Russian thistle had invaded the dead crested wheatgrass areas, being very frequent. Halogeton was also present. Winterfat was noted as invading back into the seeding in the northeast portion of the seeding.

## 11. SORENSEN WELL ALLOTMENT

### 11.1 Key Areas and Rangeland Ecological Sites

**Table 11.1-1 Sorensen Well Allotment, Key Areas, Study Sites, & Rangeland Ecological Sites**

Key Area*	Location	Ecological Site	Dominant Species of HCPC**	Soil Mapping Unit
SW-01 North Native	N: 4281939 E: 665401	28BY002NV Saline meadow	Alkali sacaton	3280 – Duffer-Equis Association
SW-02 Middle Native	N: 4280339 E: 664824	28BY028NV Sodic terrace 8-10’’	Black greasewood Basin sagebrush Basin wildrye	3211- Kunzler, Dry- Sycomat Association
SS-01 South Native	N: 4279095 E: 665658	28BY002NV Saline meadow	Alkali sacaton	3280 – Duffer-Equis Association

\* SW-01 occurs in the northeast portion of the allotment near White River Wash.

SW-02 occurs in the middle east portion of the allotment east of an old oil drill hole.

SS-01 occurs in the southeast portion of the allotment near White River Wash.

\*\* HCPC = Historic climax plant community

### 11.2 Licensed Livestock Use

The following table illustrates the licensed cattle use in the Sorensen Well Allotment from the spring of 1999 up to the present time. The season of use and active Animal Unit Months (AUMs) are presented. Licensed use averaged 366 AUMs per year for the 13 years from 1999 to 2011. Cattle numbers and season of use varied. The allotment received critical growing season rest (3/1 – 4/15) 8 of 13 years.

**Table 11.2 Sorensen Well Allotment Licensed Use 1999-2010**

Season/ Year	Season of Use	Active AUMs
Spring 2011	5/16 – 5/30	269
Spring 2010	5/25 – 6/7	184
Spring 2009	3/24 – 4/5	273
Spring 2008	5/7 – 5/30	309
Spring 2007	3/16 – 4/6	399
Spring 2006	5/25 – 6/4	228
Spring 2005	3/10 – 4/1	305
Spring 2004	4/27 – 5/4 5/22 – 5/31	60 <u>177</u> 237
Spring 2003	1/14 – 2/6	660
Spring 2002	5/2 – 5/14 4/9 – 5/3	316 <u>33</u> 349
Spring 2001	2/9 – 3/2	651
Spring 2000	5/9 – 5/31	585
Spring 1999	1/23 – 2/22	312

### ***11.3 Utilization – Sorensen Well Allotment***

Eight KFPM utilization transects were conducted in the Sorensen Well Allotment on July 10, 2009 for use to date by herbivores during the 2009 growing season. Use of alkali sacaton ranged from 4 to 13% and averaged 7% (slight) for five transects. Use of spiny hopsage at SW-02 was 16% (slight). Use of Torrey quailbush at one transect was 0%. Notes from Utilization forms are as follows:

At SW-01, soils were stabilized by live vegetation and litter. No plant pedestals, no excess trampling or compaction. The soil had a physical salty crust. In the 30 foot wide White River bottom near SW-01, soils were again stabilized by live vegetative cover & litter. No plant pedestaling, no trampling or compaction. In another area of the White River main channel, a lush cover of vegetation was present. Few bare banks were noted. Alkali sacaton was used about 5%. *Potentilla* (shrubby cinquefoil) was observed to be increasing in density near small areas where deep hoof prints occurred. About 1 mile southerly from SW-01, slight or less utilization was noted of basin wild rye or galleta grass on the terraces above the White River Wash. Soils were stabilized on the terraces by live vegetation, litter, & a physical crust. Minor plant pedestaling from prior years was noted. No current trampling or compaction. Plant cover on the terraces was noted to be appropriate to site potential. In the White River channel about 1 mile southerly from SW-01, native grasses were producing about 60% of the plant community composition by weight. Poverty weed was producing about 15% of the plant composition by weight in the White River channel. At Key Area SW-02 (sodic terrace above White River Wash), soils were stabilized by live vegetation, litter, surface gravels, & abundant biotic crusts. Slope was 0-2%. No plant pedestaling, no excess trampling or compaction. Slight cow use was observed. The plant composition was shrub dominant. No cool season native perennial bunchgrasses or galleta grass was present. About 0.6 miles west of SW-02, the range was again shrub dominant, but no spiny hopsage was present. Use of Torrey quailbush at this location was 0%. Very slight cattle use. No herbaceous understory. The forbs *erigonum* (buckwheat) and *penstemon* together were producing less than 0.1% of the current plant community production. At Study Site 1 in White River Wash, the area was observed to be well vegetated. Native grasses were producing about 66% of the current plant community production. Towards Sorensen Well in the northwest portion of the allotment, the range was big sagebrush & greasewood dominant. No native grasses were present & no cow use was noted. No key species were present. The soils were stabilized by live vegetation, litter, surface gravels, and abundant biotic crusts. No plant pedestaling & no excess trampling or compaction. The forbs *stanleya*, *erigonum*, and *penstemon* together were producing less than 0.1% of the current plant community production.

A KFPM utilization transect was conducted at SW-01 on June 30, 2008. Use of sedge was 27% (light) by cattle and rabbits for the current grazing year.

A KFPM utilization transect was conducted at SW-01 on February 7, 2002. Use of alkali sacaton and alkali cordgrass was 64% (heavy) of the cured growth from the 2001 grazing year. Photographs from February 2002 indicate a moderately to heavily used saline meadow of cured dried forage.

A KFPM utilization transect was conducted at SW-01 on March 21, 2001. Use of alkali sacaton and alkali cordgrass was 50% (moderate) of the cured growth from the 2000 grazing year. Photographs from March 2001 indicate a moderately used saline meadow of cured dried forage. Notes from the use form indicated that cattle did not create any significant hoof impacts (craters) on this portion of the meadow.

### 11.4 Line Intercept Cover Studies

**Table 11.4-1. Line Intercept Vegetation Cover Data – Sorensen Well Allotment**

Key Area/ Date*	Location	Ecological Site	Vegetation Cover/Litter	Biological Surfaces	Soil Compaction/ Infiltration.
SW-01/ 6/29/2008	N: 4281939 E: 665401	28BY002NV Saline meadow	5.08 feet/ 8.90 feet Potential cover = 15-25 ft	Not normal for this site	Not recorded
SW-02/ 6/30/2008	N: 4280339 E: 664824	28BY028NV Sodic terrace 8-10”	14.76 feet/ 17.51 feet Potential cover = 10-20 ft	Not recorded.	Not recorded
SS-01 Study Site/ 7/10/2009	N: 4279095 E: 665658	28BY002NV Saline meadow	37.32 feet/ 4.78 feet Potential cover = 15-25 ft	Not normal for this site	No excess trampling or compaction. No plant pedestalling

#### 11.4-2. Composition by Cover

*Species composition by cover at Key Areas SW-01 and SW-02 is as follows:*

<b>SW-01</b>		<b>SW-02</b>		<b>SS-01</b>	
Alkali sacaton	29.7%	Rabbitbrush	39.3%	Alkali sacaton	82.5%
perennial grass	34.1%	4 wing saltbush	32.7%	Juncus balticus	0.5%
Sedge	5.7%	Wyoming sagebrush	15.9%	Saltgrass	0.6%
Poverty weed	22.8%	Bud sagebrush	11.6%	Alkali rabbitbrush	15.8%
Groundsel	4.9%	Eriogonum	0.5%	Creeping wildrye	0.2%
Horsetail	2.0%			Alkali poa	0.2%
Thistle	0.8%			Alkali cordgrass	0.1%
		Shrubs	99%		

Photographs from SW-01 indicate a healthy saline meadow dominated by native grasses. Photographs from SW-02 indicate a shrub dominant plant community on a stable soil. Photographs from SS-01 indicate a healthy saline meadow dominated by native grasses.

### 11.5 Ecological Condition Information Including Similarity Index

Tables 11.5-1 and 11.5-2 summarize ecological condition data gathered for the Sorensen Well Allotment on July 10, 2009.

**Table 11.5-1. Total Annual Yield and Composition of SW-01 Key Area**

Key Area: SW-01				
Date: 7/10/2009				
Range Site: Saline meadow (028BY002NV)				
Plant Common Name	Plant symbol	Current % Composition by Weight (air dry)	HCPC % Composition by Weight (air dry)*	% Allowable
Alkali sacaton	SPAI	70.8%	40-50%	50%
Muhlenbergia	MUHL	0.7%	0-5%	1%
Saltgrass	DISP	2.6%	2-5%	3%
Poverty weed	IVAX	5.0%	0-2%	2%
Seepweed	SUAEDA	4.0%	0%	0%
Alkali poa	POA SP	0.2%	0-5%	0%
Baltic rush	JUBA	0.9%	2-8%	1%
Rubber rabbitbrush	CHNA	15.8%	0-2%	2%
<p>Similarity Index: 59% (late seral stage) Apparent trend was recorded as improving</p> <p>Overall Production: 1011 pounds per acre (air dry wt.). Normal year plant production is about 1000 pounds per acre. Unfavorable year production is about 700 pounds per acre. Potential vegetative composition is about 85% grasses and grass-like, 10% forbs, and 5% shrubs. Current composition is about 75% grasses and grass-like, 9% forbs, and 16% shrubs.</p> <p>Plant Community Dynamics: See ecological site description</p> <p>*from Ecological Site Description</p>				

