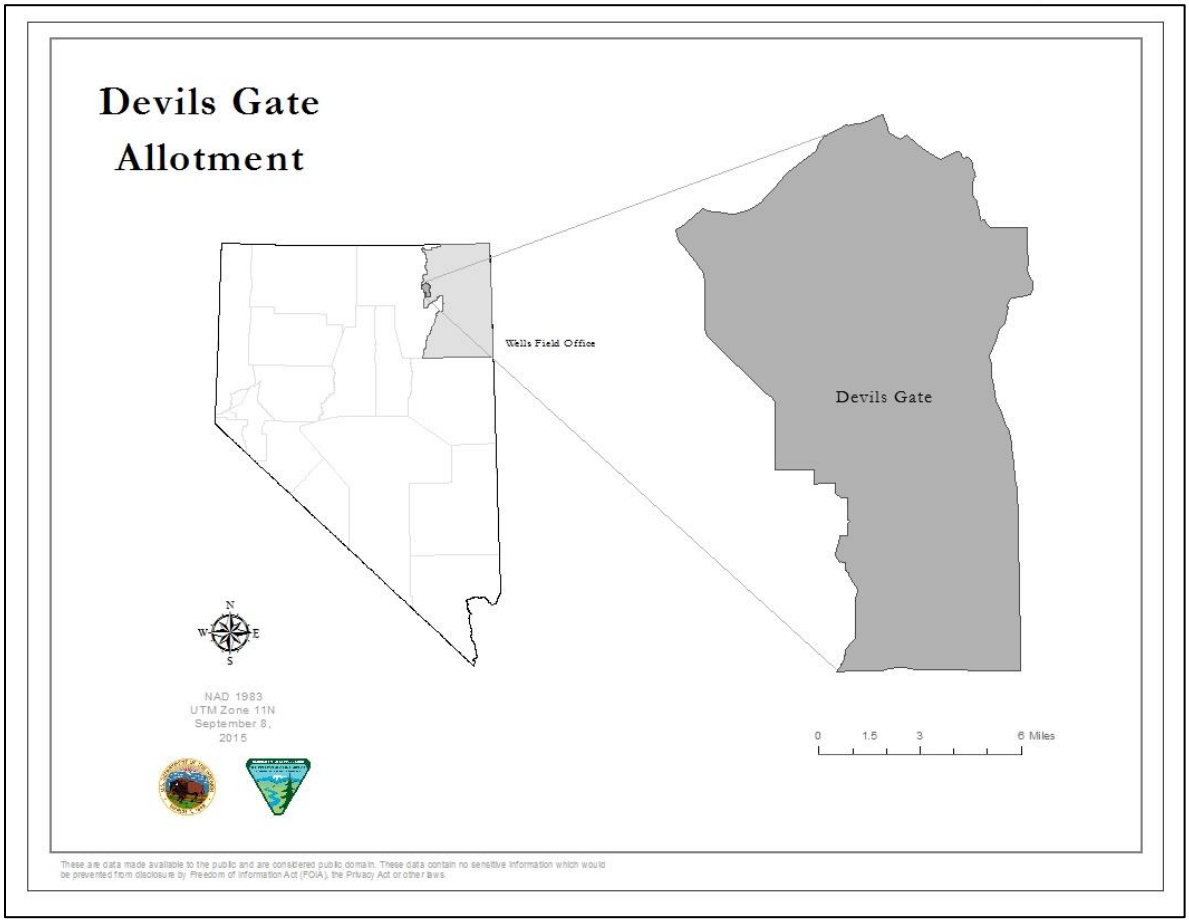
U.S. Department of the Interior
Bureau of Land Management

Draft Standards Determination Document

Devil's Gate Allotment

September 2015



PREPARING OFFICE

U.S. Department of the Interior
Bureau of Land Management
Elko District Office
Wells Field Office
Elko, Nevada 89801
775–753-0200
http://www.blm.gov/nv/st/en/fo/elko_field_office.html

B L M
NEVADA Elko District, Wells Field Office

It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

1 DEVIL'S GATE ALLOTMENT STANDARDS DETERMINATION

1.1 INTRODUCTION

The Devil's Gate Allotment lies in central Elko County, approximately thirty miles northeast of Elko, Nevada. In addition to the map of the larger area shown above, Map 1 in Appendix A displays a more detailed view of this allotment. The allotment is bordered on the west by the North Fork Group Allotment and the North Fork of the Humboldt River, on the north by the Stag Mountain Allotment, on the east by the Deeth and Pole Creek Allotments, and on the south by the Morgan Hill Allotment. The allotment sits on the southern end of the Jarbidge Mountains. The southern slopes of Stag Mountain create steep hills and canyons that comprise the northern end of the allotment. The topography of the rest of the allotment is rolling hills and open valleys. Elevations range from about 5,300 feet on the southernmost portion of the allotment to about 7,500 feet on the northernmost end.

There are currently six pastures within the allotment. These include the Devil's Gate Field, Devil's Gate Riparian pasture, Upper and Lower Indian Creek Fields, and Upper and Lower Cottonwood pastures. Map 1 in Appendix A shows the location of these pastures. Most of these pastures were created within the last ten years as fire protection fences or in conjunction with other projects. Cattle and sheep are authorized to graze in the allotment. The grazing privileges are described in the table below.

Table 1. Summary of animal unit months (AUMs), season of use, and kind of livestock.

Allotment Name	Kind of Livestock	Grazing Preference (AUMs)	Season of Use	Percent Public Land	
Devils Gate	Cattle	6,097 21 FFR[1]	4/1 – 8/31 4/1 – 4/30	94 100	
	Sheep	2,130[2]	4/1 – 8/31	100	

[1] FFR=Fenced Federal Range. These are public land AUMs fenced inside larger private land pastures.
[2] The 2,130 AUMs for sheep use are AUMs that were associated with what had once been private lands in the allotment owned by the sheep operator. Through the Indian Creek Land Exchange, the private lands (Heguy parcels) owned by the sheep operator became public lands. The AUMs that had been connected to those private lands were not converted to active grazing privileges through the land exchange but were labeled "temporary non-renewable" (TNR) AUMs. Any conversion of the TNR AUMs to active grazing privileges would be determined through allotment evaluations, and any decreases or increases in active use would be based on historic use. Historic use was defined as a combination of AUMs currently recognized as active use on their public land grazing permit (0 sheep AUMs) and the AUMs (2,130 sheep AUMs) that had been assigned to the offered lands (Heguy parcels). Prior to the land exchange, all of the sheep AUMs were based on private land ownership in the allotment and classified as exchange-of-use (EOU) AUMs.

The Devil's Gate Allotment is +/- 68,105 total acres with +/- 17,536 acres of private land and +/- 50,569 acres of BLM administered public land. There are a few privately owned properties within the allotment that have residential improvements or fencing; the majority of the private ground is basically unfenced and unimproved. Livestock water in the allotment comes from natural and manmade sources and is fairly well distributed. The Devil's Gate Riparian Enhancement Project, constructed in 2006/07, resulted in the creation of a riparian pasture, spring development, nine miles of pipeline, and five new water trough locations. This vastly improved livestock distribution across the allotment.

The allotment contains several different seasonal habitats for elk *(Cervus elaphus*), mule deer (*Odocoileus hemionus*), and pronghorn (*Antilocapra americana*). The allotment provides habitat for animals such as coyotes (*Canis latrans*), rabbits (*Lepus* spp. And *Sylvilagus* spp.), badgers (*Taxidea taxus*), bobcats (*Lynx rufus*), grey and red foxes (*Urocyon cinereoargenteus* and *Vulpes vulpes*), sagebrush obligate birds such as Greater Sage-Grouse (*Centrocercus urophasianus*; sage-grouse) and Sagebrush Sparrow (*Artemisiospiza nevadensis*), and other small mammals, reptiles, and invertebrates. Several other species of migratory birds occur within the allotment.

1.2 GRAZING HISTORY

Cattle and sheep have traditionally grazed in this allotment during the spring, summer, and fall. The cattle and sheep operations also commonly graze in the adjoining Stag Mountain Allotment to the north. In addition, the cattle operation grazes in the Morgan Hill Allotment to the south, and the sheep operation has some grazing use in the Pole Creek Allotment to the southeast, within the North Fork Group Allotment to the west, as well as use in the Jarbidge Mountains to the north. In the past, the cattle operation was part of a larger operation running in the adjoining Deeth and Pole Creek Allotments to the east which is part of the Marys River watershed.

2 DRAFT DETERMINATIONS

2.1 STANDARD 1. UPLAND SITES

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

As indicated by:

-Indicators are canopy and ground cover, including litter, live vegetation and rock, appropriate to the potential of the site.

Guidelines:

1.1: Livestock grazing management … is 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 sites within management units.
1.2: When livestock grazing management… alone is 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… is adequate when significant progress is being made toward this standard.

