

Barton Allotment Grazing Permit Renewal

ENVIRONMENTAL ASSESSMENT



August 7, 2014

File: 4130

DOI-BLM-NV-E030-2014-0010-EA



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Cover photo: Barton Allotment looking south with Gollaher Mountain in the background by Clay Stott, Rangeland Management Specialist

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1 INTRODUCTION

The Bureau of Land Management (BLM), Wells Field Office proposes to issue a grazing permit renewal decision to provide area-specific direction and management actions for the Barton Allotment in the north-eastern portion of Elko County, Nevada. See Appendix B-Figure1 for the location of this allotment.

This Environmental Assessment (EA) has been prepared for compliance with the National Environmental Policy Act (NEPA). This EA tiers to the 1983 Draft Wells Resource Management Plan and Environmental Impact Statement (EIS), the 1983 Proposed Wells Resource Management Plan (RMP) and Final EIS, and the 1985 Wells Record of Decision for the Wells RMP. This EA incorporates by reference relevant portions of the 2014 Standards and Guidelines Assessment for the Barton Allotment. These documents are available for review at the BLM Elko District Office, 3900 E. Idaho Street, Elko, NV 89801, telephone 775-753-0200.

Purpose and Need

The purpose of the action is to fully process the term grazing permit (Authorization # 2701048) for the Barton Allotment in accordance with all applicable laws, regulations, and policies and in accordance with Title 43 CFR § 4130.2(a) which states: “Grazing permits or leases shall be issued to qualified applicants to authorize use on the public lands and other lands under the administration of the Bureau of Land Management that are designated as available for livestock grazing through land use plans.” The operator meets all of the qualifications to graze livestock on public lands administered by the BLM.

The need for the action is to renew this grazing permit with terms and conditions for grazing use that would meet, or make significant progress towards meeting, the *Northeastern Great Basin Standards and Guidelines for Grazing Administration* (RAC, 1997), Resource Management Plan, and other pertinent multiple use objectives for the allotment.

The decision to be made is to determine the conditions and limitations necessary to issue a grazing permit that will comply with the BLM’s statutory obligations as outlined in 43 CFR § 4130.2 (a) and multiple use mandate specified in the Federal Land Policy and Management Act of 1976 (FLPMA), and conform to the Fundamentals of Rangeland Health (43 CFR § 4180).

Relationship to Laws, Policies and Plans

The Federal Land Policy and Management Act of 1976 (FLPMA) requires an action under consideration to be in conformance with the applicable BLM land use plan, and for it to be consistent with other federal, state, local and tribal policies to the maximum extent possible.

BLM Land Use Plan Conformance

The proposed action and alternatives conform to the decisions and objectives of the Wells Resource Management Plan (RMP), as approved 19 July 1985, the 1987 Wells RMP Proposed Elk Amendment and EA, and the Wells RMP Approved Elk Amendment and Decision Record,

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approved 14 February 1996. They are further consistent with allotment specific objectives and directives from the Wells Rangeland Program Summary (RPS) dated 15 September 1986, which provided additional management guidance and objectives for each grazing allotment affected by the Wells RMP.

The following objectives, standard operating procedures, and/or management actions are outlined in the identified planning documents and apply specifically to Barton Allotment:

Wells Resource Management Plan

1. Livestock Grazing (Wells RMP Record of Decision, page 17)
 - Provide for livestock grazing consistent with other resource uses.
 - Livestock grazing will continue in the allotment.
 - Monitor and adjust grazing management systems and livestock numbers as required.
2. Terrestrial Wildlife Habitat (Wells RMP Record of Decision, pages 19-22)
 - Conserve and/or enhance wildlife habitat to the maximum extent possible.
 - Eliminate all of the fencing hazards in crucial big game habitat, most of the fencing hazards in non-crucial big game habitat.

Wells Rangeland Program Summary

Barton Allotment

1. Livestock Grazing
 - Manage livestock to maintain or improve present ecological status and trend.
 - Provide forage to sustain 810 AUMs for livestock grazing.
2. Wildlife Habitat
 - Manage rangeland habitat to provide forage for wildlife (Deer 51 AUMs).
 - Facilitate big game movement by fence modification (2.0 miles).
 - Improve two springs to good or better condition.

Consistency with Non-BLM Authorities

The Proposed Action is further consistent with other federal, state and local plans, policies and programs to the maximum extent possible. This includes the *Nevada Statewide Policy Plan of Public Lands* (Nevada Division of State Lands, 1986) and the *Elko County Public Land Use and Natural Resource Management Plan* (Elko County, 2010).

The following table identifies elements of the human environment that are regulated by a statutory or regulatory authority and if they are present and/or would be affected by the Proposed Action. The elements that are present and require further analysis are analyzed in Chapter 3 of this EA.

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Table 1- Review of Statutory or Regulatory Authorities

ELEMENT/RESOURCE	Present?	Affected?	Comment
Air Quality	Yes	No	
Area of Critical Environmental Concern	No	No	None Present
Cultural Resources	Yes	No	Analyzed in this EA
Environmental Justice	No	No	
Farm Land -Prime/Unique	No	No	
Floodplains	No	No	There are no mapped 100 year floodplains within the allotment.
Human Health & Safety	No	No	
Migratory Birds	Yes	Yes	Analyzed in this EA
Native American Religious Concerns			To be determined
Non-Native Invasive and Noxious Species	Yes	Yes	Analyzed in this EA
Soils	Yes	Yes	Analyzed in this EA
Threatened/Endangered/Sensitive Species	Yes	Yes	Analyzed in this EA
Visual Resources	Yes	No	
Water Quality (Surface/Ground)	Yes	No	There are no natural perennial water sources on public land within the allotment. There is not a strong hydrologic connection between ephemeral streams within BLM administered portions of the allotment and streams for which water quality standards are designated.
Wastes, Hazardous/Solid	No	No	
Wetlands, Riparian Zones	No	No	None present
Wild & Scenic Rivers	No	No	None present
Wilderness	No	No	None present

2 ALTERNATIVES

This chapter describes the alternatives analyzed in this EA including two No Action Alternatives and a Two Pasture Deferred Grazing Alternative. No Action Alternative A is the true no action alternative with no changes to the current grazing permit. No Action Alternative B is not a true no action alternative, in that it makes a few changes to the terms and conditions of the existing permit. These changes are designed to clarify the existing terms and conditions and implement minor administrative changes. Because both no action alternatives bring forward the same season and level of use it is expected that no changes in grazing management will result from

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what is already occurring under either alternative, and, as such, both are analyzed concurrently throughout the document as one No Action Alternative. The one exception is the Livestock Grazing Section (3.5.2) where minor economic differences between the two no action alternatives are analyzed.

This chapter also looks at alternatives considered but eliminated from detailed analysis in this EA.

2.1 No Action Alternatives A and B

2.1.1 No Action Alternative A

Under No Action Alternative A, the grazing permit on the Barton Allotment would be renewed for a 10-year period. These terms and conditions are on the current permit and would be brought forward with no changes. Cattle grazing would continue to be authorized as outlined in Subsection 2.1.1.1 below.

2.1.1.1 Terms and Conditions

Table 2- Mandatory Terms and Conditions

Allotment	Pasture	Number	Kind	Begin Date	End Date	% Public Land	AUMs
Barton	--	168	Cattle	5/1	11/30	68	804
Barton	FFR*	001	Cattle	8/1	10/31	100	003

*FFR: Fenced Federal Range

2.1.1.1.1 Other Terms and Conditions

- Line 02 is Federal AUMs (3) fenced within private fields.
- An actual use report for the Barton Allotment must be submitted to this office within 15 days of your last day of use.
- Supplemental feeding is limited to salt, mineral and/or protein supplements in block, granular or liquid form. Supplements must be placed at least ¼ mile from live waters (springs, streams, and troughs), wet or dry meadows, and aspen stands.
- All riparian exclosures, including spring development exclosures, are closed to livestock use unless specifically authorized in writing by the assistant field manager for renewable resources.
- Pursuant to 43 CFR 10.4(G), the holder of this authorization must notify the authorized officer, by telephone, with written confirmation, immediately upon the discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony. Further, pursuant to 43 CFR 10.4(C) and (D), you must stop activities in the immediate

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vicinity of the discovery and protect it from your activities for 30 days or until notified to proceed by the authorized officer.

- The terms and conditions of your permit may be modified if additional information indicates that revision is necessary to conform to 43 CFR 4180.
- Payment of grazing fees is due on or before the due date of the grazing bill. Failure to pay the grazing bill within 15 days of the specified due date specified on the bill shall result in a late fee assessment of \$25.00 or 10 percent of the grazing bill, whichever is greater, but not to exceed \$250.00.

2.1.2 No Action Alternative B

No Action Alternative B includes minor changes to the terms and conditions of the existing permit. The permitted season and level of use would remain the same as shown in No Action Alternative A. The terms and conditions would be modified as follows:

Remove:

- An actual use report for the Barton Allotment must be submitted to this office within 15 days of your last day of use.
- All riparian exclosures, including spring development exclosures, are closed to livestock use unless specifically authorized in writing by the assistant field manager for renewable resources.
- Payment of grazing fees is due on or before the due date of the grazing bill. Failure to pay the grazing bill within 15 days of the specified due date specified on the bill shall result in a late fee assessment of \$25.00 or 10 percent of the grazing bill, whichever is greater, but not to exceed \$250.00.

Add:

- Grazing use will be in accordance with the grazing permit renewal decision for the Barton Allotment dated, (date will be entered upon issuance of permit).
- Planned use shall be outlined in a grazing application that is submitted to the BLM for final approval prior to turn out of livestock on the allotment. An actual use report will be submitted within 15 days of the last day of livestock use. A billing notice will be prepared after the grazing season based on actual use in accordance with 43 CFR Section 4130.8-1(E).
- Numbers of livestock shown on the permit are a function of authorized season of use and permitted use. Actual livestock numbers may vary through each grazing season provided that the calculated carrying capacity for the allotment is not exceeded.
- Upland utilization shall not exceed 50% of current year's growth on key grass species (Idaho fescue (*Festuca idahoensis*) and bluebunch wheatgrass (*Pseudoroegneria spicata*)) as measured at key areas.

