

**FINAL
ENVIRONMENTAL ASSESSMENT**

Churchill Canyon Grazing Allotment

DOI-BLM-NV-C020-2008-0024-EA

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

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1.0 INTRODUCTION/PURPOSE AND NEED

1.1 Introduction

The Bureau of Land Management (BLM) proposes in this environmental assessment (EA) to issue a new term livestock grazing permit for the Churchill Canyon Grazing Allotment (Allotment) and to construct range improvements within the Allotment. The Allotment is located approximately 20 miles southeast of Carson City, Nevada and is within the jurisdictional boundary of the Sierra Front Field Office. The Allotment encompasses approximately 49,228 acres¹ of BLM-managed land and is located on the eastside of the Pine Nut Mountains in Lyon and Douglas Counties (Map 1).

The Proposed Action is to issue a new 10-year term livestock grazing permit to the current permit holder that would authorize grazing use by 193 cattle from November 1 through May 20 each year, and result in forage consumption of 1,275 Animal Unit Months (AUMs), annually. The Proposed Action includes a grazing system, new permit terms and conditions, as well as fence construction. Fencing is proposed to reduce livestock drift between grazing allotments as well as provide a location for livestock handling. Management changes are proposed to improve livestock distribution and provide key perennial plant species rest during the spring growing season. Fencing is also proposed to exclude livestock from one ephemeral lake with a known population of William's combleaf.

The livestock stocking rate for this Allotment has been under evaluation since 1992, when the BLM changed the permitted kind of livestock from sheep to cattle. Between 1993 and 1997, the permit authorized cattle use of 1,074 AUMs during the period November 1 to May 15. At that time, the permittee leased 3,168 acres of private lands for grazing purposes within the boundaries of the Allotment. The permittee would move livestock from public lands to a fenced portion of these private lands on May 15 and graze them until May 31. The BLM acquired these private lands in 1997, at which time the BLM analyzed these additional lands for the purpose of authorizing grazing (BLM 1997). The decision for the land acquisition stated that adding these lands to the Allotment resulted in increased forage available to support 171 AUMs of livestock use. The acquired lands were made up of several non-contiguous parcels within the Allotment. Combined, forage for livestock from acquired lands and existing BLM managed lands within the Allotment was determined to be 1,245 AUMs. Since the acquisition, use of these lands by the permittee's livestock in conjunction with use of the Allotment has occurred. Periodically the BLM authorized non-renewable use and extended the period of use from May 16 to May 31. When this occurred, it resulted in use greater than 1,074 AUMs (Appendix A). The BLM did not modify the grazing permit when the BLM acquired the private lands in 1997. An additional 240 acres of private land were acquired in 2006, of which 200 acres are within the Allotment (BLM 2006). Although livestock can access these acquired lands (2006), no additional AUMs have been allocated to livestock because the acquired lands consist primarily of ephemeral lake playas.

¹ Acreage calculation from BLM's Geographic Information System (GIS). All acreages used in this EA are GIS based and are approximates.

The current term livestock grazing permit for the Allotment authorizes 166 cattle during the period November 1 to May 15, which results in forage consumption of 1,074 AUMs annually. All grazing use authorized by the current term livestock grazing permit occurs on BLM managed land.

To assist in evaluating the permittee's application for an increased livestock stocking rate in 1998, the BLM prepared an EA in 2000 (EA-NV-030-00-013). The EA determined that that data collected prior to that time suggested there might be additional AUM's available on the Allotment. The BLM issued a final decision in 2003 that implemented the following management actions:

- Maintained permitted use at 1,074 AUMs;
- Provided that upon annual application, authorization of additional forage removal up to a maximum of 883 additional AUMs each year, over five grazing seasons could occur in areas that the permittee had demonstrated were usable by livestock under conditions existing on the Allotment at that time² if BLM found that:
 - additional forage was available; and,
 - such use would not cause deterioration in ecological conditions;
- Authorized construction of specific range improvements;
- Implemented a grazing system; and,
- Authorized a 15 day extension of the grazing season (from May 15 to May 31).

The non-renewable use of additional AUMs was authorized from 2003 to 2007. In 2007 the BLM prepared a rangeland health determination that concluded that all standards and guidelines were being met but identified concerns regarding livestock distribution. In April 2008, the BLM completed the *Churchill Canyon Allotment Evaluation* (Evaluation) which presented and analyzed Allotment monitoring data that had been collected from 1993 to 2007 (BLM 2008). The Evaluation concluded that plant communities were in a static to downward trend and that livestock overutilization of key perennial plant species within specific areas of the Allotment was one of many contributing factors. The Evaluation set forth technical recommendations that included setting stocking rates and seasons of use by pasture to distribute livestock throughout the Allotment and to provide for the physiological needs of key perennial plant species. The Evaluation also recommended that permitted livestock use be between 1,020-1,305 AUMs for the Allotment. The recommendation considered all lands within the Allotment, including the lands that BLM acquired in 1997.

To assist in evaluating the permittee's application for a new term livestock grazing permit with an increased livestock stocking rate in 2007, the BLM prepared an EA in 2008 (EA-NV-030-08-024). Although public comment was solicited, no final decision was made. The 2008 EA has since been updated based on plant production data provided in 2008 and data collected by the

² Considering factors that affect whether livestock will or can graze a specific area without causing resource deterioration such as distance from water available to cattle and steepness of slope.

BLM in 2010. Based on frequency and photo trend plot data collected in 2010, plant communities were in a static to upward trend. Range conditions have been improving with increased precipitation. The updated analysis is presented in this EA.

1.2 Purpose and Need

The purpose of the Proposed Action is to modify current grazing practices in the Allotment to continue to meet or make significant progress toward attainment of objectives found in the Carson City Field Office Consolidated Resource Management Plan (CRMP), and in the Standards for Rangeland Health & Guidelines for Grazing Management, Sierra Front Northwestern Great Basin Area. Management of livestock grazing comes through permittee compliance with the provisions of a term livestock grazing permit issued under the authority of 43 CFR Subpart 4100, that provides the parameters and guidelines for livestock use of the range resources on the Allotment.

The need for the Proposed Action is to provide for appropriate livestock grazing on public lands in accordance with all applicable laws (such as but not limited to the Taylor Grazing Act and the Federal Land and Policy and Management Act), regulations, including but not limited to 43 CFR 4130.1(a) (2005) which states, "Grazing permits or leases authorize use on the public lands and other BLM-administered lands that are designated in land use plans as available for livestock grazing," while achieving or making progress towards achieving applicable land health standards and conforming with applicable guidelines for livestock management (S&G's)³. The need for the Proposed Action is also to address livestock grazing on the acquired lands and to modify existing management to meet specific resource objectives for the Allotment. The need for the Proposed Action is also to ensure that any grazing use authorized by the BLM does not harm the maintenance of a population of William's combleaf, a proposed BLM sensitive species, which occurs on an ephemeral lake within the Allotment.

1.3 Scoping and Issue Identification

Beginning in 2006, the BLM initiated scoping and public involvement efforts while the staff prepared the Churchill Canyon Allotment Environmental Assessment (EA-NV-030-08-24). Notification to the Yerington Paiute Tribe occurred in 2006 and 2007. At that time no issues were identified. In November 2007 a scoping letter was mailed to the interested public, other agencies and organizations. In April 2008, the BLM mailed the *Churchill Canyon Allotment Evaluation* (BLM 2008) to interested parties for a 15 day review period.

In late June of 2008, the BLM released the EA for public review for a total of 60 days. The EA was provided to the Tribe, individuals, other agencies and organizations that were on the BLM's mailing list and to those that had indicated an interest in grazing permit renewals or who

³ The applicable land health standards and guidelines for livestock grazing on the Allotment are those that apply to the "Sierra Front-Northwestern Great Basin Area" of Nevada BLM-managed lands, which were developed pursuant to 43 CFR 4180.2(b) (2005), and were approved by the Secretary of the Interior on February 12, 1997. A copy of these S&G's may be obtained from the Carson City District Office.

requested a copy of the EA. Substantive comments were reviewed and categorized. Concerns raised during public review included:

1. What portion of forage available within the Allotment should be allocated to livestock use?
2. How would the timing (season of use) and intensity (stocking rate) of livestock use affect soil, water and vegetation resources?
3. How would the timing and intensity of livestock use affect wildlife and Sensitive Species habitat?
4. How would the timing and intensity of livestock use affect sage-grouse habitat?
5. How could livestock movement between grazing allotments be reduced?

No final decision was made on the 2008 EA. Changes to the EA have since been made based on substantive comments received during the public scoping and review periods described above. Additional revisions have been made to the EA. These revisions are based on the following:

1. New forage production and monitoring data that has been collected since 2008;
2. Internal scoping conducted in February 2011; and
3. The proposed listing of the William's combleaf as a BLM sensitive species as of January 2011.

In February 2011, updated notification was sent to the Yerington Paiute Tribe. In March 2011, notification was sent to the Washoe Tribe of Nevada and California. Follow up calls were made to both Tribes in May 2011 and no concerns were expressed. As described in Section 6.2, public review and input on this EA occurred from April 27 to May 26, 2011.

1.4 Decision to Be Made

The Authorized Official will decide whether to issue a new term livestock grazing permit, and if so, its terms and conditions, and whether to authorize fencing to protect the population of William's combleaf and to facilitate a grazing system intended to maintain or further progress towards attaining S&G's throughout the Allotment.

1.5 Land Use Plan Conformance Statement

The Proposed Action and Current Management Alternatives described below are in conformance with the CRMP, pages LSG-1 & LSG-2 and is as follows:

- Maintain or improve the condition of the public rangelands to enhance productivity for all rangeland and watershed values.
- Initially, manage livestock use at existing levels (5,394 AUMs – Sheep).
- Provide adequate, high quality forage for livestock by improving rangeland condition.
- Improve overall range administration.
- Maintain a sufficient quality and diversity of habitat and forage for livestock, wildlife, and wild horses through natural regeneration and or vegetation manipulation methods.

- Improve the vegetation resource and range condition by providing for the physiological needs of key plant species.
- Reduce soil erosion and enhance watershed values by increasing ground cover and litter.
- Improve riparian-wetland ecosystems to achieve a healthy proper functioning condition that assures biological diversity, productivity and sustainability.

As the No Grazing Alternative would be inconsistent with the current CRMP, (the CRMP identified the lands within the Allotment as available for livestock grazing), selection of the No Grazing Alternative would require concurrent amendment of the CRMP (not within the scope of this EA). Under 43 CFR 1610.5-3, all actions approved or authorized by the BLM must conform to the existing land use plan.

1.6 Relationships to Statutes, Regulations and Other Plans

The Proposed Action and Alternatives are consistent with the following documents:

- Taylor Grazing Act of 1934 as amended;
- Federal Land Policy and Management Act of 1976;
- Public Rangelands Improvement Act of 1978;
- Title 43 of the Code of Federal Regulations Subpart 4100 – Grazing Administration;
- Noxious Weed Act of 1974;
- Endangered Species Act of 1973;
- National Environmental Policy Act of 1969;
- Standards and Guidelines for Nevada's Sierra Front-Northwestern Great Basin Area (2003);
- Migratory Bird Treaty Act of 1918;
- Migratory Bird Treaty Act – Interim Guidance – BLM IM 2008-050;
- Memorandum of Understanding Between the BLM and FWS to Promote the Conservation of Migratory Birds – BLM 2010-110.
- Facilitation of Hunting Heritage and Wildlife Conservation – EO 13443 – inclusion of game animals/key habitats;
- National Historic Preservation Act (16 USC 470f);
- Archeological Resources Protection Act;
- Native American Graves Protection and Repatriation Act;
- Indian Sacred Sites – EO 13007; and
- Consultation and Coordination with Indian Tribal Governments – EO 13175.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 Alternative A: Proposed Action

Under the Proposed Action, the BLM would issue the applicant a 10-year term livestock grazing permit. The permit would authorize grazing on the Allotment by cattle between November 1 and May 20 (livestock could consume 1,275 AUMs annually). The permittee would be required to move livestock between pastures in accordance with the grazing schedule in Table 1 and as further provisioned by the terms and conditions outlined below.

Table 1. Grazing Schedule.

Pasture Name	Grazing Schedule (MM/DD*)	Livestock Number	Forage Removed by Livestock Would Not Exceed
	<i>Sario Well Management Area</i>	For all pastures, the number of livestock allowed would be authorized in accordance with the provisions of the "New Permit Terms and Conditions" #2, shown below.	
Sario Well	11/01-02/29		400 AUMs
	<i>JW Ranch Management Area</i>		
Buckskin	11/01-03/31		230 AUMs
Sunrise Burn	11/01-02/29 Graze & 03/01-05/20 In Odd Numbered Years		200 AUMs
Como Burn	11/01-02/29 Graze & 03/01-05/20 In Even Numbered Years		150 AUMs
Big Meadow	05/01-05/20		70 AUMs
Upper Spring Gulch	11/01-05/20		25 AUMs
	<i>Como Management Area</i>		
Como	03/01-05/20		200 AUMs

*MM/DD = Month/Day

Flexibility in Operations (Adaptive Management)

1. The BLM may modify pasture use dates and the allowable forage removal specified by the grazing schedule to adapt to variability in resource conditions. Conditions that may require adaptive management and changes to the grazing schedule in any one year, may include but are not limited to: variations in seasonal weather patterns, drought, fire, weed infestations or above average cheatgrass production. Changes to the grazing schedule would be considered when modifications would benefit vegetative resources⁴. If modifications are agreed to by the BLM and the permittee, deviations from the grazing schedule would be documented on a grazing application and approved by BLM. Any

⁴ An example of flexibility in livestock operations would be utilizing livestock to improve the effectiveness of herbicide treatments by grazing meadows in the fall when soils are dry to remove palatable vegetation prior to applying herbicide to weed species. Because fall use of the Big Meadow pasture is outside of the grazing schedule, BLM would use this flexibility to prepare the pasture for weed suppression.

approved deviations from the grazing schedule would be within the permit terms and conditions as per 43 CFR 4130.4(b).

New Permit Terms and Conditions

1. The grazing schedule must be followed unless modified and approved by the BLM in advance.
2. For administrative purposes, the number of cattle scheduled on this permit is 193, however, during the term of the permit and pursuant to #1 above, the BLM may authorize higher or lower numbers than 193. During the permitted use period of November 1 to May 20, provided that forage removal for the entire Allotment does not exceed 1,275 AUMs annually, and provided that forage removal during the period March 1 to May 20 does not exceed 650 AUMs annually.
3. Cattle use within the Pine Nut Herd Management Area (HMA) will not exceed 154 AUMs per grazing season.
4. Livestock grazing operations shall be conducted so that forage utilization of key perennial plant species during the spring (March 1 to May 20) shall not exceed 55 percent.
5. Additional terms and conditions of the permit are listed in Appendices B & C (modified from the current permit).

Range Improvements

The Proposed Action includes construction of approximately two miles of barb wire fence. The proposed fencing in the Sario Well pasture would extend the Allotment boundary fence approximately 1 ½ miles. Each fence would consist of three strands of barb wire and one smooth bottom wire. This “Cattle with Antelope” fence would comply with BLM wildlife fence standards (BLM Fencing Handbook H-1741-1 p IV-1, “Fences” USDI/USDA p. 147 and BLM's Engineering Standard Drawings ((4-wire x 16 ½ feet) NV02834-(53)). Bottom wire (smooth) will be 18 inches from the ground (antelope and fawns). There will be at least 12 inches between the top two wires (deer). The total height of the fence will be no more than 42 inches (deer). T-posts would have white-painted tops and reflectors would be hung on the fence to increase visibility. Markers would be either FireFly diverters or trim strips of white vinyl siding per BLM IM 2010-022 reference to the Sutton Avian Research Center (2011) (Map 2).

The fencing in the Sunrise burn pasture would consist of two square livestock holding corrals. The sides of both corrals would be approximately 200 feet in length. This “Cattle and Sheep” fence would comply with BLM wildlife fence standards (BLM Fencing Handbook H-1741-1 p IV-1, “Fences” USDI/USDA p 149). The fence would consist of woven wire on the bottom with two strands of barb wire on top. From the ground to 30 inches would be woven wire, the first barb wire would be 30 inches from the ground surface and the second barb wire would be 42 inches from the ground surface. There will be at least 12 inches between the top two wires (deer). The total height of the fence will be no more than 42 inches (deer). T-posts would have white-painted tops and reflectors would be hung on the fence to increase visibility. Markers would be either FireFly diverters or trim strips of white vinyl siding per BLM IM 2010-022 reference to the Sutton Avian Research Center (2011) (Map 2).

Ephemeral Lake Fence Enclosure

In 2006 the BLM acquired a 40 acre parcel of private land ("Parcel A") within the Allotment with a known population of William's combleaf (BLM 2006). As of January 2011, this plant has been proposed to be added to the BLM sensitive species list which is undergoing an update, and is currently listed by the State of Nevada as critically endangered and is fully protected by State law. The Proposed Action includes the construction of approximately two miles of barb wire fencing around/adjacent to the ephemeral lake to exclude livestock from grazing within the occupied habitat (Map 2). This fence would meet the specifications "Cattle with Antelope" fence discussed under "Range Improvements."

2.2 Alternative B: Current Management Alternative (No Action)

Under the Current Management Alternative, a new term livestock grazing permit would be issued to authorize 166 cattle between November 1 and May 15 each year for the next 10 years, for a total of 1,074 AUMs each year. No new grazing management system would be required. Standard and current terms and conditions for the permit are listed in Appendices B & D. No new fencing would be constructed under the Current Management Alternative.

2.3 Alternative C: No Grazing Alternative

Under the No Grazing Alternative, the BLM would not issue a new term livestock grazing permit for the Allotment. No livestock would be authorized on BLM managed lands within the Allotment at this time. Under the No Grazing Alternative, no new fencing would be constructed. The CRMP has identified the lands within the Allotment as available for livestock grazing; a decision to implement a No Grazing Alternative would not be consistent with the CRMP. Under 43 CFR 1610.5-3, all actions approved or authorized by the BLM must conform to the existing land use plan. Actions out of conformance with the CRMP would require a land use plan amendment which is outside the scope of this EA.

2.4 Alternatives Considered but Eliminated From Detailed Analysis

Several alternatives have been eliminated from further consideration. Rationale is briefly described here:

- Reduction in Livestock Use and Change in Season of Use. This alternative (known as the "Proposed Action" in the 2008 EA) would have reduced the AUMs for cattle to 800 and the season of use to November 1 - March 15. No range improvements or grazing system would have been implemented. Although this was described as the "Proposed Action" in the 2008 EA, it is substantially similar to the Current Management Alternative in this EA and would have substantially similar effects. Monitoring data collected between 1993-2010, demonstrates that the range can support higher AUMs. In 2007 the Allotment had been experiencing a prolonged drought cycle and plant communities were in a downward trend. Because Allowable use levels for key perennial plant species had not been met for all portions of the Allotment, livestock grazing was listed as one of many factors contributing to the trend. An increase in precipitation during recent years

has improved plant community trends. Furthermore, this Alternative is not carried forward in this EA because under the Proposed Action, should monitoring demonstrate that there is insufficient annual forage to ensure rangeland health, under the “Flexibility in Operations”, a reduction in AUMs and/or change in pasture use could be implemented by the BLM.

- Modified Permit Terms and Conditions & Construction of Range Improvements and No Action Alternative – No Change in the Current Livestock Grazing Permit. These two alternatives would have maintained AUMs at 1,074 from November 1 to May 15. Range improvements and grazing system would have been implemented under the “Modified Permit Terms Alternative.” The “No Action Alternative – No Change in Current Livestock Grazing Permit Alternative” is substantially similar to the Current Management Alternative (Alternative B) in this EA and would have substantially similar effects. Forage production and monitoring data collected since 2008 demonstrates that the range can support higher AUMs. Furthermore, this Alternative is not carried forward in this EA because under the Proposed Action, should monitoring demonstrate that there is insufficient annual forage to ensure rangeland health, under the “Flexibility in Operations”, a reduction in AUMs and/or change in pasture use could be implemented by the BLM.
- Historic Livestock Use & Modified Management. This alternative would have permitted 1,255 AUMs from November 1 to May 31. No range improvements would have been implemented. This alternative was eliminated because it is substantially similar to the Proposed Action (Alternative A) and would have substantially similar effects.
- Increased Livestock Use and Extend the Grazing Season of Use. This alternative was based on the permittee’s 2007 application and would have increased the AUMs to 1,961 from November 1 to May 31. The permittee has since submitted a revised application; consideration of this alternative is no longer necessary.

Although these alternatives have been eliminated from consideration, this EA presents a range of alternatives for the Authorized Official to consider during the decision-making process.

3.0 AFFECTED ENVIRONMENT

This chapter identifies and describes the current condition and trend of elements or resources in the human environment which may be affected by the Proposed Action, Current Management Alternative (No Action) and No Grazing Alternatives. The Affected Environment is the same for all alternatives.

3.1 General Setting

The Allotment is located southeast of Carson City, Nevada and encompasses approximately 49,228 acres on the eastside of the Pine Nut Mountains. Elevations within the Allotment range from approximately 4,700 feet along the Churchill Canyon drainage in the northeast to over 9,000 feet on Mt. Como in the southwest portion of the Allotment. Major plant communities include salt desert shrub, low sagebrush, big sagebrush and pinyon-juniper woodlands.

3.2 Supplemental Authorities

Appendix 1 of BLM's NEPA Handbook (H-1790-1) identifies supplemental authorities that are subject to requirements specified by statute or executive order and must be considered in all BLM environmental documents (BLM 2008a). Table 2 lists the Supplemental Authorities and their status in the project area. Supplemental authorities that may be affected by the Proposed Action or Alternatives are further described in this EA.

Table 2. Supplemental Authorities.

Supplemental Authorities	Not Present *	Present Not Affected *	Present May Be Affected**	Rationale
Air Quality		X		The issuance of a livestock grazing permit and the construction of fencing would not affect overall air quality in the project area.
Areas of Critical Environmental Concern	X			Resource not present.
Cultural Resources			X	Carried forward for analysis.
Environmental Justice	X			Resource not present.
Farm Lands (prime or unique)	X			Resource not present.
Floodplains	X			Resource not present.
Invasive Weeds, Non-Native Plant Species			X	Carried forward for analysis.
Migratory Birds			X	Carried forward for analysis.
Native American Religious Concerns	X			Letters to the Yerington Paiute Tribe and Washoe Tribe of Nevada and California were sent in February and March 2011. Follow-up calls were made in May 2011 and no concerns were expressed.
Threatened or Endangered Species	X			Resource not present. The U.S. Fish and Wildlife Service (FWS) website for Nevada's Protected Species was reviewed and it was determined that no federally-listed species are present (http://www.fws.gov.nevada/protected_species/species_by_county.html).
Wastes, Hazardous or Solid	X			Resource not present.

Water Quality (Surface/Ground)			X	Carried forward for analysis.
Wetlands/Riparian Zones			X	Carried forward for analysis. No delineated wetlands are present in the Allotment.
Wild and Scenic Rivers	X			Resource not present.
Wilderness/WSA	X			Resource not present.

See H-1790-1 (January 2008) Appendix 1 Supplemental Authorities to be Considered.

*Supplemental Authorities determined to be Not Present or Present/Not Affected need not be carried forward or discussed further in the document.

**Supplemental authorities determined to be Present/May Be Affected must be carried forward in the document.

3.3 Resources or Uses Other Than Supplemental Authorities

BLM specialists have evaluated the potential impact of the Proposed Action or Alternatives on these resources and documented their findings Table 3. Resources or uses that may be affected by the Proposed Action or Alternatives are further described in this EA (BLM 2008a).

Table 3. Resources or Uses Other Than Supplemental Authorities.