2.1.1 Draft Determination

Most of the acres in this allotment meet the Upland Site Standard and livestock grazing is in conformance with the guidelines. However, there appears to be at least a modest amount of acreage where the medium to large sized perennial grasses have been substantially reduced and replaced with either small perennial grasses and/or bare ground that are only marginally meeting the standard or not meeting the standard. Livestock impacts continue on some of these areas which indicate that some of the livestock use is not in conformance with the guidelines.

Within the Indian Creek Pasture, the areas that are not meeting the standard are located close to water and along the main trailing routes associated with livestock traveling to and from water. These impacts have likely been occurring for decades and continued to the present time, and indicates that these kinds of livestock impacts are not in conformance with the guidelines.

Within the Devil's Gate Riparian Pasture, there appears to be some vulnerabilities on the upland areas, part of which may be related to livestock impacts prior to the evaluation period and partly related to livestock impacts during the evaluation period; however, the changes in management since 2006/07 have likely brought livestock use in conformance with the guidelines, which should be providing opportunities for significant progress to occur.

The limited information on the Devil's Gate Field indicates the Upland Standard is being met and that livestock use is in conformance with the guidelines.

2.1.2 Rationale

Since 1987, a variety of data on the uplands have been collected and other observations made within the allotment. These data and observations were evaluated to determine if the Upland Site Standard is being met or if significant progress is being made towards the standard, and if livestock use is in conformance with the guidelines.

The following information was used to conduct the evaluation:

1) The 1984 Elko County Soil Survey (Central Part-NV767), along with 2012 descriptions of the upper soil layers at certain monitoring sites,

2) Ecological site descriptions of the various kinds of potential native vegetation communities applicable to the area, and associated reference sheets.

3) Data on vegetative production and ecological conditions collected between 1987 and 2014 as well as frequency trend data collected between 1987 and 2012,

4) Data on vegetative cover between 1991 and 2012,

5) The levels of utilization on key forage plants, and actual livestock use (cattle and sheep) for various years between 1987 and 2014,

6) Use pattern observations from 1993, 1995, and 1996.

7) Data on plant densities and vegetative production from 2004 related to fire rehabilitation activities from the 2001 Stag Fire,

8) Data on plant densities and cover in 2009 related to the 2006 Charleston, Sugarloaf, and Gopher Fires,

9) Observations in 2012 and 2014 related to soil stability and hydrologic function,

10) Photographs taken at the key area monitoring sites between 1987 and 2014, and other photographs related to fire rehabilitation activities and newer land health assessment monitoring sites,

11) Annual precipitation data between 1985 through 2014, and

12) The knowledge gained through the professional education and experiences of our resource specialists including reviews of literature on the subject and consultation with other specialists.

The detailed evaluation of information relating to the draft determinations for the Upland Site Standard can be found in Appendix C.

2.2 STANDARD 2. RIPARIAN AND WETLAND SITES

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

As indicated by:

- 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 accelerating 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 and 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.

Guidelines:

2.1: Livestock grazing management 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 is 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 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 is adequate when significant progress is being made toward this standard.

2.2.1 Draft Determination

Standard 2 is not being met for all of the Devil's Gate Allotment because most non-exclosure lentic (stationary) riparian areas are either non-functional or functioning at risk and do not appear to be progressing. Causal factors for not achieving proper functioning condition include: livestock use, lack of other water resources, wildlife use, and drought. Livestock grazing management under the current grazing permit does not ensure protection of at risk lentic riparian areas nor does it reduce the need to use these riparian areas as livestock water sources.

Progress is being made toward achieving this standard for lotic (flowing) riparian areas within the Devil's Gate riparian pasture. Guidelines are also being met for lotic riparian areas within this pasture. Current use in the riparian pasture is only allowed during specific seasons and within set utilization levels. This management has resulted in a trend of improving riparian conditions in the pasture. Because this management system focuses only on the riparian pasture, improving lotic conditions in the riparian pasture have come at the expense of declining lentic riparian conditions in the rest of the allotment.

2.2.2 Rationale

Water resources on public land in the Devil's Gate Allotment include perennial streams, intermittent streams, springs, seeps, small ponds, and numerous ephemeral streams. Perennial water resources are capable of supporting riparian areas. These perennial resources have been evaluated using techniques described in Prichard *et al*. 2003 and Prichard *et al*. 1994. Water quality data have been collected on the North Fork of the Humboldt River and some smaller intermittent streams and results have been considered by the Nevada Bureau of Water Quality Planning. These riparian condition assessments and water quality data are used to determine achievement of the standard and guideline above. These determinations are also supported by other data such as stream survey and water resources inventory. A summary of these methodologies and results follows. A detailed record of data used to make this determination is included in Appendices R, S, and T.

2.2.2.1 Proper Functioning Condition Assessments

A Proper Functioning Condition Assessment (PFC) is a qualitative assessment of riparian areas based on quantitative science. The methodology evaluates the functionality of riparian areas based on hydrological, vegetation, and soils/erosional factors, within the context of the geologic setting and the potential of the area (Prichard *et al*. 1998 and Dickard et al 2015)

PFC assessments result in ratings of riparian area functionality on a continuum from Non Functional (NF) through Functioning At Risk (FAR) to Proper Functioning Condition (PFC). Ratings of Functioning At Risk are further classified into downward trend (FARD), no apparent trend (FARNA), Static (FARS) or upward trend (FARU).

2.2.2.1.1 Lentic Assessments

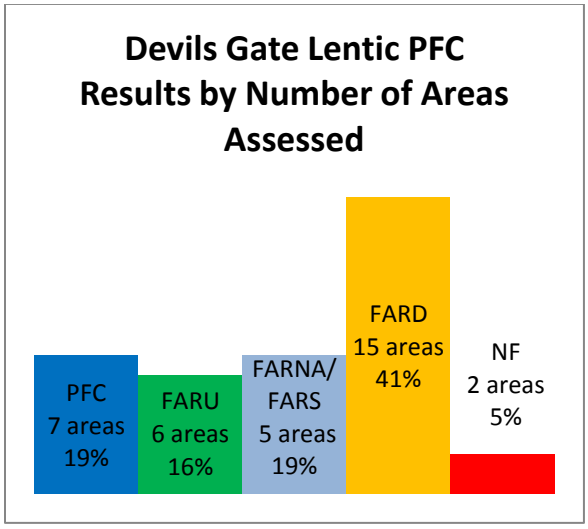
Lentic PFC assessments were completed at most of the lentic riparian areas within the Devils Gate Allotment. Wells Field Office typically conducts lentic assessments for riparian areas that are adjacent to springs, seeps, and ponded water bodies on public land. Areas were identified using topographical maps, water resource inventory records and aerial photography. These riparian areas exist on a variety of landscapes and elevations including steep hill slopes, deep canyons, and broad valleys. As part of the assessment process an effort was made to record the acres of area assessed. While these measurements are only approximations, they do provide some insight into the amount of area that each assessment represents, and the relative functionality of riparian area by acres assessed. More detailed information regarding types and characteristics of water resources in the allotment is presented in section 2.2.2.4 (Water resources inventory). Most of the lentic riparian areas within the Devils Gate Allotment were included in the lentic assessments;

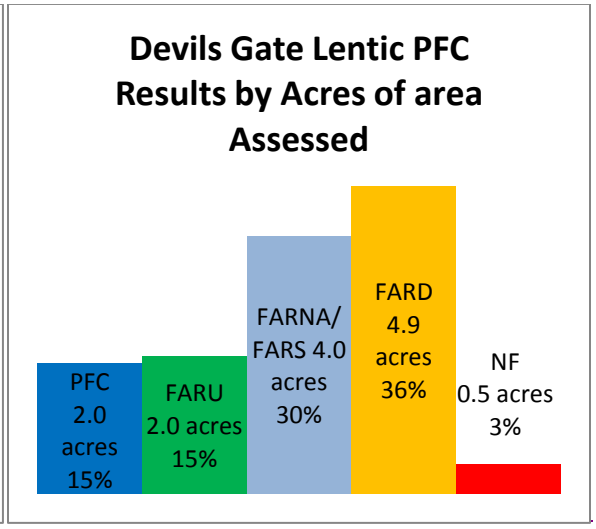
The BLM has assessed 37 lentic riparian areas in the Devils Gate Allotment between 1999 and 2013. The first assessment occurred between 1999 and 2004 when 30 areas were visited by BLM interdisciplinary teams and functional ratings were assigned. In 2012 and 2013, 18 assessments were completed by BLM, a BLM contractor, and through an assistance agreement with Great Basin Institute. A BLM interdisciplinary team reviewed and approved all assessment results. Due to reassessment and regrouping of assessments, a total of 37 riparian areas have been assessed in

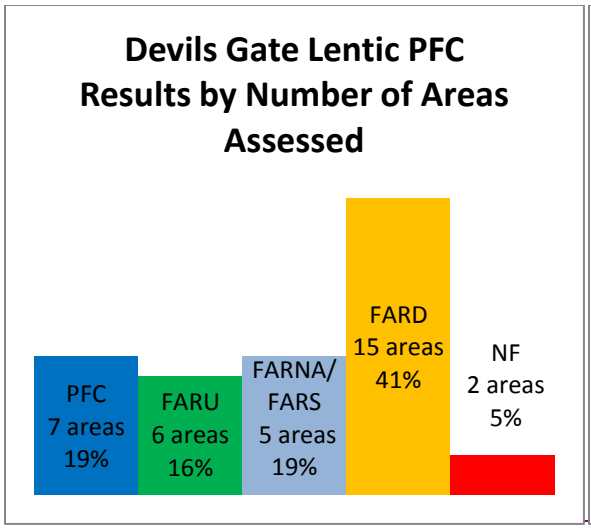
the allotment. Basic mapping indicates that assessment areas range from about 1000 square feet to two acres in size. The total assessed area is 13.7 acres and average area per assessment is 0.4 acres. In cases where areas were reassessed during 2012/2013, the summary of results below reflects the most recent assessments done. More detailed results including tables, photos, maps, and examples can be found in Appendices R and S.