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- Shrubs utilization shall not exceed 45% of current year's leader growth combined use by livestock and big game.
- Should these objective levels be exceeded in any pasture of the allotment, future grazing applications may be adjusted as warranted based on the degree of use, period of use, and duration of use relative to past use and future plans for grazing use, and the effects of the utilization on rangeland health.

2.1.3 Current Management Practices

Under the current grazing permit use is authorized from 5/1-11/30 by 168 head (see Table 2). The permittee has chosen to come into the allotment later with more cattle, and leave a little earlier. Actual use data from the last 27 years shows that beginning in 1990 turnout dates typically fell between the last week in May and the first two weeks in June. Cattle were usually removed by the second week in November (See Barton S&G, 2014). This management practice defers grazing long enough to give forage plants on the allotment a jump start that ensures that some degree of seed ripe occurs on the allotment annually. This management practice has shown good results. The permittee has spring permits in Idaho that eliminate the need for a May 1st turnout on the Barton Allotment.

2.2 Two Pasture Deferred Grazing Alternative

Under this alternative, the grazing permit on the Barton Allotment would be renewed for a 10-year period. The terms and conditions currently on the permit would be modified to reflect a two pasture deferred grazing system. In order to implement this alternative a new 3-strand barbed wire fence would be constructed from north to south, dividing the allotment into two approximately equal-sized pastures with multiple sources of water in each (see Appendix B, Figure 2). The new fence line would be marked with flight diverters to reduce collision risk for sage-grouse and other birds and would be constructed in accordance to the fencing stipulations outlined in BLM Fencing Manual Handbook, H-1741-1. Use dates are shown in Table 3. Growing season use would be rotated every other year with Pasture 1 available beginning 5/1 and Pasture 2 available after 7/16. This would be reversed the next year with Pasture 2 available 5/1 and Pasture 1 available after 7/16. All use would conclude by 11/30. FFR use dates would be changed from 8/1-10/31 to 3/1-2/28. Fenced Federal Range (FFR) AUMs would be unchanged. This deferred grazing system is designed to ensure growing season rest, attainment of seed ripe, and better control of livestock distribution.

The following changes would be made to the current terms and conditions:

Remove:

- An actual use report for the Barton Allotment must be submitted to this office within 15 days of your last day of use.
- All riparian exclosures, including spring development exclosures, are closed to livestock use unless specifically authorized in writing by the assistant field manager for renewable resources.

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- Payment of grazing fees is due on or before the due date of the grazing bill. Failure to pay the grazing bill within 15 days of the specified due date specified on the bill shall result in a late fee assessment of \$25.00 or 10 percent of the grazing bill, whichever is greater, but not to exceed \$250.00.

Add:

- Grazing use will be in accordance with the grazing permit renewal decision for the Barton Allotment dated, (date will be entered upon issuance of permit).
- Livestock use in the allotment will be in accordance with the following restrictions:
 - One pasture will be available 5/1. The other pasture will remain closed until 7/16. Beginning 7/16 both pastures are available for use.
 - The turnout pasture will be rotated every year so that each pasture gets growing season rest every other year.
- Planned use would be outlined in a grazing application that is submitted to the BLM for final approval prior to turn out. An actual use report will be submitted within 15 days of the last day of livestock use. A billing notice will be prepared after the grazing season based on actual use in accordance with 43 CFR Section 4130.8-1(E).
- Numbers of livestock shown on the permit are a function of authorized season of use and permitted use. Actual livestock numbers may vary through each grazing season provided that the calculated carrying capacities for each pasture are not exceeded.
- Upland utilization shall not exceed 50% of current year's growth on key grass species (Idaho fescue (*Festuca idahoensis*) and bluebunch wheatgrass (*Pseudoroegneria spicata*)) as measured at key areas.
- Shrub utilization shall not exceed 45% of current year's leader growth (combined use by livestock and big game).
- Should these objective levels be exceeded in any pasture of the allotment, future grazing applications may be adjusted as warranted based on the degree of use, period of use, and duration of use relative to past use and future plans for grazing use, and the effects of the utilization on rangeland health.

Table 3- Cattle grazing would be authorized as outlined below:

	Allotment	Pasture	Number	Kind	Begin Date	End Date	% Public Land	AUMs
Year 1	Barton	West	168	Cattle	5/1	11/30	68	804
		East		Cattle	7/16	11/30	68	
		FFR	1	Cattle	3/1	2/28	100	3
Year 2	Barton	West	168	Cattle	7/16	11/30	68	804
		East		Cattle	5/1	11/30	68	
		FFR	1	Cattle	3/1	2/28	100	3

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2.3 Alternatives Considered But Eliminated From Detailed Analysis

2.4 No Grazing/Reduced Grazing

Under this alternative no grazing and or reduced grazing would be authorized on public lands within the Barton allotment. The Barton Allotment is currently meeting all of the applicable standards set forth in the *Northeastern Great Basin Standards and Guidelines for Grazing Administration* (RAC, 1997), or livestock grazing is not a causal factor of non-attainment (Barton S&G, 2014). The allotment is also in conformance with the Resource Management Plan and other pertinent multiple use objectives. Because these standards are being met, analysis of a no grazing or reduced grazing alternative would fall outside the purpose and need of this document. For this reason this alternative was not further evaluated.

2.5 Deferred grazing without creation of two pastures

This alternative would defer grazing throughout the entire allotment until after seed-ripe (approximately July 15) in two out of three years, ensuring the best possible plant vigor and reproduction of perennial grasses and forbs. There would be no creation of an additional pasture and thus no direct control of livestock distribution.

The Barton Allotment is either currently meeting all of the applicable standards set forth in the *Northeastern Great Basin Standards and Guidelines for Grazing Administration* (RAC, 1997), or livestock grazing is not a causal factor of non-attainment (Barton S&G, 2014). The allotment is also in conformance with the Resource Management Plan and other pertinent multiple use objectives. Because these standards are being met, shortening the season of use falls outside the purpose and need of this document. For this reason this alternative was not further evaluated.

3 AFFECTED ENVIRONMENT/EFFECTS OF ALTERNATIVES

This chapter outlines past, present, and reasonably foreseeable future actions and characterizes the resources and uses that have the potential to be affected by the Proposed Action, followed by a comparative analysis of the direct, indirect and cumulative effects of the alternatives. Direct effects are caused by the action and occur at the same time and place. Indirect effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Cumulative effects consider those effects on the resource of concern from past, present, and reasonably foreseeable future actions combined with the Proposed Action. For each resource, a cumulative effects study area (CESA) is identified. This is the geographic area of analysis for each resource or issue. These CESAs may be the same for each resource or may vary.

3.1 Affected Environment

The Barton Allotment contains approximately 3,216 acres of public land administered by the BLM and approximately 2,663 acres of private land located approximately 14 miles east of Jackpot, Nevada and just south of the Idaho border. It sits at the base of Gollaher Mountain on a northeast aspect. The topography is fairly consistent with flat to gently rolling benches separated

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by narrow, relatively shallow ephemeral drainages. The allotment as a whole slopes slightly (<10%) to the North. Elevations range from about 5,730-6,260 feet.

The allotment borders the Salmon River, Big Bend, and Little Goose Creek allotments. It has no internal fencing except for a small privately owned gather field on the north end of the allotment that contains about 40 acres of Fenced Federal Range (FFR). Appendix B-Figure 2 displays the current land ownership, roads, pastures, existing range improvements, and water locations.

Milligan Creek, Bottom Creek, and Gollaher Spring Draw Creek all run through the allotment. Flow running through public land is considered intermittent or ephemeral and is not sufficient to create or sustain riparian areas. There is some perennial stream flow on private land.

Vegetation is a mixture of native plants and non-native cheatgrass (*Bromus tectorum*). The native vegetation is a varied mixture including but not limited to: basin big sagebrush (*Artemisia tridentata tridentata*), Douglas' rabbitbrush (*Chrysothamnus viscidiflorus*), spineless horsebrush (*Tetradymia canescens*), bluebunch wheatgrass (*Pseudoroegneria spicata*), squirreltail (*Elymus elymoides*), Idaho fescue (*Festuca idahoensis*), Sandberg's bluegrass (*Poa secunda*), western wheatgrass (*Pascopyrum smithii*), lupine (*Lupinus* spp.), phlox (*Phlox* spp.) and other forbs.

Recent fires have shaped the vegetative composition and structure on the allotment. In the last twenty years five different wildfires have burned parts of the Barton Allotment. In 1994 the 13,000 acre Goose Creek fire burned approximately 100 acres in the southeast corner of the allotment. In 2000 the 54,000 acre West Basin fire and the 31,000 acre Choke Cherry fire burned nearly all of the Barton Allotment. The 2007 West Basin fire burned approximately 58,000 acres including about two-thirds of the Barton Allotment. The most recent fire occurred in 2012 when the Milligan Fire burned about 500 acres in the allotment.

In 2014 the BLM completed the Draft Standards and Guidelines for Rangeland Health Assessments (S&G) that analyzed monitoring data collected between 1986 and 2013 and drew conclusions about attainment of multiple use objectives and the achievement of standards established by the Northeastern Great Basin Resource Advisory Council (RAC) in the *Northeastern Great Basin Standards and Guidelines for Grazing Administration* (RAC, 1997). The 2014 Draft S&G Assessment (BLM, 2014) determined that the Allotment was either meeting all applicable standards or that livestock grazing was not a causal factor of non-attainment.

3.2 Past, Present, and Reasonably Foreseeable Future Actions

Past, present, and reasonably foreseeable future actions related to the analysis of cumulative impacts on resources or uses affected by the Alternatives are discussed below.

Livestock Grazing

Grazing of domestic cattle, sheep and horses has occurred on public and private lands in the area since at least the 1860's and it is reasonably foreseeable for livestock grazing to continue at or near current levels as long as rangeland health standards and guidelines are met. There are several activities associated with livestock grazing that have, do, and will most likely continue to

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occur within and near the Barton Allotment. These include on and off-highway vehicle (OHV) travel, installation and maintenance of range improvements such as fences, pipelines, and watering wells, feeding of mineral and protein supplements, and creation of vegetation treatments. Livestock grazing is discussed in further detail in Subsection 3.5.