Resource or Uses	Present Not Affected#	Present May Be Affected##	Rationale
BLM Sensitive Species		X	Carried forward for analysis.
Forestry	X		The issuance of a livestock grazing permit and the construction of fencing would not affect the composition of the pinyon-juniper woodlands.
General Wildlife		X	Carried forward for analysis.
Global Climate Change	X		Although under the Proposed Action and Current Management Alternative, there would be some contribution of greenhouse gas (GHG), methane, no methodology currently exists to correlate GHG emissions from livestock grazing to any specific impact.
Land Use/Authorizations	X		The issuance of a livestock grazing permit and the construction of fencing are not actions that would change the existing land uses or existing land use authorizations.
Livestock Grazing		X	Carried forward for analysis.
Recreation	X		Although permitted and dispersed recreation use occurs in the Allotment area, the Proposed Action and Alternatives would have no effect on these activities. The proposed fences would not cross roads or trails.
Soils	X		During construction of the fencing, BMPs would be implemented to minimize erosion, as a result overall soils would not be affected by the Proposed Action and Alternatives.
Vegetation		X	Carried forward for analysis.
Visual Resources	X		The issuance of a livestock grazing permit is not an action that would modify visual resources. The proposed fences would not conflict with the visual resource management objectives for the area.
Wild Horses	X		Although a portion of the Allotment is within the Pine Nut Herd Management Area, the Proposed Action and Alternatives would not change the AUM's allocated to wild horses or livestock within the HMA, and there would be no effect.

#Resources or uses determined to be Not Present or Present/Not Affected need not be carried forward or discussed further in the document.

##Resources or uses determined to be Present/May Be Affected must be carried forward in the document.

3.4 Resources Considered for Analysis

The following resources are or may be present in the project area and may be affected by the Proposed Action or Alternatives.

3.4.1 Livestock

The current term livestock grazing permit authorizes 166 cattle during the period November 1 to May 15, for a total of 1,074 AUMs. The percent of federal land within the Allotment is 100 percent. In the past, the permittee was allowed to leave livestock in the Allotment until May 31 and livestock used more than 1,074 AUMs (Appendix A). During eight of the last 17 years, livestock use exceeded 1,074 AUMs and an additional 2,717 AUMs of forage were also consumed. These variances from the permit occurred due to the use of private lands located within the Allotment and non-renewable use authorizations. The BLM acquired approximately 3,168 acres of private land within the Allotment in 1997 and identified the lands as available for livestock grazing (BLM 1997). The lands acquired by BLM have been accessible to livestock but no additional AUMs have been added to the current term livestock grazing permit. The land acquisition decision stated that adding these lands to the Allotment resulted in increased forage available to support 171 AUMs of livestock use. The acquired lands were made up of several parcels within the Allotment. Combined, forage for livestock from acquired lands and existing lands within the Allotment was determined to be 1,245 AUMs.

Based on an analysis of actual use and utilization data collected between 1993 and 2007, BLM specialists recommended the permitted livestock use for the Allotment, including the lands which changed ownership, be set between 1,020 and 1,305 AUMs (BLM 2008). BLM collected forage production data on perennial grass species palatable to cattle in 2010. Shrub, forb and annual species were not included in the 2010 forage calculations. Perennial grass production data was adjusted downward to account for slope, distance from water and proper utilization factors (27 percent within the wild horse herd management area (HMA) and 55 percent for all other areas). The Animal Unit Months (AUMs) of perennial grass forage available for cattle use within the allotment was determined to be 1,275 AUMs (BLM 2010a).

There are three general Management Areas within the Allotment. The northeast portion of the Allotment, also known as Sario Well Management Area, is at the lowest elevation. The average elevation is 5,000 feet. The main water sources include three wells in the bottom of the Churchill Canyon drainage. There are drift fences along the northern, eastern and southern Allotment boundaries. There is also a drift fence in Churchill Canyon which separates this portion of the Allotment from the southern portion of the Allotment (Map 2). Fence construction in this pasture was completed during 1993-1994.

The southern portion of the Allotment, also known as JW Ranch Management Area, contains the mid-elevation pastures for the Allotment. The average elevation is 6,000 feet. Main water

sources consist of several springs and meadows. There are drift fences along the northern and southern Allotment boundaries. This portion of the Allotment is also cross fenced. Cross fencing divides the area into five separate pastures; Upper Spring Gulch, Como burn, Sunrise burn, Big Meadow and the Buckskins (Map 2). The boundary fences and the Big Meadow pasture fence were constructed and repaired during 1993-1994. The cross fencing was constructed during 2003-2004.

The northwest portion of the Allotment, also known as Como Management Area, is at the highest elevation within the Allotment. The average elevation is 6,500 feet. The main water sources include winter accumulation of precipitation in three ephemeral lakes and one dugout pond. There is also a small spring (Mud Spring). With the exception of a small drift fence on a backcountry byway road, there is no fencing within this portion of the Allotment (Map 2).

3.4.2 Vegetation

A mosaic of plant communities is present within the Allotment. Plant communities within the Allotment include: small areas of riparian vegetation associated with springs, meadows and drainages such as aspen trees, cottonwood trees, willow, sedges and rushes; salt desert shrub communities (greasewood, shadscale, salt brush), low sagebrush (arbuscula & Lahontan), big sagebrush (Wyoming, Basin & Mountain) and woodlands (pinyon-juniper). The major perennial grass species found on the Allotment are Indian ricegrass (*Achnatherum hymenoides*), Thurber's needlegrass (*Achnatherum thurberianum*), desert needlegrass (*Achnatherum speciosum*), bottlebrush squirreltail (*Elymus elymoides*), Basin wildrye (*Leymus cinereus*), and Sandberg bluegrass (*Poa secunda*). The major shrub species found on the Allotment are shadscale (*Atriplex confertifolia*), Bailey greasewood (*Sarcobatus vermiculatus* var. *baileyi*), fourwing saltbush (*Atriplex canescens*), bud sagebrush (*Artemisia spinescens*), low sagebrush (*Artemisia arbuscula*), Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*), basin big sagebrush (*Artemisia tridentata* var. *vaseyana*), mountain big sagebrush (*Artemisia tridentata*), green rabbitbrush (*Chrysothamnus viscidiflorus*), and antelope bitterbrush (*Purshia tridentata*). The major tree species found on the Allotment are Utah juniper (*Juniperus osteosperma*) and singleleaf pinyon pine (*Pinus monophylla*). The invasive plant cheatgrass (*Bromus tectorum*) is common on the Allotment especially in areas that burned recently.

The salt desert shrub, low sagebrush, Wyoming big sagebrush, basin big sagebrush and mountain big sagebrush sites are currently dominated by mature shrub species, some sagebrush sites are occupied by pinyon-juniper, and many sites have little perennial vegetation in the understories. A lower abundance of herbaceous fire tolerant plants in the understory and a higher abundance of fire intolerant woody species in the overstory reduce the resiliency of these sites to recover following fire. Areas where shrubs or pinyon-juniper were dominant prior to fire, have transitioned to new ecological states following fire. A small portion of the Adrian burn within the Allotment, and most of the Como and Sunrise burns are now dominated by annual vegetation and fire tolerant brush species. Potential dominant plant species based on Natural Resource Conservation Service (NRCS) ecological site descriptions are shown on Map 3.

Several factors influence the condition of plant communities. Historically fire has been the dominant force controlling the distribution of the plant communities in the Pine Nut Mountains. As crown cover and density increase, fuel loads result in a shift from low and mixed intensity fires to less frequent high intensity fires. High intensity fires create a post fire environment that is often exploited by fire dependent species such as cheatgrass. Once established this species provides fine fuels that increase opportunities for wildfire ignition and spread. In many areas cheatgrass is associated with a fire return interval of two to five years. Other factors influencing the vegetation density, crown cover and species composition are: livestock and wild horse grazing, drought, fire suppression and perhaps climate change. Twenty-one percent of the Allotment vegetation has been influenced by fire or mechanical treatments used to mimic fire in the past 30 years. Table 4 shows the wildland fire and vegetation treatment projects within the Allotment since 1980.

Table 4. Wildland Fire and Vegetation Treatment Projects Since 1980

Treatment/Event	Name	Year	Acreage
Mechanical	Como Aspen Protection	2001	5
Mastication	Mill Canyon	2008-10	1,999
Prescribed Fire	Mt. Como Twin Springs	1997	35
Prescribed Fire	Mt Como Unit A	1997	119
Prescribed Fire	Mt Como Unit B	2000	421
Wildfire	Unknown	1984	73
Wildfire	Sunrise	1996	2,914
Wildfire	Como	2000	1,752
Wildfire	Adrian	2007	3,394
Aerial Seeding	Sunrise Fire Rehabilitation	1996	1,900
Drill Seeding	Sunrise Fire Rehabilitation	1996	500
Aerial Seeding/ one chain pass	Como Fire Rehabilitation	2000	695
Aerial Seeding	Como Fire Rehabilitation	2000	668
Aerial Seeding	Adrian Fire Rehabilitation	2007	643

Allowable use levels on key perennial vegetation by livestock in the Sario Well pasture were met during five of 12 years (Appendix A). Use objectives were met when forage removed by livestock ranged between 406-749 AUMs. Use objectives were not met for portions of the pasture when forage removed by livestock ranged between 403-672 AUMs. Allowable use levels on key perennial vegetation in the JW Ranch portion of the Allotment were met seven of 12 years. Use objectives were met when forage removed by livestock ranged between 446-724 AUMs. Use objectives were not met for all areas when forage removed by livestock ranged between 385-946 AUMs. Allowable use levels on key perennial vegetation in the Como pasture were met four of five years. Use objectives were met when forage removed by livestock ranged between 141-328 AUMs. Meeting of use objectives varied between years despite removal of similar amounts of forage due to variances in the quantity of vegetation growth (changes in growing conditions), and livestock distribution. Construction of range improvements between 1993 and 2003 enhanced livestock distribution and decreased use levels.

Trends in vegetative attributes have been monitored at seven key areas, utilizing frequency and photo trend plot methodologies⁵. The trend within plant communities from 1994 to 2000 was static to upward. During four of these years livestock use exceeded 1,074 AUMs, and an additional 956 AUMs of forage were consumed. The trend from 2000 to 2007 for plant communities was primarily static to downward (BLM 2008). During four of these years livestock use also exceeded 1,074 AUMs, and an additional 1,761 AUMs of forage were consumed. Monitoring in 2007 indicated grass and shrub species were stable or declining. Monitoring in 2010 indicated plant community trend was primarily static to upward (BLM 2010b).

Recently, drought appears to have had a dominant affect on plant communities. With the exception of 2006, precipitation levels were below average from 2000 to 2007 with the least amount of precipitation occurring 2007 (Appendix E). The current vegetative trend is static to upward (2007-2010); vegetative conditions within the Allotment have improved with increased precipitation levels (BLM 2010b). Vegetative cover has increased and new shrub seedlings are establishing. No livestock grazing occurred in the Allotment during the 2007-2008 grazing season due to poor forage conditions associated with drought. Livestock use from 2008 to 2010 was below 1,074 AUMs and non-renewable use was not authorized.

Biological soil crusts are found within the Allotment, however no information is known on the composition of species within the crusts or on the successional status of the biological soil, crusts. Belnap, et al, (2001) outlines the varied ecological roles that biological crusts have within the ecosystem. Undoubtedly, the biological crusts perform these ecological roles within the allotment, however, no local studies have been done to better understand these roles. No other studies have been done to characterize the impact grazing, nonnative species invasions and climate change has had on biological soil crusts over time.

3.4.3 Wetlands/Riparian Zones

Riparian areas occupy less than one percent of the area within the Allotment. Riparian areas include wet/dry meadows, springs, seeps, a few small streams and ephemeral lake playas. Vegetation in these areas include quaking aspen (*Populus tremuloides*), cottonwood (*Populus spp.*), willow species (*Salix spp.*), wild rose (*Rosa woodsii*). Meadow species include bluegrass (*Poa spp.*), sedges (*Carex spp.*), rush (*Juncus spp.*), and creeping wildrye (*Elymus triticoides*) along with numerous grasses and forbs.

Eighteen separate riparian areas were assessed on the Allotment between June 5 and June 21, 2007. Other riparian areas were not assessed because of difficult access and a low likelihood of impacts from grazing due to steep terrain. Table 5 provides basic data for each location, and

⁵ Trend in range condition or plant community succession is described as either up or down, or not apparent (static). Up represents change toward climax or potential natural community; down represents a change away from climax or potential natural community; and not apparent indicates there is no recognizable change. This category is often recorded as static or stable.

Table 6 summarizes the 2007 condition ratings for all assessed sites. Table 7 compares 2007 ratings with ratings based on assessments performed in 2000.

Tables 5 and 6 show that overall ratings were generally positive. Thirty-eight percent of lentic areas were in proper functioning condition (PFC) or functional-at-risk in an upward trend (FAR-UP). Fifty-six percent were functional-at-risk in an unknown trend (FAR-UNK), which primarily reflects the rating of 62 acres in the Big Meadow enclosure. Big Meadow had many characteristics of a properly functioning system, but also localized hoof impacts around springs. Only six percent of lentic areas were in a downward trend (FAR-DN) or nonfunctional (NF).

PFC indicates a state of resiliency that would allow a riparian area to hold together during high flow events with a high degree of reliability. Almost all the riparian areas assessed on the Allotment had impacts from livestock grazing to some degree, including those rated as PFC. Because there is good spring flow at most sources, the riparian areas tend to be resilient and can recover from impacts. Though the ratings in 2007 were generally favorable, the trends from previous years were not always positive. Table 7 shows that some areas have improved somewhat since 2000, but others have declined. These areas could have been especially sensitive to heavy use because they are small. Some of the decline in conditions were also in response to drought conditions 2000-2007.

Table 5. 2007 Riparian Assessment Data

Name	Date Assessed	UTM Northing	UTM Easting	Rating	Acres	Miles	Management Recommendations
Big Meadow (inside fence)	6/5/2007	4324955	288834	FAR-UNK	62		Treat weeds
Big Meadow (outside fence)	6/5/2007	4324537	289764	FAR-UP	20		Treat weeds; monitor old headcuts
Sunrise Pass Rd Meadow #1	6/6/2007	4326705	288275	FAR-UP	2.4		Consider alternate drainage under road
Sunrise Pass Rd Meadow #2	6/6/2007	4326255	288757	PFC	11		Treat weeds
Sunrise Pass Rd Meadow #3	6/6/2007	4325785	289199	PFC	1		Treat weeds; monitor old headcuts
Sunrise Pass Rd Meadow #4	6/6/2007	4325556	289343	FAR-UNK	6		
Unnamed Seep	6/7/2007	4328320	290701	FAR-UNK	<0.1		
N. Presto Spring	6/7/2007	4328532	290806	FAR-UNK	0.1		Repair enclosure
S. Presto Spring	6/7/2007	4328049	290669	FAR-UNK	0.2		
Lower S. Presto	6/7/2007	4328077	290728	FAR-DN	0.1		
Presto Spring (aka Enclosure)	6/7/2007	4328374	290758	PFC	0.1		

U. Spring Gulch	6/8/2007	4320157	287991	PFC	11		
L. Spring Gulch	6/8/2007	4320502	288889	FAR-DN	7		
Willow Spring	6/20/2007	4327548	294657	FAR-DN	1		
Sario Ranch	6/20/2007	4330404	294163	FAR-UNK	2.6		Treat weeds
JW Spring	6/20/2007	4325155	293208	FAR-UNK	0.2		
Mud Spring	6/21/2007	4336506	288118	NF	0.1		Explore funding for fencing & gradient control by permittee
Upper Churchill Canyon	6/7/2007	4328996	290585	PFC	3	0.5	

Rating key:
PFC = Proper Functioning Condition
FAR-UP = Functional-At-Risk with an Upward Trend
FAR-DN = Functional-At-Risk with a Downward Trend
FAR-UNK = Functional-At-Risk with an Unknown Trend
NF = Nonfunctioning

Acres were determined by delineating riparian areas in ArcMap from 2006 digital color imagery, except for relatively small systems which were collected by GPS in the field. Acreage of Upper Churchill Canyon assumes an average width of 50 feet.

Table 6. Summary of 2007 Riparian Assessments

Rating	Acres	Percent of Total	Miles	Percent of Total
PFC	26.1	20	0.5	100
FAR-UP	22.4	18	-	-
FAR-DN	8.1	6	-	-
FAR-UNK	71.1	56	-	-
NF	0.1	<0.1	-	-
Total	127.8	100	1.1	100

Table 7. Comparison of 2000 and 2007 Riparian Data

Name	2000 Rating	2007 Rating	Acres	Miles
Big Meadow	FAR-UP	FAR-UNK/FAR-UP	62	
Sunrise Pass Rd Meadow #1	FAR-UP	FAR-UP	2.4	
Sunrise Pass Rd Meadow #2	FAR-UP	PFC	11	
Sunrise Pass Rd Meadow #3	FAR-UP	PFC	1	
Sunrise Pass Rd Meadow #4	FAR-UP	FAR-UNK	6	
Presto Spring (aka Exclosure)	PFC	PFC	0.1	
Upper Spring Gulch	PFC	PFC	11	
Willow Spring	PFC	FAR-DN	1	
JW Spring	PFC	FAR-UNK	0.2	
Mud Spring	FAR-DN	NF	0.1	
Upper Churchill Canyon	PFC	PFC	3	0.5

Acres shown in Table 7 were determined in 2007 with GPS or GIS. Because areas were estimated in the field during 2000 assessments they were not as precise as the 2007 acres. Direct comparisons between the 2000 and 2007 acres should not be made.

There are four ephemeral lakes within the Allotment. These shallow, internally drained basins collect surface runoff, and in an undisturbed condition, can have significant values. Ephemeral lakes can provide habitat for species such as William's combleaf. This species occurs on one of the ephemeral lakes (See section 3.5.7). On the other three ephemeral lakes, "dirt tanks" were dug out, changing the hydrology and plant communities there. By collecting runoff in the tank, the rest of the ephemeral lake dries more quickly, decreasing the amount of moisture available for plants. The drier conditions on the ephemeral lakes with "dirt tanks" make the habitat unsuitable for William's combleaf at this time due to the altered hydrology. BLM acquired two parcels of private land in 2006, one parcel (known as "Parcel A") contained an ephemeral lake where William's combleaf is present and the other parcel contained a portion of an ephemeral lake with a "dirt tank".

3.4.4 Water Quality (Ground & Surface)

Descriptive water quality standards pertaining to all surface waters in Nevada (NAC 445A.121) are used to determine whether water quality meets the standard for rangeland health. No class waters or beneficial uses are designated by the State of Nevada within the Allotment. During the rangeland health evaluation and riparian assessments only minor impacts to water quality were observed due to current land uses, including livestock grazing. There were no visual signs, odors, or other indications that water quality was being impaired.

Table 8 summarizes measurements of the pH, temperature, conductivity, and salinity taken during riparian assessments. None of the parameters indicate unacceptable livestock impacts.

Table 8. 2007 Water Quality Data

Name	Date Collected	UTM Northing	UTM Easting	pH	Temp (°C/ °F)	Conductivity (µS)	Salinity (ppt)
Sunrise Pass Rd Meadow #1	6/6/2007	4326682	288346	7.85	13.6 / 56.5	137.5	0.1
Sunrise Pass Rd Meadow #2	6/6/2007	4326255	288757	7.03	11.4 / 52.5	421.8	0.3
Upper Spring Gulch	6/8/2007	4320180	287879	8.07	15.2 / 59.4	43.3	0
Lower Spring Gulch	6/8/2007	4320486	288768	7.46	13.1 / 55.6	155.7	0.1
U. Churchill Canyon	6/7/2007	4328980	290591	8.23	18.8 / 65.8	463	0.3

3.4.5 Migratory Birds

Migratory birds are important components of biological diversity. Their conservation and management help sustain ecological integrity, insect control, pollination of wild and cultivated flora, and natural seed dispersal. Migratory bird conservation and management helps meet the demand for outdoor recreation such as wildlife viewing and hunting opportunities. The Intermountain West avifaunal biome is the center of distribution for many western birds (Rich et al. 2004). Over half of this biome's Species of Continental Importance have 75 percent or more of their population here. Many breeding species from this biome migrate to winter in central and western Mexico or in the Southwestern biome. Shrub-nesting species comprise the largest number of Species of Continental Importance in this biome.

Migratory birds are associated with a variety of habitats in the project area; habitats in the project area consist of sagebrush, salt desert scrub, pinyon-juniper woodland, and small areas of riparian vegetation such as aspen trees, cottonwood trees, willow, sedges and rushes. The BLM migratory bird species associated with habitat in the Allotment are shown in Table 9.

An Allotment Evaluation conducted in 2008 found the trend for plant communities was static to downward and that livestock overutilization of key perennial plants in certain areas was a contributing factor (BLM 2008), but new data collected in 2010 showed the trend for plant communities was static to upward (BLM 2010b). Range conditions such as plant cover and vigor have improved since 2008 with increased precipitation levels and a reduction in AUMs (Appendix A), but much of the Allotment remains dominated by mature shrubs and lacks young shrubs and a perennial understory. There is an uncharacteristic distribution of age classes because of the scarcity of seedlings and young plants, but seed heads on perennial grasses and shrubs can be seen in photographs taken in 2010. Current habitat conditions are likely skewed toward those migratory bird species more tolerant of early seral conditions, i.e. a loss of understory vegetation (Bleich 2005). Range condition quality is currently limited for migratory birds, such as the vesper sparrow (*Pooecetes gramineus*), that require perennial grasses and forbs for nest concealment and foraging. Sagebrush range in good condition supports a lush undergrowth of bunchgrasses and forbs (Wildlife Action Plan Team 2006).

Portions of the Allotment have burned in recent wildfires (Table 4). Cheatgrass and fire-tolerant shrubs such as desert peach are common in areas that burned, but sagebrush seedlings are present in the 2000 Como burn area. Small areas of riparian vegetation associated with springs and meadows such as aspen trees, willow, sedges and rushes occur on the Allotment. In June 2007, 18 riparian areas were assessed on the Allotment and almost all had some degree of impacts from livestock grazing, including those rated as being functional (BLM 2008). Seven of the riparian areas were found to be in PFC or FAR-UP, seven were found to be FAR-UNK, and four were FAR-DN or NF (Table 4). Four of the springs had been given lower ratings than in 2000.

Sagebrush communities dominate the vegetation in the Allotment (the Allotment is 89 percent [43,813 acres] sagebrush vegetation); sagebrush obligates, such as the sage sparrow (*Amphispiza belli*), sage thrasher (*Oreoscoptes montanus*), and Brewer's sparrow (*Spizella breweri*), likely occur in the area, along with any number of facultative species that may also use the area (Paige and Ritter 1999, Welch 2005, Wildlife Action Plan Team 2006). Obligates depend on sagebrush habitat to complete their life cycles and, for the most part, birds having facultative associations with big sagebrush do not require as heavy a canopy cover as obligate species (Welch 2005). Sage sparrows, sage thrashers, and Brewer's sparrows depend heavily on the shrub component for nesting substrate and their distribution is closely tied with that of sagebrush (Wildlife Action Plan Team 2006). These species benefit from open to moderate shrub densities (5-20 percent) (Paige and Ritter 1999). North American Breeding Bird Survey (BBS) data for the sage sparrow show a survey-wide minor annual increase (NatureServe 2010a). BBS data for the sage thrasher show a survey-wide minor annual increase (NatureServe

2010b). BBS data documented a population decline of 50 percent or greater for Brewer's sparrow between 1966 and 1999 (Wildlife Action Plan 2006). While BBS data for the Brewer's sparrow show major and strong survey-wide declines, it also shows the highest relative abundance (birds per route) occurring in Nevada and Oregon (NatureServe 2010c).