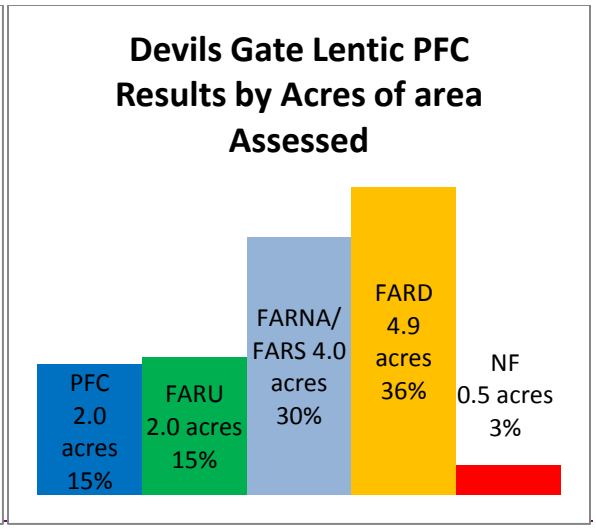
Lentic assessments indicate that the condition of lentic riparian areas covers the full range of functionality from non-functional (NF) to proper functioning condition (PFC). Out of the 37 areas assessed, seven (19%) are PFC, six (16%) are FARU, five (19%) are FARNA, 15 (41%) are FARD, and two (5%) are NF. When considered by acres of area assessed, the data show that of the 13.7 total riparian acres assessed, 15% are PFC, 15% are FARU, 30% are FARNA, 36% are FARD, and 3% are NF.

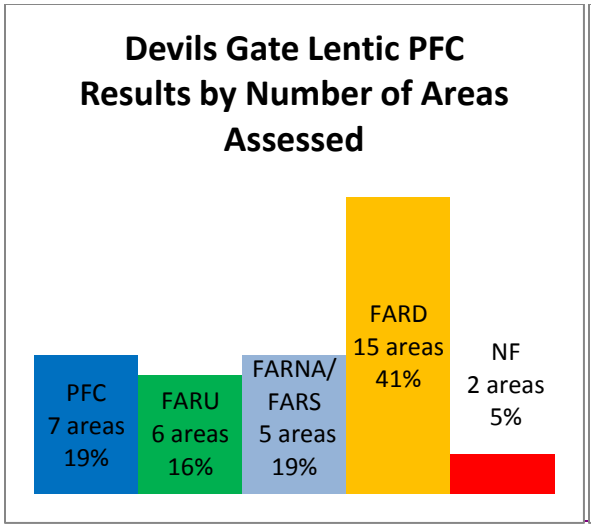
As part of the assessment process the team identified factors that were causing reduced riparian functionality and/or risk or future loss of functionality on functional at risk (FAR) and nonfunctional (NF) riparian areas. There were several of these causal factors in the Allotment, including livestock grazing, drought, roads, limited site capability, historic livestock use, and site development such as fences and water diversions.

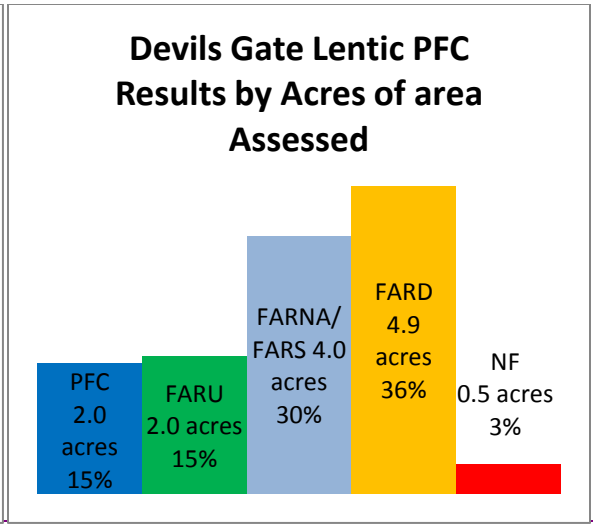


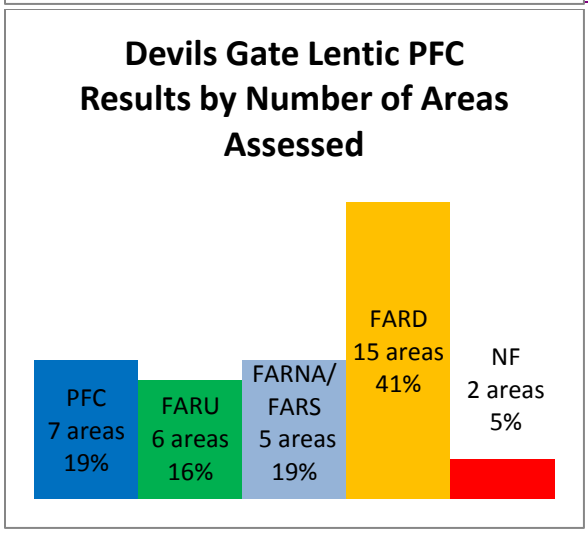


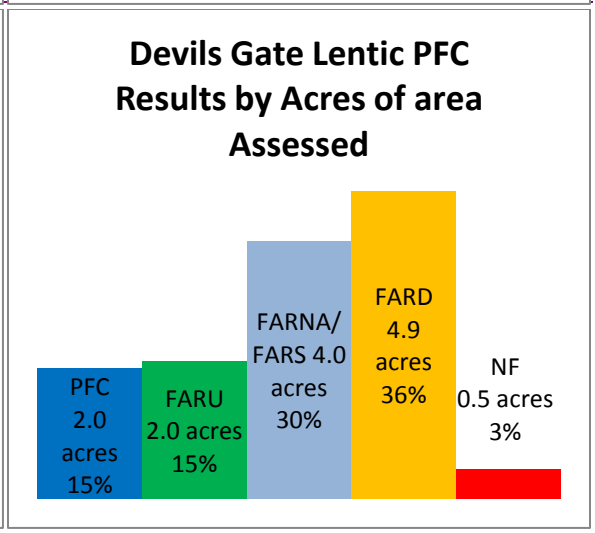












A most commonly observed causal factor for sites to be rated as FAR or NF was livestock use. Hoof action was observed at these areas. This can result in alteration of surface flow patterns by

causing channelization, head-cuts, pedestals, hummocks, and ultimately resulting in lowered water tables and shrinkage of riparian area at many sites. Livestock grazing appears to have altered vegetative communities resulting in decreased site stability in some areas. Livestock was identified as at least one of the causal factors on 27 (90%) of the 30 FAR or NF areas. The years of 2004, 2012, and 2013 were all years of considerable drought. Reduced flows or a lack of flow during drought results in a riparian area that often shows little or no perennial riparian vegetation. This adds additional complexity to doing PFC assessments, and it is likely that there are some areas rated as FARD and FARNA that would have been rated higher if the assessment had been done during normal (non – drought) conditions.

Considerable changes in riparian functionality have been observed in a few springs over the past 15 years illustrating the impact of livestock grazing on these resources. Changing impacts to riparian areas within the allotment are described in further detail in Appendix R. A spring known as Little Big Spring (Devils Gate 04, N39 E58 15AB) has shown marked improvement since 2006 when it was excluded from livestock use and a portion of its flow was diverted into a pipeline and troughs (appendix R). Likewise, several springs in the allotment achieved Proper Functioning Condition when cattle were excluded following the 2001 Stag Fire (Appendices R & S). However, since reopening the allotment to livestock grazing, these lentic areas have experienced reduced functionality and are trending downward.

Impacts from site water diversions, roads, weeds, fire, and historic livestock use are identified as at least one of the causal factors for ratings at nine (30%) of the 30 sites rated as FAR or NF. Water diversions remove a portion of water that would otherwise be available for utilization by riparian vegetation which may affect site stability. Trails, hoof action, and other surface disturbance caused by improperly located or engineered roads alters surface and sub-surface flow patterns and reduces riparian area size and stability. Fire impacts functionality by potentially removing important soil holding vegetative components which may result in increased sedimentation from the upland watershed. Historic livestock use is identified as a causal factor in areas which may have had higher intensity grazing in the past. Where historic livestock use is identified as causal factor functionality is usually improving, or current grazing is not the primary component affecting functionality.