Recreation: Past and present recreational uses primarily include dispersed recreation activities such as hunting, camping, nature-viewing and on and off-highway vehicle (OHV) travel. It is reasonably foreseeable for recreation to continue at or near current levels.

Lands and Realty Actions: In the past there has been some exploration of the area for an energy transmission corridor. There are currently no energy transmission lines through the allotment, but the potential exists for the area to be used as an energy transmission corridor.

Minerals Related Activities: Some mineral (oil, gas, mining, geothermal) leasing, exploration, and developmental activity has occurred in the past in the vicinity of (but not within) the Barton Allotment and is expected to continue at current levels.

Agriculture: Agricultural activities, primarily the cultivation of hay crops for livestock, occur on private lands within the immediate watershed. It is anticipated that agricultural activities would remain at present levels.

Climate Change:

Predictions¹ associated with climate change for the BLM-Elko District include:

- Temperature increases of 1 to 2°F between now and 2020 (Karl et al. 2009), leading to:
 - Earlier snow melt and onset of spring (Stewart et al. 2005)
 - A longer growing season for forage production
 - An increase in evapotranspiration (Hegerl et al. 2007)
 - Potential increases in diseases, insects, and non-native and noxious species (Chambers et al. 2009)
 - Reductions in soil moisture (Izaurrealde et al. 2011)
 - Increases in drought frequency and severity
 - Potential stream temperature increases in non-shaded riparian areas
 - An increase in wildfires resulting from a combination of the above factors (Ehrenfeld 2003, Norton 2003).

- Precipitation decreases of up to 15% or no change (Timmerman et al. 1999; Karl et al. 2009), resulting in:

¹ Predictions: In addition to compliance with Secretarial Order No. 3226 to consider impacts of climate change, CEQ advises agencies to recognize the *scientific limits of their ability to accurately predict climate change effects*, especially of a short-term nature, and not devote effort to analyzing wholly speculative effects. BLM (2008) further states that disseminated information based on non-agency reports/studies (i.e., third party scientific reports in credible publications) should be up-to-date, have integrity (based on accurate science and technology), useful to management for planning, and objective (BLM 2008, OMB 2002, DOI 2002).

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- Potential geographic shifts in species to adapt to changing conditions (Crozier 2003, 2004; Inouye et al. 2000; Reid and Lisle 2008)
- Mortality of species unable to adapt to changing conditions (Beever et al. 2003)
- Increased storm intensity
- Higher potential for floods and subsequently erosion (Janetos et al. 2008)
- Higher demand for water in urban, rural, and agricultural areas, as well as increasing demands for diverted flow to arid urban areas in the state

General Mitigation Measures Associated with Climate Change:

Adaptive Management

“Adaptive management can help an agency take corrective action if mitigation commitments originally made in NEPA and decision documents fail to achieve projected environmental outcomes and there is remaining federal action. Agencies can, in their NEPA reviews, establish and analyze mitigation measures that are projected to result in the desired environmental outcomes, and can then identify those mitigation principles or measures that it would apply in the event the initial mitigation commitments are not implemented or effective. Such adaptive management techniques can be advantageous to both the environment and the agency's project goals.” CEQ, 2011.

Methods that BLM Elko can use in adaptive management for this project include:

- Monitoring of key areas (baseline condition surveys and season follow-up surveys)
- Documenting through assigned tracking forms (i.e., PFC, Wildfire Recovery, Soils, etc.)
- After Action Reviews
 - Note differences, especially for species exhibiting resistance and resilience
 - Be aware of increases for insects (mosquitoes, beetles, etc.)
 - Use the "precautionary principle" (be conservative when planning--especially if the outcome of an activity is uncertain and harmful effects are possible)

Wildfire

Large portions of sagebrush and pinyon pine/juniper woodlands within the BLM-Elko District are presently dominated by perennial and annual grasses, including some invasive species (i.e., Canadian thistle and cheatgrass) that are among the first plants established following fire. These habitats, within the Great Basin, are considered crucial for many species, including the sage-grouse.

Proactive measures by BLM-Elko to minimize impacts by fire include annual enlistment of fire staff and fire suppression equipment. The BLM fire staff monitors daily weather conditions and coordinates with other agencies to suppress fires that occur within the District and surrounding areas. Seasonally, BLM also enlists the support of Engine² and Type II Hand³ Crews, as well as Helitack⁴ and Hotshot⁵ Crews when necessary.

² Engine Crews are used for initial and extended attack fire suppression, support of prescribed fires, patrolling, and project work. These crews range in size from three to ten firefighters and work with specialized firefighting

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BLM also assigns roles/responsibilities to qualified emergency assessment team members (advisors with specific training/knowledge in resources impacted by fire such as soils, range, wildlife, and botanists). Once a fire is considered both contained and controlled by a Fire Incident Commander, the advisors are among the first to examine and determine fire severity to provide reclamation recommendations.

Spread of Insects and Disease

The BLM-Elko District could be impacted by animals (i.e., mice, birds, etc.) and insect populations that can carry and/or deliver infectious disease. Medical and scientific literature reviews have attributed recent outbreaks such as West Nile Virus (WNV) to geographic shifting and adaptation to increasing temperatures associated with climate change. With regards to other animals, horses also appear to be sensitive to the virus, but there is no known evidence that WNV causes disease in cattle.

Collaborative efforts are ongoing between Federal, state, and other organizations (i.e., academia, Institute of Medicine, the Centers for Disease Control and Prevention, and the National Institute of Health). Through meetings and discussions issues of shared concern are addressed which include (but are not limited to) research, prevention, detection, and management of emerging or reemerging infectious diseases.

Within the Great Basin efforts for research also include NV Dept. of Wildlife; NV Dept. of Agriculture; NV State Health Dept.; USGS; Animal and Plant Health Inspection Service and US Fish and Wildlife Service. Methods suggested from the agencies, supported by BLM, for recommendations regarding past and emerging threats of disease include using pesticides, posting public statements, and using media/internet to inform the public about areas where reports have identified possible outbreaks and stating what the public can do to both protect themselves and how to minimize infestations.

3.3 Cultural Resources

equipment and perform many strenuous activities such as –mobile attack with engines, hose lay, construction of fireline with hand tools, burnout operations, and mopping up hotspots.

³ Hand Crews normally consist of 18-20 crewmembers. Hand Crews can be used for a variety of operations on a wildland fires. Hand Crews are assigned duties on wildland and prescribed fire primarily that consist of constructing fire lines with hand tools and chainsaws, burning out areas using drip torches and other firing devices, and mop-up and rehabilitation of burned areas. Hand crews may or may not have assigned permanent supervision.

⁴ Helitack crews are wildland fires suppression crews specializing in helicopter operations. Helitack Firefighters are delivered to fires via helicopter and suppress wildfires with hand tools and chainsaws. Helicopters can be equipped with a bucket or fixed tank to drop water or retardant during firefighting operations. They deliver helitack crews for initial attack, and transport personnel and cargo in support of fires.

⁵ Hotshot Crews are a 20 person organized crew of which is used primarily for wildfire suppression, fuels reduction, and other fire management duties. They perform the same duties as Hand Crews, however are very specialized and are generally placed in the most rugged terrain on the most active and difficult areas on wildfires. Hotshot crews are utilized throughout the country and may spend extended periods away from their home units. The crews place a great deal of emphasis on physical fitness.

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Existing Conditions and CESA Selected

Section 106 of the National Historic Preservation Act (NHPA) requires that federal agencies consider the effects of their undertakings on 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 to the NRHP, or the undertaking will not directly or indirectly affect the property, the action would be considered “no effect.” An “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. A “no adverse effect” means that if the BLM determines that identified historic properties will be avoided with the Standard Measures (Appendix H) 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 2012). The term “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(I)(1), and SHPO Protocol K.A.1.

Regarding the undertaking of the issuance of term grazing permit renewals, the BLM must ensure 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 800, this must be completed prior to initiating the undertaking of issuance of a term grazing permit renewal, and in consultation with interested tribes 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 spring development (water pipeline and trough), fence, stock pond, or other action that concentrates livestock.

To evaluate the Barton Allotment for cultural resource values, a Class I records search was conducted using BLM site records and maps, Geographical Information System (GIS) inventory, GLO survey plats, Master Title Plats, and the Nevada Cultural Resource Inventory System (NVCRI) to determine previously surveyed acres and sites recorded within the allotment boundary.

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The distribution of cultural resources is largely unknown in the Barton Allotment. Two previous inventories have been conducted within the allotment boundary. The inventories were conducted at a Class III level and covered approximately 216 acres. These surveys were conducted in 2000 and 2001 and were completed according to State Historic Preservation Office (SHPO) and Nevada BLM standards as outlined in the State Protocol.

The record searches reveal that the allotment contains no previously recorded historic properties (i.e., sites listed in or eligible for inclusion in the NRHP). There are five (5) known cultural resources located within the allotment boundary identified during the BLM West Basin Green Strip Project cultural resource inventory (Gibson 2002). Of these, two (2) are sites, one a historic trash scatter, and the other a two flake prehistoric surface lithic scatter. The other three (3) cultural resources are isolated prehistoric lithics—a projectile point fragment (midsection), a biface fragment, and a lithic flake (piece of debitage). Both sites and the three isolates were determined to be ineligible for inclusion on the NRHP under Criterion A, B, C, or D.

As a result of limited previous surveys, a Class III (intensive) cultural resource inventory was conducted at 21 known livestock congregation areas (LCA), and along a proposed 2.75 mile long allotment division fence with the Barton Allotment (Henrikson 2014). The survey took place during four days in January, March, and April 2014 covering approximately 130 acres. No cultural resources (therefore no historic properties) were encountered during the inventory. With the addition of the 2014 inventory, a total of 346 acres have been surveyed for cultural resources within the allotment.

Direct and Indirect Effects

No Action Alternative

Livestock grazing has the potential to directly impact historic properties primarily through trampling which can modify the horizontal and vertical distribution of artifacts and impact resource site integrity (Osborn et al. 1987, Roney 1977). Livestock impacts to cultural resources use on the Barton Allotment is generally limited, with activity mainly focused at congregation areas. In areas where livestock is more dispersed between the watering and salt block locations, it can be predicted that impacts will be mainly surface related, causing no stratigraphic mixing, but perhaps resulting in some horizontal displacement of artifacts.