**Table 11.5-2. Total Annual Yield and Composition of SS-1 Study Site**

Study Site: SS-1				
Date: 7/10/2009				
Range Site: Saline meadow (028BY002NV)				
Plant Common Name	Plant symbol	Current % Composition by Weight (air dry)	HCPC % Composition by Weight (air dry)*	% Allowable
Alkali sacaton	SPAI	57.8%	40-50%	50%
Rubber rabbitbrush	CHNA	29.1%	0-2%	2%
Saltgrass	DISP	2.2%	2-5%	2%
Poverty weed	IVAX	1.2%	0-2%	1%
Creeping wild rye	ELTR	0.6%	0-5%	1%
Alkali poa	POA SP	0.9%	0-5%	1%
Baltic rush	JUBA	8.3%	2-8%	8%
<p>Similarity Index: 65% (late seral stage) Trend was recorded as not apparent</p> <p>Overall Production: 688 pounds per acre (air dry wt.). Normal year plant production is about 1000 pounds per acre. Unfavorable year production is about 700 pounds per acre. Potential vegetative composition is about 85% grasses and grass-like, 10% forbs, and 5% shrubs. Current composition is about 70% grasses and grass-like, 1% forbs, and 29% shrubs.</p> <p>Plant Community Dynamics: See ecological site description</p> <p>*from Ecological Site Description</p>				

## 11.6 Holistic Resource Management Team Key Area

The holistic resources management team has established a key area in the Sorenson Well Allotment for monitoring range condition and trend. Permit #2704605 submitted a monitoring packet to BLM in March, 2010 that included monitoring information for this key area within the allotment. This monitoring data is as follows:

### 11.6.1 Sorensen Key Area – T. 9N., R. 61E., Section 2 NW ¼.

This key area is located in a saline meadow in the northeast portion of the allotment, and has been monitored from 1994 to 2008. Monitoring consists of a photo trend plot. A photo from 2008 shows a saline meadow dominated by healthy native grass species.

## 11.7 Historic Data – Range Inventory Worksheet

A range inventory worksheet was completed by the HRM team in the Sorensen Allotment on June 29, 1994. The study was completed in a saline meadow in White River Wash in T. 9N., R. 61E., Section 2. Vegetation production was rated at 1,200 pounds per acre. Composition was rated at alkali sacaton 40%, Baltic rush 25%, alkali cordgrass 15%, perennial forbs 10%, rubber rabbitbrush 8%, and western wheatgrass 2%. The area was rated in late seral (good) condition.

## 12. SWAMP CEDAR ALLOTMENT

### 12.1 Key Areas and Rangeland Ecological Sites

**Table 12.1-1 Swamp Cedar Allotment, Key Areas, & Rangeland Ecological Sites**

Key Area*	Location	Ecological Site	Dominant Species of HCPC	Soil Mapping Unit
SC-01 Key Area	N: 4293223 E: 664342	Sodic Floodplain (29XY094NV)	Alkali sacaton iodinebush	1310-Kunzler-Duffer Association
SC-02 Key Area	N: 4293157 E: 667261	Saline Meadow (028BY002NV)	Alkali sacaton	1130-Duffer-Equis Association

\* SC-01 occurs in the middle portion of the allotment about 1.3 miles west of the Ferra Well.  
SC-02 occurs on the valley bottom in a saline meadow east of FerraWell.

### 12.2 Licensed Livestock Use

The following table illustrates the licensed cattle use in the Swamp Cedar Allotment from the spring of 1999 up to the present time. The season of use and active Animal Unit Months (AUMs) are presented. Licensed use averaged 381 AUMs per year for the period 1999 to 2010. Cattle numbers and the season of use varied. The allotment received critical growing season rest (3/1 – 4/15) for 10 of the 12 years it was grazed.

**Table 12.2 Swamp Cedar Allotment Licensed Use 1999 – 2010**

Season/Year	Season of Use	Active AUMs
Spring 2010	5/20 – 6/2	131
	6/12 – 6/25	28
		159

Spring 2009	5/19 – 6/10	303
Spring 2008	3/1 – 3/13	322
	3/24 – 3/30	90
	5/9 – 6/8	<u>76</u> 488
Spring 2007	4/30 – 6/3	171
	6/1 – 6/3	28
	6/4 – 6/4	<u>18</u> 217
Spring 2006	1/31 – 2/22	503
	5/13 – 5/14	<u>14</u> 517
Spring 2005	5/21 – 5/22	9
	5/23 – 6/10	<u>336</u> 345
Spring 2004	1/16 – 1/25	179
	2/17 – 3/7	<u>336</u> 515
Spring 2003	4/28 – 5/4	184
	5/5 – 5/21	45
	5/22 – 5/30	224
	6/11 – 6/23	<u>154</u> 607
Spring 2002	1/15 – 1/31	438
Spring 2001	5/16 – 5/31	301
Spring 2000	1/17 – 2/6	534
Spring 1999	5/13 – 5/21	226
	5/22 – 5/31	<u>83</u> 309

### ***12.3 Utilization – Swamp Cedar Allotment***

On March 19, 2009 three KFPM utilization transects were read in native range of the Swamp Cedar Allotment for yearlong use during the 2008 grazing year. Transects were read at Key Areas SC—01 and SC-02 and at a third area typical of the grazing patterns and vegetative communities of the allotment. Use of alkali sacaton was 23% at SC-01, 14% at SC-02, and 15% at the third study (light or slight). Use of basin wild rye was 6% at SC-01 and 11% at the study site (slight). Range notes recorded on the utilization forms included the following:

At SC-01 litter was adequate to protect soils. Biotic crusts were not growing in the area. A good basin wild rye component was present. At SC-02 in the saline meadow alkali sacaton in the use cage was of good cured vigor with leaves averaging 7". A large area of saline meadow was present. Good vegetative cover and litter were present. No invasive species. Little to no use was observed on alkali sacaton. Alkali sacaton extends up onto the sodic terrace where it grows with big sagebrush, greasewood, and rubber rabbitbrush. At the study site in the east middle of the allotment the area appeared a little dry & decadent. Mainly older age class shrubs were present. An abundance of Torrey saltbush was present. Alkali sacaton was present growing on "hummocks".

On July 7, 2008 use to date by herbivores on Alkali sacaton at SC-01 was 13%. Use to date by herbivores on alkali sacaton at SC-02 was 5%. On July 7, 2008 use to date by herbivores on alkali sacaton at Study Site SC-03 was 13%.

On March 29, 2002 two KFPM utilization transects were read in native range of the Swamp Cedar Allotment for yearlong use during the 2001 grazing year. Transects were read at Key Areas SC—01 and at a utilization checkpoint. Utilization of alkali sacaton at SC-01 was 58% and use of basin wildrye was 70%. At a utilization checkpoint in a saline meadow use of alkali sacaton was 10% and use of alkali cordgrass was 10%.

**12.4 Line Intercept Cover Studies**

Vegetation cover data has been gathered at two key areas in the Swamp Cedar Allotment. Data has been gathered on July 3 and 7, 2008. The results are presented in Table 12.4-1:

**Table 12.4-1. Line Intercept Vegetation Cover Data – Swamp Cedar Allotment**

Key Area/ Date*	Location	Ecological Site	Vegetation Cover/Litter	Biological Surfaces	Soil Compaction/ Infiltration.
SC-01/ 7/7/2008	N: 4293223 E: 664342	29XY094NV Sodic floodplain	15.78 feet/ 39.98 feet Potential cover = 15-25 ft	Not native to site. Excellent litter present & no pedestalling observed on 3/19/09	Soil not excessively trampled or compacted
SC-02/ 7/3/2008	N: 4293157 E: 667261	28BY002NV Saline meadow	7.28 feet/ 6.66 feet Potential cover = 15-25 ft	Not native to site.	

**12.4-2. Composition by Cover**

*Species composition by cover at Key Areas SC-01 and SC-02 is as follows:*

<b>SC-01</b>		<b>SC-02</b>	
Alkali sacaton	41.3%	Alkali sacaton	3.2%
Basin wildrye	2.7%	Saltgrass	0.3%
Alkali cordgrass	0.8%	Sedge	4.1%
Seepweed	4.3%	Perennial grass	28.6%
Rabbitbrush	43.2%	Iodinebush	19.5%
Greasewood	3.7%	Groundsel	26.6%
Iodinebush	3.9%	Wild iris	2.2%
		Thistle	6.2%
		Phlox	4.3%
		Perennial forb	5.1%

**12.5 Ecological Condition Information Including Similarity Index**

Table 12.5-1 summarizes ecological condition data gathered for the Swamp Cedar Allotment on July 7, 2008.

**Table 12.5-1.Total Annual Yield and Composition of Key Area SC-01**

Key Area: SC-01				
Date: 7/7/2008				
Range Site: Sodic floodplain 29XY094NV				
Plant Common Name	Plant symbol	Current % Composition by Weight (air dry)	HCPC % Composition by Weight (air dry)*	% Allowable
Alkali sacaton	SPAI	57.9%	40-70%	58%
Basin wildrye	LECI4	9.7%	0-5%	5%
Rubber rabbitbrush	ERNAN5	28.9%	0-3%	3%
Torrey's saltbush	ATTO	3.5%	0-3%	3%
<p>Similarity Index: 69% (late seral stage) Trend was recorded as not apparent.</p> <p>Overall Production: 577 pounds per acre (air dry wt.). Normal year plant production is about 300 pounds per acre. Favorable year production is about 450 pounds per acre. Potential vegetative composition is about 70% grasses, 5% forbs, and 25% shrubs. Current composition is 68% grasses, 0% forbs, and 33% shrubs.</p> <p>Plant community dynamics: Where management results in abusive grazing use by cattle and/or feral horses, iodinebush, seepweed, rabbitbrush and inland saltbush increase as alkali sacaton decreases. With continued site degradation this site will become dominated by cheatgrass, mustards, halogeton, Russian thistle and other annuals.</p> <p>*from Ecological Site Description</p>				

**12.6 Holistic Resource Management Team Key Areas**

The holistic resources management team has established key areas in the Swamp Cedar Allotment for monitoring range condition and trend. Permit #2704605 submitted monitoring data to BLM in March, 2010 and March, 2011 that included monitoring information for these key areas within the allotment. This monitoring data is as follows:

**12.6.1 Swamp Cedar Meadow Key Area – T. 11N., R. 61E., Section 36 NW ¼.**

This key area is located in a saline meadow in the east portion of the allotment, and has been monitored from 1994 to 2008. Monitoring consists of a photo trend plot. A photo from 2008 shows a grass dominant saline meadow.