2.2.2.1.2 Lotic Assessments

Monitoring of lotic (flowing water) systems within the Devil's Gate Allotment indicates that lotic riparian areas have been improving for the last 30 years. The North Fork of the Humboldt River, Beaver Creek, Cottonwood Creek, Horse Creek, and Pole Creek either flow through the allotment or border the allotment. Portions of the North Fork of the Humboldt River pass through blocks of private land within the allotment. Wetland/riparian zones are present along the perennial North fork of the Humboldt River (NFHR) and at Beaver Creek. Beaver Creek converges with the NFHR in North-western corner of the Allotment. Although Cottonwood and Horse Creek flow into the NFHR, both drainages are considered intermittent in their lower reaches because they lack year-round flow. Pole Creek is found on the eastern side of the allotment and is also intermittent. It flows through mixed private and public land before joining the Marys River.

The Devil's Gate riparian pasture

The Devil's Gate riparian pasture was created in 2006 in the Indian Creek Field to improve approximately eight miles of the NFHR. Water developments including a trough and pipeline system were constructed on uplands to provide alternate sources of water. A new grazing system of early season use, late season use, or rest in the riparian pasture has resulted in improved growth and establishment of willow and herbaceous communities.

Proper Functioning Condition (PFC)

Proper Functioning Condition (PFC) trend data for lotic riparian areas dates back to 2006. Table 2 contains stream length information and PFC data where available. Streams were re-visited on a 1-2 year interval to track changes in riparian conditions after the 2006 Charleston Complex Fire by BLM Staff. Grazing management within the allotment has been implemented in a manner that has allowed for the establishment of riparian vegetation and the restoration of functioning riparian conditions on most of the public portions of the streams.

PFC assessments result in ratings of riparian area functionality on a continuum from Non Functional (NF) through Functioning At Risk (FAR) to Proper Functioning Condition (PFC). Ratings of Functioning At Risk are further classified into downward trend (FARD), no apparent trend (FARNA), Static (FARS) or upward trend (FARU).

Devils Gate Allotment Lentic table

Table 2: Streams, Miles and, Most Recent PFC Assessments

Stream Name	Length of stream within allotment (miles)	Length of stream within allotment on public land (miles)	Most recent PFC assessment (year)	Most recent PFC ratings by stream reach
North Fork Humboldt River	19.44	15.6	No PFC Data 2010 2009 2015	S-01 FARU S-02 to S-07 PFC S-09 PFC S-08

Beaver Creek	1.11	1.11	No PFC Data	S-01
Cottonwood Creek	7.78	7.78	No PFC Data	no stations
Horse Creek	2.8	2.8	No PFC Data	no stations
Indian Creek	9.5	9.5	No PFC Data	no stations
Pole Creek	5.6	4.5	No PFC Data	no stations

Lotic assessments indicate that the condition of riparian areas covers the range of functionality from functional at risk upward trend (FARU) to proper functioning condition (PFC). Out of the 8 station assessed, 2 (25%) are PFC and six (80%) are FARU. The most common causal factor for a site to not be rated as PFC was historic livestock management.

The Devil's Gate Riparian Pasture was created to address this situation and lotic riparian areas within the pasture are improving. Significant progress is being made toward achieving PFC for most lotic riparian areas including improved width to depth ratios and improved vegetative composition and density. The change in the reassessments suggests that conditions are likely to continue to improve under current grazing management for lotic riparian areas. Appendix R illustrates early signs of improvement in the Devil's Gate Riparian Pasture.

2.2.2.2 Stream Survey

Stream survey inventory data have been collected and recorded on streams and riparian areas with the Devil's Gate Allotment from 1978 to 2010. Stream survey techniques are described in BLM Manuals 6671 and 6720-1. These techniques measure specific site characteristics that are used to calculate Riparian Condition Indices, reported as a percentage of optimum conditions. The indices provide a way to evaluate streambank stability and streambank cover in a simplified manner:

Index scores >80% indicate excellent riparian condition.

Scores between 60-80% indicate good riparian condition

Scores between 40-60% indicate fair riparian condition.

Scores < 40% indicates poor riparian condition.

Early data and photographs illustrate Fair to poor riparian conditions (see Appendices R and S). Improved grazing management along with the development of a riparian pasture has allowed for the establishment of riparian vegetation and the restoration of good riparian conditions on most of the streams within the allotment. Table 3 show a summary of stream survey results for the North Fork Humboldt River and East Fork Beaver Creek.

	Table 3: Stream Survey Results
North Fork Humboldt River	

Station	1978	1985	1991	1996	2007	2009	2010
S-1	36%	28%	55%	No data	25%	No data	No data
Devil's Gate Riparian Pasture							
S-2	47%	25%	43%	No data	31%	44%	43%
S-3	44%	25%	39%	No data	55%	50%	57%
S-4	42%	33%	45%	No data	50%	58%	65%
S-5	38%	33%	53%	No data	44%	56%	63%
S-6	39%	32%	41%	No data	40%	49%	55%
S-7	45%	33%	36%	No data	43%	51%	61%
S-8	42%	33%	49%	No data	59%	75%	75%
S-9	41%	39%	51%	No data	45%	66%	72%
Average	**42% Fair**	**31% Poor**	**46% Fair**	**-**	**43% Fair**	**50% Fair**	**55% Fair**
Beaver Creek							
S-1	**45% Fair**	**34% Poor**	**No data**	**45% Fair**	**79% Good**	**No data**	**No data**

There are eight stream habitat survey stations on the North Fork Humboldt River (NFHR) which are labeled S-1 to S-9. An example of improvement occurred at S-8 which showed an increase in riparian condition class (RCC) from 42% to 75% of optimum. There was not a marked example of degradation; this NFHR is moving in an upward trend. This allotment has only one stream habitat survey station for East Fork of Beaver Creek. It had an increase in riparian condition class from 45% to 79% of optimum and is moving in an upward trend.

Cottonwood Creek and Horse Creek

No stream survey data or PFC assessment has been completed on Cottonwood Creek and Horse Creek. These streams are intermittent only have water flows occasionally and characteristically have a dry streambed.

2.2.2.3 Water Quality Data

Determinations made by Nevada Division of Environmental Protection (NDEP) and older data collected by BLM is used alongside lentic and lotic PFC to make the determination whether Standard 2 is met with respect to achievement of state water quality criteria. The NDEP makes their determinations by comparing sample results with criteria set by the Environmental Protection Agency (EPA) for beneficial uses of water resources as determined by NDEP. Beneficial uses and associated numeric criteria are specified in Nevada Administrative Code (NAC) 445A, designated for North Fork Humboldt River, and these standards also apply to its tributaries including Indian Creek and Cottonwood Creek in accordance with the tributary rule (NAC 445A.1239). Likewise, standards for Pole Creek are the same as those established for Marys River. Beneficial uses of these streams are identified as: recreation not involving contact with the water, recreation involving contact with the water, propagation of wildlife municipal or domestic supply; irrigation, industrial supply, aquatic life, and watering of livestock.

Numeric criteria do not apply to springs and seeps in the allotment that are not tributary to designated waters. Instead, the State of Nevada has established narrative standards. These standards contained in NAC 445A.121 apply to all surface waters of the state and require waters to be "free from" various pollutants. The state of Nevada has not listed any waters within the allotment as being in violation of narrative standards. The BLM has not observed any attributes that would result in a violation of the narrative standard.

The NDEP made determinations in its 2012 Integrated Report regarding whether water quality is supporting the beneficial uses for streams in the allotment The NDEP used their own data collected between 2006 and 2012 for their determinations on NFHR, and some older BLM data for other streams in the allotment. Water Quality samples indicated that the NFHR was not supporting the following beneficial uses due to exceedance of numeric criteria: aquatic life due to elevated iron and phosphorus; irrigation, due to elevated manganese; and recreation involving contact with the water due to elevated phosphorus. NDEP determined that Indian Creek and Cottonwood Creek were fully supporting their beneficial uses. Pole Creek is fully supporting most of its beneficial uses, but insufficient information was available to determine whether aquatic life and recreation was supported.

Pole Creek, Cottonwood Creek, and Indian Creek have not been sampled extensively due to their limited flow and lack of connection to streams for which standards have been established. The BLM collected a few water quality samples for a short time between 2002 and 2005 on these streams but on several occasions found the stream dry and were unable to take samples. It is uncertain whether the "tributary rule" even applies in these streams since they are only connected to streams for which numeric standards are expressed only during periods of high flow. The samples that were taken exhibited no obvious issues with water quality and due to this and lack of flow the BLM did not pursue further sampling.

Exceedance of the water quality criteria for phosphorus, iron, and manganese raises the possibility that these constituents may be elevated as a result of external impacts, however; some streams have naturally higher levels of these constituents and their measured values may not necessarily be the result of anthropogenic sources. Higher than normal levels of phosphorus can be anthropogenic because phosphorus adheres to sediment particles and may be introduced into surface waters through sedimentation. Poor upland watershed or stream condition as the result of intense grazing or other disturbance would increase erosion and sedimentation into streams. These impacts can also occur naturally through sedimentation from burned areas or natural flooding. Elevated manganese and iron could occur through similar processes. Phosphorus, iron, and manganese are above their criteria in many Nevada streams. The NDEP is in the process of considering whether these criteria are appropriate for other Nevada streams through the TMDL process. The BLM does not think the levels of total phosphorous and metals present within NFHR are symptomatic of any problems with grazing management within the allotment. The reach of NFHR upstream of the allotment has similarly high levels of total phosphorus suggesting that upstream waters are at least partially responsible for levels within the allotment.