The LCAs within the allotment include one corral, 11 watering areas, and nine salting locations. None of the LCAs had previously been identified as containing cultural resources. The 21 known LCAs were inventoried at the Class III level for cultural resources to ensure against potential adverse effects to any newly discovered historic properties. Unknown cultural resources outside of the livestock congregation locations are not anticipated to be significantly impacted. Additionally, as there are no changes in grazing intensity and/or duration planned, the No Action Alternative would not result in an increased time period of impacts to unknown/unrecorded cultural resources (or historic properties), and potential sensitive resources and locations.

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Two Pasture Deferred Grazing Alternative

This alternative would have a similar effect on known and unknown cultural resources and/or historic properties as the No Action Alternative. While there would be no increased time period of impacts to unknown/unrecorded cultural resources, there may be increased intensity at LCAs. The only difference between the two alternatives regarding cultural resources would be the construction of a proposed allotment division fence that would effectively divide the allotment into two relatively equal sized pastures. As the proposed 2.75 mile long fence has been inventoried by BLM at the Class III level with no cultural resources identified, the construction of the fence would have no effect on historic properties as none are present. Based on the survey of the 21 known LCAs, having livestock concentrated in one half of the allotment for parts of the grazing season, would not be considered to have an effect on cultural resources, as historic properties do not lie in areas of livestock congregation.

Cumulative Effects

As stated above, the area within the Barton Allotment was researched as the Cumulative Effects Study Area (CESA), as it includes the specific acreage livestock traverse when they are grazing. The past, present, and reasonably foreseeable future actions within the CESA are climate change (reasonably foreseeable), continued livestock grazing and dispersed recreation (past, present, and reasonably foreseeable). While these activities may result in having some effect on cultural resources, they are unlikely to do damage beyond what has been done previously by grazing, or by multiple resource actions that have occurred in the past. Additionally, they are not anticipated to result in substantive cumulative effects to cultural resources under either alternative.

3.4 Invasive, Nonnative Species and Noxious Weeds

Existing Conditions and CESA Selected

The CESA for invasive, nonnative species, and noxious weeds is the Barton Allotment and those areas within two miles of the Barton Allotment to allow for weeds that can be easily blown or transported into or out-of the allotment. This is primarily because the following invasive and/or noxious weed species have been documented on the Barton Allotment: cheatgrass, tansymustard, bull, scotch and Canada thistles, and the following invasive and/or noxious weed species occur within two miles of the Barton allotment: Black henbane, hoary cress, and halogeton.

The principle causes of weed spread are disturbance and seed dispersion. Within the allotment the catalysts of spread include: fire, recreation, livestock grazing, wildlife, and other natural disturbances. Recent wildfire history in the Barton Allotment as described in Section 3.1 has played a significant role in the proliferation of invasive weeds currently found on the allotment.

Cheatgrass (*Bromus tectorum*) and tansymustard (*Descurainia*) occur throughout the allotment in scattered patches. Thistle has been documented on the allotment, but the specific variety is not documented. Black henbane, hoary cress, and halogeton have not been documented in Barton Allotment, but they have been found in the adjacent allotments.

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Table 4- Invasive Species/Noxious Weeds With potential to occur within Barton Allotment	
<i>Nevada Listed Noxious Weeds</i>	
Category A	black henbane
Category B	Scotch thistle
Category C	hoary cress Canada thistle
<i>Invasive- Not State Listed</i>	
	cheatgrass halogeton tansymustard bull thistle

Known weed locations are treated with BLM approved herbicides on an annual basis.

Direct and Indirect Effects of Alternatives

No Action Alternative

There would be little direct or indirect effect on invasive or noxious species populations under the No Action Alternative. Under current management practices seed ripe of native species is being achieved annually across much of the allotment. It is probable that this has and will continue to result in improved perennial grass coverage which can out-compete invasive species and may result in some reduction of their prevalence under the current conditions on the allotment. It is noteworthy that current management practices are not the same as permitted use. If the permittee chose to make greater use of the allotment during the spring or fall growth periods it is likely that soil and vegetation in some areas of the allotment would be negatively impacted and this could have subsequent negative impacts on invasive and noxious species in those areas. However, within the current permitted season of use and stocking rate, increased impacts in any given area would likely equate to reduced impacts in other areas which could have positive impacts on invasive and noxious species at those locations. Based on this rationale it is likely that net effects on invasive or noxious species populations under the No Action Alternative would be minimal.

Two Pasture Deferred Grazing Alternative

The Two Pasture Deferred Grazing Alternative would have only minor direct or indirect effects on current noxious and invasive species populations. This alternative provides safeguards to ensure that seed ripe of native species is achieved every year on at least the portion of the allotment that is being deferred from grazing. This would closely mimic current management practices, thus any effects associated with this alternative are likely to be similar to the No

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Action Alternative. The addition of a division fence is likely to have both positive and negative effects in terms of disturbance (cow trails, roads, etc.). New areas of disturbance will be created, but impacts at some existing disturbance areas are likely to be reduced.

Cumulative Effects

Invasive non-native species such as black henbane, halogeton, cheatgrass, tansymustard, and thistles are known to occur within the allotment and/or within a two mile distance of the allotment boundary. These species have the capacity to expand following disturbance and have done so in the past in other areas. Past disturbances within the Barton Allotment include historic heavy livestock grazing, construction of range improvement projects, and wildfire. Present and reasonably foreseeable future disturbances include continued livestock grazing, mining activities, and installation of new range improvements. However, these projects incrementally have very little cumulative impact on the level of threat or the likelihood of the increase in either the distribution or abundance of noxious or invasive species.

Invasive non-native species seeds and plant parts may be transported into the Barton Allotment by numerous means. Seeds may be brought into the allotment on automobile and ATV tire treads. Birds, wildlife species and livestock may transport seeds on hooves or coats and within digestive systems.

Wildfire, which is not an action planned or carried out by the BLM, would continue to represent the single biggest disturbance threat to the Barton Allotment. Past wildfires have impacted most of the allotment. The BLM has and would be expected to continue to aggressively suppress wildfire in the lands in and around the allotment and conduct subsequent post-fire rehabilitation actions to reduce the likelihood of increases in noxious and invasive species occurrence.

The Two Pasture Deferred Grazing Alternative and its associated range improvement would have an incrementally positive effect to the threat posed by invasive and noxious weed species, as vegetative understories improve and communities become more resilient to fire and other disturbances. The No Action Alternative would likely also lead to greater resiliency in plant communities, however, the effect may not be as homogenous and it may take longer to achieve. While grazing may have some effect on the movement of invasive or noxious species, none of the proposed alternatives would greatly affect the presence or movement of the pre-existing invasive or noxious species on the allotment.

3.5 Livestock Grazing

Existing Conditions and CESA Selected

The CESA for livestock grazing is the area where the livestock are confined to when grazing, the Barton Allotment.

Livestock grazing is one of the most important economic activities in Elko County. Cattle ranching recorded \$53.8 million in output value, which ranked this industry 8th out of the 142 sectors; the sector employed 482 people, representing 2.53% of the total workforce, which

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ranked this sector 9th out of the 142 sectors; the industry realized \$43.5 million in export sales, representing 5.77% of Elko County's total exports, which ranked this sector 4th out of the 142 sectors. Total economic impact of the industry to Elko County amounted to \$96.6 million dollars, with a total direct and indirect payroll of 905 jobs representing \$14.4 million in income (Alevy et al., 2007; Fadali et al., 2009; Fadali and Harris, 2006; Harris et al., 2007).

Elko County has a land base of just less than 11 million acres, of which 71.5% is in Federal ownership. Private farm and rangelands occupy another 26% of the county's land base, with the remaining 2.5% of the land base occupied by other uses. Hay is the principle crop raised on the private farmlands. The 1997 Census of Agriculture counted 402 farms and ranches in the county, with an aggregate cow herd ranking Elko County fourth in the nation in terms of animal numbers. Approximately 68% of all Elko County beef cow operations held federal grazing permits. The average Elko county ranch derives 49% of its annual forage requirements from public lands. Each Animal Unit Month (AUM) utilized on public lands in Elko County is estimated to have a total production value of \$38 and a total economic impact of \$68 when considered independently of private land resources; when combined with private lands involved in livestock operations, these figures increase to an annual production value of \$84 per AUM and a total economic impact of \$148 per AUM. In 2006 an estimated 152,000 cows grazed within the county.

The current grazing permit for the Barton Allotment allows cattle from 1 May to 30 November annually, with a total permitted use of 810 AUM's, which represents a total potential annual economic impact of \$55,080 to the Elko County economy for the public AUMs alone (\$119,880 including private lands). Actual use for the allotment during the evaluation period has ranged from 0 AUMs to 810 AUMs, with an average of 674 AUMs. The average actual use represents a total economic impact of \$45,832 for the public AUMs alone (\$99,752 including private lands).

Livestock normally turn out onto the allotment in June and are removed in November. Livestock are shipped back to Idaho for the winter. The current livestock operation usually grazes one herd comprised of pairs, replacement heifers, and bulls. Although these groups are grazed together as one unit, their arrival is typically staggered. The sale of calves and culled cows represents the primary sources of ranch income earned in Nevada.

The permittee for this allotment is a grazing association based out of Idaho. Over the years different operators within the association have grazed the Barton Allotment. Each of these different operators used the permitted AUMs slightly differently as best fitted their operations. Beginning in 1990 the operator went from using the allotment season long to using it for a shorter period with a larger herd. This voluntary change has led to improving trends in resource conditions across most of the allotment, as well as attainment of the standards of rangeland health. (The habit standard was not met but this was attributed to wildfire and not livestock grazing.)

Direct and Indirect Effects

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No Action Alternative

Under either of the No Action Alternatives a 10 year grazing permit would be issued. The number of permitted AUMs and season of use would remain the same.