**12.6.2 Swamp Cedar Mid Allotment Key Area – T. 11N., R. 61E., Section 27 SW ¼.**

This key area is located in salt desert shrub range. A photo from 2000 shows a healthy mix of native grasses and shrubs. Plant spacing and plant composition data from 1994 to 2010 is indicated in Table 12.6.2:

Table 12.6.2 – Swamp Cedar Mid Allotment Plant Spacing, Composition, and Number of Plant Species

<i>Year</i>	<i>Plant Spacing (inches)</i>	<i>Grass</i>	<i>Brush</i>	<i>Forbs</i>	<i>Number Of Species</i>
1994	8.16	61	39	0	7
1996	3.00	89	11	0	4
1998	3.36	73	27	0	7
2002	5.72	58	42	0	6
2008	3.25	80	20	0	5
2010	4.13	70	30	0	7

**12.6.3 Swamp Cedar West Key Area – T. 11N., R. 61E., Section 32 NW ¼.**

This key area has been monitored from 1993 to 2008. Monitoring consists of a photo trend plot. A photo “North Shot” from 2006 shows a shrub dominant landscape.

**12.6.4 Swamp Cedar West South Key Area – T. 11N., R. 61E., Section 32 SW ¼.**

This key area has been monitored from 1993 to 2008. Monitoring consists of a photo trend plot. A photo from 2005 shows a shrub dominant landscape with a basin wildrye grass plant in the foreground.

**13. WELLS STATION ALLOTMENT**

**13.1 Key Areas and Rangeland Ecological Sites**

Table 13.1-1 Wells Station Allotment, Key Areas, & Rangeland Ecological Sites

<b>Key Area**</b>	<b>Location</b>	<b>Ecological Site</b>	<b>Dominant Species of HCPC*</b>	<b>Soil Mapping Unit</b>
WS-01	N: 4276955 E: 651920	028BY013NV Silty 8-10”	Winterfat Indian ricegrass	3091-Univega-Clowfin-Molion Association
WS-02	N: 4274799 E: 654054	028BY011NV Shallow calcareous loam	Black sagebrush Indian ricegrass needleandthread	3300-Palinator very gravelly loam
WS-03	N: 4275201 E: 652925	028BY013NV Silty 8-10”	Winterfat Indian ricegrass	3300-Palinator very gravelly loam
WS-04	N: 4276708 E: 653582	028BY011NV Shallow calcareous loam	Black sagebrush Indian ricegrass needleandthread	3300-Palinator very gravelly loam

\* HCPC = Historic climax plant community

\*\* WS-01 occurs in the middle portion of the allotment about 0.8 miles north of A.G. Well.

WS-02 occurs about 1.2 miles southeast of A.G. Well as the crow flies.

WS-03 occurs 0.7 miles east of A.G. Well as the crow flies.  
 WS-04 occurs about 1 mile northeast of A.G. Well as the crow flies.

### 13.2 Licensed Livestock Use

The following table illustrates the licensed cattle use in the Wells Station Allotment from the spring of 1999 up to the present time. The season of use and active Animal Unit Months (AUMs) are presented. Licensed use averaged 267 AUMs per year for the 9 years the allotment was grazed. Cattle numbers and the season of use varied. The allotment was completely rested in 2000, 2003, 2006, and 2010.

**Table 13.2 Wells Station Allotment Licensed Use 1999 – 2010**

Season/Year	Season of Use	Active AUMs
Spring 2011	1/29 – 2/13	158
Spring 2010	Rest	
Spring 2009	3/6 – 3/16	231
Spring 2008	3/26 – 4/14	257
Spring 2007	2/12 – 3/1	326
Spring 2006	Rest	
Spring 2005	1/14 – 2/3	279
Spring 2004	3/13 – 4/5	163
Spring 2003	Rest	
Spring 2002	3/21 – 3/30	240
	3/31 – 4/7	<u>38</u>
Spring 2001	12/28/00 – 1/2/01	178
	1/3 – 1/6	<u>112</u>
		290
Spring 2000	Rest	
Spring 1999	1/6 – 1/26	424

### 13.3 Recent Utilization – Wells Station Allotment

On April 24, 2009 eight KFPM utilization transects were read in native range of the Wells Station Allotment for use during the 2008 grazing year that ended February 28, 2009. Transects were read at Key Areas WS-01 through WS-04 and at four other locations typical of the grazing patterns and plant communities in the allotment. Use of winterfat ranged from 65% to 88% and averaged 80% (heavy) for four transects. Use of Indian ricegrass ranged from 19% to 68% and averaged 47% (moderate) for four transects. Use of bottlebrush squirreltail ranged from 31% to 86% and averaged 71% (heavy) for four transects. Use of fourwing saltbush ranged from 50% to 78% and averaged 63% (heavy) for three transects. Use of basin wild rye was 86% (severe) at one transect. Range notes recorded on the utilization forms included the following:

The soil surface characteristics at WS-02 were positive. The soils were stabilized by biotic crusts, litter, several kinds of forbs, surface fragments, and live vegetation. No excess trampling or soil compaction was observed. No plant pedestaling or surface erosion was observed. Four wing saltbush was used moderate or less for the grazing year. At WS-03 (small winterfat inclusion of 2 acres) the area west of the track was not trampled, however east of the track the area was trampled heavily and use of winterfat was heavy to severe. Cheatgrass was common in the area. Indian ricegrass on a nearby sagebrush hill was used lightly for the grazing year. One mile past WS-03 in Wyoming sagebrush range the soils were again stabilized by biotic crusts, surface fragments, and live vegetation. No plant pedestaling or surface soil erosion was noted. There were light cow & wild horse tracks in the area. At

WS-01 in a winterfat stringer meadow winterfat was used uniformly severely. Lots of cattle & wild horse fecal droppings were present. Many Sandberg's bluegrass bunchgrasses were sprouting. Young globemallow plants were sprouting. Whatever was present of globemallow during the 2008 grazing year was used severely. In the open area of big sagebrush range near Burnt Station very little native perennial grass was present. The basin wildrye plants that were present were used severely. Four wing saltbush was used heavily. More Douglas rabbitbrush was being used than any other native plant in the area. Four wild horses observed in the area were of a poor condition class. In open sagebrush range about 1.0 miles north of Wells Station a mix of black sagebrush & Wyoming sagebrush was present. Surface soil characteristics were again positive with biotic crusts, litter, surface fragments, and live vegetation stabilizing the soils. No surface erosion of plant pedestaling were observed. Black and white biotic crusts were abundant. At WS-04 in black sagebrush range the soil surface characteristics were again positive. The range was dominated by black sagebrush, and has crossed a threshold to shrub dominance. Few invasive species were present, however a little cheatgrass & mustard were sprouting. In the main wash to the north of WS-04 the winterfat area was used uniform severely. Use was by both cattle and wild horses. Cow & horse trails were prominent in the area.

On June 24 & 25, 2008 four KFPM utilization transects were read in native range of the Wells Station Allotment for use to date during the 2008 grazing year. Transects were read at Key Areas WS-01 through WS-04. Use of winterfat at WS-01 and WS-03 was 2.5%. Use of Indian ricegrass at WS-03 was 5.7% and at WS-04 was 12.2%. Range notes recorded on the utilization forms included the following:

At WS-02 some pinyon and juniper tree encroachment was noted in the sagebrush range. A recommendation to decrease horse use was noted. At WS-03 some rabbit use of Indian ricegrass was noted. Litter was adequate to protect soils.

On March 20, 2001 a use pattern map was drawn and three KFPM utilization transects were completed for year-long use by cattle and wild horses in the allotment during the 2000 grazing year. Indian ricegrass was used 70% at one location. Native bluegrass was used 90% at two locations. Winterfat was used 90% at one location. Range notes recorded on the utilization forms included the following:

At No.1 (mixed sagebrush/perennial grass area) the heavy use of ricegrass is associated with cattle & wild horses utilizing last year's growth. At No. 2 (bench area of sagebrush) there appeared to be more wild horse sign and use then in years past. In a winterfat stringer area utilization was by wild horses & this portion of the allotment is severely grazed by wild horses on an annual basis.

### ***13.3-1. Historical Utilization – Wells Station Allotment***

Livestock and wild horse use patterns were mapped for use during 1997, 1995, 1994, 1993, 1991, and 1989. KFPM utilization transects were completed associated with these maps. This data is available for review in the Wells Station Allotment files.

### ***13.4 Line Intercept Cover Studies***

Vegetation cover data was gathered at four key areas in the Wells Station Allotment on June 24 and 25, 2008. No photographs were taken for either the vegetation cover studies or the ecological condition studies completed the same days.