The National Audubon Society has established a program of identifying areas of importance for migratory birds and these areas are called Important Bird Areas (IBAs). Although IBAs have no legal status, the IBA description contains useful information about the birds using a particular area, local land uses, and conservation issues. There are no IBAs associated with the Allotment (McIvor 2005).

Table 9. BLM sensitive species and BLM migratory birds of concern that use or may use habitat in the Allotment (BLM 2003, BLM 2010d).

Common Name	Scientific Name	BLM Sensitive Species	BLM Migratory Bird
Big brown bat	<i>Eptesicus fuscus</i>	Y	-
Brazilian free-tailed bat	<i>Tadarida brasiliensis</i>	Y	-
Brewer's sparrow	<i>Spizella breweri</i>	N	Y
Burrowing owl	<i>Athene cunicularia</i>	Y	Y
California myotis	<i>Myotis californicus</i>	Y	-
Ferruginous hawk	<i>Buteo regalis</i>	Y	Y
Fringed myotis	<i>Myotis thysanodes</i>	Y	-
Golden eagle	<i>Aquila chrysaetos</i>	Y	Y
Greater sage-grouse	<i>Centrocercus urophasianus</i>	Y	N
Green-tailed towhee	<i>Pipilo chlorurus</i>	N	Y
Hoary bat	<i>Lasiurus cinereus</i>	Y	-
Juniper titmouse	<i>Baeolophus griseus</i>	Y	Y
Loggerhead shrike	<i>Lanius ludovicianus</i>	Y	Y
Long-billed curlew	<i>Numenius americanus</i>	Y	Y
Long-eared myotis	<i>Myotis evotis</i>	Y	-
Long-legged myotis	<i>Myotis volans</i>	Y	-
Marbled godwit	<i>Limosa fedoa</i>	N	Y
Mountain quail	<i>Oreortyx pictus</i>	Y	N
Mourning dove	<i>Zenaida macroura</i>	Y	Y
Northern goshawk	<i>Accipiter gentilis</i>	Y	N
Pallid bat	<i>Antrozous pallidus</i>	Y	-
Pinyon jay	<i>Gymnorhinus cyanocephalus</i>	Y	Y
Prairie falcon	<i>Falco mexicanus</i>	Y	N
Pygmy rabbit	<i>Brachylagus idahoensis</i>	Y	-
Sage thrasher	<i>Oreoscoptes montanus</i>	N	Y
Sage sparrow	<i>Amphispiza belli</i>	N	Y
Short-eared owl	<i>Asio flammeus</i>	Y	N
Silver-haired bat	<i>Lasiorycteris noctivagans</i>	Y	-
Snowy plover	<i>Charadrius alexandrinus</i>	Y	Y
Spotted bat	<i>Euderma maculatum</i>	Y	-
Swainson's hawk	<i>Buteo swainsoni</i>	Y	N
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	Y	-
Vesper sparrow	<i>Pooecetes gramineus</i>	Y	N
Virginia's warbler	<i>Vermivora virginiae</i>	N	Y
Western small-footed myotis	<i>Myotis ciliolabrum</i>	Y	-
Western pipistrelle bat	<i>Pipistrellus hesperus</i>	Y	-
Williamson's sapsucker	<i>Sphyrapicus thyroideus</i>	N	Y
Yuma myotis	<i>Myotis yumanensis</i>	Y	-

3.4.6 General Wildlife

Based on the Southwest Regional GAP Analysis Project, the Nevada Department of Wildlife's (NDOW) Wildlife Action Plan characterizes Nevada's vegetative land cover into eight broad ecological system groups and links them with key habitat types and their associated wildlife species (Wildlife Action Plan Team 2006). Key habitats can be used to infer likely occurrences of wildlife species when survey data is unavailable. The key habitats on Allotment are described below.

Intermountain Cold Desert Scrub – This habitat type occurs at the lower elevations of the Allotment and annual precipitation is generally less than 10 inches per year. Shadscale and greasewood are the dominant shrub species, and Indian ricegrass, Thurber's needlegrass, and bottlebrush squirreltail are the dominant grasses. The salt desert scrub in the Allotment is dominated by mature shrubs with little perennial understory. Cheatgrass and fire-tolerant shrubs such as desert peach are common in areas that burned. The occurrence of cheatgrass increases its ability to burn and it can be extremely difficult and costly to restore if dominated by cheatgrass. General wildlife species associated with this habitat type include kit fox (*Vulpes macrotis*), pale kangaroo mouse (*Microdipodops pallidus*), Great Basin collared lizard (*Crotaphytus bicinctores*), and black-throated sparrow (*Amphispiza bilineata*). Many wildlife species use both cold desert scrub and sagebrush habitats for various life requirements such as foraging and nesting. For instance, kit fox use the sandy soils for denning in cold desert scrub habitat but also forage for prey in sagebrush plant communities.

Sagebrush – Dominant species include basin big sagebrush, mountain big sagebrush, Wyoming big sagebrush, low sagebrush and black sagebrush. Co-dominant plants include bitterbrush, rabbitbrush, winterfat, bluebunch wheatgrass, Great Basin wildrye, globemallow, and penstemon. Higher elevations in the Allotment are dominated by mountain sagebrush and Wyoming big sagebrush dominates at middle elevations. Low sagebrush can be found as small inclusions associated with specific soil types. Bitterbrush is not present as a co-dominant and desert peach and cheatgrass are abundant on recently burned areas. Forbs are less abundant than shrubs in the unburned portions of the Allotment. Sagebrush range in good condition supports a substantial bunchgrass/forb component and where sagebrush habitat has been depleted of its understory, it lacks the ability to provide nesting cover, escape cover, and sources of food for wildlife (Wildlife Action Plan Team 2006). General wildlife species such as Great Basin pocket mouse (*Perognathus parvus*), sagebrush lizard (*Sceloporus graciosus*), pronghorn (*Antilocapra americana*), and sagebrush vole (*Lemmiscus curtatus*) are associated with this habitat type.

Lower Montane Woodlands – Singleleaf pinyon and Utah juniper are the dominant vegetation types in this habitat. Associated shrubs include sagebrush and bitterbrush. Bitterbrush is an important mule deer (*Odocoileus hemionus*) forage species. Forbs and grasses are sparse, especially as the canopy closure increases in some areas of the Allotment. Pinyon-juniper woodland provides a variety of sheltering functions for wildlife that range from hiding cover and thermal protection to cavities and nest sites for birds, bats, and small mammals. Pinyon-

juniper woodlands provide habitat for general wildlife species such as Steller's jay (*Cyanocitta stelleri*), mule deer, and black bear (*Ursus americanus*).

Aspen Woodland – Small amounts of aspen occur at heads of canyons in the Allotment. Its distribution is limited and expressed as riparian stringers and isolated patches. Snowberry and currant are common shrubs in aspen stands. Deciduous riparian habitats attain multi-layered vertical structure with an intermittent to continuous overstory, a mid-story that is often dense and impenetrable, and an understory rich in grasses and forbs. Aspen stands provide forage and nesting substrate, and are particularly important to cavity nesting species like woodpeckers. General wildlife species associated with aspen are mule deer, vagrant shrew (*Sorex vagrans*), Cooper's hawk (*Accipiter cooperii*), and mountain bluebird (*Sialia currucoides*).

An Allotment Evaluation conducted in 2008 found the trend for plant communities was static to downward and that livestock overutilization of key perennial plants in certain areas was a contributing factor (BLM 2008), but new data collected in 2010 showed the trend for plant communities was static to upward (BLM 2010b). Range conditions such as plant cover and vigor have improved since 2008 with increased precipitation levels and a reduction in grazing from 1,807 AUM's in 2007 to 1,045 AUM's in 2009 (Appendix A). Much of the Allotment is dominated by mature shrubs. In comparison to shrubs, the abundance of forbs and grasses is low in unburned portions of the Allotment. Sagebrush range in good condition supports a lush undergrowth of bunchgrasses and forbs (Wildlife Action Plan Team 2006). There is a lack of age class diversity because of the scarcity of seedlings and young plants, but seed heads on both shrubs and perennial grasses can be seen in photographs taken in 2010. The majority of the big sagebrush sites have been affected by pinyon-juniper encroachment. Pinyon-juniper has been removed from big sagebrush sites by mechanical thinning (63 percent) and fire (23 percent). Approximately 14 percent (2,928 acres) of the big sagebrush sites are still occupied by pinyon-juniper.

Portions of the Allotment have burned in recent wildfires (Table 4). Cheatgrass and fire-tolerant shrubs such as desert peach are common in areas that burned recently, but sagebrush seedlings are present in the 2000 Como burn area. Small areas of riparian vegetation associated with springs and meadows such as aspen trees, willow, sedges and rushes occur on the Allotment. In June 2007, 18 riparian areas were assessed on the Allotment and almost all had some degree of impacts from livestock grazing, including those rated as being functional (BLM 2008). Seven of the riparian areas were found to be in PFC or FAR-UP, seven were found to be FAR-UNK, and four were FAR-DN or NF (Table 4). Four of the springs had been given lower ratings than in 2000.

Sagebrush communities dominate the vegetation in the Allotment; the Allotment is 89 percent (43,813 acres) sagebrush. Shrub communities generally support the largest populations and most diverse number of species of any of the Great Basin habitats (Welch 2005). Tall, dense sagebrush is required by some wildlife species, but other species use more open or grassy areas (GBBO 2010). Understory requirements likewise vary by species, although the presence of an understory layer is generally beneficial. In general, wildlife species benefit from a shrub

community that contains a mix of seral stages, shrub densities, and height classes with a diversity of plant species. Sagebrush obligates, such as the Great Basin pocket mouse, sagebrush vole, pronghorn, and sagebrush lizard, are likely to occur in the area (Paige and Ritter 1999, Wildlife Action Plan Team 2006). These species are dependent on sagebrush habitat to complete their life cycles. Sagebrush range in good condition supports a lush undergrowth of bunchgrasses and forbs, and this highly productive understory is critical to the needs of the sagebrush vole (Wildlife Action Plan Team 2006). Merriam's shrew (*Sorex merriami*) and panamint kangaroo rat (*Dipodomys panamintinus*) also require perennial grasses and forbs for nesting cover and foraging. Even though many reptiles found in sagebrush can be found in other vegetation types, their populations are often higher in sagebrush. More rattlesnakes and gopher snakes have been captured in big sagebrush communities than in winterfat, shadscale, and greasewood communities, and more short-horned lizards have been noted in big sagebrush than in crested wheatgrass plantings (Welch 2005). Current habitat conditions are likely skewed toward those wildlife species more tolerant of early seral conditions, i.e. a loss of understory vegetation (Bleich 2005). Range condition quality is currently limited for wildlife species that require perennial grasses and forbs for nesting cover and foraging.

The area provides habitat for mule deer, pronghorn, black bear, mountain lion (*Puma concolor*), and upland game birds. There are three small game guzzlers in the Allotment (Sario Well pasture). Small game guzzlers are used by a variety of wildlife including birds, small mammals, and reptiles in the Sario Well pasture. The entire Allotment has been identified by NDOW as black bear range (NDOW 2011). Mountain lions use the Pine Nut Mountains and would be expected to travel through the Allotment periodically. California quail (*Callipepla californica*), mourning doves (*Zenaida macroura*) and chuckar (*Alectoris chukar*) occur in the Allotment.

Mule deer – Mule deer in Nevada have experienced a 50 percent population decline since the 1980s (Wildlife Action Plan Team 2006). Major impacts to deer habitat include conversion of native shrub communities with a perennial herbaceous understory to nonnative annual grasslands, expansion of pinyon-juniper woodlands, plant senescence of preferred species, and habitat loss and fragmentation from human development (Cox et al. 2009). The Allotment is within NDOW big game hunt Units 291 (Douglas County) and 203 (Lyon County). The herd in Unit 291 is stable over the short-term but has declined significantly over the long-term (NDOW undated). The deer herd in Unit 203 that occupies Mason and Smith Valley has declined from what was observed in the 1990s, but has remained stable since 2001 (NDOW undated). Ninety-eight percent (48,243 acres) of the Allotment has been identified by NDOW as year-round mule deer habitat (NDOW 2011). Deer are likely to inhabit this area all months of the year. Occupancy is limited by pinyon-juniper encroachment (e.g. elimination of natural shrubland habitat to conifer overstory with a lack of understory), shrubland succession/maturation (e.g. canopy closure, seral stage advancement), and water (e.g. lack or reliable year-round water source). Mule deer are generally classified as browsers, with shrubs and forbs making up the bulk of their annual diet. Sagebrush and bitterbrush are important components of their diet throughout the year. Use of grasses is highest in spring (26 percent of the diet) and use of forbs is highest in summer (46 percent of the diet) (Peek and Krausman 1996). Bitterbrush is found scattered throughout the Allotment, but has been reduced by recent burns.

Roughly 17 percent (8,039 acres) of the deer habitat in the Allotment has burned in wildfires. In many places fire-tolerant brush species, such as desert peach, came back instead of bitterbrush. The burns are also dominated by cheatgrass. The riparian areas (streams, springs and seeps) and aspen stands on the Allotment likely provide habitat for mule deer fawning. Deer winter in the lower to mid-elevation areas of the Allotment. Juniper provides important winter deer cover. Low sagebrush tends to lose snow cover earlier in the spring than surrounding habitats and thus provides an important source of new, green forage. In general, pinyon-juniper encroachment, the loss of bitterbrush and maturation of sagebrush, a lack of water, and wide-spread occurrence of cheatgrass are limiting the quality of deer habitat in the Allotment. A lack of perennial understory grasses and forbs in the uplands and riparian areas is reducing the quality of habitat used during summer and for fawning.

Pronghorn – Pronghorn increased more than 3,200 percent in the 20th Century after being nearly extirpated in the 1800s (Yoakum et al. 1996). Nevada’s estimated statewide pronghorn population increased by six percent in 2009 and is at an all-time high of 26,000 animals (NDOW undated). Today, 98 percent of pronghorn share their habitat with domestic livestock (Yoakum et al. 1996). The Allotment is within NDOW big game hunt units 291 and 203. The pronghorn population in these units is around 60 animals and there is an overall static population growth trend for this herd (NDOW undated). Pronghorn show a preference for low sagebrush communities and require communities with a mixture of sagebrush, shadscale, forbs, and grasses (Tsukamoto 2003). They typically need open space with good forb and shrub availability (Yoakum et al. 1996). Preferred pronghorn rangelands have vegetation with a mean height of 15 inches, areas with vegetation over 24 inches are less preferred, and those over 30 inches are infrequently used (Yoakum 1980). Salt desert shrub is used as winter range (Tsukamoto 2003). Some of the main components of pronghorn diet in many areas include sagebrush, bitterbrush, rabbitbrush, Indian rice grass, cheatgrass, crested wheatgrass, and shadscale. Shrubs are used heavily year-round, forbs are highly preferred, and grasses are used very little (Yoakum 1980, Yoakum et al. 1996). Forbs are important because they contribute a high amount of protein and minerals to the pronghorn diet.

Eighty-eight percent (43,321 acres) of the Allotment has been identified by NDOW as year-round pronghorn habitat (NDOW 2011). Pronghorn use open, low sagebrush in the Allotment. Low sagebrush tends to lose snow cover earlier in the spring than surrounding habitats and thus provides an important source of new, green forage. Roughly 13 percent (5,519 acres) of the pronghorn habitat in the Allotment has burned in wildfires. In general, the lack of perennial forbs and grasses, wide-spread occurrence of cheatgrass, and a lack of water are limiting habitat quality for pronghorn in the Allotment.

Bighorn sheep – The Allotment is within historic bighorn range, but is not currently occupied by this species. NDOW has not proposed to re-introduce bighorn in this Allotment or in the Pine Nut Mountains (NDOW 2009).

3.4.7 BLM Sensitive Species

BLM sensitive species are federally designated candidate species, proposed species, and delisted species in the five years following their delisting. Sensitive species are species requiring special management considerations to promote their conservation and reduce the likelihood and need for future listing under the Endangered Species Act (ESA).

BLM sensitive species are associated with a variety of habitats in the project area; habitats in the project area consist of sagebrush, salt desert scrub, pinyon-juniper woodland, and small areas of riparian vegetation such as aspen trees, cottonwood trees, willow, sedges and rushes. A list of Nevada BLM sensitive species was signed in 2003 and the sensitive species associated with habitat in the Allotment are shown in Table 9.

An Allotment Evaluation conducted in 2008 found the trend for plant communities was static to downward and that livestock overutilization of key perennial plants in certain areas was a contributing factor (BLM 2008), but new data collected in 2010 showed the trend for plant communities was static to upward (BLM 2010b). Range conditions such as plant cover and vigor have improved since 2008 with increased precipitation levels and a reduction in AUMs (Appendix A), but much of the Allotment remains dominated by mature shrubs and lacks a perennial understory. Sagebrush range in good condition supports a lush undergrowth of bunchgrasses and forbs (Wildlife Action Plan Team 2006). There is an uncharacteristic distribution of age classes because of the scarcity of seedlings and young plants, but seed heads on perennial grasses and shrubs can be seen in photographs taken in 2010. Current habitat conditions are likely skewed toward those sensitive species more tolerant of early seral conditions, i.e. a loss of understory vegetation (Bleich 2005). Range condition quality is currently limited for sensitive species, such as sage-grouse, that require perennial grasses and forbs for nesting cover and foraging (Wildlife Action Plan Team 2006).

Portions of the Allotment have burned in recent wildfires (Table 4). Seventeen percent (8,133 acres) of the Allotment has burned in recent wildfires. Cheatgrass and fire-tolerant shrubs such as desert peach and horse brush are common in areas that burned recently, but sagebrush seedlings are present in the 2000 Como burn area. Small areas of riparian vegetation associated with springs and meadows such as aspen trees, willow, sedges and rushes occur on the Allotment. In June 2007, 18 riparian areas were assessed on the Allotment and almost all had some degree of impacts from livestock grazing, including those rated as being functional (BLM 2008). Seven of the riparian areas were found to be in PFC or FAR-UP, seven were found to be FAR-UNK, and four were FAR-DN or NF (Table 4). Four of the springs were given lower ratings than in 2000.

Bi-State DPS of the greater sage-grouse – Sagebrush communities dominate the vegetation in the Allotment (the Allotment is 89 percent (43,813 acres) sagebrush) and the greater sage-grouse (*Centrocercus urophasianus*), a sagebrush obligate, has habitat in the Allotment and likely occurs in the Allotment. The greater sage-grouse is highly adapted to sagebrush; 98 percent of the year-round diet of adults is made up of sagebrush leaves, which gives the bird

the ability to winter on sagebrush range (Wildlife Action Plan Team 2006). Sage-grouse are dependent on sagebrush habitat to complete their life cycle.

In 2010, the FWS determined that the greater sage-grouse warrants the protection of the ESA, but that listing was precluded by higher priority listing actions (FWS 2010a). The FWS also announced that listing the Bi-State population (previously referred to as the Mono Basin area population), which meets criteria as a distinct population segment (DPS) of the greater sage-grouse, is warranted but precluded. The Bi-State DPS was given a higher listing priority number than sage-grouse range-wide. As a result, both the greater sage-grouse range-wide and the Bi-State DPS are now candidate species for ESA protection. The FWS will review the status of the greater sage-grouse and the Bi-State DPS annually and will propose them for listing when funding and workload permit. Candidates do not receive statutory protection under the ESA and States continue to be responsible for managing the species.

Sage-grouse lek count data for 1965-2007 indicate that the species has experienced a long-term, range-wide population decline and that populations are now at much lower levels than in the early 1980s (NatureServe 2010g). Currently, greater sage-grouse occupy approximately 56 percent of their historical range. Most western states have engaged in a conservation planning process for sage-grouse because of range-wide population declines and habitat loss. In an effort to stabilize and recover populations, NDOW and its partners have pursued a strategy of proactive management and monitoring, which is organized into population management units (PMUs). The *Greater Sage-Grouse Conservation Plan for Nevada and Eastern California (Nevada and Eastern California Plan)* presents information on sage-grouse populations and the risks to populations (NGSCT 2004). Local planning groups were then tasked with developing local conservation plans with solutions to on-the-ground challenges for PMUs. The Bi-State DPS (previously referred to as the Mono Basin area population) is covered by its own local conservation plan the *Greater Sage-Grouse Conservation Plan for the Bi-State Plan Area of Nevada and Eastern California (Bi-State Plan)* (Bi-State Local Planning Group 2004). The sage-grouse that occur in the Pine Nut Mountains are part of the Bi-State DPS and the Bi-State Plan includes the Pine Nut PMU. The Bi-State Plan gives a population estimate between 292-389 birds and states anecdotal evidence suggests that populations within the Pine Nut Mountains were greater and distributed across a wider area in the past (NGSCT 2004). The estimated population for 2009 is between 89-107 birds (FWS 2010a).

Ninety percent of the Allotment occurs in the Pine Nut PMU. Two distinct breeding areas have been identified in the PMU. These breeding areas refer to clusters of leks and none of the leks occur in the Allotment.

The Allotment is 14 percent (7,087 acres) delineated nesting, 33 percent (16,486 acres) delineated summer, and 24 percent (12,043 acres) delineated winter habitat (NDOW 2011) (Map 4). Sage-grouse depend on mature shrubs for nesting structure, protection from predators, and thermal cover. They nest on the ground under low-growing shrubs and a dense shrub overstory and a healthy herbaceous understory of grasses are important for shade and nest concealment (Wildlife Action Plan Team 2006). Hens select nesting sites under sagebrush

plants that have a relatively high canopy cover and are relatively tall (Welch 2005). Sagebrush canopy cover in preferred nesting areas ranges from 15-30 percent (BLM 2005). Adequate herbaceous cover may be as important as shrub density in determining nesting success, and chick survival is directly linked to availability of food and cover of short grasses (GBBO 2010). Grass and forb cover at nest sites provide visual, physical, and scent barriers to predators. The first few weeks after hatch and considered the early brood-rearing period and chicks rely heavily on insects, such as ants and beetles and native forbs during this time. More juvenile mortality occurs during this period from predation and weather, and predation can increase with diminished hiding cover.

Summer/late brood-rearing habitat usually has less dense sagebrush canopy than nesting habitat and a higher proportion of grasses and forbs in the understory. Diverse plant communities with abundant insects are particularly important. Broods move with range desiccation down to wet meadows, where they feed on highly preferred forbs such as aster, dandelion, and yarrow. Interspersion of meadows in a sagebrush matrix is important for brood rearing (Neel 1999). Klebenow (1981) found meadows most used by birds had moderate grass cover six to eight inches tall. Areas providing persistence of green forbs and abundant insects through late summer are critical to brood survival and may be a limiting factor in much of Nevada (Wildlife Action Plan Team 2006, GBBO 2010). Upland meadows are the primary summer habitat used by grouse in Nevada (Neel 2001). In Nevada, hens with broods only used water in meadow vegetation and that water sources surrounded by bare ground were avoided (Klebenow 1981).

All NDOW brood data for the PMU comes from Big Meadow, which is in the Allotment. Other springs occur in the Allotment and are potential brood habitat, but their use by grouse for brood-rearing is not currently known. Big Meadow is monitored annually during sage-grouse brood counts conducted by NDOW. The Bi-State Plan states NDOW has documented an upward trend in the number of birds seen at this location over the last 10 years, but mean brood size and nesting success have not been estimated (Bi-State Local Planning Group 2004). It is assumed that the grouse using Big Meadow breed and nest in the north breeding area. Big Meadow supports a diversity of grasses, sedges and forbs including yarrow, milk vetch, dandelion, milkweed, and monkey flower. Wiregrass and wild iris are common and Canada thistle, a noxious weed, is present. In 2007, Big Meadow had some severe localized hoof impacts around springs.