The current grazing management practices as described in the affected environment have been voluntarily implemented for many years, and have likely contributed to attainment of the Standards and Guidelines for Rangeland Health. These practices could continue, but the lack of any structured grazing system would not prevent future return to grazing practices that could inhibit the ability of the allotment to maintain the standards and guidelines for rangeland health. This alternative would give the permittee the most flexibility. Overall economic impact to Elko County would be unchanged from the current situation described in the affected environment.

No Action Alternative A- No changes to the terms and conditions of the grazing permit. This alternative would have no direct or indirect effect on livestock grazing, other than what is already occurring.

No Action Alternative B- Change the terms and conditions to replace advance billing with after the fact billing. After the fact billing defers payment of grazing fees until after the end of the grazing season. This eliminates the permittee paying for AUMs that may not be used. This typically equates to a cost savings for the operator. Under this alternative effects to the livestock operator would be positive, otherwise livestock grazing would be unchanged from what is already occurring.

Two Pasture Deferred Grazing Alternative

Under this alternative a ten year grazing permit would be issued. The current terms and conditions would be modified to reflect a change from advance billing to after the fact billing. A new fence would be constructed and a deferred grazing system would be implemented. This alternative would not include any changes to the number of permitted AUMs or overall season of use. The economic impacts of these changes would be similar to No Action Alternative B. After the fact billing would be beneficial to the permittee, but would have little other impact. The new fence and deferred grazing system would result in increased labor costs to the permittee in terms of fence maintenance and increased livestock herding. Any other economic impacts of this alternative should be minimal.

The Deferred Grazing Alternative would ensure some degree of growing season rest.

Cumulative Effects

Despite the economic importance of the farming and ranching industry to the local economies, the business of livestock grazing remains challenging. Rates of economic return on investment are usually low, usually averaging about two percent. Volatile cattle and energy input prices and ever increasing capital equipment costs hamper the viability of livestock operations. Increased mining activity driven by high mineral prices and expanding use of public and private lands for recreation also causes conflicts with the livestock industry. Trends in livestock operation

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demographics in Elko County show a general increase in the number of individual ranch operations, a decrease in the physical size of individual operations, and a gradual aging of the ranching population. These trends reflect the on-going break up of large commercial cattle operations into smaller hobby and/or lifestyle ranches and the lack of recruitment into the industry as children of operators leave the ranch for better opportunities elsewhere.

Range grazing of livestock is “proven to be the most environmentally benign and energy efficient of all land-based food production systems” and involves 30-80% less energy input than present production systems (Holecheck, 2007). Predictions are that future energy shortages may re-emphasize and promote the role of western rangelands, both private and public, to meet American food needs.

Livestock grazing would continue under the no action and deferred grazing alternatives. Either of these alternatives would promote the maintenance of a commercially viable livestock operation on the Barton Allotment and would continue the positive economic impacts to the Elko County economy.

3.6 Soil Resources

Existing Conditions and CESA Selected

The CESA for Soil Resources is the area where the livestock are confined to when grazing, the Barton Allotment. Soils in the allotment are aridisols and mollisols that vary in depth, texture, erosion potential, and other characteristics based upon several soil forming factors. Major soil mapping units are the Chayson-Igdell, Forvic-Igdell, and Coser-Forvic-Scalfar associations (USDA 2014). These soils have a mesic or frigid temperature regime and aridic soil moisture regime. Isolated patches of hydric soils are present near water resources. Topography within the project area consists of hill slopes and fan remnants. Surface soils are moderately fine to medium textured and more than 10 inches thick to the subsoil or underlying material. The water holding capacity is moderate to high. Runoff is slow to medium. The potential for sheet and rill erosion is slight to moderate depending on slope (USDA 2014). A biological soil crust is not present on soils within the allotment. This is likely due to naturally high percentage of gravel at the surface along with a vegetation density that inhibits crust formation.

Soils within the project area are currently impacted by a wide variety of natural and anthropogenic influences. Actions which affect soil quality include but are not limited to recreation, wildfire, climatic variability, grazing, and hoof action. These activities can result in a variety of impacts which vary in spatial and temporal scale and severity. Most existing impacts to soils are dispersed; however, there are some impacts from fencing, roads, livestock improvements, and livestock concentration areas which result in small scale and in some cases severe impacts to soils. These activities result in removal of vegetation, soil compaction, and other impacts to soil quality factors (USDA 2001). Short term impacts such as wildfire have not been observed to impact soil quality in the long term in the allotment. Continued use of long term facilities such as water developments and roads will continue to result in small scale impacts to soils which are not likely to recover without targeted restoration. The project area also receives long term low intensity impacts from livestock grazing, dispersed recreation, and

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weather variability. The area has been grazed historically by cattle likely resulting in some impacts to soil quality as described below. In addition, soils have likely been affected by environmental changes related to climate change (Karl et al. 2009).

Qualitative and quantitative assessment of soils within the subject area indicates that while there are some negative impacts to soils, these soils exhibit characteristics that are appropriate to soil type, climate, and landform. Monitoring found that sufficient vegetative cover exists on these allotments to stabilize soils and ensure proper infiltration. BLM specialists have observed that there are no signs of excessive erosion on the allotment and soils appear to be stable (Barton S&G, 2014).

Direct and Indirect Effects

No Action Alternative

No change in impacts to soils is expected other than what is already occurring and has been reported in the Standards and Guidelines under the No Action Alternative because no changes in grazing intensity and duration are proposed. Grazing and related activities are expected to occur at the same rate as they have been occurring on the allotment, and would continue to impact soil resources within the project area by affecting the soil's physical properties and through removal of vegetation (See Barton S&G 2014). Direct impacts include compaction, hoof shear and other physical impacts which reduce aggregate stability increasing the likelihood of erosion by wind and water (USDA 2001). Similar impacts occur indirectly as a result of vegetation removal. Through a decrease in vegetative cover, grazing can increase exposure of soils to erosion from rainfall impact. A decrease in vegetative vigor due to grazing stress and increased susceptibility to weed establishment can also increase the hazard of erosion. It is expected that continuation of these activities in the allotment would result in similar conditions as those described in the Affected Environment (Section 3.6.1) and (Barton S&G, 2014).

Two Pasture Deferred Grazing Alternative

Soil quality would likely experience some positive and some negative impacts from this alternative, but would be expected to improve as a whole because some of the allotment scale indirect impacts to soil quality would be reduced. As described in Section 3.8 vegetative communities would be expected to improve as a result of rest and rotation of pastures within the allotment. This improvement over the long-term would indirectly affect soil quality by increasing soil organic matter, and improving soil structure. The installation of a fence however, would result in some short and long term localized impacts to soil quality. Fence installation would result in temporary soil disturbance, and trails and roads which develop along the fence would reduce soil quality in the long term. Because these impacts are localized, they would not be expected to impact soil quality at a large scale, and the overall improvements to soil quality as a result of the alternative would likely outweigh the negative effects.

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Cumulative Effects

Past and present actions and natural conditions which affect soil quality in this area are described in Sections 3.2 and 3.6.1. There are no planned future actions which would impact soil quality; however, the predicted effects of climate change may result in some impacts to soils in the long term, should they come to fruition. The Alternatives, in addition to natural conditions, anthropogenic alterations, and past, present, and reasonably foreseeable future actions, are not expected to result in poor soil conditions within the CESA as a whole. As a result, there are no substantive cumulative impacts of concern for soil resources.

3.7 Special Status Species, Migratory Birds and Other Wildlife

Existing Conditions and CESA Selected

The allotment provides habitat for a diversity of wildlife species, including big game, game birds, meso-carnivores, small mammals, passerine birds, waterfowl, raptors, amphibians, reptiles, and invertebrates (See Appendix A for a list of all animal species that may occur within northeastern Nevada). The Standards and Guidelines Assessment (BLM 2014) documented that upland habitats were not meeting the Habitat Standard in the *Northeastern Great Basin Standards and Guidelines for Grazing Administration* (RAC, 1997), given the recent widespread effects of wildfire within the allotment. Current habitat conditions are primarily suited to those species that thrive in grass-dominated early seral states or use such habitats during some portion of their life cycle (e.g., foraging habitat).

3.7.1 Big Game Species

The allotment is located entirely within the Nevada Department of Wildlife Hunt Unit 076 and provides year-round habitat for elk (*Cervus elaphus*) and pronghorn antelope (*Antilocapra americana*), and is of limited use for mule deer (*Odocoileus hemionus*). There is no identified habitat for bighorn sheep (*Ovis canadensis*).

Hunt Unit 076 is surveyed for elk by the NDOW as a unit group with Hunt Units 77, 79 and 81 (NDOW 2013). In 2012 a record number (1,577) of elk were classified in this unit group, indicating a positive long-term outlook for this herd. Recent wildfires have benefitted elk by providing increased herbaceous forage, particularly perennial grasses. While the allotment lacks security or thermal cover in the form of woodlands or tall shrublands, the flush of perennial grasses and forbs following wildfire has been a net benefit to elk habitat. Elk found in the vicinity of the Barton Allotment may occasionally use habitat in the adjacent Game Management Unit 54 (GMU) in Idaho. While a reliable estimate of elk numbers in this GMU is not available, habitat in this and adjacent Idaho GMUs is currently capable of supporting substantially greater numbers of elk, particularly due to recent wildfires which have resulted in an increase in perennial grasses favored by elk (IDFG 2011a).

Hunt Unit 076 is surveyed for pronghorn as a unit group with Hunt Units 77, 79, 81 and 91 (NDOW 2013). The pronghorn population trend within this unit group is stable. Recent wildfires have benefitted pronghorn by providing increased perennial grasses and forbs. Pronghorn depend

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upon a healthy, diverse, and productive herbaceous forage component and also benefit from a healthy shrub component for forage and cover during winter. The shrub component in this unit group is recovering from fire and should continue to improve the year-round suitability of pronghorn habitat as it recovers. Pronghorn found in the vicinity of the Barton Allotment may also use habitat in the adjacent Game Management Unit 54 (GMU) in Idaho. In 1989, the Idaho Department of Fish and Game (IDFG) transplanted 29 pronghorn to the Shoshone Basin area of GMU 54. In addition, the Nevada Division of Wildlife released pronghorn east of Jackpot, Nevada, near Shoshone Basin in the late 1980s. This interstate population has increased and provides hunting opportunity in both Idaho and Nevada (IDFG 2011b).