2.2.2.4 Water Resources Inventory

The BLM conducted inventory of water resources in the Devils Gate Allotment between 1980 and 2014 to locate water resources such as springs/seeps (springs), ponds and streams, and

quantify and describe their characteristics. These inventories included measurements of flow and simple water chemistry and observers also took photos and recorded observations.

Water resources in the allotment vary in size, shape, configuration and hydrology. This section focuses on springs, and a discussion of streams can be found in sections 2.2.1.2 and 2.2.2.3. Some springs are perennial and can support obligate riparian vegetation and others are intermittent and cannot. Some water resources are grouped together in two or more sources and are referred to as complexes. There are 28 perennial springs, one perennial spring complex, and 15 intermittent springs within the allotment. Details regarding these resources can be found in Appendix S. Spring flows vary from zero to 30 gallons per minute (gpm) and median flow at perennial springs is one gallon per minute. Water chemistry and variability of flow at these sources suggest that they are local springs meaning that the source of their water is from infiltration of precipitation on nearby uplands (USGS 2001). Photos and observations indicate that some riparian areas have experienced heavy livestock use in the past, and that similar impacts continue to occur within the allotment. A few spring sources have been developed to increase availability of water for livestock use. Detailed assessments of these spring sources and associated riparian areas are presented in section 2.2.2.1.1.

2.3 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.

As indicated by:

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

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

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 and burros 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

2.3.1 Draft Determination

The Standard is not met. Current livestock grazing is a causal factor of the poor condition of lentic riparian wildlife habitat. The interaction of historic and current livestock grazing, and fire exclusion has resulted in sagebrush/mountain shrub vegetation communities that contain an overabundance of shrubs and paucity of perennial grasses and forbs, relative to site potential, throughout a majority of the allotment. Current livestock grazing is therefore not in conformance with Guidelines 3.1 and 3.2.

2.3.2 Rationale

2.3.2.1 Special Status Species

BLM Special Status Species are: (1) species listed or proposed for listing under the Endangered Species Act (ESA), and (2) species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA, which are designated as Bureau Sensitive by the State Director. Additionally, all Federal candidate, proposed, and delisted species in the five years following delisting are designated as Bureau Sensitive Species (BLM 2008). Elko District BLM Special Status Species, including those known or with the potential to occur within the allotment are presented in Appendix V.

2.3.2.1.1 Aquatic Special Status Species

Lahontan Cutthroat Trout
The North Fork of the Humboldt River (NFHR) historically supported Lahontan cutthroat trout (*Oncorhynchus clarkii henshawi*) (LCT), a federally listed threatened species; however this species is now confined to headwater reaches more than 20 to 30 miles from the project area. The 1995 LCT Recovery Plan identifies this stream portion of the NFHR as supporting LCT populations best suited for recovery of the species (U.S. Fish Wildlife Service 1995). Portions of the River just above the project area have been identified as potential LCT habitat (NDOW 2005).

California Floater
The California floater (*Anodonta californiensis*) is likely to be found in the project area. The floater is a freshwater mussel that lives in shallow areas of lakes, ponds, and rivers. They burrow into substrates and feed on bacteria, plankton, and detritus, strained through the gills. The life

cycle includes a parasitic stage requiring a host fish, usually native minnows. Although little is known about habitat requirements for floaters, in general, declines in freshwater mussels are thought to be associated with habitat degradation including loss of fish host and declines in water quality.

A live California floater was documented in the NFHR just above the confluence of Beaver Creek (a location immediately upstream from the project area) in September of 2004 (BLM files). Floater shells, some with intact hinges (suggesting recent viability), were recorded in 1997 in portions of NFHR farther upstream, (BLM files).

Conclusion

The standards are close to being met for lotic aquatic habitat needs; however, at this time some species are not found in these streams. Observations that the majority of lotic riparian areas were rated as Functioning At Risk with an Upward trend or at Proper Functioning Condition indicate an improvement in aquatic habitat. As riparian vegetation continues to mature in the riparian pasture, the likelihood that aquatic special status species will migrate down from the higher reaches increases. Current livestock grazing practices do not appear to be inhibiting the recovery of these systems. Existing livestock grazing management is adequate for these areas and significant progress is being made toward meeting the lotic riparian standard.

2.3.2.1.2 Terrestrial Special Status Species

Greater Sage-Grouse

As a sagebrush-obligate, landscape-scale species and current Candidate for listing under the Endangered Species Act, Greater Sage-Grouse (sage-grouse) is an appropriate "umbrella" species to represent the habitat needs of a suite of sagebrush-obligate and sagebrush-associated species, including, but not limited to Sage Thrasher, pygmy rabbit, Brewer's Sparrow (all BLM Sensitive Species), Sagebrush Sparrow and sagebrush vole. It is presumed that managing for habitat characteristics that benefit the sage-grouse will also benefit other species that fall under the sage-grouse umbrella (Rowland *et al*. 2006, Hanser and Knick 2011).

The United States Geological Survey (USGS) recently developed a habitat classification model for greater sage-grouse based in part on telemetry location data collected throughout Nevada and northeastern California from 1998 to 2013 (Coates *et al*. 2014). This model generated spatially explicit maps describing relative habitat suitability indices (HSI) for sage-grouse across the area. The authors then combined probabilistic breeding density with a non-linear probability of occurrence relative to distance to nearest lek using count data to calculate a composite space use index (SUI). The SUI was then classified into two categories of use (high and low-to-no use) and intersected with the HSI categories to prioritize habitat across the range of greater sage-grouse within Nevada and northeastern California. Habitats were prioritized and categorized as follows (BLM Instruction Memorandum NV-2015-017):

1) Preliminary Priority Habitat (PPH): Defined as the intersection between all suitable habitat (high, moderate, and low) and the 85% Space Use Index (SUI). This habitat management class is intended to incorporate all suitable habitats that have relatively high certainty of current sage-grouse occupancy (i.e., the "best of the best").

2) Preliminary General Habitat (PGH): Defined as all high quality habitat falling outside the 85% SUI and all non-habitat falling within the 85% SUI. This was a two-part process.

High quality habitat falling outside the 85% SUI was erased by the 85% SUI, and non-habitat was clipped by the SUI. This habitat management class encompasses: (1) high-quality habitats based on environmental covariates with a lower potential for occupancy given the current distribution of sage-grouse; and (2) sage-grouse incursion into areas of low quality habitat that is potentially important for local populations (for example, corridors of non-habitat connecting higher quality habitat).

3) Mapped Habitat: Defined as moderate and low quality habitat falling outside the 85% SUI. This class represents areas with appropriate environmental conditions for sage-grouse, but that are less frequently used.

4) Non-habitat. Defined as non-suitable habitat that is present within the low-to-no use SUI. This scenario represents habitat of marginal value to sage-grouse populations.

The Devil's Gate Allotment is comprised of 91% PPH, 7% PGH and 2% Mapped Habitat, emphasizing its importance for sage-grouse. Five active, three inactive and one lek of pending status occur within the allotment (NDOW 2014 lek database).

Monitoring data were collected within the allotment in June, 2012, using protocol similar to that established by Stiver *et al*. (2015) for assessing seasonal sage-grouse habitat quality. Breeding habitat (pre-laying, nesting, early brood-rearing) indicators are as follows: (1) sagebrush canopy cover, (2) woody height (all shrubs), (3) sagebrush growth form for nesting, (4) herbaceous height, (5) perennial grass canopy cover, (6) cheatgrass cover, (7) forb canopy cover, and (8) preferred food forb diversity. Table 4 includes the average rating for each breeding habitat indicator at each monitoring site. Raw data are presented in Appendix W.

Table 4. Habitat ratings for Greater Sage-Grouse breeding habitat, Devil's Gate Allotment, June, 2012.