**Table 13.4-1. Line Intercept Vegetation Cover Data – Wells Station Allotment**

Key Area/ Date*	Location	Ecological Site	Vegetation Cover/Litter	Biological Surfaces	Soil Compaction/ Infiltration.
WS-01/ 6/24/2008	N: 4276955 E: 651920	028BY013NV Silty 8-10"	12.24 feet/ 4.17 feet Potential cover = 10-20 ft	Not recorded	Not recorded
WS-02/ 6/25/2008	N: 4274799 E: 654054	028BY011NV Shallow calcareous loam	8.04 feet/ 3.77 feet Potential cover = 15-20 ft	Not recorded. Juos & Pimo are beginning to encroach on the site.	Not recorded
WS-03/ 6/24/2008	N: 4275201 E: 652925	028BY013NV Silty 8-10"	17.26 feet/ 8.68 feet Potential cover = 10-20 ft	Not recorded	Not recorded
WS-04/ 6/25/2008	N: 4276708 E: 653582	028BY011NV Shallow calcareous loam	7.40 feet/ 10.17 feet Potential cover = 15-20 ft	Not recorded	Not recorded
WS-04/ 7/24/2002	N: 4276708 E: 653582	028BY011NV Shallow calcareous loam	20.53 feet/ Litter unrecorded Potential cover = 15-20 ft	Not recorded.	Not recorded

**13.4-2. Composition by Cover**

*Species composition by cover at Key Areas WS-01 through WS-04 is as follows:*

<b>WS-01</b>		<b>WS-02</b>		<b>WS-03</b>	
Winterfat	90.8%	Black sagebrush	41.9%	Winterfat	67.0%
Bluegrass	4.9%	Rabbitbrush	15.5%	Wyoming sage	22.9%
Cheatgrass	0.6%	Mormon tea	16.8%	Bluegrass	0.9%
Halogeton	3.8%	Four wing saltbush	5.0%	Cheatgrass	8.5%
		Bluegrass	16.8%	Russian thistle	0.7%
		Indian ricegrass	1.0%		
		Cheatgrass	2.1%		
		Russian thistle	0.9%		
<b>WS-04(6/24/2008)</b>		<b>WS-04 (7/24/2002)</b>			
Black sagebrush	80.7%	Black sagebrush	72.3%		
Rabbitbrush	07.2%	Rabbitbrush	16.8%		
Winterfat	1.8%	Indian ricegrass	10.9%		
Indian ricegrass	1.6%				
Cheatgrass	4.3%				
Aster	2.8%				
Phlox	0.4%				
Stickseed	1.2%				

### 13.5 Ecological Condition Information Including Similarity Index

Tables 13.5-1 through 13.5-4 present the ecological condition data gathered for the Wells Station Allotment at four key areas on June 24 and 25, 2008.

**Table 13.5-1.Total Annual Yield and Composition of Key Area WS-01**

Key Area: WS-01 Date: 6/24/2008 Range Site: Silty 8-10" (028BY013NV)				
Plant Common Name	Plant symbol	Current % Composition by Weight (air dry)	HCPC % Composition by Weight (air dry)*	% Allowable
Winterfat	KRLA	95.2%	40-50%	50%
Sandberg's bluegrass	POSE	1.6%	0-2%	2%
Aster	ASTER	1.6%	0-1%	1%
Perennial forb	PPFF1	1.3%	0-1%	1%
Halogeton	HAGL	0.3%	0%	0%
Similarity Index: 54% (late seral stage). Trend was recorded as declining. Overall Production: 313 pounds per acre (air dry wt.). Normal year plant production is about 500 pounds per acre. Unfavorable year production is about 350 pounds per acre. Potential vegetative composition is about 30% grasses, 5% forbs, and 65% shrubs. Current composition is 2% grasses, 3% forbs, and 95% shrubs. Plant community dynamics: See Rangeland ecological site description. *from Ecological Site Description				

**Table 13.5-2.Total Annual Yield and Composition of Key Area WS-02**

Key Area: WS-02 Date: 6/25/2008 Range Site: Shallow calcareous loam 8-10" (028BY011NV)				
Plant Common Name	Plant symbol	Current % Composition by Weight (air dry)	HCPC % Composition by Weight (air dry)*	% Allowable
Black sagebrush	ARNO4	74.7%	25-35%	35%
Sandberg's bluegrass	POSE	0.8%	0-2%	1%
Cheatgrass	BRTE	0.4%	0%	0%
Mormon tea	EPNE	14.3%	0-3%	3%
Downy rabbitbrush	CHVIP4	9.4%	2-5%	5%
Similarity Index: 44% (mid seral stage). Overall Production: 594 pounds per acre (air dry wt.). Normal year plant production is about 450 pounds per acre. Favorable year production is about 600 pounds per acre. Potential vegetative composition is about 50% grasses, 5% forbs, and 45% shrubs. Current composition is 1% grasses, 0% forbs, and 99% shrubs. Plant community dynamics: See Rangeland ecological site description. *from Ecological Site Description				

**Table 13.5-3.Total Annual Yield and Composition of Key Area WS-03**

Key Area: WS-03				
Date: 6/24/2008				
Range Site: Silty 8-10" (028BY013NV)				
Plant Common Name	Plant symbol	Current % Composition by Weight (air dry)	HCPC % Composition by Weight (air dry)*	% Allowable
Winterfat	KRLA	69.3%	40-50%	50%
Squirreltail	ELEL5	0.7%	0-2%	1%
Cheatgrass	BRTE	1.1%	0%	0%
Wyoming sagebrush	ARTRW	30.0%	0%	0%
<p>Similarity Index: 51% (late seral stage). Trend was recorded as declining.</p> <p>Overall Production: 449 pounds per acre (air dry wt.). Normal year plant production is about 500 pounds per acre. Unfavorable year production is about 350 pounds per acre. Potential vegetative composition is about 30% grasses, 5% forbs, and 65% shrubs. Current composition is 1% grasses, 0% forbs, and 99% shrubs.</p> <p>Plant community dynamics: See Rangeland ecological site description.</p> <p>*from Ecological Site Description</p>				

**Table 13.5-4.Total Annual Yield and Composition of Key Area WS-04**

Key Area: WS-04				
Date: 6/25/2008				
Range Site: Shallow calcareous loam 8-10" (028BY011NV)				
Plant Common Name	Plant symbol	Current % Composition by Weight (air dry)	HCPC % Composition by Weight (air dry)*	% Allowable
Black sagebrush	ARNO4	70.9%	25-35%	35%
Winterfat	KRLA	5.2%	0-3%	3%
Cheatgrass	BRTE	2.2%	0%	0%
Phlox	PHLOX	0.5%	0-2%	1%
Downy rabbitbrush	CHVIP4	20.7%	2-5%	5%
<p>Similarity Index: 44% (mid seral stage). Trend was recorded as not apparent.</p> <p>Overall Production: 368 pounds per acre (air dry wt.). Normal year plant production is about 450 pounds per acre. Unfavorable year production is about 250 pounds per acre. Potential vegetative composition is about 50% grasses, 5% forbs, and 45% shrubs. Current composition is 0% grasses, 1% forbs, and 99% shrubs.</p> <p>Plant community dynamics: See Rangeland ecological site description.</p> <p>*from Ecological Site Description</p>				

Key Area: WS-04				
Date: 7/24/2002				
Range Site: Shallow calcareous loam 8-10" (028BY011NV)				
Plant Common Name	Plant symbol	Current % Composition by Weight (air dry)	HCPC % Composition by Weight (air dry)*	% Allowable
Black sagebrush	ARNO4	61.4%	25-35%	35%
Indian ricegrass	ACHY	21.0%	20-35%	21%
Squirreltail	ELEL5	5.3%	2-5%	5%
Four wing saltbush	ATCA2	3.5%	0-3%	3%
Downy rabbitbrush	CHVIP4	8.8%	2-5%	5%
Cactus	OPUNTIA	Trace	0%	0%
Similarity Index: 69% (late seral stage). Trend was recorded as not apparent.				
Overall Production: 285 pounds per acre (air dry wt.). Normal year plant production is about 450 pounds per acre.				
Unfavorable year production is about 250 pounds per acre. Potential vegetative composition is about 50% grasses, 5% forbs, and 45% shrubs. Current composition is 26% grasses, 0% forbs, and 84% shrubs.				
Plant community dynamics: See Rangeland ecological site description.				
*from Ecological Site Description				

Key Areas WS-02 and WS-04 were both found to be in late seral stage according to ecological condition studies completed on March 20, 1996. These studies are available for review in the allotment file.

### 13.6 Holistic Resource Management Team Key Area

The holistic resources management team has established a key area in the Wells Station Allotment for monitoring range condition and trend. Permit #2704605 submitted monitoring data to BLM in March, 2010 and March, 2011 that included monitoring information for this key area within the allotment. This monitoring data is as follows:

#### 13.6.1 Wells Station Key Area – T. 9N., R. 60E., Section 28 NW ¼.

This key area is located in Wyoming sagebrush range. A photo from 2006 shows a mix of native shrubs, grasses, and winterfat. Plant spacing and plant composition data from 1994 to 2010 is indicated in Table 13.6.1

Table 13.6.1 – Wells Station Plant Spacing, Composition, and Number of Plant Species

Year	Plant Spacing (inches)	Grass	Brush	Forbs	Number Of Species
1994	4.56	46	53	1	7
1996	3.54	47	53	0	7
1998	4.66	46	54	0	8
2001	5.94	50	50	5	6
2002	4.77	42	58	0	6
2008	3.96	60	40	0	6
2010	3.48	56	42	0	6

### 13.7 Wells Station Allotment Proposed Decision

A proposed decision was issued for the Wells Station Allotment in December, 1992 which reduced cattle active preference from 312 to 258 active AUMs, which was to be phased in over a five year period. This decision also established an appropriate management level (AML) of 168 AUMs for wild horses, or 14 animals year-long. The proposed decision was subsequently protested by the grazing permittee. The final multiple use decision for several allotments that included the Wells Station Allotment that was issued in February, 1997 maintained cattle active preference at 312 AUMs, and maintained the AML for the allotment at 14 animals year-long + or – 15%, which established a wild horse management range of 12 to 16 wild horses year-long.

## 14. WILLOW SPRINGS SEEDING ADDITION ALLOTMENT

### 14.1 Key Areas and Rangeland Ecological Sites

**Table 14.1-1 Willow Springs Addition Allotment, Key Areas, & Rangeland Ecological Sites**

Key Area*	Location	Ecological Site	Dominant Species of HCPC**	Soil Mapping Unit***
WSA-01	T. 12N., R. 61E., Sec. 23 SE1/4 NW1/4	Crested wheatgrass seeding	Crested wheatgrass	192- Cowgil-Yody Association

\* WSA-01 occurs in the east central portion of the allotment.

\*\* HCPC = Historic climax plant community

\*\*\* The main range site within the 192 Soil Mapping Unit is a loamy 8-10" ecological site (028BY010NV).