Winter habitat is dense sagebrush that reaches 10-12 inches above snow (BLM 2005, GBBO 2010). Grouse eat exclusively sagebrush during winter. Sagebrush species eaten by grouse include Wyoming big sagebrush, mountain big sagebrush, low sagebrush, black sagebrush, fringed sagebrush, and silver sagebrush. Grouse are known to prefer Wyoming sagebrush rangeland for wintering habitat.

Overall, grouse exhibit temporally-variable structural preferences and high-quality sagebrush habitat has been characterized by 15-25 percent sagebrush canopy cover and perennial herbaceous cover greater than seven inches high, with 15 percent canopy cover of grasses and

10 percent cover of diverse forbs (Connelly et al. 2000, GBBO 2010). Roughly 30 percent (2,123 acres) of the nesting habitat, 23 percent (3,759 acres) of the summer habitat, and 23 percent (2,437 acres) of the winter habitat in the Allotment burned in recent wildfires (Table 4). Grouse habitat in the Allotment is generally not meeting the herbaceous understory recommendations in the sage-grouse guidelines by Connelly et al. (2000), but nest success is varied among Bi-State PMUs and residual grass cover does not appear to be as significant a factor to nest success as in other western U.S. locations (FWS 2010a).

Pygmy rabbit – Pygmy rabbits are highly dependent on sagebrush to provide food and shelter throughout the year and are typically associated with tall, dense stands of big sagebrush growing in deep, loose soils in which they can construct their burrows. Pygmy rabbits have needs similar to sage-grouse and occupy sagebrush stands having 16-46 percent canopy cover (Welch 2005). With sufficient big sagebrush cover, soil characteristics such as depth and ease of digging are the determining factors in the distribution of these rabbits and not the presence of specific subspecies of big sagebrush. Burrows are almost always under big sagebrush and only rarely in the open. Pygmy rabbits occasionally use burrows abandoned by other species and as a result, may occur in areas of shallower or more compact soils that support sufficient shrub cover. Big sagebrush is the primary food source, but grasses and forbs are eaten in summer (Wildlife Action Plan Team 2006). Their diet in the winter consists of up to 99 percent sagebrush (Welch 2005).

Little information is available on pygmy rabbit population trends in most states, but the trend for Great Basin shrubsteppe habitats is generally downward due to fire, grazing, invasion of exotic annuals, and agricultural conversion, which likely correlates with downward trends for sagebrush obligate species (NatureServe 2010f). Pygmy rabbit distribution within its range is not continuous but patchy, primarily in areas of Great Basin big sagebrush. In Nevada, pygmy rabbits are found in broad valley floors, drainage bottoms, alluvial fans, and other areas with friable soils. Most of the historical records (1999 and earlier) for Nevada documented occurrences are in the following counties: Elko, Eureka, Lander, White Pine, and Nye Counties (FWS 2010b). There are fewer records from Washoe, Humboldt, Pershing, and Churchill Counties. The Nevada Natural Heritage Program (NNHP) does not list pygmy rabbit on the Douglas or Lyon County rare species lists (NNHP 2011a), and it does not list Douglas or Lyon County as historic range for pygmy rabbit distribution (NNHP 2011b). Pygmy rabbit are not known to occur on the Allotment. While the Allotment contains sagebrush habitat, research suggests pygmy rabbits are habitat specialists and that large portions of native vegetation within what is currently depicted as habitat may not be suitable (Gabler et al. 2000). Observations of pygmy rabbits have never been documented and areas of potential habitat have never been identified during field reconnaissance or rangeland health monitoring by the BLM on the Allotment. Suitable habitat can be recognized by distinctly taller patches of mature sagebrush, which are indicative of deeper soils. Burrows and pellets are excellent indicators of the occurrence of pygmy rabbits (Himes and Drohan 2007). Pygmy rabbits spend the majority of their time close to their burrows resulting in high concentrations of pellets at or near burrow entrances. Sites occupied by rabbits are often closer to perennial streams (Himes and Drohan

2007), but the perennial stream in the Allotment is in a narrow, steep, rocky canyon and is associated with cottonwoods and willows, not deep soils and mature sagebrush.

Raptors – Raptors, such as ferruginous hawks (*Buteo regalis*) and golden eagles (*Aquila chrysaetos*), spend most of their time hunting over sagebrush for ground squirrels, jackrabbits, and other prey and likely forage in the Allotment. Golden eagles and ferruginous hawks do best where habitat favors production of rabbits and ground squirrels (Call 1979). The ferruginous hawk's breeding density and productivity apparently track the abundance of its prey (Paige and Ritter 1999, GBBO 2010). These raptors are limited by prey densities and need sagebrush habitat with a productive herbaceous understory for high quality foraging habitat and healthy prey populations (GBBO 2010). Threats to these raptors include reductions in prey populations from degradation or loss of rangelands, and habitat management should focus on maintaining prey populations. The main function of big sagebrush for many small mammals is cover, while the herbaceous understory and insects supply food (Welch 2005). BBS data for the ferruginous hawk indicate an average annual increase (NatureServe 2010d). Concern for goshawks in Nevada is related to their strong association with aspen, which are limited in extent and subject to many threats (GBBO 2010). Goshawks could nest in the aspen stands on the Allotment, but no nests are currently known.

Bats – All of the bats that could occur in the Allotment belong to the habitat guild representing water source foraging/watering habitat. Nevada's water sources at least partially determine the distribution and abundance of these bats. Approximately 90 percent of all bat activity occurs at water sources and the majority of bats use both developed and undeveloped springs (Bradley et al. 2006). Many insectivorous bats concentrate around water sources because these areas support high numbers of insects. Springs rated in good to excellent condition generally sustain a richer insect fauna than surrounding uplands and those rated in poor to fair have an insect forage base that resembles surrounding uplands.

William's combleaf - William's combleaf (*Polyctenium williamsiae*) is a rare endemic perennial plant found along the margins of ephemeral lakes in western Nevada and eastern California. The plant was first discovered in 1946 in Long Valley, Washoe County, Nevada. William's combleaf has been documented at 34 scattered sites with an estimated population of 452,000 individuals. About 37 percent of known populations occur on BLM managed lands (Holland and Morefield 2003). As of January 2011, this plant has been proposed to be added to the BLM sensitive species list which is undergoing an update (See Section 5.0).

William's combleaf has emergent leaves by March and flowers from mid-May through July, with most seed released by July. This plant is almost entirely restricted to the relatively barren sandy to sandy-clay or mud margins and bottoms of non-alkaline seasonal and ephemeral overlying volcanic bedrock in the sagebrush, pinyon-juniper, and mountain sagebrush zones. The plants usually occur at low densities. Local hydrological processes are critical to William's combleaf survival. Ephemeral lakes seasonally fill with water during the winter months, primarily from snow accumulation and subsequent snowmelt. The snowmelt hydrates the ephemeral lake margins and drowns out native and non-native invasive plant species that

attempt to establish along the playa lake margins. The ephemeral waters also help distribute William's combleaf seed to other parts of the playa lake shoreline (Holland and Morefield 2003).

William's combleaf does not appear to tolerate much soil disturbance, or to be capable of colonizing disturbed or undisturbed soil in other habitat types (Holland and Morefield 2003). This is evident when examining ephemeral lakes, throughout the region and within the Allotment, that have been partly excavated to create waterholes for domestic livestock, wild horses and wildlife.

William's combleaf is vulnerable from impacts by grazing from trampling by livestock when the ephemeral lake is used as a watering site. There are four ephemeral lakes within the Allotment. William's combleaf occurs on one ephemeral lake (known as "Parcel A"). In the past 30 years several ephemeral lakes within the Allotment were partly excavated to create deeper pools for longer water retention for cattle and wildlife use. On August 30, 1985 a decision was signed (Churchill Canyon Waterholes EA, NV-030-5-78) authorizing the excavation of a small portion of three ephemeral lake beds as part of a range improvement project creating the Dry Lake, Powerline and Eldorado waterholes. The Powerline and Eldorado waterholes were partly excavated in 1986. The Dry Lake waterhole was partly excavated in 1991. The environmental analysis did not identify whether these ephemeral lakes were occupied by William's combleaf, and no assessment was completed to determine whether suitable habitat existed at the time. If hydrology was changed (outside the scope of this EA), these three ephemeral lakes could potentially become suitable habitat for an introduction effort (See Section 5.0).

3.4.8 Cultural Resources

Section 106 of the National Historic Preservation Act (NHPA) requires that federal agencies consider the effects of their undertaking on NRHP historic properties. In evaluating historic properties within undertakings, "effect" means alteration to the characteristics of a historic property qualifying it for inclusion in, or eligibility for the NRHP. If the property is determined not eligible for the NRHP, or the undertaking will not directly or indirectly affect the property, the action would be "no effect." "Adverse effect" is found when an undertaking may alter characteristics of the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. "No adverse effect" means that if the BLM determines that identified historic properties will be avoided with the Standard Measures in the State Historic Preservation Office (SHPO) Protocol Agreement, the BLM can determine that the undertaking will have no adverse effect on historic properties and proceed with the undertaking (SHPO 2009). The terms "adverse effect" in the Cultural Resources sections of this EA is used in the specific context and definition set in the NHPA and not in NEPA.

The potential exists for adverse impacts to historic properties due to a continuation of livestock grazing with or without modifications to the grazing permit. By definition, a historic property is a "prehistoric or historic district, site, building, structure, or object included in, or eligible for

inclusion in, the NRHP” and includes “artifacts, records, and remains that are related to and located within such properties” (36 CFR 800.16(l)(1), and SHPO Protocol K.A.1)).

Regarding the undertaking of the issuance of term grazing permit renewals, the BLM must insure that each historic property would have any potential adverse effects resolved, ideally through avoidance (SHPO Protocol H.A.1 avoiding with standard measures, and H.B.A.1, avoiding through non-standard measures). Resolution of adverse effects can be completed by other means—such as through data recovery of the values present at the property. However, pursuant to 36 CFR Part 800, this must be completed prior to initiating the undertaking of issuance of a term grazing permit renewal, and in consultation with the Yerington Paiute Tribe, the Washoe Tribe of Nevada and California, and the SHPO. If these measures cannot be accomplished, specific project undertakings would be cancelled, or the Allotment use would be modified to otherwise result in no adverse effect to an historic property.

Cultural resource concerns regarding livestock grazing and related effects focus on NRHP eligibility of historic properties, site type, and the potential impacts from livestock-related activities. In accordance with 36 CFR Part 800 and 43 CFR Part 8100, as amended, BLM is required to identify and evaluate cultural resources within the area of potential effect from any current or future proposal for an undertaking such as a waterline, fence, or other action that concentrates livestock.

Previous cultural resource inventories evaluated 2,601 acres, or 5.4 percent, of the Allotment area, and resulted in the identification of sites. To date, in and immediately adjacent the Allotment, known cultural resources represent significant past human use of the landscape. Known site types within the Allotment area include prehistoric camp sites; prehistoric limited activity/procurement sites; rock alignments and hunting blinds; historical stone structures; historical refuse scatters; mining complexes; isolated prospecting locales; ranch sites; transportation and communication sites; woodcutting locales; and charcoal production locales.

Records searches by the BLM and through the Nevada State Museum revealed that the Allotment contains five historic properties (sites recommended or eligible for inclusion in the NRHP). All five historic properties consist of areas of prehistoric material remains. One of these historic properties has been subject to archaeological data recovery designed to resolve adverse effects from a previous undertaking. That site received a Class III cultural resources inventory and full data recovery, as part of the cultural inventory for the Fort Churchill to Buckeye Transmission Line Project in 2005. Impacts to the prehistoric site, an NHRP eligible cultural property, were mitigated by an archeological excavation (Envirosolutions 2005). Therefore the site, which is no longer a historic property as a result of artifact removal, has already been mitigated for and no additional mitigation would be necessary. One of the proposed improvements, the construction of a new livestock handling corral, has been proposed in the vicinity of the mitigated prehistoric site. In addition, in 2008, the BLM conducted a records search of the Allotment (Carter 2008).

The specific Allotment improvements include a proposed drift fence extension in the Sario Well pasture and two small holding corrals along the northern pasture boundary, one of which was mitigated through data recovery; a full excavation and archiving of artifacts. The mitigation of the site was part of the Historic Properties Treatment Plan for Sierra Pacific's Fort Churchill to Buckeye Transmission Line (Johnson 2008).

Soils are integral to archaeological investigations as soil types can either aid site preservation or act to diminish site integrity. Archaeological sites in erosive sediments with natural weathering impacts can be damaged by trampling and vegetation removal from livestock. In such erosive areas an open site such as a prehistoric flint station or flake scatter would be damaged by congregating cattle, and the trampling would increase the existing natural erosion.

Archaeological sites in areas of little natural erosion suffer only minor impacts from livestock trampling, and generally the trampled stone flakes break down to a size class that is no longer impacted. In such scenarios the subsurface component of the site essentially remains intact as artifacts move downward, displaced over time through the mixing of subsurface soils by earthworms, insects, decomposing vegetation, and other processes. This natural process, called bioturbation (Balek et al 2002), mixes the archaeological site stratification layers, the cultural context timeline that archaeologists study. However, this process buries artifacts that had accumulated on the surface and thereby preserves the objects. This has been observed in many archaeological sites, and is also supported by studies (Frolking 2001, Nielson 1991).

Within the Allotment soil types are basically split into lowland soils and upland soils, spread among five basic soil types (among pockets of others). On the lowlands on flat ground or on very moderate slopes, soils are gravelly loam and gravelly sandy loam. These are very deep, well drained soils on old alluvial fans, typical to the floor of Churchill Canyon and Lincoln Flat. Alluvial fans and flood plains are active surfaces over which water and sediments are moved by major storm events. The initial form of most water-related erosion is raindrop splash erosion on bare ground (Weltz 1998 in DOI 2005). The low precipitation on the Allotment greatly decreases this form of natural erosion.

Soils on the slopes at the edge of the flats are much different, and are composed of very gravelly sandy loam on 8 to 30 percent slopes. Permeability of these soils is moderately slow, runoff is medium, and available water capacity is very low. These are very shallow soils with a depth to bedrock only 10 to 20 inches. Regardless of the shallowness, these soils are stabilized by gravelly aggregates, and also by decomposing organic matter and biological crusts. The presence of these soil factors is an indicator of soil surface resistance to erosion (Blackburn et al 1992, Pierson et al 1994 in DOI 2005).

On the slopes of the Singatse Range the soil is an extremely cobbly loam. Depth to bedrock is 14-20 inches, water runoff is rapid but the hazard of erosion is slight, as is wind-blown erosion. Common to all soils that have been described is a very low hazard of water erosion and wind erosion, owing to the low average annual precipitation, very low available water capacity (USDA undated).

Foot slopes in the Allotment represent a transitional depositional zone of sediments eroded from steeper slopes, and down to the edges of the alluvial valley bottom (Frolking 2001). Archaeological sites would be expected to lie within the subsurface, buried by sediment and the bioturbation process. At these locations on the margins of Sierra Front valleys, archaeological investigations have uncovered seed gathering camps. Hunting and seed gathering camps stretch from the Sierra Front all the way south to Owens Valley. In the Pine Nut Mountains, hunting base camps are found at strategic locations. These hunting and seed gathering sites at the most favorable locations were consistently reoccupied (Elston 1982). Hunting sites are displayed in the archaeological record by the presence of commonly known stone tools such as arrow points, knives, scrapers, and flaked debris. The archaeological record of prehistoric plant usage to harvest a host of plants for seeds is much less evident because few tools were used to collect plant resources. Studies (Simms 1985) have shown that two open-faced baskets and a winnowing tray were used. These artifacts would have decayed and disappeared entirely from the archaeological record. Even though prehistoric Great Basin people depended heavily on plant resources, the sole remains from plant processing would be rarely found grinding stones. These isolated solitary finds would not represent historic properties.

On the alluvial flats in the Allotment there are occasional small playa ponds and impressions of larger playa lakes that formed in basins that are now dry. The basins all have the same loamy coarse sand that is very deep and very poorly drained. The underlying layer is sandy loam and sandy clay loam. Many of the playa lakes in Nevada are remnants of ancient pluvial lakes that filled most of the closed valleys of the Great Basin such as Lake Lahontan, which covered an area greater than 21,800 square kilometers (Caskey et al 2004).

Lower elevation valleys were filled with broad marshes and/or shallow lakes, between 11,000 and 12,500 years ago when humans likely first entered a Great Basin that was cooler and moister than today. The margins of valleys with wetlands contain some of Nevada's oldest sites. Studies suggest that early inhabitants made great use of the lake shores through a series of cyclical movements, foraging from lake to lake. This is thought to have been a region-wide practice in the Great Basin (Smith 2004).

The Allotment area, though showing the characteristics of closed valleys with alluvial flats and playa lakes, does not have geologic features representative of ancient pluvial lakes. The nearest extent of ancient Lake Lahontan would have been about 25 miles northeast of the Allotment in the northeast part of Churchill Valley, in the vicinity of Hooten Well (Adams 1999 et al). Therefore, while the Allotment area may not contain the oldest of Great Basin prehistoric sites, the conditions are right for more recent sites, with the presence of seasonal playa lakes/ponds and associated flora and fauna.

Within the Allotment there is an ephemeral lake that has been proposed for fencing to protect a plant (William's combleaf) that has been proposed to be added to the BLM sensitive species list. The plant would be protected from livestock with approximately two miles of fencing around the ephemeral lake. This minor undertaking is a ground disturbing activity; in April 2011

BLM archeologists conducted the Class III cultural resources inventory to determine the best location to place the proposed ephemeral lake fencing (CRR3-2589).

3.4.9 Noxious Invasive Weeds, Non-Native Plant Species

Noxious invasive weeds are defined by the Nevada Department of Agriculture as non-native species that are injurious to wildlife habitat and agriculture (Creech 2010). Off-highway vehicles, overgrazing by livestock, wild horses and wildlife can disturb native plant communities such that noxious weeds establish and proliferate. Dispersal of noxious weeds occurs when motorized vehicles, livestock, wild horses and wildlife transport weed seeds from infested areas to other sites. Once noxious weeds are established, selective grazing can further reduce native plant competition when livestock, wild horses and wildlife preferentially graze native plant species and avoid noxious weeds, giving the weeds a competitive advantage.

There are three noxious invasive plant species known to occur in the Churchill Canyon Allotment.

Perennial pepperweed (*Lepidium latifolium*) is a perennial forb that is extremely aggressive often out-competing native vegetation, and in many places forming monocultures. The plant flowers from June to September and is a prolific seed producer, though many of the seeds are not viable. Viable seeds can maintain viability from five to 10 years (Burnside 1981). The plant has an extensive root network that is capable of sending up shoots from the numerous nodes found along the root system. Pulling plant stalks or uprooting plants stimulates the plant to send up shoots. The sprouting root network is the primary method this plant utilizes to propagate and expand (Creech 2010). This species requires more mesic soils and it is primarily found in meadows, riparian areas and along roadsides where paved roads or compacted dirt surfaces allow greater water runoff to the road margins. Livestock, wild horses and some wildlife will eat the plant leaves and flowers, but not to any degree that adversely impacts the plant.

Perennial pepperweed is scattered throughout the native willows and grasses within the Sario Well riparian area making eradication difficult. Repeated mechanical treatment such as mowing followed by herbicide application is the most widely accepted method for controlling this noxious weed.

Canada thistle (*Cirsium arvense*) is a perennial forb that requires mesic soils such as those found in meadows, riparian areas and alongside springs. The thistle flowers from June to September, producing abundant quantities of seed. The plant has an extensive root system, which if uprooted, stimulates the plant to send up shoots (Creech 2010). Livestock, wild horses and wildlife may occasionally eat flower heads, but the spiny leaves and stems prevent any significant impacts from herbivory. Herbicide treatments are the only effective means of control. Canada thistle is found within the JW Ranch pasture, primarily in the open meadows. Repeated observations indicate that this noxious weed is spreading within the meadow.

Musk thistle (*Carduus nutans*) is a biennial forb that flowers during the second year of its life. The plant flowers from June to September, producing 10,000 seeds per plant. The seeds are viable for up to 10 years, although, only one-third of the seeds are viable (Beck 2008). Musk thistle requires mesic soils and can be found alongside roads, riparian areas, meadows and springs. The only known locations within the Allotment are along an unnamed spring in the JW Ranch pasture. Musk thistle can be pulled or dug out effectively when patches are small. Large infestations require the use of herbicides.

4.0 ENVIRONMENTAL CONSEQUENCES

This chapter describes the potential direct, indirect, and residual effects to resources that may result from the Proposed Action or Alternatives, as well as identifies the potential monitoring needs associated with the specific resources. In this document, the word “adverse” is used in characterizing minor (non-significant) detrimental effects on the resource. “Beneficial” effects would have a positive effect on the resource. In this document, the terms “effect” and “impact” are used synonymously.

4.1 Alternative A: Proposed Action

4.1.1 Livestock

Under the Proposed Action the stocking rate for cattle within the Allotment would be 38 acres per animal unit month (A/AUM). Past stocking rates for the Allotment based on actual use data ranged between 26-45 A/AUM (Appendix A).

Additional terms and conditions in the new term livestock grazing permit would require that the “grazing schedule” would be followed. A proposed grazing system would: improve livestock distribution, which would reduce utilization levels; reduce overall cattle stocking rates; further reduce cattle stocking rates in the spring (March 1 to May 20) and rest specified pastures during the spring. The stocking rates by pasture under the grazing schedule would be as follows:

Table 9. Grazing Schedule.

Pasture	Acres ⁶	AUMs 11/1-2/29 Odd Years	Acres/ AUM	Acres	AUMS 11/1-2/29 Even Years	Acres/ AUM
Sario Well	15,480	400	39	15,480	400	39
JW Ranch	15,913	466	34	15,913	485	33
		<u>AUMS</u> <u>3/1-5/20</u> <u>Odd Years</u>			<u>AUMS</u> <u>3/1-5/20</u> <u>Even Years</u>	
JW Ranch	12,497*	209	60	12,748**	190	67
Como	16,433	200	82	16,433	200	82
TOTALS		1,275			1,275	

*Graze Sunrise burn rest Como burn.

** Graze Como burn rest Sunrise burn

Management flexibility would be included as part of the new term livestock grazing permit to allow seasonal modifications in livestock management that would benefit vegetative resources. The degree of flexibility would be limited by permit terms and conditions. The maximum dormant season stocking rate for cattle would be 25 A/AUM. Due to snow in the Como portion of the Allotment dormant season (November 1 to February 28) grazing typically occurs in the Sario Well and JW Ranch Management Areas. The maximum growing season (March 1 to May

⁶ Acres from Natural Resource Conservation Service Web Soil Survey

20) stocking rate would be 50 A/AUM. Spring grazing typically occurs in the JW Ranch and Como portions of the Allotment.

New permit terms and conditions would limit spring use (March 1 to May 20) by cattle to 650 AUMs which would ensure spring stocking rates would not exceed 50 A/AUM, even if flexibility in annual operations were granted by the BLM. Cattle use within the HMA would be limited to 154 AUMs per grazing season. Forage utilization of key perennial plant species during the spring (March 1 to May 20) would also be limited to 55 percent.

The proposed fencing would reduce cattle trespass between the Churchill Canyon and Lincoln Flat Allotments and facilitate livestock handling for the purposes of sorting and care. Refer to Map 2.

4.1.2 Vegetation

Under the Proposed Action a portion of the annual forage production would be removed by livestock grazing. Under the grazing schedule approximately 40 percent (514 AUMs) of the forage removed would occur during the spring (March-May) which is part of the critical growing season for key cool-season grass species. The stocking rate on the Allotment during the spring would be between 60-82 A/AUM depending upon the pasture and year in the grazing schedule. Flexibility in livestock operations could be approved for a particular grazing season; a maximum of 51 percent (650 AUMs) of the forage removed could occur during the spring (March-May). Under adaptive management, the maximum spring stocking rate would be 50 A/AUM.