Breeding Habitat Indicators	Suitable	Marginal	Unsuitable
Average Sagebrush Canopy Cover (%) (Suitable=15-25%, Marginal=5 to <15% or >25%, Unsuitable= <5%)	*1,4,6	2,5	3
Woody Height (cm) – Arid Site (Suitable=30 to 80, Marginal=20 to <30 or >80, Unsuitable= <20)	1,2,4,5	6	3
Sagebrush Growth Form (Suitable=Spreading, Marginal= mix of Spreading and Columnar, Unsuitable=Columnar)	2,4,5	1,3,6	
Average Herbaceous Height (cm) (Suitable= ≥18, Marginal= 10-18, Unsuitable= <10)	1,2,3,5,6	4	
Average Perennial Grass Canopy Cover (%) – Arid Site (Suitable= ≥10, Marginal= 5 to <10, Unsuitable= <5)	1,2,3,4,5,6		
Average Perennial Forb Canopy Cover (%) – Arid Site (Suitable= ≥5, Marginal= 3 to <5, Unsuitable= <3)	1,3,4,6	5	2
Average cheatgrass cover (%) Suitable=≤5%, Unsuitable= >5%)	1,3,6		2,4,5
Preferred Forb Availability (total species) (Suitable= preferred forbs are common with several species present,	1,4,6	5	2,3

Marginal= preferred forbs are common but only a few species present, Unsuitable= Preferred forbs are rare)			

*1 = DG-01, 2 = DG-02, 3 = DG-03, 4 = DG-04, 5 = DG-05, 6 = DG-06

Non-native annual grass presence in nesting habitat exerts a negative impact on nest success (Blomberg *et al*. 2012). It provides neither a cover nor a food component for sage-grouse. It is also a vector for increasing fire occurrence and the loss of quality nesting habitat. In south-central Wyoming, Kirol *et al*. (2012) found that selection of microhabitat for nests was negatively correlated with cheatgrass, and Lockyer *et al*. (*in press*), in a similar study in Nevada, reported that adult females selected for perennial grasses while avoiding annual grasses at nest sites. In east-central Nevada, Blomberg *et al*. (2012) documented declining sage-grouse populations in areas impacted by cheatgrass. Johnson *et al*. (2011) reported similar pronounced negative effects on sage-grouse populations in areas with relatively small amounts of sagebrush conversion to exotic species. The Nevada Greater Sage-Grouse Conservation Plan (State of Nevada Sagebrush Ecosystem Program 2014) provides an objective of less than 5% annual grass cover within nesting habitat. Cheatgrass cover ranged from 9 to 15% at three of the monitoring sites within the allotment (DG-01=15%, DG-03=12%, DG-06=9%), indicating that these sites are not providing high quality nesting habitat compared to other sites that did not contain significant amounts of cheatgrass cover (DG-02=1%, DG-04=0%, DG-05=2%).

The quality and extent of late brood-rearing habitats have also been suggested as factors limiting sage-grouse chick survival and subsequent recruitment and population growth rates (Aldridge and Brigham 2001, Connelly *et al*. 2004, Crawford *et al*. 2004, Gregg 2006, Atamian *et al*. 2010). Late brood-rearing habitat indicators (upland) are as follows: (1) sagebrush canopy cover, (2) woody height (all shrubs), (3) perennial grass and forb canopy cover, and (4) preferred food forb diversity. Table 5 includes the rating for each of these indicators at each monitoring site.

Table 5. Habitat ratings for Greater Sage-Grouse late brood-rearing habitat, Devil's Gate Allotment, June, 2012.

Late Brood-Rearing Habitat Indicators (uplands)	Suitable	Marginal	Unsuitable
Average Sagebrush Canopy Cover (%) (Suitable= 10-25, Marginal= 5 to <10 or >25, Unsuitable= <5)	*1,4,5,6	2	3
Woody Height (cm) (Suitable= 40-80, Marginal= 20 to <40 or >80, Unsuitable= <20)		1,2,4,5,6	3
Average Perennial Grass and Forb Canopy Cover (%) (Suitable= ≥15, Marginal= 5 to <15, Unsuitable= <5)	1,2,3,4,5,6		
Preferred Forb Availability (total species) (Suitable= preferred forbs are common with several species present, Marginal= preferred forbs are common but only a few species present, Unsuitable= Preferred forbs are rare)	1,4,6	5	2,3

*1 = DG-01, 2 = DG-02, 3 = DG-03, 4 = DG-04, 5 = DG-05, 6 = DG-06

An additional component of late brood-rearing habitat includes riparian/mesic areas such as springs and wet meadows. Such sites are an essential component of grouse habitat in many areas because they provide the best sources of succulent forbs and insects important in the diet of young sage-grouse. However, these sites are often extremely limited in extent in cold desert ecosystems (late brood-rearing habitats where broods were successfully reared represented 2.8%

of the total landscape area in east-central Nevada; Atamian *et al*. 2010). Stiver *et al*. (2015) indicated that PFC is an appropriate methodology to assess the quality of mesic areas during the late brood-rearing period. The evaluation of riparian areas (Standard 2 above) indicated that the Riparian Standard was not met, with a majority of lentic riparian areas evaluated as Functioning At Risk or Non-Functional. Given the critical importance of these limited areas to sage-grouse and the degraded conditions documented at many of these areas within the allotment, this component of brood-rearing habitat is not meeting the Habitat Standard and current livestock grazing was identified as a causal factor.

Sagebrush is essential for sage-grouse as both food and cover during winter. Sage-grouse forage exclusively on the leaves of sagebrush during winter; therefore these plants must be accessible above the snow to permit utilization (Connelly *et al*. 2000). Thus, winter habitat indicators are as follows: (1) sagebrush canopy cover, and (2) sagebrush height. According to data available from the Western Regional Climate Center (2015) snow depths at the nearest monitoring station, located at the Gibbs Ranch approximately 16 miles northeast and at a similar elevation to the Devil's Gate Allotment, peak in the month of January. Snow depth was recorded from 1952 to 2013 and yielded an average peak depth (seven day running average) of almost three inches (~8 cm). This data was used to determine winter habitat suitability based on sagebrush height above snowpack. Table 6 includes the rating for each winter habitat indicator at each monitoring site.

Table 6. Habitat ratings for Greater Sage-Grouse winter habitat, Devil's Gate Allotment, June, 2012.

Winter Habitat Indicators	Suitable	Marginal	Unsuitable
Sagebrush Canopy Cover (%) (Suitable= ≥10, Marginal= 5 to <10, Unsuitable= <5)	*1,4,5,6	2	3
Sagebrush Height (cm) (Suitable= >25, Marginal= >10 to <25, Unsuitable ≤ 10)	1,2,4,5	6	3

*1 = DG-01, 2 = DG-02, 3 = DG-03, 4 = DG-04, 5 = DG-05, 6 = DG-06

In summary, seasonal habitat suitability indicators for sage-grouse were found to be primarily in the 'suitable' category, with a smaller proportion in the 'marginal' category. Those found to be in the 'unsuitable' category were recorded at two monitoring sites that had recently burned, a result to be expected for several years following wildfire in sagebrush rangelands. The observation that the majority of lentic riparian areas, critical to survival of sage-grouse broods (Atamian *et al*. 2010), were rated as Functioning At Risk or Non-Functional indicates that this important component of sage-grouse habitat is not meeting the Standard. In addition, the presence of a significant cheatgrass component at half of the monitoring sites indicates that nesting habitat is substandard and at higher risk of conversion to cheatgrass following disturbance. In aggregate, while much of the monitoring data indicate that unburned habitat within the allotment is meeting the needs of sage-grouse and other species that fall under the sage-grouse umbrella, the inadequate conditions at lentic riparian areas and within a portion of the nesting habitat indicate the Standard is not met for sage-grouse during at least two critical life stages. Current livestock grazing is a contributing factor to at least the poor riparian conditions.

<u>Raptors</u>

There are several historic nest sites, primarily in cliff nesting habitat, along the North Fork Humboldt River on the west side of the allotment (NDOW GIS Raptor Database 2015). Most of these were identified as probable Golden Eagle* or Prairie Falcon nests. Additional raptors that may use habitat within the allotment during at least some portion of the year include Bald Eagle, Peregrine Falcon*, American Kestrel, Swainson's Hawk*, Ferruginous Hawk*, Rough-legged Hawk, Red-tailed Hawk, Sharp-shinned Hawk, Cooper's Hawk, Northern Goshawk*, Short-eared Owl, Burrowing Owl*, Great Horned Owl, Barn Owl, Northern Harrier and Turkey Vulture (*BLM Sensitive Species). While not all of these species use the allotment for breeding, most of them may pass through and use portions of the allotment as foraging habitat during annual migration, or as winter habitat.

As predators, raptors are dependent upon a sufficiently abundant and diverse prey base to sustain their populations. Raptor prey includes small mammals (rabbits, rodents), birds, reptiles, amphibians and invertebrates. Many small mammals are vegetarians, feeding on seeds or herbaceous material, and therefore require a healthy component of grasses and forbs. The reduced cover of grasses (relative to desired condition where grasses generally comprise at least half of the vegetation composition by weight) noted at several of the unburned monitoring sites indicates that habitat quality for many small mammals and other raptor prey species is likely lacking in these areas. This condition could lead to reduced prey populations (Reynolds and Trost 1980), resulting in a concomitant reduction in the potential of the ecosystem to sustain raptor populations.

Loggerhead Shrike

Loggerhead Shrike inhabits desert scrub, sagebrush rangelands, grasslands and meadows (Wildlife Action Plan Team 2012). Shrikes often perch on poles, wires, or fence posts; appropriate hunting perches are an important part of suitable habitat. Arthropods, amphibians, small to medium-sized reptiles, small mammals and birds are primary prey (Reuven 1996). Potential nest sites within the allotment include shrubs, with nest height averaging 0.8-1.3 meters (2.6-4.3 feet) off the ground (Wiggins 2005). The allotment serves as year-round habitat for the species and may host resident breeding pairs as well as wintering migratory individuals that breed further north.