Normal year production is about 600 pounds per acre. The plant community is dominated by Wyoming sagebrush, Indian ricegrass, and needleandthread. Potential vegetative composition is about 50% grasses, 5% forbs, and 45% shrubs and trees.

### 14.2 Licensed Livestock Use

The following table illustrates the licensed cattle use in the Willow Springs Addition Allotment from the spring of 1999 up to the present time. The season of use and active Animal Unit Months (AUMs) are presented. Licensed use averaged 67 AUMs the 4 years the allotment was grazed. Cattle numbers and the season of use varied. The allotment was completely rested 9 of 13 years. As the table shows, there has not been much cattle grazing in this seeding over the last 13 year period.

**Table 14.2 Willow Springs Addition Allotment Licensed Use 1999 – 2010**

Season/Year	Season of Use	Active AUMs
Spring 2011	2/11 – 2/17	52
Spring 2010	Rest	
Spring 2009	Rest	
Spring 2008	Rest	
Spring 2007	5/15 – 5/30	56
Spring 2006	4/12 – 4/17	46
Winter 2005	12/13 – 12/20	115
Spring 2005	Rest	

Spring 2004	Rest	
Spring 2003	Rest	
Spring 2002	Rest	
Spring 2001	Rest	
Spring 2000	Rest	
Spring 1999	Rest	

### ***14.3 Utilization – Willow Springs Seeding Addition Allotment***

On July 17, 2009 use of crested wheatgrass at Key Area WSA-01 was 0%. Cattle did not use the seeding during the spring of 2009. Notes from the use form indicated that crested wheatgrass inside the use cage was of good vigor, still green, to 24” tall.

On October 16, 2003 the seeding exhibited heavy use throughout. Crested wheatgrass plants were observed to be drought stressed. Lots of Russian thistle was present. A note was made that the seeding should be closed to grazing in 2004. Photographs from October 16, 2003 show a very dry and drought stressed seeding. This information conflicts with the table above that indicates the seeding was rested in 2003.

On November 4, 1998 the seeding exhibited slight to light use. Lots of remaining old growth was present, as well as new basal leaf growth. The seeding was observed to be in excellent condition.

### ***14.4 Line Intercept Cover Studies***

Vegetation cover data was gathered at two sites in the Willow Springs Seeding Addition Allotment on July 17, 2009. The results are presented in Table 14.4-1:

**Table 14.4-1. Line Intercept Vegetation Cover Data – Willow Spring Seeding Addition Allotment**

Key Area/ Date	Location	Ecological Site	Vegetation Cover/Litter	Biological Surfaces	Soil Compaction/ Infiltration.
WSA-01/ 7/17/2009	N: 4306281 E: 665927	Crested wheatgrass seeding	4.21 feet/ 34.88 feet Potential cover = 10-20 ft*	Not present	No excess trampling or compaction
SS-01 Study Site 7/17/2009	N: 4305263 E: 665065	Crested wheatgrass seeding	7.90 feet/ 11.85 feet Potential cover = 10-20 ft*	Not present	Not recorded.

\* Prior to conversion to crested wheatgrass, the majority of the land area of this allotment was a loamy 8-10” rangeland ecological site (028BY010NV).

### ***Professional observations noted on the line intercept cover study forms indicated the following:***

The soils at WSA-01 are stabilized by live crested wheatgrass, surface gravels, invasive species litter, and rabbit droppings. No plant pedestaling or excess trampling or compaction was observed. No biotic crust was present. About 100 yards north of the south boundary fence, the range was characterized by bare ground, dried invasive species, and dead crested wheatgrass plant crowns. The dead crowns were pedestaled. No biotic crust was present.

A few live big sagebrush shrubs and live Russian thistle sprouts were present. Lots of old cattle and rabbit droppings were present. In the south portion of the allotment big sagebrush made up about 30% of the ground cover over a 120 acre area. Bare ground, live invasives and dead invasives made up about 70% of the ground cover. Crested wheatgrass, an occasional forb, or bearded wheatgrass made up about 1/100 of 1% of the ground cover. Key Area WSA-01 is not representative of the seeding allotment as a whole. Just west of the key area is an area of about 50 acres where live Russian thistle and halogeton dominate the range. In this area about 55% of the vegetative cover was Russian thistle, 29% halogeton, 15% crested wheatgrass, and 1% Indian ricegrass.

#### ***14.5 Historical Data and Photographs***

A task force rangeland tour held in July, 1989 indicates that prior to 1989 this seeding has typically been grazed from June 1 through August. The seeding was originally established in 1966 and originally adjudicated at 251 active cattle AUMs. The allotment was use mapped in 1988, and the use map indicated heavier than acceptable utilization. Actual cattle use in 1988 was 203 AUMs (81%) of the active use of 251 AUMs.

On June 29, 1987 a Total Annual Yield & Composition Record showed crested wheatgrass to be producing about 634 pounds per acre, and composing 100% of the plant composition in the seeding. 1987 was an average year for precipitation.

In July 1989, a photo trend study indicated range trend was stable. Utilization of crested wheatgrass was recorded at 63% up to July 19.

An Ecological Status Write-Up sheet for March 8, 1990 showed the Willow Spring Seeding Addition Allotment to be in excellent condition with 98% production of crested wheatgrass and 2% production of big sagebrush.

An Ecological Status Write-Up sheet for November 12, 1992 showed the Willow Spring Seeding Addition Allotment to be in excellent condition with 100% production of crested wheatgrass. Sagebrush shrubs were rare or absent in the seeding. The south portion of the seeding showed dead crested wheatgrass plants with lots of encroaching weeds. A Total Annual Yield & Composition Record showed crested wheatgrass to be producing about 232 pounds per acre (drought year).

Photographs from June 15, 1998 show crested wheatgrass plants tall, green, vigorous, and producing abundant seed. Photographs from September, 1996 show a dry area with cured standing growth present on some crested wheatgrass plants. Photographs prior to 1996 and dating back to 1988 are available for review in the allotment files.

Photographs from July 17, 2009 show a seeding dominated by bare ground, dried invasive plants halogeton, Russian thistle, and mustards, and dead crested wheatgrass crowns. It was observed that Key Area WSA-01, where crested wheatgrass was vigorous, was not representative of the seeding as a whole. WSA-01 represented about 50 acres of 602 acres in the seeding.

#### ***14.6 Specialized Prescription Herbivory***

The Northeastern Great Basin Area Standards and Guidelines (2004) list specialized prescription herbivory as one method or strategy to maintain healthy sagebrush ecological sites. Specialized herbivory was authorized in the Willow Spring Seeding Addition for 7 days during February,

2011. Approximately 10 acres of land area were broadcast seeded with an all terrain vehicle (ATV). Crested wheatgrass, Russian wildrye, and Siberian wheatgrass were seeded into an area where Russian thistle and crested wheatgrass grew in the seeding. Approximately 230 cattle grazed the general area and were forced to graze the seeded area for a portion of the 7 days. Vegetation cover studies were conducted both prior to and after this specialized herbivory, and photographs were taken. The results of the studies are indicated in Table 14.6:

Study Area/ Date	UTM Location	Crested Wheatgrass Cover percent	Professional Observations
WSSA #A/ 2/15/2011	N: 4306402 E: 0665090	2%	Russian thistle skeletons were thick in the area (see photo)
WSSA #A/ 7/11/2011	N: 4306402 E: 0665090	13%	A good precipitation year resulted in good seedling establishment of seeded grasses
WSSA #B/ 2/15/2011	N: 4306549 E: 0665235	2%	Area of big sagebrush, Russian thistle, crested wheatgrass, buckwheat, halogeton, and mustard
WSSA #B/ 7/11/2011	N: 4306549 E: 0665235	15%	A good precipitation year resulted in good seedling establishment of seeded grasses

The HRM team made a field tour of the Willow Addition Seeding on July 13, 2011. The team agreed that the specialized prescription herbivory was a success, and that this type of treatment should be authorized in other portions of crested wheatgrass seedings.

## 11. WILD HORSE DATA

Wild horses are known to regularly use the Wells Station Allotment. Of those fourteen allotments currently permitted to Carter Cattle Company, only the Wells Station Allotment is used regularly by wild horses. In the past, rare use by wild horses occurred on the North Cove Allotment.

A portion of the Wells Station Allotment is within the White River Wild Horse Herd Area (HA). This herd area was dropped from herd management area status (HMA) and assigned herd area status (HA) by the Ely District Record of Decision (ROD) and approved Resource Management Plan (RMP) signed August 20, 2008; due to insufficient long-term habitat resources to sustain healthy populations of wild horses (see pages 47, 48 of the ROD-RMP). A population inventory conducted in November 2008 resulted in a direct count of 140 wild horses in the White River HA. The population estimate for the HA in January 2009 was about 168 animals.

A wild horse gather of the White River HA was conducted in August, 2009. The gather removed 182 wild horses.

A wild horse removal summary is provided below for the White River HA:

**Table 11.2 Wild Horse Removal Summary – Ely District BLM – White River HMA**

Removal Date	Animals Removed	Notes
Sept. 1996	277	Emergency Gather
July 2004	286	
February 2005	120	
August 2009	182	

According to the Final Multiple Use Decision (FMUD) of 2/10/1997, wild horse use on the Wells Station Allotment shall be managed at 14 animals year-long + or – 15%, which established a wild horse management range of 12 to 16 wild horses year-long on the allotment.

### ***Vegetation Production & Precipitation – All Allotments Permitted to Operator #2704605***

The crop year precipitation table for the Ely and Lund Stations shows that of the last 14 years, from 10 to 12 years have been below the long term normal precipitation. Many of the years have been far below normal. Combined with hotter temperatures, this represents drought conditions during which native plant community production is generally unfavorable. The U.S. Drought Monitor (National Drought Mitigation Center – NDMC) summary for February 3, 2009 showed eastern Nevada has been in a severe drought (D2) for several months. This severe intensity classification (D2) has occurred for quite a while and has been common in eastern Nevada.