The remaining livestock grazing on the Allotment occurs post seed ripe when perennial grasses and forbs are dormant (November-February). Under the grazing schedule dormant season stocking rates would range between 33 to 39 A/AUM depending upon the pasture and year in the grazing schedule. Flexibility in livestock operations could be approved for a particular grazing season; the maximum stocking rate for dormant season grazing would be 25 A/AUM.

The Proposed Action would maintain or improve the upland rangeland health conditions by providing stocking rates that are appropriate for plant life cycles. Grazing would occur after seed ripe when perennial grasses and forbs are dormant. The grazing schedule would ensure plants rest from livestock grazing during the spring. The grazing schedule provides for a typical stocking rate of 50 A/AUM during the critical spring growing season which would help ensure that livestock use of key species would be moderate or less during this critical vegetative growth period. Plants receiving moderate or less use during this timeframe would have the vegetative matter and capability to grow, produce viable seed and replenish energy reserves. Rest from grazing during the growing season, ensures that the majority of the rangeland plants would complete a growth cycle without grazing pressure. The growing season for salt desert shrub vegetation in the Sario Well pasture begins prior to the growing season for other plant community types within the Allotment. In the past, plant re-growth has not always occurred after livestock grazing due to low precipitation amounts. The proposed grazing system would remove livestock from this pasture prior to March 1, so there would be no spring grazing in this pasture under the grazing schedule.

The Sunrise and Como burn pastures are recovering from wildfire and would be rested from grazing every other year during the spring growing season. The Buckskin, Upper Spring Gulch, Big Meadow and Como pastures are the mid and high elevation pastures within the Allotment, the growing season begins later in the spring and extends beyond the end of the grazing season. Under the grazing schedule livestock use in the Buckskin pasture ends prior to April 1, this would allow for two months of plant growth during the grazing season without livestock grazing. Livestock use in the Big Meadow pasture would be limited to 20 days in May. Pasture use periods and grazing system are proposed to remove livestock grazing early in the spring while there is sufficient soil moisture to allow perennial plants to re-grow and set seed. This grazing system allows for plant re-growth at the end of the grazing season and seed set after the grazing season ends. Grazing at proper stocking rates, post seed ripe during the dormant season would not cause an interruption to the plants physiological or morphological processes. Little to no active plant growth occurs after seeds ripen because plants have completed the annual cycle of producing seed.

Monitoring of the Allotment has shown that the range conditions are meeting the rangeland health standards. Vegetation observed within transects of recent monitoring indicates that the uplands of the Allotment are stable as pertaining to soil stability, watershed function and biological integrity. Trends in vegetative attributes have been monitored at seven key areas, utilizing frequency and photo trend plot methodologies. Monitoring in 2007 indicted grass and shrub species were stable or declining. Several factors influenced the condition of plant communities. Influences included livestock and wild horse grazing, drought, fire and plant community dynamics. Recently, drought appears to have had a dominant affect on plant communities. With the exception of 2006, precipitation levels were below average from 2000 to 2007 with the least amount of precipitation occurring 2007 (Appendix E). The current vegetative trend is static to upward (2007-2010), vegetative conditions improved with increased precipitation levels (BLM 2010b). Vegetative cover has increased and new shrub seedlings are establishing.

The proposed managed livestock grazing would not directly cause a change in the ecological condition of plant communities. Sites within the Allotment would continue to be dominated by shrub species in unburned areas and by fire tolerant shrubs or annual species in burned areas. Without fire, plant community trends would be expected to be static to upward. Managed livestock grazing would reduce the risk of fire by decreasing the amount of available fine fuels. Plant communities are at risk of transitioning to new ecological states following fire, due to the high abundance of desirable fire intolerant species and low abundance of desirable fire tolerant species. Plant community trends would be expected to be static to downward following fire without successful rehabilitation.

The construction of two miles of fence in the Sario Well pasture would disturb vegetation from a low sagebrush plant community. Vegetation along a 15 foot wide corridor would likely be driven over during fence construction and maintenance. This would temporarily impact less than two acres of vegetation; recovery of the vegetation would likely occur. The construction

and use of the holding corrals in the Sunrise burn pasture would permanently disturb less than one acre of primarily annual vegetation. Construction of approximately two miles of fence around/adjacent to an ephemeral lake would temporarily disturb less than two acres of low sagebrush vegetation.

Under the Proposed Action disturbance to biological crusts may occur if livestock step on the crust, however, this is unlikely because the crusts are located under shrubs. The risk of damage is further reduced during the winter months. Belnap, et al (2001) report that biological soil crusts are least vulnerable to shear and compressional forces when soils are frozen or snow covered.

4.1.3 Wetlands/Riparian Zones

Actual livestock use in the two years immediately preceding the 2007 riparian assessments ranged between 1,684 and 1,807 AUMs because of non-renewable use authorizations. Under the Proposed Action there would be fewer livestock on the Allotment and grazing would occur for a shorter period of time than in the past, which is likely to result in maintaining or improving riparian conditions. Areas such as Willow Spring and Lower Spring Gulch that were rated in a downward trend during the 2007 assessments should improve because the downward trend appeared to be drought related. Other riparian areas on the Allotment should at least be maintained at current conditions, which were generally favorable. As described in Section 4.1.7, under the Proposed Action, a known population of William's combleaf at an ephemeral lake would be enclosed within fencing.

4.1.4 Water Quality (Ground & Surface)

The Proposed Action would maintain or slightly improve water quality through better livestock distribution. Based on water quality data collected in 2007, grazing practices are not adversely affecting water quality.

4.1.5 Migratory Birds

Allotment monitoring has shown range conditions are meeting rangeland health standards and that the current vegetative trend is static to upward (BLM 2010b). Vegetation condition in the Allotment has improved since 2008 with increased precipitation and a reduction in livestock use grazing from 1,807 AUM's in 2007 to 1,045 AUM's in 2009 (Appendix A). Under the Proposed Action, rangeland health conditions would likely continue to improve by deferring a portion of the grazing to the dormant season, authorizing appropriate stocking rates and seasons of use, and resting a portion of the Allotment during the spring. The Proposed Action would maintain or continue progress toward the achieving applicable land health standards, and therefore it should maintain functional habitat for migratory bird species. Grazing allotments under managed grazing systems are intended to improve rangeland health. Importantly, the flexibility in operations of the Proposed Action would provide for adaptive management to address livestock distribution, variations in seasonal weather patterns, drought, fire, weed infestations or above average cheatgrass production, or other concerns about vegetation conditions. See Table 9 for a list of BLM migratory bird species associated with habitat in the Allotment.

Because a large number of species, each with differing life histories and responses to grazing, potentially use habitat on the Allotment, the Proposed Action would likely have a range of effects depending on the species (Knopf 1996). For example, cattle can adversely affect birds such as the sage thrasher that nest and forage on the ground and in shrubs, but have relatively little impact on birds such as the pinyon jay and the juniper titmouse that use tree canopies. Birds generally respond to indirect impacts of cattle on vegetation and not to cattle specifically, although cattle can directly affect ground-nesters by trampling nests. Short-eared owls nest on the ground, but are sufficiently scattered so that there is very little likelihood of trampling of nests (Call 1979). Reduced stocking levels, season of grazing and rotating pastures would reduce the potential for trampling of ground nests and nestlings in May (Paige and Ritter 1999). No trampling would occur during the remainder of the nesting period because no cattle would be present in the Allotment.

Grazing primarily affects migratory birds indirectly by altering food and cover, and the response is greatest for species dependent on herbaceous and shrub layers. Sage sparrows, sage thrashers, and Brewer's sparrows are expected to respond relative to how grazing affects shrub cover. These birds can likely persist with moderate grazing that maintains sagebrush cover and integrity of native vegetation (NatureServe 2010a, b, c). Grazing can positively affect abundance of these birds by increasing sagebrush density, but grazing may also encourage the invasion of non-native grasses that escalates the fire cycle and converts shrublands to annual grasslands. Moderate levels of livestock grazing is not harmful to sage sparrows, sage thrashers, and Brewer's sparrows (GBBO 2010). These birds are associated with low grass cover and some bare ground may be important for foraging (Paige and Ritter 1999). Relative to minimizing impacts to habitat, the season of use appears to be a more important consideration than intensity (Knopf 1996). Grazing late in the growing season or when vegetation is dormant can drastically reduce physical impacts of cattle on vegetation and bird communities.

Up to four miles of fencing would be built under the Proposed Action. There is a low risk of migratory bird mortality with barb wire fencing; white-topped fence posts and reflectors would increase fence visibility to help migratory birds avoid fence lines. The benefits of constructing fencing to facilitate proper use levels on vegetation by reducing livestock drift between allotments and protect ephemeral lake habitat outweigh the low risk of bird collisions. Overall, the Proposed Action could have some adverse impacts to individual birds, but adverse effects to regional populations would not be expected.

4.1.6 General Wildlife

Allotment monitoring has shown range conditions are meeting rangeland health standards and that the current vegetative trend is static to upward (BLM 2010b). Vegetation condition in the Allotment has improved since 2008 with increased precipitation and a reduction in livestock grazing from 1,807 AUM's in 2007 to 1,045 AUM's in 2009 (Appendix A). Under the Proposed Action, upland rangeland health conditions would be maintained or continue to improve by deferring a portion of the grazing to the dormant season, authorizing appropriate stocking rates and seasons of use, and resting a portion of the Allotment. Under the Proposed Action approximately 40 percent of the forage would be removed during the spring growing season for

cool-season grasses (March-May) and the remainder would be removed when perennial grasses and forbs are dormant (November-February).

The stocking rates would help ensure that livestock use of key species would be moderate (55 percent) or less during the spring growing season. This utilization level combined with seasons of use for pastures would allow plant growth to continue through spring and summer and seed-set would occur. There would be no spring grazing in salt desert scrub habitat (Sario Well pasture) and pastures recovering from wildfire (Sunrise Burn and Como Burn pastures) would be rested every other year during the spring. The growing season begins relatively late in the spring and extends beyond the end of the grazing season in the four mid and high elevation pastures (Buckskin, Upper Spring Gulch, Big Meadow, Como pastures) allowing plant recovery and growth in the absence of livestock grazing. Grazing during the dormant period may favor perennial species where cheatgrass and perennials are mixed (Paige and Ritter 1999).

The construction of fencing would further reduce utilization by reducing livestock drift between allotments. The riparian areas in less than fully functional condition would begin moving toward a more functional condition under the Proposed Action and this would benefit wildlife species that use these areas. Sagebrush habitat plants are not well-adapted to continuous grazing pressure, but grazing can be sustainable as long as herbaceous understories are retained (GBBO 2010). The Proposed Action would maintain or continue progress toward achieving applicable land health standards, and therefore it should maintain functional habitat for wildlife species. Grazing allotments under managed grazing systems are intended to improve rangeland health. Importantly, the flexibility in operations of the Proposed Action would provide for adaptive management to address livestock distribution, variations in seasonal weather patterns, drought, fire, weed infestations or above average cheatgrass production, or other concerns about vegetation conditions.

Because a large number of general wildlife species, each with differing life histories and responses to grazing, potentially use habitat on the Allotment, the Proposed Action would likely have a range of effects depending on the species. For example, grazing can improve conditions for granivorous rodents by increasing the abundance of annual grasses and forbs, which produce more seeds than the perennial grasses that are reduced in abundance by grazing, but the results of jackrabbit response to grazing have been mixed. The relationship between grazing and jackrabbits is not well understood; some studies show heavy grazing increases suitable habitat while others report a preference for moderately to non-grazed pastures (Fagerstone and Ramey 1996).

Ground squirrels are often less numerous where vegetation is tall and dense, and appear to tolerate or even benefit from livestock grazing because they are most common on overgrazed ranges where they can reach high densities (Fagerstone and Ramey 1996, Knopf 1996). Their burrowing activities may have positive effects on rangeland by deepening soil, mixing soil, and improving the water holding capacity of soils. They are also important prey for many predators including coyotes, bobcats, badgers, mountain lions, bears, skunks, and weasels (Fagerstone and Ramey 1996).

Voles and harvest mice generally inhabit tall, dense grass habitats and disappear from areas with moderate to heavy grazing. Sagebrush voles are restricted to areas where big sagebrush occurs with large bunchgrasses and were more abundant on ungrazed rangeland than grazed rangeland in Nevada (Fagerstone and Ramey 1996). Light or moderate grazing would have little effect or even a positive effect on small rodents. The proposed grazing system would allow vegetation communities to retain perennial grasses and forbs and this would benefit wildlife species that depend on herbaceous plant material, seed production, and insects.

Up to four miles of fencing would be built under the Proposed Action and would comply with BLM wildlife fence standards. White-topped fence posts and reflectors would increase fence visibility to help wildlife, including mule deer and pronghorn, avoid fence lines. The benefits of constructing fencing to facilitate proper use levels on vegetation by reducing livestock drift between allotments and protect ephemeral lake habitat outweigh the low risk of wildlife collisions.

Mule deer –Livestock grazing has the potential to affect both food and cover available to deer. Under appropriate grazing regimes, cattle primarily eat grass and have a lesser impact on forbs and browse. Differences also exist in habitat preferences with cattle generally preferring gentle terrain near water, while deer will use steeper terrain further from water sources (Peek and Krausman 1996). Grazing can remove herbaceous cover crucial for doe nutrition and fawn hiding cover. Drought and prolonged severe winters influence the potential for competition for forage. Reductions in plant species diversity or productivity can increase competition (Peek and Krausman 1996).

During the fall when herbaceous species are dormant, cattle begin to use browse and compete with deer for forage (Cox et al. 2009). Bitterbrush is an important deer forage plant and heavy utilization by livestock could be harmful if it occurs on winter range (Wasley 2004). Livestock would be removed from the Allotment in May which is at the beginning of the growing season for bitterbrush (May-August). Late summer is a critical period for forage quality for mule deer (Peek and Krausman 1996), however no livestock grazing would occur during the summer. By late season when grasses and forbs have cured and are no longer high quality forage, cattle would not be competing for leaders of browse species. Overall, the proposed grazing system would allow vegetation communities to improve shrub and understory conditions, which would increase the quality of mule deer habitat.

Pronghorn – Vegetation changes caused by livestock grazing have likely had a greater impact than direct competition for forage (Yoakum 1980). Pronghorn prefer forbs, then shrubs, and seldom eat grasses. Pronghorn do not typically switch to less preferred forage classes when forbs and shrubs are limited (Yoakum et al. 1996). Vegetation should be managed to provide a variety of forage classes. Rangelands producing mixtures of grasses, forbs, and shrubs will best serve livestock and wildlife. Overall, the proposed grazing system would allow vegetation communities to improve shrub and understory conditions which would increase the quality of pronghorn habitat.

Up to four miles of fencing would be built under the Proposed Action and would comply with BLM wildlife fence standards. White-topped fence posts and reflectors would increase fence visibility and help pronghorn avoid fence lines. The benefits of constructing fencing to facilitate proper use levels on vegetation by reducing livestock drift between allotments outweigh the low risk of collisions.

4.1.7 BLM Sensitive Species

The current vegetative trend is static to upward (BLM 2010b). Vegetation condition in the Allotment has improved since 2008 with increased precipitation and a reduction in livestock grazing from 1,807 AUM's in 2007 to 1,045 AUM's in 2009 (Appendix A). Plant cover and vigor have improved, the perennial grasses and shrubs had seed heads, and there were sagebrush seedlings in the Como burn. Plant density, especially of forbs and grasses, remains low. Range conditions would be maintained or continue to improve under the Proposed Action when compared to past actual use by deferring a portion of the grazing to the dormant season, authorizing appropriate stocking rates and seasons of use, and resting a portion of the Allotment.

The proposed permitted use would be less than actual past use (Appendix A). Sagebrush habitat plants are not well-adapted to continuous grazing pressure, but grazing can be sustainable as long as herbaceous understories are retained (GBBO 2010). Some vegetation conditions may not respond to changes in livestock management and may require restoration efforts such as pinyon-juniper thinning and seeding of herbaceous species for habitat improvement. The Proposed Action would maintain or continue progress toward land health standards, and therefore it should maintain functional habitat for wildlife species. Grazing allotments under managed grazing systems are intended to improve rangeland health. Importantly, the flexibility in operations of the Proposed Action would provide for adaptive management to address livestock distribution, variations in seasonal weather patterns, drought, fire, weed infestations or above average cheatgrass production, or other concerns about vegetation conditions. See Table 9 for a list of BLM sensitive species associated with habitat in the Allotment.

Sensitive species including raptors and bats – Because a variety of sensitive species, each with differing life histories and responses to grazing, potentially use habitat on the Allotment, the Proposed Action would likely have a range of effects depending on the species (Knopf 1996). For example, grazing that reduces shrub cover or diversity is a habitat threat for the green-tailed towhee, but primary habitat threats to Swainson's hawks in Nevada are loss of alfalfa fields and residential development, not livestock grazing (GBBO 2010). Birds generally respond to impacts on vegetation from grazing and not to cattle specifically, although cattle can directly affect ground-nesters by trampling nests. Burrowing owls are often present where disturbance or grazing has shortened or removed some vegetation (GBBO 2010). Reduced stocking levels and grazing time, and rotating pastures would reduce the potential for trampling of ground nests and nestlings in May (Paige and Ritter 1999). No trampling would occur during the remainder of the nesting period because no cattle would be present in the Allotment. Cattle

can impact raptors by affecting the availability of nest sites and prey abundance (Knopf 1996). Northern goshawks do not appear to select nesting sites based on prey abundance, but rather based on forest structure and in Nevada they usually nest in mature aspen stands (Younk and Bechard 1994). They are affected by grazing that prevents stand regeneration or removes understory vegetation (GBBO 2010). In contrast, golden eagles and ferruginous hawks are primarily affected by decreases in prey abundance caused by changes to understory vegetation from grazing, not availability of nest sites, but relative impacts to these birds from specific modes of habitat degradation (invasive plants, livestock grazing, fragmentation) are not clear. Grazing may provide short-term benefits by reducing vegetative cover and making prey more visible.

The presence of livestock water developments also can improve the quality of surrounding habitat for bats, but anecdotal evidence suggests drowning occurs fairly frequently (Taylor and Tuttle 2007). Maintenance of existing water developments would provide escape structures for bats. Effective escape structures are easy and inexpensive to build and can virtually eliminate bat mortality in water troughs. Properly designed and installed, these structures also improve livestock health by maintaining clean water uncontaminated by dead animals. The guidelines in Taylor and Tuttle (2007) for designing and installing escape structures would be followed.

Up to four miles of fencing would be built under the Proposed Action and would comply with BLM wildlife fence standards. White-topped fence posts and reflectors would increase fence visibility and help sensitive species avoid fence lines. The benefits of constructing fencing to facilitate proper use levels on vegetation by reducing livestock drift between allotments and protect ephemeral lake habitat outweigh the low risk of collisions.

Bi-State DPS of greater sage-grouse – The primary threats to sage-grouse are loss of habitat to fire and pinyon-juniper encroachment, and decline in habitat quality due to invasive plants and inadequate grazing management systems (NGSCT 2004, GBBO 2010). There are numerous risks for the Pine Nut PMU including pinyon-juniper encroachment, wildfire, predation, power lines, urbanization, OHV use, wild horses, livestock grazing, poaching, and pronghorn grazing (Bi-State Local Planning Group 2004); grazing is only one factor affecting grouse in the PMU. According to the Bi-State Plan, grazing is not known to be impacting breeding or summer/late brood habitat, or populations, and the conservation strategy is to continue to manage grazing in compliance with the Sierra Front/Northwestern Great Basin Resource Advisory Council standards and guidelines (Bi-State Local Planning Group 2004). Moderate levels of livestock grazing are not harmful to sage-grouse (GBBO 2010). Grouse respond positively to light or moderate grazing strategies that maintain grass and forb cover (Paige and Ritter 1999). Locally intensive grazing would be harmful if it exposes bare soils and facilitates weed invasion. Grazing that maintains healthy rangeland and riparian conditions are compatible with sage-grouse management (NGSCT 2004). Grazing under the Proposed Action would not prevent the growth and persistence of native shrubs, grasses, and forbs needed by grouse for seasonal food and concealment. Some vegetation conditions would not respond to changes in livestock management and would require restoration efforts to improve habitat. Some areas may need seeding of sagebrush and herbaceous species and other areas may need pinyon-juniper

thinning. Drought can lead to increased competition between livestock and grouse, and drought has been identified as a major factor contributing to the range-wide decline of grouse (Connelly and Braun 1997). Reduced stocking rates during drought and for some time after are necessary to minimize damage and hasten recovery of perennial vegetation (BLM 2002). Adaptive management under the Proposed Action would provide for reduced stocking rates as necessary.

The Connelly et al. (2000) guidelines for grouse and their habitats provide a good overview of the different habitat needs of sage-grouse at different seasons of the year and provide recommendations for habitat management, but the BLM *National Guidance for the Management of Sagebrush Plant Communities for Sage-grouse Conservation* (BLM 2005) does not include the quantitative habitat specifications from Connelly et al. in order to promote development of local, site-specific prescriptions. Connelly et al. states that judgment of local biologists and quantitative data from population and habitat monitoring are necessary to implement the guidelines correctly. With respect to the Connelly et al. guidelines, it must be recognized that generally lower moisture regimes prevail throughout the majority of Nevada's sagebrush ecosystem. The SFFO does not currently have quantitative habitat data for sage-grouse in the Pine Nut PMU and site-specific quantitative requirements have not been developed. Many of the relationships between livestock, habitat, and sage-grouse are not known (Connelly et al. 2000). Connelly et al. (2000) recognized that local differences in conditions that affect sage-grouse may occur. Habitat monitoring accompanied by population measurements helps to confirm habitat relationships and measure effectiveness of management actions. There are data to support both beneficial and detrimental aspects of grazing, suggesting that the risk of grazing to grouse depends on site-specific management (FWS 2010a). The impacts of livestock operations on grouse depend upon stocking levels, season of use, and utilization levels. Research has concluded that intensity, duration, and distribution of livestock grazing are more influential on rangeland condition than livestock densities. Importantly, the flexibility in operations of the Proposed Action would provide for adaptive management to address sage-grouse concerns, as recommended by Connelly et al. 2000 and The Wildlife Society 2010.

Leks – There would be no effects to leks because there are no leks in the Allotment.

Nesting/brood-rearing/summer habitat – Livestock grazing can result in nest desertion and egg destruction, and nests and broods in the Allotment may be vulnerable to trampling during the breeding season (Paige and Ritter 1999, NGSC 2004). While nest destruction by livestock trampling is rare, the presence of livestock can cause grouse to abandon their nests (Crawford et al. 2004). All recorded encounters between livestock and grouse nests resulted in hens flushing, which could expose eggs to predation (FWS 2010a). The nesting/early brood-rearing period is roughly April-June and cattle would be out of the Allotment by May 20; cattle would only be in the Allotment for a portion of the nesting/early brood-rearing period. Livestock rarely access the nesting habitat identified in the southern portion of the Allotment due to steep terrain. However, if livestock access the nesting habitat in this area then spring rest of the Sunrise Burn and Como burn pastures during alternating years would allow for periods of

undisturbed nesting. Nest success is varied among Bi-State PMUs and residual grass cover does not appear to be as significant a factor to nest success as in other western U.S. locations (FWS 2010a).