Hunt Unit 076 is surveyed for mule deer as a unit group with Hunt Units 71-79 and 091 (NDOW 2013). In contrast to elk and pronghorn, recent wildfires in this unit group have been a detriment to mule deer through destruction of a significant portion of the sagebrush/bitterbrush shrub component, an important cover component and factor in the diet of mule deer, particularly during winter. Due to the combination of recent wildfire, drought and other factors it is likely that this unit group cannot support the high numbers of deer it has in recent decades (NDOW 2013). Because habitat within the allotment is classified by NDOW as being of limited use for mule deer, they are not further considered in this document.

Fences can restrict the movement of big game, causing changes in herd distribution, deaths from entanglement, and overall decrease in habitat quality (Kindschy et al. 1982). The Barton Allotment contains 17.6 miles of barbed wire fencing. The western boundary fence (5.4 miles) is not conducive to movement of big game, particularly antelope. It is a 4-strand fence with the top wire averaging 42-44 inches high and ≥ 10 inches between strands. The bottom wire is barbed rather than smooth and averages 10-12 inches above ground level rather than the more wildlife-friendly 16-18 inches.

3.7.2 Migratory Birds

Several species of migratory birds may use the allotment for breeding and brood-rearing, including those species associated with perennial grasslands, which are present in abundance after the recent wildfires, and those species associated with sagebrush-steppe.

In addition to protections for migratory birds that are considered Nevada BLM Sensitive Species, all migratory birds are offered certain protections under the Migratory Bird Treaty Act and Presidential Executive Order. On January 11, 2001, President Clinton signed the Migratory Bird Executive Order. This Order outlined the responsibilities of Federal agencies to protect migratory birds and directed executive departments and agencies to take certain actions to further implement the Migratory Bird Treaty Act. A list of migratory birds affected by the President's Order is contained in 50 CFR 10.13.

On April 12, 2010 the BLM entered into a Memorandum of Understanding (MOU) with the US Fish and Wildlife Service (USFWS) to promote the conservation of migratory birds. An example of a conservation measure in the MOU is to manage livestock to avoid impacts on nesting birds and to improve migratory bird habitat. Standard BLM grazing terms and conditions (e.g., maximum utilization levels, 1/4 mile minimum distance from mineral supplements to live water

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sources) are designed to minimize impacts to migratory birds and help promote their conservation.

3.7.3 Special Status Species

Special status species include species that are listed or proposed for listing as Threatened or Endangered (T&E) under the Endangered Species Act (ESA), species that are Candidates for listing under the ESA, species that are listed by the State of Nevada, and/or species that are on Nevada BLM’s list of Sensitive Species. No federally Proposed, Threatened, or Endangered species are known to exist on the Barton Allotment.

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

1. There is information that a species has recently undergone, is undergoing, or is predicted to undergo a downward trend such that the viability of the species or a distinct population segment of the species is at risk across all or a significant portion of the species range, or
2. The species depends on ecological refugia or specialized or unique habitats on BLM-administered lands, and there is evidence that such areas are threatened with alteration such that the continued viability of the species in that area would be at risk (BLM Manual 6840-Special Status Species Management).

Sensitive species known or with the potential to exist within the allotment are listed in Table 5, including the BLM criteria (factors 1 and 2 above) for Sensitive designation.

Table 5- Sensitive Species known or with the potential to use the Barton Allotment during at least some portion of their life cycle.

Scientific Name	Common Name	FWS Status	NV Range	BLM Criteria
Birds				
<i>Accipiter gentilis</i>	northern goshawk		Breeding	1
<i>Aquila chrysaetos</i>	golden eagle		YR	2
<i>Athene cunicularia hypugaea</i>	Western burrowing owl		YR	1
<i>Buteo regalis</i>	ferruginous hawk		YR	1,2
<i>Buteo swainsoni</i>	Swainson's hawk		all	1
<i>Centrocercus urophasianus</i>	greater sage-grouse	CS	YR	1
<i>Charadrius alexandrinus nivosus</i>	Western snowy plover	T	Breeding	1,2
<i>Falco peregrinus</i>	peregrine falcon	delisted 1999	YR	1,2
<i>Gymnorhinus cyanocephalus</i>	pinyon jay		YR	1
<i>Haliaeetus leucocephalus</i>	bald eagle	delisted 2009	YR	1
<i>Lanius ludovicianus</i>	loggerhead shrike		YR	1

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Scientific Name	Common Name	FWS Status	NV Range	BLM Criteria
<i>Leucosticte atrata</i>	black rosy-finch		YR	2
<i>Melanerpes lewis</i>	Lewis' woodpecker		YR	1
<i>Oreoscoptes montanus</i>	sage thrasher		S	1
<i>Spizella breweri</i>	Brewer's sparrow		YR	1
Mammals				
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat			
<i>Eptesicus fuscus</i>	big brown bat			
<i>Euderma maculatum</i>	spotted bat		YR	1,2
<i>Lasionycteris noctivagans</i>	silver-haired bat			
<i>Lasiurus cinereus</i>	hoary bat			
<i>Myotis californicus</i>	California myotis		YR	2
<i>Myotis ciliolabrum</i>	Western small-footed myotis			
<i>Myotis evotis</i>	long-eared myotis			
<i>Myotis lucifugus</i>	little brown myotis		YR	2
<i>Myotis thysanodes</i>	fringed myotis			
<i>Myotis yumanensis</i>	Yuma myotis		YR	2
<i>Pipistrellus hesperus</i>	Western pipistrelle			
<i>Tadarida brasiliensis</i>	Brazilian free-tailed bat			
<i>Antrozous pallidus</i>	pallid bat			
<i>Brachylagus idahoensis</i>	pygmy rabbit		YR	1
<i>Microdipodops megacephalus</i>	dark kangaroo mouse*			
<i>Sorex preblei</i>	Preble's shrew		YR	2
Insects				
<i>Euphilotes pallescens mattonii</i>	Mattoni's blue		YR	2
Fish				
<i>Oncorhynchus mykiss gairdnerii</i>	redband trout**		YR	2

*The dark kangaroo mouse (*Microdipodops megacephalus*) is restricted to stabilized dunes and other sandy soils in valley bottoms and alluvial fans dominated by big sagebrush (*Artemisia tridentata*), rabbitbrush (*Chrysothamnus* spp.), and horsebrush (*Tetradymia* spp.). It typically occurs in sandy habitats below the elevation where pinyon-juniper occur and above those habitats where greasewood and saltbush predominate (Hafner and Upham 2011). Although within the range of the dark kangaroo mouse (Hafner and Upham 2011), ecological sites (025XY017NV and 025XY027NV) within the allotment contain soils composed of loams and clay loams with little sand content, likely precluding the presence of the species.

**Redband trout (*Oncorhynchus mykiss gairdnerii*) potentially occurs in perennial streams with cold, clear water and clean gravel substrates within the Columbia River basin (Salmon Falls Creek watershed). Distribution maps provided by NDOW indicate the occurrence of redband trout in several tributary streams within the allotment. The indicated streams are ephemeral and are not suitable redband trout habitat. Furthermore, there are no sampling records of redband trout occurring in these streams. Redband trout are not likely to exist within the allotment.

3.7.4 Greater Sage-Grouse

Greater Sage-Grouse (*Centrocercus urophasianus*; sage-grouse), a Candidate for listing as Threatened or Endangered under the Endangered Species Act, is known to use habitat within the allotment. BLM Instruction Memorandum 2012-043 described two categories of sage-grouse habitat: 1) Preliminary Priority Habitat (PPH), and 2) Preliminary General Habitat (PGH).

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Preliminary Priority Habitat is comprised of areas that have been identified as having the highest conservation value to maintaining sustainable sage-grouse populations. These areas include breeding, late brood-rearing, and winter concentration areas and have been identified by the BLM in coordination with NDOW. Preliminary General Habitat is comprised of areas of occupied seasonal or year-round habitat outside of priority habitat, and these areas have also been delineated. The allotment is located entirely within PPH. It contains one inactive and one historic lek, with an additional 56 leks (18 historic, 27 inactive, 6 active, and 5 pending active status) within four miles of the allotment boundary (including Idaho), highlighting the importance of the area for sage-grouse, particularly prior to the recent wildfires.

The allotment lies within the NDOW's Gollaher Population Management Unit (PMU). Population Management Units areas are delineated based on aggregations of greater sage-grouse lek locations where the potential for genetic interchange (short-term) is high. PMUs were originally designated based on assumed population isolation due to topographic features but telemetry work has revealed that adjacent PMUs are not necessarily completely genetically isolated. Nevertheless, the PMU provides the fundamental unit of study for monitoring and conservation planning purposes.

As a sagebrush-obligate, landscape-scale species and current candidate for listing as a Threatened or Endangered Species, sage-grouse is an appropriate "umbrella" species representing the habitat needs of a suite of sagebrush-obligate and sagebrush-associated species. As an umbrella species, it is assumed that managing for habitat characteristics that benefit sage-grouse will also generally benefit other species that fall under the sage-grouse umbrella (Rowland et al. 2006). In the Barton Allotment, these species include, but are not limited to: sage thrasher (*Oreoscoptes montanus*), Brewer's sparrow (*Spizella breweri*), pygmy rabbit (*Brachylagus idahoensis*) (all BLM Sensitive Species), sagebrush sparrow (*Artemisiospiza nevadensis*) sagebrush vole (*Lemmiscus curtatus*), and northern sagebrush lizard (*Sceloporus graciosus graciosus*).

3.7.5 Raptors

The NDOW raptor nest database did not contain any records of nests within four miles of the allotment boundary. Due to the lack of trees and other nesting substrates within or near the allotment it is unlikely to be used for nesting by eagles, hawks, falcons, or tree-nesting owls.

Eagles

The Golden Eagle (*Aquila chrysaetos*) is a year-round resident in the vicinity of the Barton Allotment but no nesting habitat (e.g., trees or cliffs) occurs within the allotment. The Bald Eagle (*Haliaeetus leucocephalus*) has not been documented on the allotment but is likely a spring/fall migrant and may be an occasional winter visitor. Suitable Bald Eagle winter habitat is widely dispersed on uplands, irrigated lands and riparian areas throughout the Elko District. Recent data suggest Golden Eagle populations are generally stable throughout the western US and in the Great Basin Bird Conservation Region (Millsap et al. 2013), while Bald Eagle populations are increasing (Buehler 2000 and Sauer et al. 2014).