Black rosy-finch

Black rosy-finches (*Leucosticte atrata*) breed in remote alpine habitats, where they are difficult to monitor and study. They are more easily observed after they descend to lower elevations for the winter, where they often join with Gray-crowned Rosy-Finches (*Leucosticte tephrocotis*) in mixed foraging and roosting flocks of 25 – 1,000 individuals. Nevada trends and population size are unknown, and breeding populations are small and discontinuous (GBBO 2010). Most of the conservation attention for this bird is focused on protecting communal winter roost sites (which are critical for survival) and winter foraging areas.

Winter telemetry studies in northeastern Nevada revealed that Black Rosy-Finches depend heavily upon the shelter offered by below-ground communal roost sites, including abandoned mine shafts, caves, and deep fissures in metamorphic rock outcrops. The flocks return to these roost sites every evening after foraging in sagebrush or montane shrubland habitat up to 10 kilometers [6 miles] away. Flocks may remain in the roosts for extended periods when the weather is inclement. Known roost sites were located at elevations ranging from 1,400 – 2,800

miles [4,600 – 9,200 feet] within a matrix of sagebrush, montane shrubland, and pinyon-juniper habitats, and were typically higher in elevation than their associated foraging sites. While not documented, it is possible that black rosy-finches use the allotment as foraging or roosting habitat during winter.

Bats

All (14) species of bats are designated as Sensitive Species within the Elko District. Many of these species are associated with specific habitats that are particularly important for roosting or foraging, including:

- Bridges and buildings
- Natural caves, mine shafts and adits
- Cliffs, crevice and talus slopes
- Desert wash foraging habitat
- Forest and woodland foraging habitat
- Tree roosting habitat
- Water source foraging and watering habitat (Bradley *et al*. 2006)

Of these specific habitat types, the allotment contains a bridge, cliffs and crevices, water source foraging and watering habitat, and potentially some small cave and mine shaft habitat. The allotment may serve as roosting and foraging habitat for bats and provides opportunities for watering in the Humboldt River and at catchment ponds and livestock watering facilities when they are in operation. No systematic surveys for bats have been conducted within or near the allotment, and thus not all bat species listed in Appendix V - Table 2 necessarily use habitat within the allotment.

Preble's Shrew

Likely habitat associations for Preble's shrew (*Sorex preblei*) collected in northeastern Nevada were described as "ephemeral and perennial streams dominated by shrubs, primarily below 2,500 m [8,202 feet]in elevation" (Ports and George 1990). At Sheep Creek, approximately 23 kilometers [14 miles] west of the allotment, Ports and George (1990) collected 12 specimens "in a seasonally wet, sagebrush-dominated community." Little else is known about the ecology and distribution of Preble's shrew in Nevada or its specific habitat needs, although its' diet is likely similar to that of other shrews (insects and other small invertebrates; NatureServe 2008). Given the brief description of habitat associations of Preble's shrews in northeastern Nevada, it is reasonable to expect that the species could occur within the allotment.

Mattoni's blue butterfly

The species is dependent upon slender buckwheat (*Eriogonum microthecum laxiflorum*) as a host plant, which is fairly widespread and grows in mountain habitats from about 1,500-3,200 meters [5,000-10,500 feet]. Mattoni's blue is known in Nevada from the Pequop Range, Charleston Reservoir and the west fork of Beaver Creek (Shields 1975), part of which flows through the northwestern corner of the allotment. Because its host plant is fairly widespread Mattoni's blue may be more common than is currently known. Slender buckwheat may occur within the allotment; therefore it is possible that Mattoni's blue could also be present. The status of Mattoni's blue is likely to mirror that of slender buckwheat, which is assumed to mirror that of other native forbs.

2.3.2.1.4 Special Status Plants

A request was sent to the Nevada Natural Heritage Program for information regarding occurrence of Special Status Species within 10 km of the Mary's River Complex. The results indicated that no Special Status Plants have been documented within the Devil's Gate Allotment; however, Deeth buckwheat (*Eriogonum nutans* var. *glabratum*) was documented approximately six miles to the southeast. All Special Status Plants that could occur within the allotment are forbs (Appendix V - Table 1) whose distribution and abundance, if present, would reasonably be expected to reflect those of the native forb community observed at monitoring sites.

2.3.2.2 *Wildlife including big game and migratory birds*

2.3.2.2.1 Big Game

Data collected at monitoring sites were analyzed for mule deer (*Odocoileus hemionus*) and pronghorn (*Antilocapra americana*) habitat quality using the BLM's WILDIVE program, which calculates a vegetative diversity index based on percent composition and preference for species present at the site. This information was used along with other factors such as water distribution, vegetative production, percent foliar cover, vertical obstruction cover, disturbance or interference factors and browse condition to estimate habitat condition ratings.

Pronghorn

The allotment is comprised primarily (90%) of summer range with a smaller proportion (10%) of crucial winter range in the south (Appendix A, Map 4), although much of the latter burned in the 2006 Gopher Fire. Habitat evaluation ratings are presented in Table 7.

Table 7. Pronghorn habitat evaluation ratings* (BLM Big Game Manual 6630).

Key Area	1987	1990	1994	2012	2014
DG-01 (summer)	Fair (52)	NA**	Good (73)	Fair (50)	Fair (51)
DG-02 (summer)	Fair (57)	Fair (52)	Fair (59)	Fair (58)	Good (65)
DG-03 (crucial winter)	NA	NA	NA	NA	Fair (58)
DG-04 (summer)	NA	NA	NA	NA	Fair (47)
DG-05 (summer)	NA	NA	NA	NA	Fair (41)
DG-06 (summer)	NA	NA	NA	NA	Fair (49)

*Good (61-105), Fair (31-60), Poor (5-30).
**Not Available.

Only two sites (DG-01 and DG-02) were rated more than once during the rating period (1987-2014). DG-01 did not burn during the rating period and was rated as 'Good' only during the 1994 rating. All other ratings at this site were 'Fair' and the most recent rating was due to an overabundance of shrubs. DG-02 was rated as 'Fair' throughout most of the rating period until improving to 'Good' in 2014. The improvement was due to an increase in grass composition of the vegetation community at the site. The remainder of the monitoring sites were established and measured only in 2014, yielding a 'Fair' rating at each. The primary limiting factor at these sites was skewed vegetation composition, including a paucity of shrubs at DG-03 (due to a wildfire in 2006) and an overabundance of shrubs at DG-04, DG-05 and DG-06.

Given the less than ideal habitat ratings at the majority of sites monitored, it is reasonable to evaluate whether or not the sites are capable of providing good quality habitat ratings. Because the primary factor in the substandard ratings consistently was skewed vegetation composition of grasses, forbs and shrubs, an examination of the desired composition contained in the NRCS ecological site descriptions is informative. Ecological site could be verified only at DG-03 (R025XY019NV; Loamy 8-10" Wyoming big sagebrush/Thurber's needlegrass-bluebunch wheatgrass) and DG-04 (R024XY030NV; Shallow Calcareous Loam 8-10" Black sagebrush/Thurber's needlegrass). Desired vegetation composition at the former consists of approximately 30% shrubs by weight compared to 2% actual, although this was due to the 2006 gopher fire removing the shrub component. At DG-04, desired vegetation composition is approximately 45% shrubs, 5% forbs and 50% grasses, compared to the actual of 83%, 7% and 10%, respectively. If desired vegetation composition had been present, the site would still have rated 'Fair' (58) although it would have been much nearer the 'Good' category. While not able to be verified through onsite soil examination, potential ecological sites at the remaining four monitoring sites were identified in the NRCS GIS database as:

DG-01 and DG-06: R025XY019NV; Loamy 8-10" Wyoming big sagebrush/Thurber's needlegrass-bluebunch wheatgrass

DG-02 and DG-05: R025XY009NV; Mountain big sagebrush-bitterbrush/bluebunch wheatgrass

These ecological sites are typically composed of at least 70% grasses and forbs by weight at desired condition (NRCS 2003). This composition, if present, often would have improved the habitat ratings nearer to or into the 'Good' category, indicating the sites are capable of providing better quality habitat than currently exists and that an overabundance of shrubs has diminished habitat suitability.

Table 8. Percent composition of shrubs, grasses and forbs at six monitoring sites in Devil's Gate Allotment, 5/28-7/1/2014.

Monitoring Site	Shrub	Grass	Forb
DG-01	80	16	5
*DG-02	46	52	2
**DG-03	2	87	11
DG-04	83	7	10
DG-05	94	5	0.4
DG-06	67	15	18

*This site burned in 2001.
**This site burned in 2006.