The summer/late brood-rearing period is roughly July-September and cattle would not be in the Allotment during this time. All of the nesting/early brood-rearing habitat and most of the summer habitat is in the mid to high elevation pastures. The growing season in these pastures extends beyond the end of the grazing season allowing for plant recovery and growth without livestock grazing. The Big Meadow pasture is summer habitat and is a mid-elevation pasture that would be used for only 20 days (May 1-May 20). The length of time livestock have access to meadows may be more important than the level of utilization and access should be limited to less than three weeks (Crawford et al. 2004). Light to moderate grazing can create conditions favorable for sage-grouse by reducing dense grass growth and stimulating forb growth and nutritional content (NGSCT 2004). Under the Proposed Action, livestock use of Big Meadow would be limited to 20 days and 70 AUMs of forage which would ensure utilization levels at or below moderate levels. When meadows are grazed, grouse select the grazed areas for feeding (Neel 2001). Birds remained in a meadow grazed season long if remaining vegetation is enough to provide effective cover six to eight inches tall. On heavily grazed meadows, the meadow edge was noticeably important and with little to no cover in the meadow, disturbed birds quickly retreated in brushy cover at the edge. Some sagebrush cover around the edges of Big Meadow burned in the Como fire but horse brush is present and sagebrush is coming back.

Greater sage-grouse are considered to have high susceptibility to West Nile virus (WNV), with high levels of mortality (FWS 2010a). Currently the annual patchy distribution of the disease is keeping impacts at a minimum. In sagebrush habitat, WNV transmission is primarily regulated by temperature, precipitation, and surface water abundance. Cold ambient temperatures preclude mosquito activity, so transmission is limited to the summer, with a peak in July and August. Livestock grazing in the Allotment would not occur during summer. No water would be pumped at well sites and there would be no water haul sites during summer. In summer, anthropogenic water sources associated with livestock grazing in the Allotment would be limited to existing troughs at springs.

Winter habitat – Winter habitat occurs in the Sario Well pasture (low elevation), Buckskin pasture (mid elevation) and Como pasture (high elevation). Direct effects during the winter are not likely; most of the winter habitat is in the Como pasture (high elevation) and cattle largely do not use this area until March when grouse have already moved to leks outside the Allotment. Livestock do not typically use sagebrush for forage so little conflict for sagebrush forage would exist in winter habitat. There should be little effect to sagebrush plants in grouse winter range. Livestock consumption of sagebrush in these pastures is expected to be minimal because of their preference for other available plants. Research suggests that moderate grazing or less in fall or winter is generally compatible with maintenance of perennial grasses and forbs in sagebrush habitat (Crawford et al. 2004).

Up to four miles of fencing would be built under the Proposed Action. Grouse mortality from collisions with fencing is a potential concern, but fencing can also provide a valuable management tool and may ultimately improve habitat conditions for grouse (FWS 2010a). White-topped fence posts and reflectors would increase fence visibility to help grouse avoid fence lines. Increased mortality and decreased use of leks has been reported when fences were in close proximity (FWS 2010a). New fencing in the Allotment would not be near leks. The benefits of constructing fencing to facilitate proper use levels on vegetation by reducing livestock drift between allotments to improve distribution outweigh the low risk of bird collisions.

Pygmy rabbit – Pygmy rabbit are not known to occur in the Allotment and there are no documented areas of potential habitat in the Allotment. While the Allotment contains sagebrush habitat, research suggests pygmy rabbits are habitat specialists and that large portions of native vegetation within what is currently depicted as habitat may not be suitable (Gabler et al. 2000).

If pygmy rabbits were found on the Allotment, possible effects of livestock grazing include injury or death from trampling, trampling of burrows, degradation of sagebrush plant structure resulting in reduced forage and shelter, reduced grasses and forbs resulting in reduced summer forage, and increased invasive plants that impede rabbit movements and reduce ability to see predators (FWS 2010). These potential effects have not resulted in documented measurable population declines and the FWS does not consider livestock grazing to be a significant threat to the pygmy rabbit now or in the foreseeable future. Research shows that rabbits continue to occupy areas grazed by livestock and there is no indication of a causal relationship between livestock grazing and pygmy rabbit site avoidance or abandonment. Studies found no clear evidence that livestock grazing is detrimental to pygmy rabbits in Idaho, that pygmy rabbits were surviving and even thriving with grazing in certain areas in Montana, and that grazing was compatible with rabbits if sagebrush plants were left intact and soils were not overly compacted in Nevada and California. According a report prepared for the Southern Nevada Water Authority, there was little evidence to suggest that light to moderate grazing was detrimental to pygmy rabbits. Due to the pygmy rabbit's patchy habitat distribution across the landscape, loss or modification of sagebrush habitat in general does not equally relate to loss or modification of rabbit habitat.

William's combleaf - William's combleaf is known to occur along the shoreline of one ephemeral lake within the Allotment. The plant is vulnerable from trampling by livestock when the ephemeral lake is used as a watering site (Holland and Morefield 2003). The Proposed Action includes the construction of approximately two miles of barb wire fencing around the ephemeral lake to exclude livestock from grazing and trampling plants within the occupied habitat. The fencing would be constructed per the specifications included in Section 2.1 "Range Improvements."

4.1.8 Cultural Resources

The BLM recognizes the potential for grazing to affect historic properties which can occur through two scenarios: 1) human made livestock attractants, and 2) naturally occurring livestock attractants.

1. Human made attractants: Potential grazing impacts exist from concentrated livestock distribution on historic properties located near or within range improvements that attract the animals (corrals, water troughs, tanks, loading chutes, stock ponds, etc.). Potential impacts on historic properties exist from other grazing-related operations such as access road improvements. These types of conditions are not presently known to exist in the Allotment, as roads are few, OHVs are not widely used in the Allotment, and the grazing permittee still uses a horse. Based on the improvements and use that have been proposed, no additional areas of potential conflict between concentrated livestock use and historic properties are anticipated within the Allotment. An historic property was identified in the area and was mitigated through full data recovery (an archeological excavation in 2005).

2. Natural attractants: Potential grazing impacts exist from concentrated livestock distribution near historic properties located where the natural conditions of shade, shelter, water, alcoves, drainages, cliff walls, etc. that attract the animals. In instances where similar conditions may exist, measures such as strategically placed salt blocks or water troughs can draw cattle away from historic properties.

Archaeological sites on moderate slopes with stable, gravelly sediments – even on shallow soils – would not be seriously impacted from grazing. Therefore, owing to the low precipitation, the likelihood of natural erosion would remain low regardless of the grazing level.

Under the Proposed Action, range improvements would have the potential to adversely affect cultural resources. However, after more than 100 years of grazing there are few livestock-accessible sites that have not been detrimentally affected long before the present. Prior to the Taylor Grazing Act of 1934, levels of sheep and cattle on the range were significantly higher than at present, and grazing related impacts were likely much greater. Since then, the degree of cattle impacts would probably have diminished.

Based on previous BLM range experience and studies in the West (Osborn 1987 et al) and Southwestern U.S. (Popelish 2001), BLM considers that present day continued dispersed livestock grazing has no effect on prehistoric sites (that are historic properties) on the open landscape.

Therefore, the Proposed Action is not known to have adverse effects to historic properties and there is no need to alter proposed improvements to prevent adverse effects to cultural resources.

Ephemeral lake enclosure fence: In April 2011 BLM archeologists performed a Class III cultural resources inventory to determine the best location for the proposed ephemeral lake fencing. The BLM archeologists determined that the fence construction could proceed as proposed.

4.1.9 Noxious Invasive Weeds, Non-Native Plant Species

Animals including livestock may facilitate seed dispersal, including weed seeds. The implementation of the Proposed Action would have little effect on known weed populations and the establishment of new populations. Facilitated weed seed dispersal by animals may occur although livestock would be managed under different stocking rates and rotations throughout the Allotment. Noxious weeds would be managed under the Noxious Weed Management Plan (BLM 2008b). Within this plan protocol exists for the inventory, mapping, treatment, evaluation and restoration of areas with noxious weeds. Inventories for the allotment are ongoing. Known infested sites will be managed following an integrated pest management approach, involving mechanical, biological and chemical treatments. This approach follows a strategy utilizing a variety of treatment combinations and timing to weaken noxious weed infestations and either eradicate the noxious weeds or minimize their rate of spread. Disturbance to native plant communities, facilitated weed seed dispersal and selective grazing by livestock, wild horses and wildlife species in the Allotment would continue though under different stocking rates and rotations throughout the Allotment for livestock.

4.2 Alternative B: Current Management Alternative (No Action)

4.2.1 Livestock

Under the Current Management Alternative there would be no changes in the term livestock grazing permit. The stocking rate for cattle within the Allotment would be 45 A/AUM, if all pastures are used. Past stocking rates based on actual use data ranged between 26-45 A/AUM (Appendix A).

Under the Current Management Alternative, actual livestock use would be reduced and livestock would leave the Allotment two weeks earlier compared to the past. In the past, livestock use exceeded 1,074 AUMs (Appendix A) and the permittee was able to leave livestock in the Allotment until May 31.

Under the Current Management Alternative livestock movement and stocking rates within the pastures would be at the discretion of the permittee. Pastures may or may not be rested during the spring growing season. In the past the permittee voluntarily followed a grazing system which provided for spring rest, but under the Current Management Alternative this would not be required in the new term livestock grazing permit.

The construction of fencing for livestock management would not occur under the Current Management Alternative. Cattle movement between the allotments would continue to occur. A few cattle would drift out of the Allotment into the adjacent Lincoln Flat Allotment, and a few cattle from the Lincoln Flat Allotment would drift into the Allotment. The corrals would not be constructed so livestock handling for the purposes of sorting and care would continue to be a

time consuming and difficult process. Construction of approximately two miles of fencing around/adjacent to an ephemeral lake would not occur under the Current Management Alternative.

4.2.2 Vegetation

Under the Current Management Alternative a portion of the annual forage production would be removed by grazing livestock. Approximately 39 percent (415 AUMs) of the forage removed would occur during the spring (March-May) which is part of the critical growing season for key cool-season grass species. Because no grazing system would be specified as part of the terms and conditions of the grazing permit, grazing could occur anywhere within the Allotment during the grazing season. The stocking rate would depend upon livestock distribution within the Allotment. Based on past actual use for years when 1,032-1,053 AUMs were removed during the entire grazing season, the spring stocking rate would likely be between 40-65 A/AUM. The remaining livestock grazing on the Allotment occurs post seed ripe when perennial grasses and forbs are dormant (November-February). The stocking rate would depend upon livestock distribution but based on past actual use would likely be between 15-59 A/AUM.

The impacts to vegetation from livestock grazing may be slightly higher in specific areas of the Allotment. There would be no grazing system by pasture to ensure livestock use is distributed throughout the Allotment, nor rest periods to provide plants spring rest (March-May) from grazing. The degree and size of area impacted if any would depend upon livestock distribution. Past overutilization primarily occurred due to livestock congregation in specific areas of the Allotment and higher stocking rates (26-28 A/AUM). Range improvements constructed within the Allotment between 1993 and 2003 improved livestock distribution by creating pastures and providing additional water sources. Because past actual livestock use was higher and the season of use was longer than permitted use due to non-renewable use authorizations, overall vegetative trend would be expected to continue to improve under the Current Management Alternative. In comparison to actual past use, key forage species would have an additional two weeks of leaf growth to utilize for food production (photosynthesis), food storage (root reserves) during the spring growing season, which would contribute to reproductive capability. The grazing season would end on May 15, and a portion of the grazing would be deferred to post seed ripe when perennial grasses and forbs are dormant (November-February). Some plants would receive rest from livestock grazing during the spring (March-May) but the degree and extend of the rest would depend on livestock distribution.

Under the Current Management Alternative upland rangeland health conditions would likely be maintained or would improve. Monitoring has shown that the range conditions are meeting the rangeland health standards and that the vegetation observed within transects of recent monitoring indicates that the uplands are stable as pertaining to soil stability, watershed function and biological integrity. Trends in vegetative attributes have been monitored at seven key areas, utilizing frequency and photo trend plot methodologies. Monitoring in 2007 indicted grass and shrub species were stable or declining. Several factors influence the condition of plant communities. Influences include: livestock and wild horse grazing, drought, fire and plant community dynamics. Recently, drought appears to have had a dominant affect on plant

communities. With the exception of 2006, precipitation levels were below average from 2000 to 2007 with the least amount of precipitation occurring 2007 (Appendix E). The current vegetative trend is static to upward (2007-2010), vegetative conditions improved with increased precipitation levels (BLM 2010b). Vegetative cover has increased and new shrub seedlings are establishing.

Under the Current Management Alternative, managed livestock grazing would not directly cause a change in the ecological condition of plant communities. Sites within the Allotment would continue to be dominated by shrub species in unburned areas and by fire tolerant shrubs or annual species in burned areas. Without fire, plant community trends would be expected to be static to upward. Managed livestock grazing would reduce the risk of fire by decreasing the amount of available fine fuels. Plant communities are at risk of transitioning to new ecological states following fire, due to the high abundance of desirable fire intolerant species and low abundance of desirable fire tolerant species. Plant community trends would be expected to be static to downward following fire without successful rehabilitation.

The construction of a new fence in the Sario Well pasture and corrals in the Sunrise Burn pasture would not occur under the Current Management Alternative. Not extending the boundary fence would have an adverse effect on vegetation. In the past, trespass livestock from an adjacent allotment have ranged into the Allotment, but they are typically few in number and would be removed by the permittee. No fence construction would occur to protect a known population of William's combleaf on an ephemeral lake.

Under the Current Management Alternative, disturbance to biological crusts although unlikely may occur if livestock step through shrubs and onto crusts. The risk of disturbance is lowest during the winter months. Belnap, et al (2001) report that biological soil crusts are least vulnerable to shear and compressional forces when soils are frozen or snow covered.

4.2.3 Wetlands/Riparian Zones

Actual livestock use in the two years immediately preceding the 2000 riparian assessment ranged between 1,032 and 1,543 AUMs. Actual livestock use in the two years immediately preceding the 2007 riparian assessments ranged between 1,684 and 1,807 AUMs. Based on assessment data from 2000 and 2007, riparian conditions would likely be maintained or would improve under the Current Management Alternative. Maintaining the current permitted use would result in fewer livestock on the Allotment for a shorter period of time. Without the proposed grazing management system, some localized, temporary impacts from grazing would continue to occur, and may be slightly higher than with a grazing management system. No fence construction would occur to protect a known population of William's combleaf on an ephemeral lake.

4.2.4 Water Quality (Ground & Surface)

The Current Management Alternative would maintain or slightly improve water quality by reducing the number of livestock on the Allotment. Based on water quality data collected in 2007, grazing practices are not adversely affecting water quality.

4.2.5 Migratory Birds

Under the Current Management Alternative fewer livestock would be on the Allotment for a shorter period of time. Past actual livestock use included both permitted and non-renewable use authorizations (Appendix A). Monitoring on the Allotment quantified the impacts of authorizing more livestock for a longer period of time and the affects of extended drought conditions from 2000-2007. The improvement in the condition of the vegetation from 2008 to 2010 is likely due to a combination of increased precipitation and reduced use because non-renewable use ended. The proposed permitted use under the Current Management Alternative would be less than past actual use and a continued increase in vegetation condition would be expected because of reduced AUMs and increased precipitation. Compared to actual past use, vegetation would also have roughly two weeks of additional growth during the spring growing season, which would contribute to higher reproductive capability.

Differences in numbers of animals (166 versus 193), AUMs (1,074 versus 1,275), and seasons of use (November 1-May 15 versus November 1-May 20) between the Current Management Alternative and Proposed Action would not result in substantially different effects. However, under the Current Management Alternative there would be no mandatory grazing schedule or spring rest; maximum utilization level, AUMs, or stocking rate for the spring season; or fencing to manage livestock distribution. As a result, grazing could occur anywhere in the Allotment during anytime within the grazing season and the stocking rate would depend upon how livestock are distributed across the entire Allotment. Consequently, higher use would likely occur in certain areas of the Allotment at certain times of the year; heavy utilization of some areas is possible under the Current Management Alternative. Livestock congregation and high stocking rates contributed to overuse in the past. Without a grazing schedule for pastures, there would be a greater potential for vegetation in some areas of the Allotment, such as in aspen stands and at springs, to be used more heavily, resulting in reduced habitat quality for migratory birds. Greater reductions in habitat quality could affect migratory bird abundance or the amount of time migratory birds spend on the Allotment.

Under the Current Management Alternative, there would be no new fence construction for livestock distribution management or to protect an ephemeral lake with a known population of William's combleaf. Therefore under this alternative there would be no increased risk of mortality to migratory birds from collisions with new additional fencing.

4.2.6 General Wildlife

Under the Current Management Alternative fewer livestock would be on the Allotment for a shorter period of time. Past actual livestock use included both permitted and non-renewable use authorizations (Appendix A). Monitoring on the Allotment quantified the impacts of authorizing more livestock for a longer period of time and the affects of extended drought conditions from 2000-2007. The improvement in the condition of the vegetation from 2008 to 2010 is likely due to a combination of increased precipitation and reduced livestock use. The proposed permitted use under the Current Management Alternative would be less than past actual use and a continued increase in vegetation condition would be expected. Compared to

actual past use, vegetation would also have roughly two weeks of additional growth during the spring growing season, which would contribute to higher reproductive capability.

Differences in numbers of animals (166 versus 193), AUMs (1,074 versus 1,275), and seasons of use (November 1-May 15 versus November 1-May 20) between the Current Management Alternative and Proposed Action would not result in substantially different effects. However, under the Current Management Alternative there would be no mandatory grazing schedule or spring rest; maximum utilization level, AUMs, or stocking rate for the spring season; or fencing to manage livestock distribution. As a result, grazing could occur anywhere in the Allotment during anytime within the grazing season and the stocking rate would depend upon how livestock are distributed across the entire Allotment. Consequently, higher use could occur in certain areas of the Allotment at specific times of the year. Without a grazing schedule for pastures, there would be a potential for vegetation in some areas of the Allotment, to be used more heavily than other areas. Congregation of livestock in portions of the Allotment could reduce habitat quality for wildlife in specific areas. Although potential of reduced habitat quality exists, this is unlikely to occur due to fewer numbers of livestock, a shorter season of use and the time which livestock use occurs. Livestock would not be on the Allotment during the summer when use of riparian areas is highest. In addition livestock would not be on the Allotment during late summer and early fall when use of browse species peaks.

Under the Current Management Alternative, there would be no new fence construction for livestock distribution management or to protect an ephemeral lake with a known population of William's combleaf. Therefore under this alternative there would be no increased risk of mortality to general wildlife from collisions with new additional fencing.

4.2.7 BLM Sensitive Species

Under the Current Management Alternative fewer livestock would be on the Allotment for a shorter period of time. Past actual livestock use included both permitted and non-renewable use authorizations (Appendix A). Monitoring on the Allotment quantified the impacts of authorizing more livestock for a longer period of time and the affects of extended drought conditions from 2000-2007. The improvement in the condition of the vegetation from 2008 to 2010 is likely due to a combination of increased precipitation and reduced livestock use. The proposed permitted use under the Current Management Alternative would be less than past actual use and a continued increase in vegetation condition would be expected. Compared to actual past use, vegetation would also have roughly two weeks of additional growth during the spring growing season, which would contribute to higher reproductive capability.

Differences in numbers of animals (166 versus 193), AUMs (1,074 versus 1,275), and seasons of use (November 1-May 15 versus November 1-May 20) between the Current Management Alternative and Proposed Action would not result in substantially different effects to BLM sensitive species, including sage-grouse and pygmy rabbit (if present). However, under the Current Management Alternative there would be no mandatory grazing schedule or spring rest; maximum utilization level, AUMs, or stocking rate for the spring season; or fencing to increase distribution. As a result, grazing could occur anywhere in the Allotment during anytime within

the grazing season and the stocking rate would depend upon how livestock are distributed across the entire Allotment. Without a grazing schedule for pastures, there would be a greater potential for vegetation in some areas of the Allotment, to be used more heavily than others. Livestock congregation in specific areas of the Allotment could result in reduced habitat quality for sensitive species in portions of the Allotment. Although potential of reduced habitat quality exists, this is unlikely to occur due to fewer numbers of livestock, a shorter season of use and the time which livestock use occurs. Livestock would not be on the Allotment during the summer when use of riparian areas is highest. In addition livestock would not be on the Allotment during late summer and early fall when use of browse species peaks.

Under the Current Management Alternative, there would be no new fence construction for livestock distribution management or to protect an ephemeral lake with a known population of William's combleaf. Therefore under this alternative there would be no increased risk of mortality to sensitive species from collisions with new additional fencing.

William's combleaf - William's combleaf are known to occur in one ephemeral lake within the Allotment. The plant is vulnerable to impacts from trampling by livestock when the ephemeral lake is used as a watering site (Holland and Morefield 2003). Under the Current Management Alternative no new fencing would be constructed to protect a known population of William's combleaf.

4.2.8 Cultural Resources

The Current Management Alternative would not result in an increased time period of impacts to unknown/unrecorded and sensitive cultural resources. Relative to adverse effects to historic properties, the magnitude of effect would not be measurable.

Livestock grazing is not considered to have an effect on cultural resources in the grazing Allotment, as historic properties do not lie in areas of heavy grazing. One historic property lies in the vicinity of a spring, and received a field visit in 2008 by a BLM archaeologist who concluded that it would not be adversely affected by grazing.

Trampling of historic properties by livestock would be minimized by removing attractants to livestock, fencing sensitive areas, and measures to draw livestock away from historic properties. Therefore, the Current Management Alternative would have no adverse effect on historic properties in the Allotment.

4.2.9 Noxious Invasive Weeds, Non-Native Plant Species

Animals including livestock may facilitate seed dispersal, including weed seeds. The implementation of the Current Management Alternative would have little effect on known weed populations and the establishment of new populations. Facilitated weed seed dispersal by animals may occur though livestock would be managed under different stocking rates throughout the Allotment. Under the Current Management Alternative noxious weeds would be managed under the Noxious Weed Management Plan (BLM 2008b). Within this plan protocol exists for the inventory, mapping, treatment, evaluation and restoration of areas with

noxious weeds. Disturbance to native plant communities, facilitated weed seed dispersal and selective grazing by livestock, wild horses and wildlife species in the Allotment would continue.

4.3 Alternative C: No Grazing Alternative

4.3.1 Livestock

Under the No Grazing Alternative, no livestock would be authorized in the Allotment at this time. The construction of fencing would not be authorized. Not renewing the term livestock grazing permit would likely result in economic harm to the permittee. This alternative is not in conformance with the CRMP which identified lands within the Allotment available for livestock grazing. Under 43 CFR 1610.5-3, all actions approved or authorized by the BLM must conform to the existing land use plan. Actions out of conformance with the CRMP would require a land use plan change which is outside the scope of this EA.

4.3.2 Vegetation

Under the No Grazing Alternative, vegetation would not be affected by livestock. No livestock would trample or eat vegetation within the Allotment. Plants obtain food for their maintenance and growth from the photosynthetic process that occurs in plant leaves. By not authorizing livestock grazing, the available vegetative leaf area would be increased. Available vegetative leaf area would be utilized for food production (photosynthesis), which would increase food storage (root reserves).

The recovery of ungrazed plant communities are not expected to surpass recovery rates of moderately grazed plant communities (Courtois et al 2004). The removal of managed livestock grazing would not directly cause a change in the ecological condition of plant communities. Sites within the Allotment would continue to be dominated by shrub species in unburned areas and by fire tolerant shrubs or annual species in burned areas. Without fire, plant community trends would be expected to be static to upward under the No Grazing Alternative. However, the removal of managed livestock grazing would increase the risk of fire by increasing the amount of available fine fuels. Plant communities are at risk of transitioning to new ecological states following fire, due to the high abundance of desirable fire intolerant species and low abundance of desirable fire tolerant species. Plant community trends would be expected to be static to downward following fire without successful rehabilitation.

The construction of fencing would not occur under the No Grazing Alternative. Trespass livestock from an adjacent allotment may use a portion of the vegetation within the Allotment.