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Ferruginous and Swainson's hawks

These two congeneric species often occur sympatrically during the breeding season. In Nevada, ferruginous hawks (*Buteo regalis*) prefer open, rolling sagebrush near the pinyon-juniper interface (GBBO 2010). Their favored prey are rabbits (*Lepus* spp.), but they are also known to take other small rodents and occasionally birds and reptiles. The species has probably undergone recent population declines within Nevada (GBBO 2010).

The Swainson's hawk (*Buteo swainsoni*) is a summer resident in Nevada (Herron et al. 1985). Often associated with agricultural and riparian areas, it will also use sagebrush steppe, nesting in scattered junipers, cliffs or other trees (GBBO 2010). Favored prey on breeding territories includes rabbits and ground squirrels. Local populations have likely been in recent decline (GBBO 2010).

No known nest sites for either species occur within or near the allotment, but it may be used as foraging habitat particularly during spring and fall migration periods. Ferruginous hawks occasionally overwinter in northern Nevada, while Swainson's hawks leave the area entirely.

Western burrowing owl

Burrowing owls (*Athene cunicularia*) may occur in the area. Abandoned mammal burrows, such as those created by badgers (*Taxidea taxus*) and coyotes (*Canis latrans*), provide nesting habitat. In addition, this species requires low vegetation and suitable prey including a variety of arthropod, small mammalian and reptilian species. Burrowing owls may use disturbed or open sites with minimal vegetation for nesting and loafing, such as recently burned areas or areas near troughs, corrals, or livestock mineral licks where open terrain exists. This may be due to the lack of vegetation at these sites that allows increased visibility from the burrow entrance. While this species has undergone large historical declines in Nevada, recent trends are uncertain (GBBO 2010).

3.7.6 Other Sensitive bird species

Loggerhead shrike

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

Black rosy-finch

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

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conservation attention for this bird is focused on protecting communal winter roost sites (which are critical for survival) and winter foraging areas.

Winter telemetry studies in northeastern Nevada revealed that Black Rosy-Finches depend heavily upon the shelter offered by below-ground communal roost sites, including abandoned mine shafts, caves, and deep fissures in metamorphic rock outcrops. The flocks return to these roost sites every evening after foraging in sagebrush or montane shrubland habitat up to 10 kilometers [6 miles] away. Flocks may remain in the roosts for extended periods when the weather is inclement. Known roost sites were located at elevations ranging from 1,400 – 2,800 miles [4,600 – 9,200 feet] within a matrix of sagebrush, montane shrubland, and pinyon-juniper habitats, and were typically higher in elevation than their associated foraging sites. While not documented, it is possible that black rosy-finches use the allotment as foraging habitat during winter.

Pinyon Jay

The pinyon jay is found in pinyon-juniper woodland and less frequently in pine; in nonbreeding season, it also inhabits scrub oak and sagebrush (AOU 1983). A Great Basin Bird Observatory radio-telemetry study found that foraging pinyon jays appeared to favor transitional areas where pinyon-juniper woodland is interspersed with sagebrush (GBBO 2010). The species has undergone recent range wide population declines of 4.4-6.4% per year (GBBO 2010), and a recent Great Basin Bird Observatory analysis of bird population responses to projected effects of climate change indicates pinyon jay populations are projected to decline by a further 19 percent (GBBO 2012).

Other reasons for recent pinyon jay declines may be at least partly related to substantial increases in the acreage of closed-canopy mature (or senescent) woodland with a poor shrub understory, coupled with a corresponding loss of mixed-age woodland mosaics with openings and a complex shrubland edge. These landscape-scale changes are largely the result of altered fire regimes, although grazing pressure and invasive plants may be contributing factors.

There is no pinyon pine habitat within the allotment, but pinyon jays may wander widely in search of food resources during the nonbreeding season. Jays eat primarily pinyon seeds, but may forage on other seeds and arthropods found in sagebrush habitats. It is possible that pinyon jays use the allotment during such foraging forays.

The remaining sensitive bird species (northern goshawk, peregrine falcon, Lewis' woodpecker) may occasionally occur within the allotment during spring or fall migration periods, but based on preferred habitat characteristics their occurrence is considered to be incidental.

Bats

Fourteen species of bats are designated as sensitive within the Elko District. Many of these species are associated with specific habitats that are particularly important for roosting or foraging, including:

- Bridges and buildings
- Natural caves, mine shafts and adits
- Cliffs, crevice and talus slopes
- Desert wash foraging habitat
- Forest and woodland foraging habitat

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- Tree roosting habitat
- Water source foraging and watering habitat (Bradley et al. 2006)

Of these specific habitat types, the Barton allotment contains only water source foraging and watering habitat. At best, the allotment serves as foraging habitat for bats and provides opportunities for watering when catchment ponds contain water and livestock watering facilities are in operation. No systematic surveys for bats have been conducted within or near the allotment, and thus not all bat species listed in Table 5 necessarily forage within the allotment.

Preble's Shrew

Likely habitat associations for Preble's shrew (*Sorex preblei*) collected in northeastern Nevada were described as "ephemeral and perennial streams dominated by shrubs, primarily below 2,500 m [8,202 feet] in elevation" (Ports and George 1990). At Sheep Creek, approximately 55 kilometers [34 miles] north of Elko, Ports and George (1990) collected 12 specimens "in a seasonally wet, sagebrush-dominated community." Little else is known about the ecology and distribution of Preble's shrew in Nevada or its specific habitat needs, although its diet is likely similar to that of other shrews (insects and other small invertebrates; NatureServe 2008). Given the brief description of habitat associations of Preble's shrews in northeastern Nevada, it is reasonable to expect that the species could occur within the allotment.

Insects

There are no records for Mattoni's blue (*Euphilotes pallescens mattonii*) within the Salmon Falls HUC8 watershed. The species is thought to be dependent upon slender buckwheat (*Eriogonum microthecum laxiflorum*) as a host plant, which is fairly widespread and grows in mountain habitats from about 1,500-3,200 meters [5,000-10,500 feet]. Mattoni's blue is known in Nevada from the Pequop Range, Charleston Reservoir and the west fork of Beaver Creek (Shields 1975), although because its host plant is widespread it may be more common than is currently known. Slender buckwheat may occur within the allotment, although it would have been severely affected by the recent wildfires. Nevertheless, it is possible that Mattoni's blue could be present in the allotment if and when slender buckwheat recovers from the burns.

Plants

A data request was sent to the Nevada Natural Heritage Program to query its database for all documented Special Status plant and animal species within 10 kilometers [6.2 miles] of the Barton Allotment. No BLM Sensitive plant species were reported. Based on distribution data in the NatureServe database (http://explorer.natureserve.org/servlet/NatureServe?post_processes=PostReset&loadTemplate=nameSearchSpecies.wmt&Type=Reset), only Elko rockcress and Lewis buckwheat have been documented within the Salmon Falls HUC8 watershed within which the allotment is located. Based on habitat descriptions for these two species, neither is likely to occur within the allotment.

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Direct and Indirect Effects

Table 6- Comparison of Direct and Indirect Effects of Alternatives on Wildlife Resources.

Resource	Effects of Alternatives	
	No Action	Deferred Grazing with two pastures
Big game including elk and antelope	<p>The Barton Allotment Draft Northeastern Great Basin Standards and Guidelines for Rangeland Health Assessment (BLM 2014) classified the habitat standard as “not achieved.” However, the reason for the finding was not due to current livestock management, but recent widespread wildfire that significantly altered the native vegetation community for many wildlife species. Thus, the area is currently in an early, herbaceous-dominated successional state and also contains scattered patches of cheatgrass, an undesired annual species that lessens the value of wildlife habitat. The No Action Alternative would renew the current permit which authorizes livestock grazing during the growing season (beginning May 1) each year. However, average actual turnout dates since reopening after the 2007 fire have generally been the first week of June. This has resulted in acceptable use levels throughout most of the allotment, with the exception of mesic areas in perennial and ephemerally wet drainages on private land, and at water sources and mineral sites. If turnout were to occur on May 1 every year, use on these areas would be more prolonged, as cattle tend to concentrate in mesic drainage bottoms first.</p> <p>The number of allotted AUMs for livestock would remain at a level that has been shown through range monitoring data to generally be commensurate with use by elk and antelope throughout, with the exception of the heavy use areas noted above. Artificial livestock watering sources such as troughs and dirt tanks provide a direct benefit to big game by providing additional sources of water on the landscape. An entanglement hazard is posed by fences required to contain livestock, although this hazard can be lessened by modification of fences to BLM-approved standards for wildlife.</p>	<p>Properly managed duration, timing and intensity of livestock grazing are basic tenets in ensuring proper grazing management. Grazing the same plant at the same time and intensity every year generally has negative consequences to vegetation in sagebrush-steppe ecosystems. This alternative would provide regular rest from livestock grazing during the growing season, a key factor in ensuring the health, vigor and long-term persistence of native perennial grasses and forbs in these ecosystems.</p> <p>The benefit of a two pasture system would be realized through better timing and distribution of livestock grazing, ensuring that most native grasses and forbs reach seed maturity in each pasture every other year, resulting in improved carbohydrate reserves, plant persistence, and ecosystem resilience compared to the No Action Alternative. This would generally provide habitat benefits for big game and other wildlife.</p> <p>Creation of two pastures would require construction of 2.8 miles of 3-strand barbed wire fence. This would present additional entanglement hazards and some restriction of movement for elk and antelope. This effect would be ameliorated by construction to BLM wildlife-friendly standards, including a smooth bottom wire at least 16 inches above ground level, and total fence height no greater than 40 inches. This would allow both elk and antelope to navigate the fence fairly easily, but there would still be an additional minimal impact compared to the No Action Alternative. In addition, a benefit compared to the No Action Alternative, is that resource competition for forage and water would be delayed until July 16 (76 days) in one pasture every year.</p>