### ***Ecological Processes***

Direct measures of the status of ecological processes are difficult or expensive to measure due to the complexity of the processes and their interrelationships. Therefore, biological and physical attributes are often used as indicators of the functional status of ecological processes and site integrity. Based on the generally negative vegetative attributes of the term permit renewal area

as presented by monitoring data, the hydrologic cycle, nutrient cycle, and energy flow are barely being maintained. In addition to range monitoring data, qualitative observations and professional judgment indicate ecological processes are less than desired for the vegetative communities. Ecological processes are generally not within the normal range of variability for the rangeland ecological sites.

### ***Vegetation Distribution***

Professional observation as well as soil mapping unit data and ecological site descriptions indicates vegetation distribution (patchiness, corridors) to be appropriate in the term permit renewal area as a whole. The vegetation composition changes along the elevation gradients and plant communities are separated by washes or rolling hills and canyons in the allotments. Elevations vary from about 6,000 feet to 9,000 feet. Topographic diversity is complex. There is a mosaic and “mix” of plant communities and ecological sites, including sites dominated by winterfat, black sagebrush, sickle saltbush, shadscale, Wyoming big sagebrush, basin big sagebrush, mountain big sagebrush, black greasewood or Bailey greasewood, small rabbitbrush, and pinyon and juniper trees. Differences in topography, slope, exposure, parent material, and soils all contribute to diversity in the area. There are many travel corridors present for grazing animals between the hills. Escape cover is present for grazing animals in these areas.

## **14. PROFESSIONAL OBSERVATIONS – SALT DESERT SHRUB RANGE**

On the deserts, where amount and season of precipitation are so erratic, years of good seed production are infrequent for most species. Years favorable for seedling establishment are also infrequent. The circumstance of a good seed year followed by a good establishment year is a rare occurrence. Even rarer for rangeland ecological sites that are in poor to fair condition with disturbed or sensitive soils, little to no herbaceous understory, inappropriate native vegetation cover, and invasive species.

Herbage removal is most injurious to native grasses and forbs during the middle part of the growing period, between boot stage and the maturation of the fruit. As carbohydrate reserves are depleted during this period plants become susceptible to injury or mortality. The critical growing period ends earlier with drier drought years (spring, early summer). Grazing during this period can be detrimental to plants because of the undependability of sufficient soil moisture for plant growth and recovery after being grazed.

The nutritional quality of the salt desert shrub range type is best suited for animal maintenance during the winter period.

## **15. WILDFIRE DATA**

The Ely District BLM has data available for the following wildfires which have occurred within the permit #2704605 grazing area:

The Currant Fire (K149) burned approximately 214 acres of mountain sagebrush/native grass habitat in August, 1986. Approximately 188 acres of the total burned on BLM lands in the west pasture of the North Cove Allotment. It is unknown if the burned area was reseeded with native

plant species. Several professional observations and photographs during the years 2007 -2009 indicate the burned area has not recovered well and the invasive species cheatgrass, halogeton, mustards, and Russian thistle dominate a large area of the burn.

The Six Mile Fire (K177) burned approximately 859 acres of black sagebrush/perennial grass habitat in July, 2001. Approximately 100 acres of the total burned in the southern portion of the Brown Knoll Allotment. The burned area was reseeded using an aerial seeding method. Several professional observations and photographs during the years 2008 -2009 indicate the burned area has recovered fairly well. A mix of native and invasive species dominate the visual aspect. Cheatgrass is common in the area and was present prior to the burn. Drought impeded efforts to rehabilitate the burned area.

The Unknown Fire (4029 - 1983) and Lund Fire (K109 - 1985) together burned approximately 375 acres in the north portion of the Brown Knoll Allotment. Very little data is available on these fires. It is unknown if the burned areas were reseeded with native plant species. Several professional observations and photographs during the years 2008 -2009 indicate the burned area has recovered fairly well. The invasive species cheatgrass, halogeton, mustards, and Russian thistle dominate a large area of the burns.

The Gubler Fire (C0H1) burned approximately 1388 acres of sagebrush and salt desert shrub habitat in White River Valley in July, 2006. Approximately 1,000 acres of the total burned in the south pasture of the Dee Gee Spring Allotment. The burned area was aerial seeded with native plant species. The recovery of the area has been a failure, as indicated by professional observations, photographs, and monitoring by the Emergency Stabilization and Rehabilitation (ESR) Team. Drought has impeded recovery. The area is dominated by several types of invasive plant species.

## Appendix II Grazing Permit Terms and Conditions

**Terms and Conditions of Authorized Use – Permit #2703457 and #2703458** – Big Six Well (00812), Brown Knoll (00831), Cattle Camp/Cave Valley (00903), Dee Gee Spring (00815), East Wells (00830), Maybe Seeding (00828), North Cove (00816), Preston (00806), Rock Canyon (00808), Sheep Trail Seeding (00829), Sorenson Well (00818), Swamp Cedar (00832), Wells Station (00819), and Willow Spring Seeding Addition Allotments (00825).

Permit #2703457 and #2703458 is currently authorized to graze in both the Egan (LLNVL01000) and Schell (LLNVL02000) Field Office Areas of the Ely District. The number and kind of livestock, season-of-use and permitted use for the current grazing permit by field office area is as follows:

In accordance with 43 CFR 4130.3-1, cattle grazing use is currently authorized as follows for permit #2703458.

***Schell Field Office Area – Grazing Permit #2703458 Authorized from 5/1/2010 to 2/28/2015:***

Allotment/ Number Name	Livestock Number & Kind	Period of Use	Percent Public Land	Type Use	Active AUMs
00808 Rock Canyon	61 Cattle 78 Cattle	3/15 – 5/15 11/01 – 2/28	100% 100%	Active Active	124 308
00903 Cattle Camp/Cave Valley	484 Cattle	5/15 – 11/30	100%	Active	3182
00831 Brown Knoll	109 Cattle	4/01 – 5/15	100%	Active	161

***Other Terms and Conditions – Permit #2703458***

An agreement was signed on July 25, 1995 authorizing 6,316 AUMs of permitted use for a five year period beginning March 1, 1993. Carter Cattle Company will be authorized to make livestock use according to the principles of Holistic Resource Management (HRM) and to use the HRM model as its guide as related to livestock grazing management in the 12 allotments. Carter Cattle Company will be authorized the flexibility to graze the public lands of the 12 allotments for the prescribed season not to exceed 6,316 AUMs of livestock use in accordance with an annually submitted biological plan. The annual grazing plan will include a grazing schedule for the year. Where the HRM team determines that additional forage is available, the annual biological plan will include a recommendation that additional forage be authorized.

00808 Rock Canyon Allotment. Grazing use will be in accordance with the Northeastern Great Basin Area Standards and Guidelines, and with the Final Multiple Use Decision dated February 10, 1997.

00831 Brown Knoll Allotment. Grazing use will be in accordance with the Northeastern Great Basin Area Standards and Guidelines, and with the Final Multiple Use Decision dated January 19, 1993 and updated February 10, 1997.

00903 Cattle Camp/Cave Valley Allotment. Grazing use will be in accordance with the Northeastern Great Basin Area Standards and Guidelines, and with the Final Multiple Use Decision dated February 10, 1997.

Allotment Summary (AUMs)

<i>Allotment</i>	<i>Active AUMs</i>	<i>Suspended AUMs</i>	<i>Grazing Preference</i>
00808 Rock Canyon	432	464	896
00831 Brown Knoll	161	268	429
00903 Cattle Camp/Cave Valley	3185	0	3185

***Egan Field Office Area – Grazing Permit #2703457 Authorized from 5/1/2010 to 2/28/2015:***

<b>Allotment/ Number Name</b>	<b>Livestock Number &amp; Kind</b>	<b>Period of Use</b>	<b>Percent Public Land</b>	<b>Type Use</b>	<b>Active AUMs</b>
00818 Sorensen Well	96 Cattle	3/01 – 4/30	100%	Active	193
00812 Big Six Well	56 Cattle	3/01 - 5/15	100%	Active	140
00816 North Cove	200 Cattle	3/01 – 5/15	100%	Active	500
	170 Cattle	12/01 – 2/28		Active	503
00815 Dee Gee Spring	118 Cattle	5/1 –5/15	100%	Active	58
	48 Cattle	12/01 – 2/28		Active	142
00832 Swamp Cedar	390 Cattle	3/01 – 3/15	100%	Active	192
00828 Maybe Seeding	203 Cattle	4/01 – 5/15	100%	Active	300
00819 Wells Station	211 Cattle	11/01 – 12/15	100%	Active	312
00830 East Wells	132 Cattle	2/01 – 2/28	100%	Active	122
00829 Sheep Trail Seeding	217 Cattle	2/01 – 2/28	100%	Active	200
00806 Preston	66 Cattle	4/18 – 5/31	100%	Active	95
00825 Willow Spring Addition	101 Cattle	6/1 – 7/1	100%	Active	103

***Other Terms and Conditions – Permit #2703457***

An agreement was signed on July 25, 1995 authorizing 6,316 AUMs of permitted use for a five year period beginning March 1, 1993. Carter Cattle Company will be authorized to make livestock use according to the principles of Holistic Resource Management (HRM) and to use the HRM model as its guide as related to livestock grazing management in the 12 allotments. Carter Cattle Company will be authorized the flexibility to graze the public lands of the 12 allotments for the prescribed season not to exceed 6,316 AUMs of livestock use in accordance with an annually submitted biological plan. The annual grazing plan will include a grazing schedule for the year. Where the HRM team determines that additional forage is available, the annual biological plan will include a recommendation that additional forage be authorized.

00806 Preston Allotment. Grazing use will be in accordance with the Northeastern Great Basin Area Standards and Guidelines.

00812 Big Six Well Allotment. Grazing use will be in accordance with the Northeastern Great Basin Area Standards and Guidelines, and with the Final Multiple Use Decision dated February 10, 1997.

00815 Dee Gee Spring Allotment. Grazing use will be in accordance with the Mojave Southern Great Basin Area Standards and Guidelines, and with the Final Multiple Use Decision dated February 10, 1997.