Under the No Grazing Alternative, domestic livestock would not disturb biological crusts. However, exclusion of domestic grazing would not prevent the risk of other animals stepping through shrubs onto soil crusts. Belnap, et al (2001) report that biological soil crusts experience vulnerability decreases and recovery rate increases whenever there is increased site stability, effective precipitation and infrequent disturbance.

4.3.3 Wetlands/Riparian Zones

The No Grazing Alternative would result in improved riparian conditions on the Allotment to some degree by eliminating livestock grazing impacts. Under the No Grazing Alternative, no new fencing would be constructed.

4.3.4 Water Quality (Ground & Surface)

The No Grazing Alternative would maintain or improve water quality on the Allotment by eliminating possible livestock grazing impacts. Under the No Grazing Alternative, no new fencing would be constructed.

4.3.5 Migratory Birds

Under the No Grazing Alternative, there would be no impacts from livestock grazing to sagebrush plant communities, and the migratory birds that use them. No vegetation would be trampled or consumed by cattle and the abundance of migratory birds that use the area and length of time they spend on the Allotment may increase as a result. There would be no direct impacts to nesting birds and their eggs from cattle. Plant community trend would likely be static to upward and perennial herbaceous cover might move toward desired conditions quicker even if full site potential is not reached, but the removal of grazing would not directly cause a shift in ecological states. Some vegetation conditions in the Allotment may not respond solely to changes in livestock management and may require active restoration efforts such as pinyon-juniper thinning and seeding of herbaceous species for habitat improvement. The condition of most riparian areas would improve. There would be no increased risk of bird mortality from collisions with additional fencing because no new fencing would be constructed, but this would eliminate the benefits of controlling livestock distribution by reducing livestock drift into the Allotment from a neighboring allotment.

4.3.6 General Wildlife

Under the No Grazing Alternative, there would be no impacts from livestock grazing to sagebrush plant communities, and the migratory birds that use them. No vegetation would be trampled or consumed by cattle and the abundance of migratory birds that use the area and length of time they spend on the Allotment may increase as a result. There would be no direct impacts to nesting birds and their eggs from cattle. Plant community trend would likely be static to upward and perennial herbaceous cover might move toward desired conditions quicker even if full site potential is not reached, but the removal of grazing would not directly cause a shift in ecological states. Some vegetation conditions in the Allotment may not respond solely to changes in livestock management and may require active restoration efforts such as pinyon-juniper thinning and seeding of herbaceous species for habitat improvement. There would be no increased risk of wildlife mortality from collisions with additional fencing because no new fencing would be constructed, but this would eliminate the benefits of controlling livestock distribution by reducing livestock drift into the Allotment from a neighboring allotment.

4.3.7 BLM Sensitive Species

Under the No Grazing Alternative, there would be no impacts from livestock grazing to sagebrush plant communities, and the BLM sensitive species that use them, including sage-grouse and pygmy rabbit (if present). No vegetation would be trampled or consumed by cattle and the abundance of BLM sensitive species that use the area and length of time they spend on the Allotment may increase as a result. There would be no direct impacts to nesting birds and their eggs from cattle. Plant community trend would likely be static to upward and perennial herbaceous cover might move toward desired conditions quicker even if full site potential is not reached, but the removal of grazing would not directly cause a shift in ecological states. Removal of livestock grazing may have many different affects depending upon the site and the condition of the site when grazing is removed from no response to increasing the influence of exotic plants such as cheatgrass (Connelly et al. 2000). Within the Allotment sites would continue to be dominated by shrub species in unburned areas and by fire tolerant shrubs or annual species in burned areas. Without fire, plant community trends would be expected to be static to upward under the No Grazing Alternative. However, the removal of managed livestock grazing would increase the risk of fire by increasing the amount of available fine fuels.

Some vegetation conditions in the Allotment may not respond solely to changes in livestock management and may require active restoration efforts such as pinyon-juniper thinning and seeding of herbaceous species for habitat improvement. For example, removal of livestock grazing from the Allotment would not re-connect the habitat between the north and south lek that would make the populations associated with these lek areas less isolated and less susceptible to extirpation. Many factors are involved in the current decline in sage-grouse populations in the Pine Nut PMU including pinyon-juniper encroachment, wildfire, predation, power lines, urbanization, OHV use, wild horses, livestock grazing, poaching, and pronghorn grazing (Bi-State Local Planning Group 2004). There would be no increased risk of sensitive species mortality from collisions with additional fencing because no new fencing would be constructed, but this would eliminate the benefits of controlling livestock distribution by reducing livestock drift into the Allotment from a neighboring allotment.

William's combleaf - Under the No Grazing Alternative, no fencing would be constructed to protect the William's combleaf.

4.3.8 Cultural Resources

The No Grazing Alternative may have a beneficial effect on unknown and unrecorded cultural resources within the Allotment, however since the Proposed Action is analyzed to meet standards of "no adverse effect", the magnitude of the improvement would not be measurable.

Archaeological sites may or may not show indications of past or ongoing use by livestock, but neither will they necessarily show that livestock use is contributing to adverse impacts. Cultural resources research potential of known historic properties will not be affected by ongoing grazing, but neither will the research potential of unknown and unrecorded sites be affected by no grazing.

The hazard of human made attractants to livestock (corrals, water troughs, loading chutes, stock ponds) is moot under this alternative, and natural attractants (shade, shelter, water, alcoves, drainages, cliff walls) is also moot under the No Grazing Alternative.

Stable soils in the Allotment will essentially remain static owing to the mild natural erosion from low average annual precipitation, and low hazard for wind-blown erosion. Historic properties with surface and subsurface components will remain intact and unaffected by the No Grazing Alternative.

Open sites such as prehistoric flint stations or flake scatter sites would not be impacted by livestock trampling, and existing natural erosion would not be exacerbated. Therefore, it has been determined that this alternative will have “no effect” on historic properties.

4.3.9 Noxious Invasive Weeds, Non-Native Plant Species

Under the No Grazing Alternative, facilitated weed seed dispersal by animals may still occur. There would be little effect on known weed populations and the establishment of new populations. Disturbance to native plant communities, facilitated weed seed dispersal and selective grazing would be limited to wild horse and wildlife species in the Allotment. Noxious weeds would be managed under the Noxious Weed Management Plan (BLM 2008b). Within this plan protocol exists for the inventory, mapping, treatment, evaluation and restoration of areas with noxious weeds. Inventories for the allotment are ongoing. Known infested sites will be managed following an integrated pest management approach, involving mechanical, biological and chemical treatments. This approach follows a strategy utilizing a variety of treatment combinations and timing to weaken noxious weed infestations and either eradicate the noxious weeds or minimize their rate of spread.

4.4 Residual Effects

“Residual effects” are those adverse effects that remain after implementation of mitigation measures. No major (significant) adverse effects have been identified in this EA. Measures have been incorporated into the elements of the Proposed Action to avoid and minimize adverse effects. Livestock would be managed to avoid overutilization through implementation of a grazing schedule and improved fencing to manage livestock distribution. No mitigation is necessary; there would be no residual effects.

5.0 CUMULATIVE EFFECTS

A cumulative effect is defined under NEPA as “the change in the environment which results from the incremental impact of the action, decision, or project when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other action”. “Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time” (40 CFR Part 1508.7). Past, present, and reasonably foreseeable future actions are analyzed to the extent that they are relevant and useful in analyzing whether the reasonably foreseeable effects of the Proposed Action and Alternatives may have an additive and significant relationship to those effects.

Geographic Scope

The geographic scope of the cumulative effects analysis is the entire Allotment, encompassing approximately 49,228 acres of BLM-managed lands.

Timeframe of Effects

Construction of fencing as a part of the Proposed Action would contribute to short-term cumulative effects. Construction of the fencing is expected to take one to two weeks. Direct effects would be short-term. Indirect effects associated with the fencing would occur over a 10-year period which is the lifespan of the new term livestock grazing permit.

Direct and indirect effects associated with livestock grazing would occur over a 10-year period, which is the lifespan of the new term livestock grazing permit.

Past Actions

The Pine Nut Mountains were subject to a historic regime of wildfire caused by lightning strikes. Natural-caused fire may have burned several acres to several thousand acres during one event. In more modern times, the area is also subject to man-caused wildfire in addition to lightning-caused fire. Several wildfires have occurred within the past 30 years adjacent to and within the Allotment (Table 4). In 1984 a fire of unknown origin burned 73 acres. The Sunrise fire in 1996 burned 2,914 acres within the Allotment; the Como fire in 2000 burned 1,752 acres within the Allotment, and the Adrian fire in 2007 burned 3,394 acres within the Allotment (Map 3). The Adrian fire was caused by lightning strikes. Typical wildfire patterns created a mosaic pattern on the landscape, burning intensely in some areas removing all vegetation, and burning lightly in other areas, removing only grasses or groundcover.

Past prescribed fires have been completed in the Allotment area to reduce catastrophic wildfire risks and to influence plant community composition and diversity. In 2000, the BLM treated 421 acres as a part of the Mount Como Biodiversity Enhancement Project by prescribed fire (Map 3) (BLM 1997a). During implementation, however, the fire escaped the burn area perimeter and burned an additional 1,331 acres.

Re-seeding efforts have occurred in areas of the Allotment burned by fire. After the Sunrise fire, approximately 1,900 acres were aerially re-seeded and approximately 500 acres were re-seeded by ground application (drill seeder pulled by tractor). After the Como fire, approximately 695 acres were aerially seeded and “one chain pass” application (lower elevations), and approximately 668 acres were aerially seeded at upper elevations. After the Adrian fire, approximately 643 acres within the Allotment were aerially re-seeded.

Past vegetation treatments have been completed in the Allotment area to reduce catastrophic wildfire risks and to influence plant community composition and diversity. Starting in 2008 and completed in 2010, the BLM treated 1,999 acres within the Allotment by hand and mechanical thinning of pinyon-juniper and scrub as a part of the Mill Canyon Vegetation Treatment Project (BLM 2007) (Map 3).

Historically, livestock grazing is known to have occurred in the area since the 1930’s under BLM permitting, although sheep and/or cattle grazing are likely to have been occurring in the area since the late 1800’s. Livestock grazing has been and is a well established element of the regional economy and is an integral part of the larger society. Many Allotments in the West are managed as a part of multi-generational and family operations that rely on grazing on public lands for income.

Between the 1930’s and 1993 the Allotment was grazed by sheep. The BLM had authorized approximately 5,394 AUMs for sheep grazing each year during winter, spring and until mid-summer. In 1993 the type of livestock grazing was changed to cattle (BLM 1992). The pattern and intensity of cattle grazing within the Allotment has varied over the past 30 years. During the last eight of 17 years, cattle grazing has exceeded 1,074 AUMs. During the 2006-2007 grazing season, actual use was 1,807 AUMs, whereas in during the 2007-2008 grazing season no grazing occurred due to drought conditions (Appendix A).

Approximately 15 miles of fencing had been constructed to manage livestock distribution. Temporary and permanent water troughs have been placed within the Allotment and maintained for livestock. Some troughs also include salt/mineral supplements.

In the past 30 years, three ephemeral lakes in the Allotment were partly excavated to serve as watering holes for livestock. On August 30, 1985 a decision was signed (Churchill Canyon Waterholes Environmental Assessment, NV-030-5-78) authorizing the excavation of a small portion of three ephemeral lake beds as part of a range improvement project creating the Dry Lake, Powerline and Eldorado waterholes. The Powerline and Eldorado waterholes were partly excavated in 1986. The Dry Lake waterhole was partly excavated in 1991. The environmental analysis completed did not identify whether or not William’s combleaf was known to occur or whether or not suitable habitat existed at any of these ephemeral lakes.

The northwest portion of the Allotment is within the Pine Nut HMA (approximately 18 percent or 8,694 acres of the Allotment). No boundary fencing for the HMA exists; wild horses may roam outside the HMA and throughout the Allotment. In 1975, the most reliable census of wild

horses was completed, which identified an estimated 297 animals. The first gather of wild horses occurred in 1978 when 65 animals were removed from the range. At that time the census was 639 animals. In 1995 the Multiple Use Decision for the Appropriate Management Levels for wild horses was set at between 119-179 animals. Gather and removal of wild horses has continued since 1978. The most recent operation occurred in December 2010, although the effort was a gather and remove/treat effort. The wild horse census in 2010 was 215 animals. Approximately 45 mares were gathered and treated with PZP-22 (Porcine Zona Pellucida, a fertility control). Sixty-five wild horses residing outside the HMA were removed (BLM 2010c).

Dispersed recreation has occurred throughout the Pine Nut Mountains. General activities include: rock hounding, hunting, sightseeing, OHV use, and wildlife viewing. Members of area Tribes collect pinyon pine nuts. Annually in certain areas, the BLM permits woodcutting/firewood gathering and cutting/removal of younger evergreen trees for the holiday season. The BLM permits non-commercial and commercial recreation events through its Special Recreation Permit program. Events include motorcycle enduro races usually lasting one to three days. The "Valley Off-Road Racing Association" typically conducts an annual spring and/or fall OHV event. The event utilizes roads in the Allotment, and attracts 50 to 60 race participants. "Best in the Desert" conducts an annual Vegas to Reno OHV race in August each year. Up to 200 even people participate in the event which uses the Churchill Canyon Road. The Pine Nut Mountains is an "open and unlimited use" area for travel management. Although most of the vehicle use occurs on existing two-track trails and dirt roads, OHV use is also permitted. Actual numbers of users per day or per year are not available, but generally speaking the intensity of use is low and dispersed. Most use occurs during the spring and fall months.

In 2004 the BLM authorized an additional transmission line as a part of an existing right of way grant as a part of the Fort Churchill to Buckeye 120-kV Transmission Line (BLM 2004). No new disturbance occurred along the existing route (originally constructed in the 1970's), which crossed approximately three miles of the Allotment. Land use ownership changes have been previously discussed in Section 1.1: land acquisitions within the Allotment occurred in 1997 and 2006 of approximately 3,400 acres. These efforts were to consolidate federal ownership for improved management of the area and to conserve a known population of William's combleaf.

Present Actions

Although no prescribed fire has been proposed to occur in the Pine Nut Mountains, unplanned lightning-caused or man-caused wildfire may occur at anytime. The intensity and scope of any such fire is unknown, and the impacts associated with any near-term fire are too speculative to evaluate in this EA. Should any fire occur in the near-term, post-fire rehabilitation including re-seeding with native plants would likely occur.

Livestock grazing is a present activity on the Allotment, authorized by the BLM under a term livestock grazing permit. Fifteen miles of existing fencing within the Allotment are maintained. In addition, activities continue to maintain existing temporary and permanent water troughs

used by livestock. Livestock grazing in the Allotment is a part of the regional economy and larger society.

The BLM continues to manage wild horses in the area, although since a gather and remove/treat effort occurred in December 2010, no further management activities are presently planned.

As described in Past Actions, recreation activities are on-going in the Pine Nut Mountains. General intensity of use is dispersed and low.

There are no requests before the BLM for land use changes or rights-of-way authorizations.

Reasonably Foreseeable Actions

Natural, man-caused, and prescribed fire are all likely to occur in the future, although the intensity and scope of any such event is unknown. The impacts from potential future fire are too speculative to evaluate in this EA. Should any fire occur in the future, post-fire rehabilitation including re-seeding with native plants would likely occur.

Under the Proposed Action and Current Management Alternatives, livestock grazing would continue to occur for a 10-year period, the lifespan of the new term livestock grazing permit. The No Grazing Alternative would result in the removal of all cattle from the Allotment; there would likely be economic harm to the permittee and livestock grazing on the Allotment would no longer contribute to the regional economy and larger society.

Maintenance of fencing within the Allotment, including the up to four miles of new fencing, would continue under the Proposed Action. No additional new fencing would be maintained under either the Current Management or No Grazing Alternative.

Addressing the other ephemeral lakes within the Allotment with potential habitat for the William's combleaf would likely be addressed in a broader management plan developed by the BLM in the future. Introduction of William's combleaf to these ephemeral lakes would require restoration of the lakes' hydrologic cycles and potentially excavating and replacing of topsoil. This effort and the broader management of William's combleaf are too speculative for analysis and are outside the scope of this EA.

Under the Proposed Action and Current Management Alternative, maintenance of existing temporary and permanent water troughs used by livestock would continue.

The BLM is currently preparing the Buckskin Valley Vegetation Treatment Project EA (Map 3). Similar to the Mill Canyon Vegetation Treatment, this proposal would reduce the fuel load and risk for catastrophic fire, and to promote plant community diversity and enhance wildlife habitat. Public review of the EA is anticipated spring 2011, with a decision by fall of 2011. Implementation of this project, which covers 7,000 acres (1,809 acres within the Allotment), and would occur over a 10-year period depending on staffing and funding availability.

The BLM would continue to manage wild horses in the area. Although it may be several years before the BLM initiates another gather and remove/treat effort, this activity is likely to occur.

As described in Past and Present Actions, dispersed recreation is likely to continue in the future, but is anticipated to remain similar in nature (dispersed and low intensity).

There are no proposed land use changes, and although rights-of-way authorizations may occur in the future, any analysis of potential effects is too speculative.

Effects Analysis

Resource topics considered under the Effects Analysis include all resources identified in Table 2 and Table 3 in Section 3.0 which “may be affected” by direct or indirect effects of the Proposed Action or Alternatives. The following actions are not analyzed further because the Proposed Action or Alternatives do not contribute to additive effects: recreation, land use/authorizations, and wild horse management. Effects analysis considered all identified past, present and reasonably foreseeable actions within the Allotment.

Although wildland fire, no matter what its origin, can have an additive effect to effects from livestock grazing on the distribution of noxious invasive weeds and non-native plant species and overall plant community diversity and health, due to the unknown timing, scope and intensity from any fire, examination of fires’ contribution to cumulative effects is too speculative to analyze.

Cultural Resources

Under all Alternatives, no historic properties would be adversely affected. Class III cultural resource inventories have been completed for all new proposed fencing to determine if NRHP eligible sites are present. Based on the surveys conducted in April 2011, the fence construction can proceed as proposed. The Proposed Action or Current Management Alternative is not anticipated to change potential cumulative effects to cultural resources in areas where natural or human-caused attractants increase the intensity of livestock use. Implementing either of these alternatives would have only a negligible adverse cumulative effect; the No Grazing Alternative may have a minor beneficial cumulative effect due to the removal of livestock grazing, although adverse cumulative impacts from wild horses would continue.

Migratory Birds

Under the Proposed Action and Current Management Alternative, livestock grazing would continue, although at different AUMs (1,275 versus 1,074). Depending on the species, there may be a range of effects on migratory birds. For example, cattle may trample nests of ground dwelling migratory bird species such as the sage thrasher, which would be minor adverse cumulative effects. However, for species such as the pinyon jay and titmouse which nest in trees, the cumulative effects would be neutral. For Brewer’s sparrows, the cumulative effects from grazing would be beneficial, as this bird species benefit from low grass cover and some bare ground. Under the Proposed Action, livestock grazing would occur during the dormant

season for plants, and grazing would not occur in the later part of the plants growing season, providing a minor beneficial cumulative effect for migratory birds.

Under the Proposed Action, approximately four miles of fencing would be constructed to address a known population of William's combleaf and for the grazing management system. A low risk of bird collisions exists with fencing, therefore would be a negligible adverse cumulative effect. Added to the existing 15 miles of fencing within the Allotment (for a total of 19 miles of fencing), cumulative effects to migratory birds from all fencing would be slightly adverse.

Under the Current Management Alternative, no grazing management system would be implemented, causing minor adverse cumulative effects to migratory birds from poor distribution of cattle. Under the Current Management Alternative, no new fencing would be constructed to protect a known population of William's combleaf, there would be no cumulative effect to migratory birds.

Under the No Grazing Alternative, livestock would no longer consume vegetation, cumulatively benefiting those ground dwelling migratory birds, but cumulatively having an adverse effect on those that depend on low grass cover. Under the No Grazing Alternative, cumulative effects to migratory birds would be slightly beneficial because there would be no potential trampling nests of ground dwelling migratory birds, and vegetation used for cover would no longer be alerted by cattle. Under the No Grazing Alternative no cumulative effects to migratory birds would occur from new fencing construction as none would be built. However, minor adverse cumulative effects to migratory birds from the existing 15 miles of fencing would continue until any fencing would be removed if livestock grazing was eliminated from the Allotment.

General Wildlife

Under the Proposed Action and Current Management Alternative, livestock grazing would continue, although at different AUMs (1,275 versus 1,074). Depending on the species, there may be a range of cumulative effects on general wildlife. For example, cumulative effects to granivorous rodents would be beneficial as livestock grazing can increase the availability of grasses and forbs. Managed grazing can have a neutral cumulative effect on mule deer as cattle would tend to eat more grasses than forbs and browse. No grazing would occur during the summer, which would benefit mule deer. Cumulative effects to pronghorn would be neutral to slightly beneficial as the grazing management system would likely maintain or improve shrub or understory conditions needed by pronghorn. The construction of up to four miles of fencing under the Proposed Action (for 19 total miles of fencing), could have a minor adverse cumulative effect to wildlife due to a low risk of collisions, however under this Alternative fencing would include white-topped fence posts and reflectors to minimize collisions. Under the No Grazing Alternative, cumulative effects to general wildlife would be slightly beneficial. Forage that would be consumed by cattle would be available to wildlife. No new fencing would be constructed, which would be negligibly beneficial, however 15 miles of existing fencing would likely remain unless removed; overall cumulative effects from fencing under the No Grazing Alternative would continue to be slightly adverse.

BLM Sensitive Species

Under the Proposed Action and Current Management Alternative, livestock grazing would continue, although at different AUMs (1,275 versus 1,074). Depending on the species, there may be a range of cumulative effects on BLM sensitive species. For example, grazing or other disturbances benefit burrowing owls because of the presence of short or removed vegetation. Northern goshawks can be adversely affected if grazing prevents stand regeneration. Golden eagles and ferruginous hawks are more responsive to prey populations than from grazing itself. Better grazing management, as described in the Proposed Action, may cumulatively benefit small mammal populations, therefore benefit birds of prey such as golden eagles. The Current Management Alternative does not include a grazing management system or new fencing, there would be minor adverse cumulative effects to some birds of prey. Under the No Grazing Alternative, all grazing would be eliminated, which may negligibly increase small mammal populations which may benefit birds of prey. There would be negligible beneficial cumulative effects for BLM sensitive species under the No Grazing Alternative.

The presence of water developments for livestock may cumulatively benefit bats, at the same time there is a certain amount of mortality from drowning. Existing water developments for livestock would continue to be maintained under the Proposed Action and Current Management Alternative. Overall cumulative effects to bats are neutral, although under the No Grazing Alternative, elimination of grazing could also include eliminating any water developments, which would be minor adverse cumulative effects on bats. Although pygmy rabbits are not known to occur in the Allotment, managed grazing would have neutral cumulative effects to potential pygmy rabbit habitat. There would be no cumulative effects to pygmy rabbit habitat under the No Grazing Alternative.

Grazing is only one of many factors affecting the sage-grouse. Under all alternatives, adverse cumulative effects to sage-grouse associated with wild horses, OHV use, wildfire, and pinyon-juniper encroachment would continue. Managed grazing as described in the Proposed Action would maintain or improve grouse habitat requirements including the growth and persistence of native shrubs, grasses, and forbs needed by grouse for season food and concealment. Overall the Proposed Action would have minor beneficial cumulative effects on sage-grouse. The Current Management Alternative, without a grazing management system, would have minor adverse cumulative effects to sage-grouse. The No Grazing Alternative would have minor beneficial cumulative effects on sage-grouse. Under the No Grazing Alternative, there would be minor beneficial cumulative effects to vegetation, although overall vegetation trends with the removal of livestock grazing are not expected to change. Some vegetation conditions in the Allotment would not respond solely to changes in livestock management and require active restoration efforts such as pinyon-juniper thinning and seeding of herbaceous species for habitat improvement.