An additional consideration concerning the documented composition of the vegetation community includes the observation that at four of six monitoring sites the forb community was composed of 77-100% of three phlox species (*Phlox hoodii*, *P. longifolia*, and *Linanthus pungens*) (a fifth site [DG-01] had 78% phlox composition in 2012 but dropped to 23% in 2014). These species have low palatability for grazing animals (Dayton 1931, Parker 1975, Mueggler and Stewart 1980, Dittberner and Olson 1983) and are termed 'increasers' because they tend to increase in abundance under a moderate to heavy livestock grazing regime (Johnson and Nichols 1970, Parker 1975, Looman 1980, Lacey and Mosely 2002). There is some indication that these

species may also increase because of long-term fire exclusion and it is likely that both livestock grazing and fire exclusion play a role. The effect of livestock grazing on the fire regime, particularly historically heavy grazing/overgrazing, is to decrease the occurrence and extent of wildfire, thus encouraging an increase in phlox. In general, a large increase in the percent composition of phloxes is considered an indicator of rangelands in poor condition (Hopkins 1979).

Mule Deer

The allotment is comprised of 43% summer range, 30% crucial winter and 27% limited use. Habitat evaluation ratings are shown in Table 9.

Table 9. Mule deer habitat evaluation ratings* (BLM Big Game Manual 6630).

Key Area	1991	2014
DG-01 (limited use)	Not rated	Not rated
DG-02 (summer)	59 (Fair)	47 (Poor)
DG-03 (crucial winter)	NA**	19 (Poor)
DG-04 (summer)	NA	43 (Poor)
DG-05 (summer)	NA	52 (Fair)
DG-06 (crucial winter)	NA	54 (Fair)

*Excellent (81-100), Good (61-80), Fair (51-60), Poor (10-50).
**Not available.

The factors most often resulting in the Poor to Fair ratings for mule deer habitat were low diversity indices indicating a skewed vegetation composition (DG-04, DG-05 and DG-06) and disturbance related to recent wildfire which affected the availability of shrub cover and browse (DG-02 and DG-03). Similar to the pronghorn ratings, desired vegetation composition would improve the quality of mule deer habitat at most of the monitoring sites.

Elk

The allotment is comprised primarily (82%) of crucial winter habitat with the remainder being low density use. The Bureau has no formal rating system for elk habitat, but key factors of high quality winter elk habitat include security and thermal cover (often in the form of pinyon and juniper trees in Elko County), and a robust grass component for winter grazing. Neither of these is prevalent at a majority of the monitoring sites in the allotment, with the exception of a robust grass component at two sites (DG-02 and DG-03) that have recently burned. As described for pronghorn and mule deer, a more robust grass component would improve the quality of winter elk habitat at most of the monitoring sites within the allotment.

Migratory birds

Several species of migratory birds may use habitat within the allotment during all or some portion of their annual life cycle. The Nevada Comprehensive Bird Conservation Plan (GBBO 2010) details Priority and Indicator bird species for specific habitat types within Nevada. Habitat types found within the Devil's Gate Allotment include Montane Riparian, Sagebrush, Cliffs, Springs, Montane Shrubland and limited Montane Riparian. Priority and Indicator bird species likely to be found in these habitats in the allotment are detailed in Appendix V.

Vegetation composition in unburned Sagebrush and Montane Shrubland habitat types (the primary habitat types by percent of area covered) were found to be dominated by shrubs at the

expense of grasses and forbs, indicating that conditions are less than desired for species that benefit from structurally diverse communities, including many migratory birds. In areas that have recently burned, some migratory bird species have benefitted from temporary conversion to grasslands (e.g., Vesper Sparrow) while others have been negatively impacted (e.g., Brewer's Sparrow). These effects are expected to moderate as post-fire vegetation succession proceeds. For the many species (over 60% of neotropical migrant bird species; Rich 2002) that utilize riparian habitats associated with springs, the finding that the majority of lentic riparian areas were not properly functioning indicates that these critical habitats are not meeting the needs of many migratory bird species. Such sites are particularly crucial to migratory birds as breeding habitat and as stopover sites during spring and fall migration (Rich 2002).

Conclusion

The aggregate evaluation of vegetation composition, structure and productivity indicate that while some portions of the allotment are meeting the Habitat Standard, others are not. Of particular note, critical late brood-rearing habitats for sage-grouse are less suitable than their potential, and vegetation communities comprised of an overabundance of shrubs are limiting habitat quality for big game, migratory birds and other wildlife populations. Current livestock grazing was identified as a contributing factor to these marginal or unsuitable habitat conditions.

Duration, timing and intensity of livestock grazing are basic tenets in ensuring proper grazing management. Regular rest from livestock grazing during the growing season is a key factor in ensuring the health, vigor and long-term persistence of native perennial bunchgrasses in big sagebrush communities (Burkhardt and Sanders 2012).

The site potential composition within the majority of the allotment is 50-70% grasses and forbs by weight. The most abundant and ecologically important native grasses within the allotment are bluebunch wheatgrass and Thurber's needlegrass, which provide important forage for livestock and wild ungulates and forage and cover for a host of bird, small mammal and other wildlife species.

It is recommended that bluebunch wheatgrass be grazed under a deferred, rotational grazing system to ensure plants remain healthy (Eckert and Spencer 1987, Ogle et al. 2003), as it is extremely sensitive to defoliation during the active growth period (Eckert and Spencer 1987, Zlatnick 1999). Ideally, spring grazing should occur no more than one out of three years (Ogle et al. 2003). Bluebunch wheatgrass reaches seed-ripe by mid-July at similar elevations in southern Idaho (Blaisdell and Pechanic 1949), thus regular deferment of livestock grazing until after this time can ensure that bluebunch wheatgrass and other native perennial grasses (e.g., Idaho fescue, Sandberg bluegrass, squirreltail) are able to successfully reproduce and ideally increase over time. Likewise, Thurber's needlegrass is particularly sensitive to growing season use, especially if grazed under a season-long grazing regime or without regular rest (Eckert and Spencer 1987).

The current grazing system does not ensure regular growing season rest and subsequent seed production, or adequate storage of carbohydrate reserves in these perennial bunchgrasses. Season-long grazing systems have been shown to be detrimental to rangeland health, decreasing the occurrence of perennial bunchgrasses such as bluebunch wheatgrass and Thurber's needlegrass (Burkhardt and Sanders 2012). Vegetation composition within the allotment was heavily skewed toward shrubs in areas that had not recently burned. Historic and current grazing

regimes (i.e., season-long grazing during and after the critical growth and reproduction stage for perennial bunchgrasses) have been a contributing factor negatively affecting the vegetation community composition within the allotment, and thus contributing to marginal and/or unsuitable conditions documented throughout significant portions of the allotment.

2.4 STANDARD 4. CULTURAL RESOURCES

Land use plans will recognize cultural resources within the context of multiple-use.

Guidelines:

4.1 Rangeland management plans will consider listings of known sites that are National Register eligible or considered to be of cultural significance and new eligible sites as they become known.

4.2 Wild horse and burro herd management will be designed to avoid or mitigate damage to significant cultural resources.

2.4.1 Draft determinations

After reviewing all information, it is determined that these standards for rangeland health are being met and livestock grazing management is considered to be in conformance with the guidelines. As there are no wild horses or burros in the allotment, there are no management issues relating to National Register eligible sites or significant cultural resources.

2.4.2 Rationale

In order to comply with the National Historic Preservation Act (NHPA) of 1966, as amended, the BLM in consultation with the Nevada State Historic Preservation Office (SHPO) must consider the effects on historic properties for all federal undertakings requiring permits, including grazing permit renewals.

Based on the evaluation of existing information pertaining to range improvements and grazing, cultural resources are being recognized within the context of multiple-use management in the Devil's Gate Allotment.

Existing data show that 13 cultural resource inventories have been conducted within the Devil's Gate Allotment. The inventories covered a total of 2,227 acres (less than one percent of the allotment). The inventories produced a total of 51 cultural resource sites, predominately prehistoric lithic scatters, and historic-era refuse dumps. Of the 51 sites, five sites were determined eligible for inclusion in the NRHP, and thus considered historic properties. However, two historic properties were mitigated as part of a previous project installation, reducing the current number of known historic properties in the allotment to three.

One historic-era road was identified in the General Land Office Survey Plats. A road labeled "Road to Horse Camp" is apparent in the northwestern portion of the allotment from the 1890 survey plat for T.40N, R.57E. Historic-era debris may be located along its route through the allotment.

Because many of the cultural resources in the allotment were recorded 30 to 35 years ago, site condition assessments were sometimes lacking or provided minimal information. At the same

time, as many of the sites were encountered during linear surveys (seismic lines, fence lines and pipelines), and the one large block inventory was conducted away from major water sources (perennial streams and springs), any potential impacts to existing sites from livestock grazing are generally considered to be minimal to moderate.

In an effort to gain additional information regarding how cultural resources are, or are not being impacted by livestock grazing, a targeted inventory of about 20 high-potential areas for cultural resources and livestock use will be conducted within the allotment in the near future.

Based on the above factors and conditions, and considering that (1) there are currently no known historic properties within the allotment being negatively impacted by general livestock grazing, and that (2) potential adverse effects to cultural resources encountered in the future will be avoided, minimized, or mitigated prior to ground-disturbing projects in accordance with the State Protocol, the BLM has determined that the standard is currently being met.

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