00816 North Cove Allotment. Grazing use in White Pine County, Nevada will be in accordance with the Northeastern Great Basin Area Standards and Guidelines, grazing use in Lincoln & or Nye County, Nevada will be in accordance with the Mojave Southern Great Basin Area Standards and Guidelines. Grazing use will also be in accordance with the Final Multiple Use Decision dated February 4, 1992 and updated February 10, 1997.

00818 Sorensen Well Allotment. Grazing use will be in accordance with the Northeastern Great Basin Area Standards and Guidelines, and with the Final Multiple Use Decision dated February 10, 1997.

00819 Wells Station Allotment. Grazing use will be in accordance with the Mojave Southern Great Basin Area Standards and Guidelines, and with the Final Multiple Use Decision dated February 10, 1997.

00825 Willow Spring Addition Allotment. Grazing use will be in accordance with the Northeastern Great Basin Area Standards and Guidelines, and with the Final Multiple Use Decision dated May 24, 1991.

00828 Maybe Seeding Allotment. Grazing use will be in accordance with the Mojave Southern Great Basin Area Standards and Guidelines, and with the Final Multiple Use Decision dated February 10, 1997.

00829 Sheep Trail Seeding Allotment. Grazing use will be in accordance with the Mojave Southern Great Basin Area Standards and Guidelines, and with the Final Multiple Use Decision dated February 10, 1997.

00830 East Wells Allotment. Grazing use will be in accordance with the Mojave Southern Great Basin Area Standards and Guidelines, and with the Final Multiple Use Decision dated February 10, 1997.

00832 Swamp Cedar Allotment. Grazing use in White Pine County, Nevada will be in accordance with the Northeastern Great Basin Area Standards and Guidelines, grazing use in Lincoln & or Nye County, Nevada will be in accordance with the Mojave Southern Great Basin Area Standards and Guidelines. Grazing use will also be in accordance with the Final Multiple Use Decision dated February 10, 1997.

#### Allotment Summary (AUMs)

<i>Allotment</i>	<i>Active AUMs</i>	<i>Suspended AUMs</i>	<i>Grazing Preference</i>
00806 Preston	97	226	323
00812 Big Six Well	140	326	466
00815 Dee Gee Spring	200	178	378
00816 North Cove	1003	756	1759
00818 Sorensen Well	193	450	643

00819 Wells Station	312	372	684
00825 Willow Spring Addition	103	122	225
00828 Maybe Seeding	300	0	300
00829 Sheep Trail Seeding	200	0	200
00830 East Wells	122	104	226
00832 Swamp Cedar	192	418	610

**Additional Stipulations Common to All Grazing Allotments:**

1. Livestock numbers identified in the Term Grazing Permit are a function of seasons of use and permitted use. Deviations from those livestock numbers and seasons of use may be authorized on an annual basis where such deviations are consistent with multiple-use objectives. Such deviations will require an application and written authorization from the authorized officer prior to grazing use.
2. The authorized officer is requiring that an actual use report (form 4130-5) be submitted within 15 days after completing your annual grazing use.
3. Grazing use will be in accordance with the Standards and Guidelines for Grazing Administration. The Standards and Guidelines have been developed by the respective Resource Advisory Council and approved by the Secretary of the Interior on February 12, 1997. Grazing use will also be in accordance with 43 CFR Subpart 4180 – Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration.
4. If future monitoring data indicates that Standards and Guidelines for Grazing Administration are not being met, the permit will be reissued subject to revised terms and conditions.
5. The permittee must notify the authorized officer by telephone, with written confirmation, immediately upon discovery of any hazardous or solid wastes as defined in 40 CFR Part 261.
6. The permittee is responsible for all maintenance of assigned range improvements including wildlife escape ramps for both permanent and temporary water troughs.
7. When necessary, control or restrict the timing of livestock movement to minimize the transport of livestock-borne noxious weed seeds, roots, or rhizomes between weed-infested and weed-free areas.
8. The placement of mineral or salt supplements will be a minimum distance of ½ mile from known water sources, riparian areas, winterfat dominated sites, sensitive sites, populations of special status species, and cultural resource sites. Mineral and salt supplements will also be one mile from active sage grouse leks. Placing supplemental feed (i.e. hay, grain, pellets, etc.) on public lands without authorization is prohibited.

## **APPENDIX III**

### **RECOMMENDED PRACTICES - STATE AND TRANSITION MODEL**

***Management strategies to maintain the “shrubby and herbaceous state” for eight different types of rangeland ecological sites in MLRA 28B where winterfat and Indian ricegrass are the dominant vegetation of the salt desert shrub range.***

Winter is the best season for livestock grazing. Limit grazing to the dormant season or control grazing during the growing season to ensure herbaceous grasses and forbs or palatable shrubs are not grazed excessively or repeatedly while growing. With excessive or persistent season long grazing by grass-preferring herbivores during the herbaceous growing season, the site can cross a threshold to a Shrub Dominant State where deep-rooted grasses and other palatable herbaceous species are almost completely absent. If this does not happen and the area remains in the Shrubby and Herbaceous State, long-term grazing by shrub-preferring herbivores or in the non-growing season can shift the plant community to increased herbaceous vegetation. Management to maintain this Shrubby and Herbaceous State is often much more cost effective than management to return to this state once a threshold has been crossed.

#### **SHRUB-DOMINANT STATE**

##### **Description:**

Herbaceous understory species diversity has decreased across a threshold level with abusive grazing, while winterfat and other shrub cover and density remain. Deep-rooted perennial grasses and forbs are largely absent. Plant community is dominated by winterfat. Shallow-rooted perennial grasses are often diminished from the Shrubby and Herbaceous State levels or mostly absent. Thereafter winterfat occurs as a monoculture or dominates a shrubs-only community type.

##### **Successional trajectories:**

Loss of deep-rooted perennial grasses does not cause herbivores to avoid this state. Livestock, wild horse, and wildlife grazing continues to influence winterfat vigor and species composition of remaining species. Although winterfat tolerates grazing quite well during the dormant season, it can be removed by even moderate growing season grazing. This leaves the site open to the increase of unpalatable or invasive plants and/or the site suffers soil erosion due to the excess of bare ground. The soil disturbance associated with abusive grazing also accelerates soil erosion.

##### **Management strategies to return to Herbaceous and Shrub State:**

Winter, or the dormant season is the best season to graze this state. However, dormant season grazing, or total removal of grazing pressure, will not return native deep-rooted grasses. This requires seeding of deep-rooted grasses and additional measures to return (cross threshold) to Herbaceous and Shrubby State because seed sources have been lost. Apply re-seeding operations in conjunction with shrub thinning measures. Shrub thinning measures could include, herbicide, mechanical, or shrub consuming herbivores. Considering the harsh nature of the site, the susceptibility of the site to altered site potential due to soil erosion, and the resource value of winterfat for many herbivores, only vegetation management methods that minimize soil disturbance and retain winterfat should be considered and then used only with great caution. Investigate possibility of re-seeding and establishing understory species several growing seasons prior to implementing shrub-thinning measures. Due to the great palatability and nutritional quality of the dominant shrub, winterfat, shrub control and grass seeding is rarely practiced.

#### **WITH EXOTIC PLANTS AND/OR INVASIVE WEEDS PRESENT**

##### **SHRUBBY AND HERBACEOUS STATE**

##### **Description:**

Plant community dominated by winterfat and a mix of other shrubs, fourwing salt bush, shadscale, spiny hop sage and bud sage with a relatively productive understory mix of deep and shallow rooted grasses, especially Indian ricegrass and bottlebrush squirreltail, and forbs. Although cheatgrass, Halogeton, and other annual weeds may be present they are not dominant.

**Successional trajectories:**

Annual shrub production and the amount and species of herbaceous vegetation varies in response to weather, disease and insect outbreaks, and rarely fire. Although cheatgrass is present and varies by year, it does not dominate the understory under normal circumstances.

**Management strategies to maintain state:**

On this type, the best season for livestock grazing is winter. Limit grazing to the dormant season or control grazing during the herbaceous growing season to ensure native perennial herbaceous plants are not grazed excessively or repeatedly. Grazing at the late-winter and early spring season when cheatgrass is growing is preferred if grazing ceases before the early growing season of perennial grasses to ensure that soil moisture remains for their growth or recovery. With excessive, long-term grazing by grass-preferring herbivores during the herbaceous growing season, the type can cross a threshold to a Shrub Dominant State where deep-rooted grasses and other palatable herbaceous species are almost completely absent. If this does not happen and the vegetation remains in the Shrubby and Herbaceous State, long-term grazing by shrub-preferring herbivores or in the non-growing season can shift the plant community to increased herbaceous vegetation. Excessive or poorly timed grazing that stresses either the deep rooted grasses or the palatable shrubs leaves ecological resources available to cheatgrass, Halogeton, and other weeds and should be avoided. Management to maintain this Shrubby and Herbaceous State is often much more cost effective than management to return to this state once a threshold has been crossed.

***Management strategies to maintain the herbaceous state for a loamy 5-8" shadscale/Indian ricegrass/bottlebrush squirreltail plant community (028BY017NV). This is a very typical salt desert shrub plant community.***

Limit grazing to dormant season or control grazing dose during the growing season to ensure herbaceous plants are not grazed excessively. Limit shrub cover to 3 -10% of total. Intervene with prescription grazing. Shrub decrease can be fostered by relatively intense grazing using herbivores with shrub diet preferences.

***Management strategies to return to the herbaceous state once the loamy 5-8" site has become shadscale dominant.***

Apply shrub control measures in conjunction with re-seeding operations. Shrub control measures could include, herbicide, mechanical, or shrub consuming herbivores. Considering the harsh nature of the site, control methods that minimize soil disturbance should be considered first. Investigate possibility of re-seeding and establishing understory species several growing seasons prior to implementing shrub control measures. Shrub control without re-seeding may create open areas susceptible to invasion by undesirable species or major erosion events.