Moderate levels of grazing under the Proposed Action would maintain or improve pygmy rabbit habitat within the Allotment. Pygmy rabbit are not known to occur in the Allotment. Possible effects from livestock grazing if pygmy rabbits are present, could include direct injury or death

from trampling, and trampling of burrows. Possible effects to pygmy rabbit habitat from livestock grazing include degradation of sagebrush plant structure, reduced summer forage, and an increase in invasive plants. Overall cumulative effects to pygmy rabbit would be neutral under the Proposed Action. The Current Management Alternative, without a grazing management system, would have minor adverse cumulative effects to pygmy rabbit habitat. Under the No Grazing Alternative, no livestock grazing would occur; there would be no cumulative effects to pygmy rabbit or pygmy rabbit habitat from livestock grazing.

Under the Proposed Action, cumulative effects to William's combleaf, a proposed BLM sensitive species, would be beneficial. A proposed fence would exclude livestock and wild horses from an ephemeral lake with a known population. Under the Current Management Alternative no fencing would be constructed; there would be adverse cumulative effects on William's combleaf due to continuing impacts from livestock and wild horse grazing. Under the No Grazing Alternative, no fencing would be constructed; there would be adverse cumulative effects on William's combleaf due to continuing impacts from wild horses.

Water Quality (Surface/Ground)

Under the Proposed Action cumulative effects to water quality is anticipated to be neutral or be slightly beneficial due to improved distribution of cattle on the Allotment. No new fencing would be constructed to manage livestock distribution under the Current Management Alternative, although overall cumulative effects on water quality is expected to be neutral or slightly beneficial. Under the No Grazing Alternative, cumulative effects to water quality are anticipated to be neutral or slightly beneficial. Under all Alternatives, minor adverse cumulative impacts on water quality from wild horses would continue.

Wetland/Riparian Zones

No wetlands are present in the Allotment, therefore all Alternatives would have no cumulative effect on wetlands. Under the Proposed Action, cumulative effects to riparian zones are likely to be neutral or be slightly beneficial as a result of improved distribution of livestock on the Allotment. No new fencing would be constructed to manage livestock distribution under the Current Management Alternative, although overall cumulative effects on water quality is expected to be neutral or slightly beneficial. Under the No Grazing Alternative, impacts from livestock grazing would be eliminated, providing beneficial cumulative effects to riparian zones, although there would continue to be minor adverse cumulative effects to riparian zones from wild horses. Under the Current Management and No Grazing Alternatives no fencing would be constructed to protect a known population of William's combleaf; there would be an adverse cumulative effect to this plant.

Livestock Grazing

The Proposed Action would have minor beneficial cumulative effects on livestock grazing. By implementing a grazing system, vegetation conditions are anticipated to be maintained or improved, which provides better forage for cattle. No grazing system would be implemented under the Current Management Alternative, therefore there would be a minor adverse cumulative effect to livestock grazing. Under the Proposed Action and Current Management

Alternatives, livestock grazing would continue in the Allotment and would be a part of the regional and national economy, providing beneficial cumulative effects. Implementing the No Grazing Alternative and eliminating grazing would likely cause economic harm to the grazing permittee, which would be an adverse cumulative effect to the permittee and regional economy.

Vegetation

The Proposed Action would have minor beneficial cumulative effects on vegetation. By implementing a grazing system, vegetation conditions are anticipated to be maintained or improved. Although there would be minor short-term impacts to vegetation from the construction of approximately four miles of fencing, overall vegetation would benefit from improved efforts to manage the distribution of cattle. No grazing system would be implemented under the Current Management Alternative, therefore there would be minor adverse cumulative effects to vegetation. Under the No Grazing Alternative, there would be minor beneficial cumulative effects to vegetation, although overall vegetation trends with the removal of livestock grazing are not expected to change. Some vegetation conditions in the Allotment would not respond solely to changes in livestock management and require active restoration efforts such as pinyon-juniper thinning and seeding of herbaceous species for habitat improvement.

Under the Proposed Action, construction of up to four miles of fencing would result in the temporary impact to less than four acres of low sagebrush plant community and annual vegetation. Constructing holding corrals in the Sunrise burn pasture would result in the permanent loss of less than one acre of primarily annual vegetation. The Proposed Action would result in negligible adverse cumulative effects on vegetation from new fence construction. No fencing would be constructed under the Current Management or No Grazing Alternative; there would be no cumulative effect on vegetation from new fence construction.

Under all alternatives, minor adverse cumulative effects to vegetation will continue to occur due to impacts associated with wild horses to vegetation. As such, management of wild horses is outside the scope of analysis of this EA.

Implementing the Buckskin Vegetation Treatment Project would affect approximately 1,809 acres within the Allotment. Under this action, the BLM would remove pinyon-juniper along portions of the eastside of the Pine Nut Mountains. Although this project would adversely affect those tree species (and associated tree nesting birds) which are encroaching onto previously unoccupied lowlands, the project would benefit plant and shrub communities and associated wildlife species. This project would cumulatively benefit plant (and animal) communities associated with the Allotment.

Noxious Invasive Weeds, Non-Native Plant Species

Under all Alternatives, noxious invasive weeds and non-native plants would continue to be managed under the Noxious Weed Management Plan (BLM 2008b). Under the Proposed Action and Current Management Alternatives, cumulative effects to these plants would remain

neutral. The presence of these plants would continue in the Allotment but distribution is not anticipated to change under any alternative. Under the No Grazing Alternative, there may be a minor beneficial cumulative effect due to no grazing from livestock, however impacts from wild horses, other wildlife species, and other recreational uses in the area such as OHV use, would continue to occur causing a minor adverse cumulative effects.

5.1 Monitoring

Monitoring would continue as it has before on the Allotment. Utilization data would be collected from pastures at the end of livestock use periods. Actual use is due 15 days after the end of the grazing season. Trend studies, which are located throughout the Allotment, would be read at least every decade to ensure continued vegetative health and upward trend. Monitoring of cultural resources would continue. All monitoring would be performed in accordance with BLM policy following protocols from BLM approved manuals and technical references. Monitoring would occur where and when applicable and as resources allow.

6.0 PERSONS, GROUPS, AND AGENCIES CONSULTED

6.1 List of Preparers

Bureau of Land Management

Name	Title	Project Expertise
Steve Christy	Archeologist	Cultural Resources, Native American Religious Concerns
James deLaureal	Soil Scientist	Soils
Arthur Callan	Outdoor Recreation Planner	Recreation
Brian Buttazoni	Planning and Environmental Coordinator	NEPA
Katrina Leavitt	Rangeland Management Specialist	Livestock, Vegetation
Jim Schroeder	Hydrologist	Wetlands/Riparian Zones Water Quality
Pilar Ziegler	Wildlife Biologist	Migratory Birds General Wildlife, BLM Sensitive Species
Dean Tonenna	Natural Resources Specialist	BLM Sensitive Species, Vegetation, Noxious Weeds and Non-Native Invasive Plant Species

6.2 Public Review

The *Churchill Canyon Grazing Allotment Environmental Assessment* (DOI-BLM-NV-C020-2008-24-EA) was made available to the public, Tribes and other agencies for a 30-day review and comment period. The comment period closed on May 26, 2011.

Letters (including maps and the draft EA) were mailed to 11 individuals, organizations and agencies (including two Tribes) on April 27, 2011. Notification of the availability of the EA to 15 other State and federal offices was made through the Nevada State Clearinghouse on April 27, 2011. The BLM published a news release on April 26, 2011. An article on the proposal was featured in the *Reno Gazette-Journal* (web version). In addition, the BLM's Public Affairs Office in Reno posted notices on Facebook and Twitter. The comment period closed on May 26, 2011. Comments received in a timely manner after this date were also considered.

Public Comments.

Although not required for an EA by regulation, an agency may respond to *substantive* and *timely* comments. Substantive comments: 1) question, with reasonable basis, the accuracy of information in the EIS or EA; 2) question, with reasonable basis, the adequacy of, methodology for, or assumptions used for the environmental analysis; 3) present new information relevant to the analysis; 4) present reasonable alternatives other than those analyzed in the EIS or EA; and/or 4) cause changes or revisions in one or more of the alternatives. No response is necessary for non-substantive comments (BLM, 2008a).

The BLM received five letters from individuals, organizations and agencies. All letters and the comments contained within were reviewed and categorized. Comment letters were received

from the Nevada State Grazing Board District N-3, the Nevada State Division of Water Resources, Richard Huntsberger, the Smith Valley Conservation District and Western Watersheds Project.

The comments from Nevada State Grazing Board District N-3, Richard Huntsberger, the Smith Valley Conservation District were considered. These letters raised the following issues: the need for fencing to protect a known population of William's combleaf, and the need to have flexibility in grazing operations. Although these comments were considered, no changes have been made to the EA. The need for the fencing to protect a known population of William's combleaf is warranted due to its change in BLM status. The current Proposed Action provides for flexibility in grazing operations.

Comments raised by the Western Watersheds Project fell into the following categories: 1) that the BLM failed to consider a reduced grazing alternative; and 2) further analysis was needed concerning a) the Bi-State Sage-Grouse, b) pygmy rabbit, c) global climate change, d) invasive species, and e) wetlands/riparian zones.

Changes from the Draft to Final EA:

I. *Substantive* changes were made to the Draft EA in the following sections:

- Vegetation Sections 3.4.2, 4.1.2, 4.2.2, and 4.3.2;
- Migratory Birds Sections 3.4.5, 4.1.5 and 4.2.5;
- General Wildlife Sections 3.4.6, 4.1.6 and 4.2.6;
- BLM Sensitive Species Sections 3.4.7, 4.1.7 and 4.2.7
- Noxious Invasive Weeds Species Sections 3.4.9; 4.1.9, 4.2.9, and 4.3.9.
- Cumulative Effects Section 5.0 (new section on pygmy rabbit).

Changes made to the above sections fell into the following categories:

- a. New information;
- b. Clarification to existing information; and
- c. General resorting and re-ordering of content for improved readability of the Sections.

No change made caused a revision to an alternative, nor did any change alter analysis such that "significant" effects would result from the Proposed Action or Alternatives.

II. *Minor, non-substantive* changes were made to the Draft EA. Those changes are hereby incorporated into this Final EA.

1. Second to last sentence of Section 1.1 on page 2 removed the term "livestock carrying capacity" and replaced with the correct term "permitted livestock use" (also see item #5 below);

2. Last sentence of Section 1.3 on page 4 updated information to reflect that follow-up calls were made to Tribes in May 2011 and they expressed no concerns on this proposal, and that the public review period was from April 27 to May 26, 2011;
3. Section 2.4, page 8 the BLM has added clarification on a determination why an alternative was not considered fully;
4. Section 3.3 Table 3, page 11 now includes information regarding global climate change;
5. First sentence in the second paragraph, Section 3.4.1 on page 12, removed the term "livestock carrying capacity" and replaced with the correct term "permitted livestock use" and added an explanation on forage calculations in the second paragraph;
6. Section 5.0, page 60, under "Timeline of Effects." In the first sentence the words 'and Current Management Alternatives' were deleted. No new fence construction would occur under the Current Management Alternative;
7. Section 5.0, second paragraph, third sentence, on page 67 inserted the word "Alternative" after 'Current Management';
8. Section 6.2 starting on page 70 has been updated with a summary of the public review process;
9. Section 7.0 the hyperlinks to NatureServe were shortened due to linkage issues; and
10. Appendix E, the precipitation table was updated to include 2010 data.

6.3 Tribes, Individuals, Organizations or Agencies Consulted

The following individuals, organizations, Tribes and agencies were consulted during the preparation of this EA:

Tribes

Yerington Paiute Tribe
Washoe Tribe of Nevada and California

Individuals

Richard Huntsberger

Organizations

Best in the Desert
Coalition for Public Access
Friends of Nevada Wilderness
Resource Concepts Inc.
Smith Valley Ranch
Sustainable Grazing Coalition
Valley Off-Road Racing Association
Western Watersheds Project

Agencies

Nevada State Clearinghouse (multiple state and county agencies)

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Appendix A – Summary Actual Use, Utilization & Trend Data Churchill Canyon Allotment

Grazing Year	Actual Use & Utilization Objectives Actual Use in Animal Unit Months (AUMs) Utilization Objectives Met: Utilization < AUL Utilization Objectives Not Met: Utilization > AUL						Total Actual Use AUMs	Livestock Stocking Rate Acres/AUM *	Precipitation +Above Average - Below Average	Trend
	Sario Well		JW Ranch		Como					
	AUMs	Utilization	AUMs	Utilization	AUMs	Utilization				
93-94	651	>AUL	385	>AUL	0	NA	1,036	30	+	Up
94-95	416	ND	326	ND	0	NA	742	42	-	ND
95-96	749	<AUL	446	<AUL	0	NA	1,195	26	+	ND
96-97	616	>AUL	413	>AUL	266	ND	1,295	37	+	ND
97-98	453	>AUL	478	<AUL	288	<AUL	1,219	39	-	Up
98-99	610	<AUL	605	<AUL	328	<AUL	1,543	31	+	ND
99-00	ND	>AUL	ND	>AUL	ND	>AUL	1,032	ND	-	ND
00-01	403	>AUL	647	<AUL	0	NA	1,050	30	-	Up
01-02	594	>AUL	242	ND	217	ND	1,053	45	-	ND
02-03	0	NA	637	ND	77	ND	714	45	-	ND
03-04	406	<AUL	724	<AUL	148	ND	1,278	37	-	ND
04-05	625	ND	525	<AUL	138	ND	1,288	37	-	ND
05-06	636	<AUL	907	>AUL	141	<AUL	1,684	28	+	ND
06-07	672	>AUL	946	>AUL	189	<AUL	1,807	26	-	Down
07-08	0	NA	0	NA	0	NA	0	NA	-	ND
08-09	ND	<AUL	ND	ND	ND	ND	1,045	ND	+	ND
09-10	ND	ND	ND	ND	ND	ND	1,045	ND	+	Up
10-11	ND	ND	ND	ND	ND	ND	1,052	ND	ND	ND

AUM = Animal Unit Month : ND = No Data : AUL = Allowable Use Level : NA = Not Applicable
 *Calculations for all years include 3,168 acres of private land acquired by BLM in 1997.

Appendix B - Standard Grazing Permit Terms & Conditions

1. Grazing permit or lease terms and conditions and the fees charged for grazing use are established in accordance with the provisions of the grazing regulations now or hereafter approved by the Secretary of the Interior.
2. They are subject to cancellation, in whole or in part, at any time because of:
 - a. Noncompliance by the permittee/lessee with rules and regulations.
 - b. Loss of control by the permittee/lessee of all or a part of the property upon which it is based.
 - c. A transfer of grazing preference by the permittee/lessee to another party.
 - d. A decrease in the lands administered by the Bureau of Land Management within the allotment(s) described.
 - e. Repeated willful unauthorized grazing use.
 - f. Loss of qualifications to hold a permit or lease.
3. They are subject to the terms and conditions of allotment management plans if such plans have been prepared. Allotment management plans MUST be incorporated in permits or leases when completed.
4. Those holding permits or leases MUST own or control and be responsible for the management of livestock authorized to graze.
5. The Authorized Officer may require counting and/or additional special marking or tagging of the livestock authorized to graze.
6. The permittee's/lessee's grazing case file is available for public inspection as required by the Freedom of Information Act.
7. Grazing permits or leases are subject to the nondiscrimination clauses set forth in Executive Order 11246 of September 24, 1964, as amended. A copy of this order may be obtained from the Authorized Officer.
8. Livestock grazing use that is different from that authorized by a permit or lease MUST be applied for prior to the grazing period and MUST be filed with and approved by the Authorized Officer before grazing use can be made.
9. Billing notices are issued which specify fees due. Billing notices, when paid, become a part of the grazing permit or lease. Grazing use cannot be authorized during any period of delinquency in the payment of amounts due, including settlement for unauthorized use.
10. Grazing fee payments are due on the date specified on the billing notice and MUST be paid in full within 15 days of the due date, except as otherwise provided in the grazing permit or lease. If payment is not made within that time frame, a late fee (the greater of \$25 or 10 percent of the amount owed but not more than \$250) will be assessed.
11. No member of, or Delegate to, Congress or Resident Commissioner, after his/her election of appointment, or either before or after he/she has qualified, and during his/her continuance in office, and no officer, agent, or employee of the Department of the Interior, other than members of Advisory committees appointed in accordance with the Federal Advisory Committee Act (5 U.S.C. App. 1) and Sections 309 of the Federal Land Policy Management Act of 1976 (43 U.S.C. 1701 et seq.) shall be admitted to any share or part in a permit or lease, or derive any benefit to arise there from; and the

provision of Section 3741 Revised Statute (41 U.S.C. 22), 18 U.S.C. Sections 431-433, and 43 CFR Part 7, enter into and form a part of a grazing permit or lease, so far as the same may be applicable.

THIS GRAZING PERMIT:

1. CONVEYS NO RIGHT, TITLE OR INTEREST HELD BY THE UNITED STATES IN ANY LANDS OR RESOURCES AND 2. IS SUBJECT TO (A) MODIFICATION, SUSPENSION OR CANCELLATION AS PROVIDED BY LAND PLANS AND APPLICABLE LAW; (B) REVIEW AND MODIFICATION OF TERMS AND CONDITIONS AS APPROPRIATE; AND (C) THE TAYLOR GRAZING ACT, AS AMENDED, THE FEDERAL LAND POLICY AND MANAGEMENT ACT, AS AMENDED, THE PUBLIC RANGELANDS IMPROVEMENT ACT, AND REGULATIONS NOW OR HEREAFTER PROMULGATED THEREUNDER BY THE SECRETARY OF THE INTERIOR.

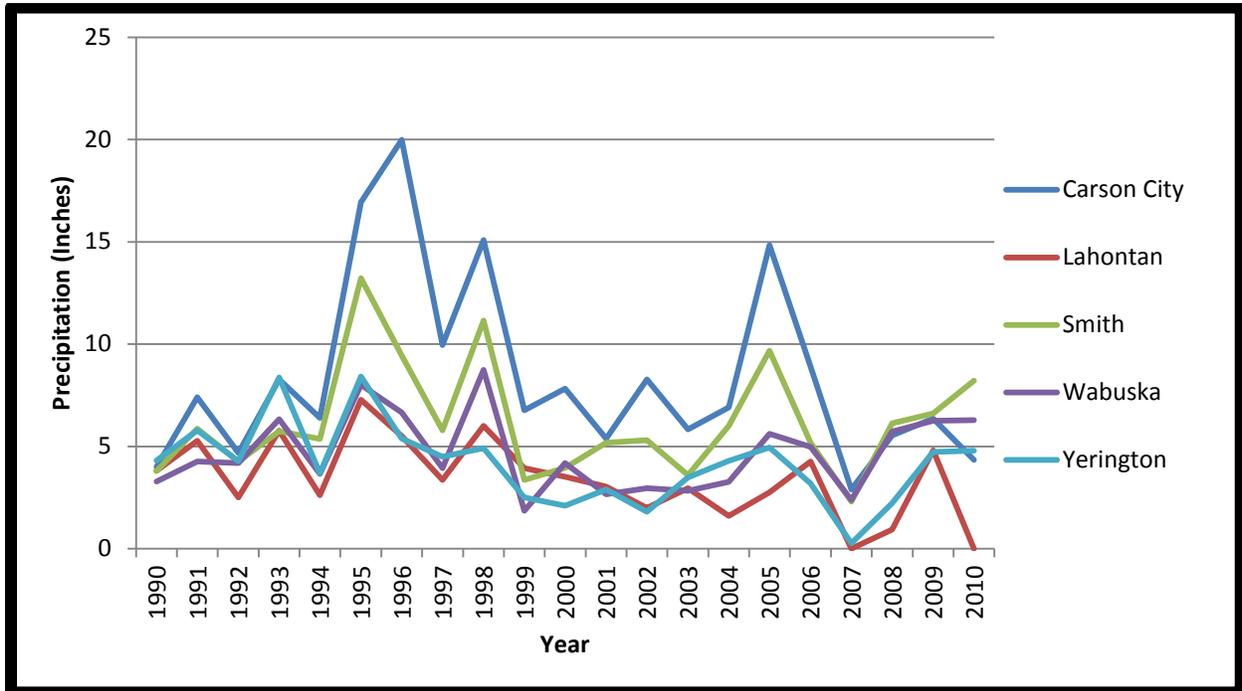
Appendix C – Proposed Grazing Permit Terms & Conditions

1. Livestock will be managed in a manner that will allow natural resources to make progress towards meeting the standards as set forth by the Sierra Front-Northwestern Great Basin RAC 1997.
2. Pursuant to 43 CFR 10.4 (G), you must notify the Authorized Officer, by telephone, with written confirmation, immediately upon the discovery of human remains. Funerary items, sacred objects, or objects of cultural patrimony. Pursuant to 43 CFR 10.4 (C) and (D), you must stop activities in the immediate vicinity until notified by the Authorized Officer.
3. The use of supplements, including salt is authorized in-so-far as the following conditions are met: They will not be placed within $\frac{1}{4}$ mile of live waters (springs/streams), associated riparian areas, permanent livestock watering facilities, wet or dry meadows, aspen stands or in known historic properties. The use of supplements, including salt, which does not comport with these conditions is not authorized.
4. Range improvements assigned to the permittee shall be maintained in good working order and an aesthetic state by the permittee.
5. The grazing schedule must be followed unless modified and approved by the BLM in advance.
6. For administrative purposes, the number of cattle scheduled on this permit is 193, however, during the term of the permit and pursuant to #1 above, the BLM may authorize higher or lower numbers than 193. During the permitted use period of November 1 to May 20, provided that forage removal for the entire Allotment does not exceed 1,275 AUMs annually, and provided that forage removal during the period March 1 to May 20 does not exceed 650 AUMs annually.
7. Cattle use within the wild horse HMA will not exceed 154 AUMs per grazing season.
8. Livestock grazing operations shall be conducted so that forage utilization of key perennial plant species during the spring (March 1 to May 20) shall not exceed 55 percent.

Appendix D – Current Grazing Permit Terms & Conditions

1. An analysis of grazing use will be made following the 1998 grazing season and the preference adjusted based on that analysis.
2. The use of a protein/mineral supplement is encouraged: these are to be placed at least ¼ mile from water and the location moved by at least 10 yards with each feeding.
3. The Sunrise Pass Burned Area is not to be grazed during April or May in the 96-97 and 97-98 grazing seasons.
4. Grazing management shall be authorized in a manner that will make progress towards meeting the standards as set forth by the Sierra Front-Northwestern Great Basin RAC 1997.
5. Pursuant to 43 CFR 10.4(G), you must notify the Authorized Officer, by telephone, with written confirmation, immediately upon the discovery of human remains. Funerary items, sacred objects, or objects of cultural patrimony. Pursuant to 43 CFR 10.4 (C) and (D), you must stop activities for 30 days or until notified by the Authorized Officer.
6. Salt and/or Supplements will be placed at least ¼ mile from live waters (springs/streams), and outside associated riparian areas, permanent livestock watering facilities, wet or dry meadows and aspen stands. Also salt and/or supplements should not be placed in known historic properties.
7. It is your responsibility to maintain all assigned range improvements in good working order and an aesthetic state.
8. The payment of grazing fees is due on or before the due date specified in the grazing bill. If payment is not received within 15 days of the due date, a late fee of \$25 or 10 percent of the grazing bill, whichever is greater, not to exceed \$250, will be assessed. Failure to make payment within 30 days of the due date may result in trespass action.
9. Grazing use will be made in accordance with the terms and conditions of your grazing permit.

APPENDIX E – Precipitation data 1990-2010.



Source: www.wrcc.dri.edu