***Management strategies to return to the herbaceous state once the loamy 5-8" site has become an annual plant state characterized by the presence of cheatgrass, annual mustards, and halogeton.***

Apply cheatgrass and other annual plant control measures in conjunction with re-seeding operations. Cheatgrass control measures could include wildfire, controlled burn, herbicide, mechanical, or grazing. Consideration of soil disturbance severity should be included in choice of control measure. Re-seeding treatments could include native perennial or non-native perennial species. Site stabilization may be a priority objective. If so, non-native perennial species may provide the best option.

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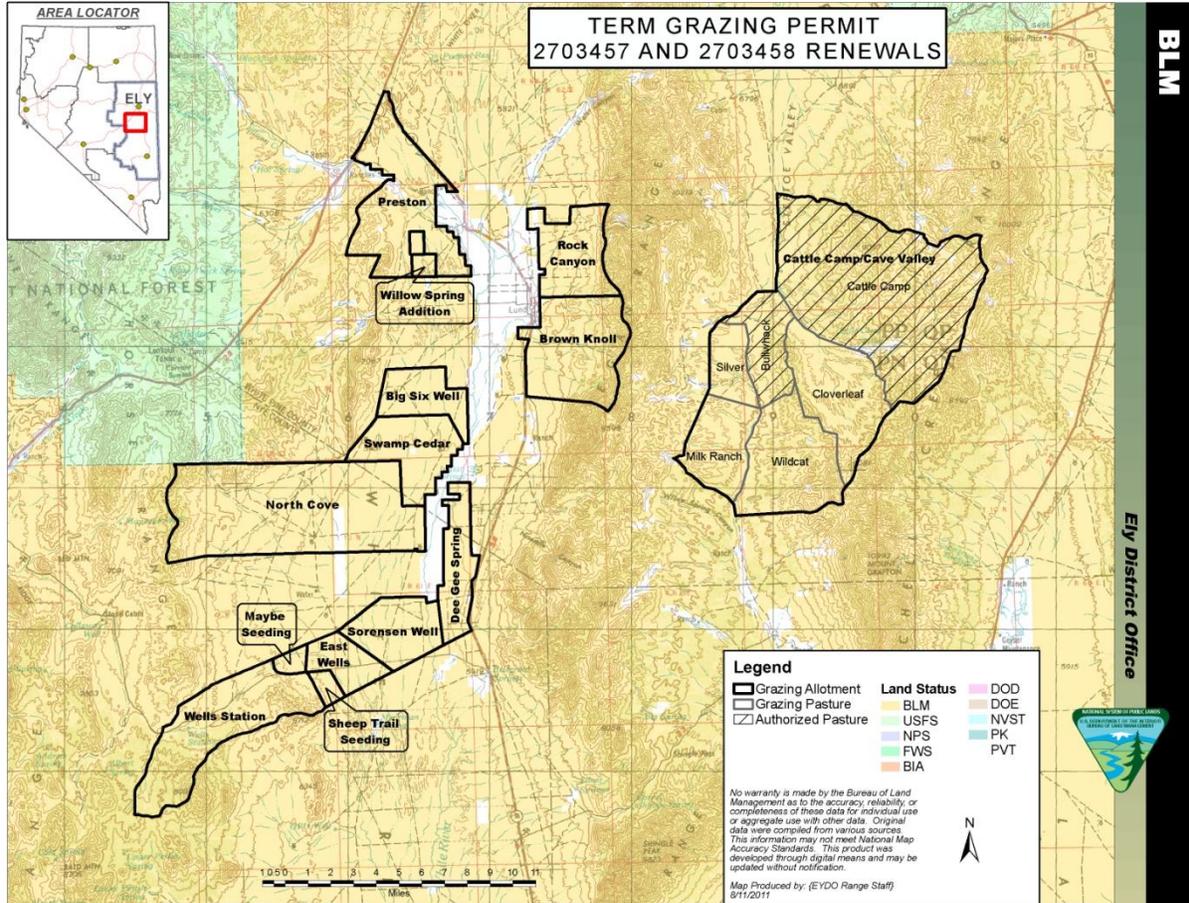
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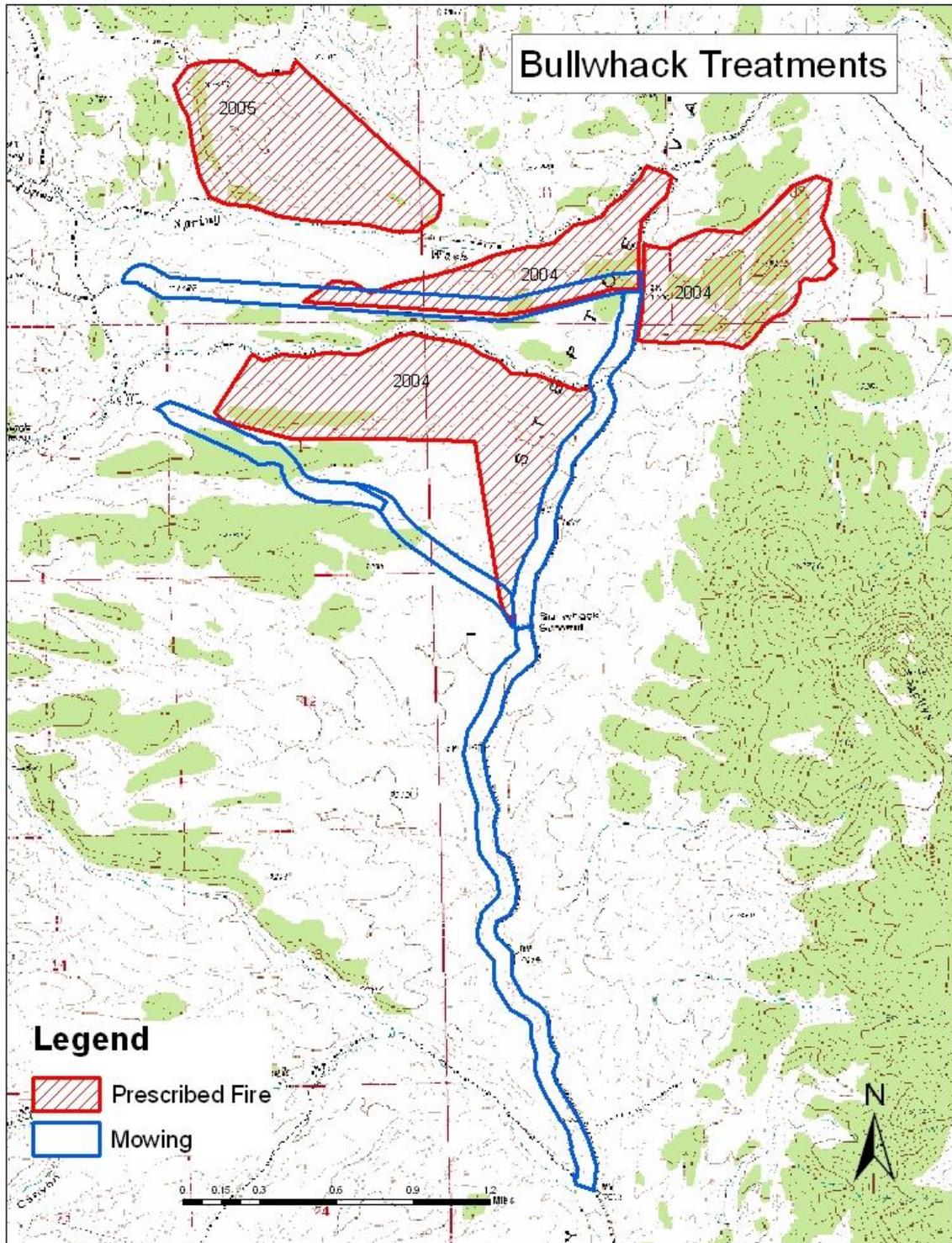
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# Appendix V - Maps

## Map 1 - Carter Cattle Company Permitted Allotments



Map 2



## Appendix VI – Birds

The following data reflect survey blocks and/or incidental sightings of bird species within the allotment boundaries from the Atlas of the Breeding Birds of Nevada (Floyd et al. 2007). These data represent birds that were confirmed, probably, or possibly breeding within the allotment boundaries. These data are not comprehensive, and additional species not listed here may be present within the allotment boundary.

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No survey blocks or incidental sightings occur within in this allotment. Survey blocks with similar vegetation as this allotment contained the following bird species:

### **Carter Allotment**

Common name

turkey vulture (*Cathartes aura*)

American kestrel (*Falco sparverius*)

\*greater sage-grouse (*Centrocercus urophasianus*)

killdeer (*Charadrius vociferous*)

common nighthawk (*Chordeiles minor*)

northern flicker (*Colaptes auratus*)

ash-throated flycatcher (*Myiarchus cinerascens*)

western kingbird (*Tyrannus verticalis*)

violet-green swallow (*Tachycineta thalassina*)

northern rough-winged swallow (*Stelgidopteryx serripennis*)

western scrub-jay (*Aphelocoma californica*)

\*pinyon jay (*Gymnorhinus cyanocephalus*)

\*juniper titmouse (*Baeolophus ridgwayi*)

blue-gray gnatcatcher (*Polioptila caerulea*)

American robin (*Turdus migratorius*)

sage thrasher (*Oreoscoptes montanus*)

\*loggerhead shrike (*Lanius ludovicianus*)

spotted towhee (*Pipilo maculatus*)

\*Brewer's sparrow (*Spizella breweri*)

lark sparrow (*Chondestes grammacus*)

black-throated sparrow (*Amphispiza bilineata*)

\*sage sparrow (*Amphispiza belli*)

Savannah sparrow (*Passerculus sandwichensis*)

red-winged blackbird (*Agelaius phoeniceus*)

western meadowlark (*Sturnella neglecta*)

Brewer's blackbird (*Euphagus cyanocephalus*)

brown-headed cowbird (*Molothrus ater*)

\* = Sensitive or species of concern