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Resource	No Action	Deferred Grazing with two pastures
Migratory birds	<p>Livestock turnout on May 1 would coincide with the peak of nesting season (generally April 1 - July 30) for many migratory bird species. Presence of livestock during this time would result in increased physical disturbance to breeding and nesting migratory birds, most of which are particularly sensitive while incubating eggs. Physical disturbance may result in nest abandonment and failure of individual nests. Indirect effects include removal of up to 50% of the herbaceous vegetation component, which is important as nest and/or brood concealment to many species of migratory birds.</p> <p>Riparian and wetland areas comprise less than one percent of the total land area in the western US, yet are used as by wildlife more than any other habitat type (Thomas et al. 1979 in Rich 2002). Birds are particularly dependent upon riparian habitats; over 60% of Neotropical migrants in the western US use riparian either as breeding habitat or stopover sites during migration, far higher than any other habitat type (Krueper 1993 in Rich 2002). Livestock tend to concentrate in riparian or wet areas, thus use would be heaviest in these areas upon turnout and use would occur throughout the growing season every year.</p>	<p>Creation of two pastures would allow deferment of grazing until July 16 each year in one pasture. This would remove the potential effect of physical disturbance to breeding activities in one pasture every year for most breeding migratory birds. In addition, no utilization of vegetation would occur in one pasture every year until most breeding activities have concluded.</p> <p>Over the long-term, regular growing season rest would be likely to ensure the health and persistence of a vigorous herbaceous understory that is important to most species of migratory birds. This benefit would be particularly beneficial for riparian habitats which are disproportionately important to migratory birds.</p>
Special Status Species		
<i>Greater Sage-Grouse</i>	<p>The No Action Alternative allows livestock to begin grazing on May 1 every year, which coincides with the latter portion of the sage-grouse breeding period (generally March 1-May 15). Nesting and incubation may continue through June. Livestock may cause incubating hens to flush from their nests when they approach too closely, potentially leading to nest abandonment (Coates et al. 2008). They may also inadvertently trample nests while grazing, although both of these possibilities are expected to result in minor impacts to individual hens. Livestock grazing would also directly reduce the amount of residual herbaceous cover important to nesting and brooding hens, potentially exposing them higher risks of predation and nest depredation. Ensuring that maximum utilization levels within the Terms and Condition of the permit are not exceeded will help to mitigate any impacts. There may also be a benefit to broods from moderate grazing use in mesic areas (Evans 1986).</p> <p>Continued authorization of livestock grazing on the allotment would require that existing barbed-wire fences remain in place. Fences may pose a significant collision risk to sage-grouse, particularly when located near leks and on flat or rolling terrain (Stevens et al. 2012). Sage-grouse fly to and from leks during low-light conditions at dawn, making them vulnerable to fence collisions, especially when flying low over relatively flat terrain. The area within and surrounding the allotment contained up to 56 leks prior to recent wildfires and also contains gentle topography of the type that can present a collision hazard.</p>	<p>Creation of two pastures would require construction of 2.8 miles of 3-strand barbed wire fence. This would present an additional collision hazard to sage-grouse. This impact would be ameliorated by marking the fence with flight diverters (BLM Instruction Memorandum 2012-043).</p> <p>The benefit of a two pasture system would be realized through better timing and distribution of livestock grazing, ensuring that most native grasses and forbs reach seed maturity in each pasture every other year. This would be more likely than the No Action Alternative to ensure the health and persistence of a vigorous herbaceous understory that is especially important for nesting and early brood-rearing habitat.</p>

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Resource	No Action	Deferred Grazing with two pastures
<i>Raptors including hawks and eagles</i>	No direct effects to raptors are expected. Indirectly, the No Action Alternative has the potential to affect the primary prey species of raptors (lagomorphs and small mammals). This would occur through herbivory of the herbaceous vegetative component upon which they depend for food and shelter. Many small mammals are granivorous (seed-eaters) and they could be impacted by a reduction in the available seed crop since livestock would be permitted throughout the allotment both before and after the seed ripe period for herbaceous plants. The magnitude of this impact could be mitigated through maximum utilization levels incorporated into standard Terms and Conditions of the permit. These are designed to ensure equitable allocation of vegetative resources for all herbivores, and a residual seed crop sufficient to sustain perennial grasses and forbs over time, but there would still be a negative impact.	No direct effects to raptors are expected. Creation of two pastures with grazing deferment until July 16 in one pasture each year would be an indirect benefit compared to the No Action Alternative. Deferment until after seed maturity would ensure a greater amount of hiding cover for all prey species and forage for granivorous prey species.
<i>Western Burrowing Owl</i>	Direct effects to burrowing owls include potential benefits derived from livestock-disturbed areas such as those around water sources and mineral supplement sites (Haug et al. 1993). Indirect effects include impacts to prey species similar to those described for raptors above.	Impacts would be similar to those described for raptors above.
<i>Black Rosy-Finch</i>	This species is strictly a seed-eater during winter (Johnson 2002), which is the only time it would be expected to use habitat within the allotment. Compared to the Deferred Grazing Alternative, many plants would not reach the seed-ripe or seed dissemination growth stage, resulting in less seeds available to black rosy-finches as forage. No other effects are anticipated.	Compared to the No Action Alternative, there would be an increased proportion of herbaceous plants that reach seed ripe each year. This would result in proportionately more seeds being available as forage to black rosy-finches during winter.
<i>Pinyon Jay</i>	Being primarily a granivore, effects would be similar to those described above for black rosy-finch.	Similar to those described above for black rosy-finch.
<i>Loggerhead Shrike</i>	Potential direct effects include physical disturbance of nest sites, which are usually located in shrubs. In a worst-case scenario, such disturbance could result in nest abandonment and no reproductive output for that specific nest. However, this would not be expected to result in population-level effects. Indirect effects could occur for the primary prey species of the shrike. These would be similar to those described above for raptors.	Effects would be similar to those described above for raptors. In addition, construction of 2.8 miles of new fence would provide additional perching opportunities for shrikes while hunting.
<i>Bats</i>	As insectivores, bats are dependent upon diverse and vigorous plant communities to provide suitable amounts and diversity of insects as forage. Overall abundance of vegetation-associated insect communities has been shown to be lower in the presence of livestock grazing (Debano 2006). Compared to the Deferred Grazing Alternative, the plant community would retain less plant biomass and less structural diversity, potentially resulting in decreased insect biomass available to bats.	Plant communities of greater diversity and structural complexity generally tend to support greater diversity and abundance of insects (Wenninger and Inouye 2008). Deferring grazing until seed maturity every year in one pasture is designed to maintain or potentially improve the vigor of the plant community (likely including diversity and structural complexity) over the long-term compared to the No Action Alternative. In turn, this would likely increase the diversity and abundance of insects for bats compared to the No Action Alternative.

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Resource	No Action	Deferred Grazing with two pastures
<i>Preble's shrew</i>	In contrast to many other small mammals which are granivorous, Preble's shrew feeds on insects, arthropods, mollusks and worms. Therefore, it would not be directly affected by livestock utilization of herbaceous plant seeds resulting from both alternatives. However, many of its potential food items are dependent upon a healthy shrub steppe ecosystem, especially the herbaceous component. Compared to the Deferred Grazing Alternative, this alternative is the less likely to maintain the same degree of health and vigor of the herbaceous plant community and the invertebrate food sources upon which the Preble's shrew depends.	Plant communities of greater diversity and structural complexity generally tend to support greater diversity and abundance of insects (Wenninger and Inouye 2008). Deferring grazing until seed maturity every year in one pasture is designed to maintain or potentially improve the vigor of the plant community (likely including diversity and structural complexity) over the long-term compared to the No Action Alternative. In turn, this would likely increase the diversity and abundance of insects available to Preble's shrew compared to the No Action Alternative.
<i>Mattoni's blue</i>	Slender buckwheat (<i>Eriogonum microthecum</i>), the host plant for Mattoni's blue, is a perennial forb with no fire resistance, medium fire tolerance, the ability to re-sprout following fire, and low palatability for grazing and browsing animals (http://plants.usda.gov/java/charProfile?symbol=ERMI4). Such species often decrease in abundance immediately following wildfire and then re-sprout from root masses that survived fire or recolonize from seed in unburned islands. The majority of the allotment has burned at least twice since 2000, likely resulting in an immediate and widespread decrease in slender buckwheat followed by gradual regrowth and recolonization. Given the dependence of Mattoni's blue on slender buckwheat, its distribution and abundance within the allotment has likely mirrored that of slender buckwheat and will continue to do so as post-fire succession occurs within the vegetation community. This alternative would not be expected to affect the status of slender buckwheat or Mattoni's blue as it is not palatable to livestock.	Similar to the No Action Alternative, this alternative would not be expected to affect the status of slender buckwheat, and thus Mattoni's blue, as it is not palatable to livestock.

Cumulative Effects

The BLM supports the process established by NDOW when analyzing big game use of the landscape. The CESA boundaries used in this analysis were delineated in coordination with NDOW and they consist of all or portions of NDOW and IDFG management units.

Past, present, and reasonably foreseeable future actions (PPRFFAs) include:

- Livestock grazing
- Anthropogenically-induced wildfire
- Lands and Realty actions
- Mineral exploration
- Dispersed recreation activities
- Hunting

NEPA Handbook H-1790-1 states “if the proposed action and alternatives would have no direct or indirect effects on a resource, you do not need a cumulative effects analysis on that resource.” The wildlife resources for which there could be cumulative effects are discussed below.

Pronghorn Antelope

The pronghorn CESA was comprised of portions of NDOW Hunt Units 076 and 081 and the Shoshone Basin portion of IDFG GMU 54, displayed in Appendix B-Figure 3. The pronghorn

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CESA encompassed 187,760 acres. A description of PPRFFAs within the pronghorn CESA is presented in Table 7.

Table 7- Quantitative description of Past, Present and Reasonably Foreseeable Future Actions on within the Pronghorn Cumulative Effects Study Area (CESA).

Action	Past	Present	Future	Total	Percent of CESA
Wildfire (public and private acres)	88,938 (burned at least once in past 20 years)	Not applicable	Not applicable	88,938	47
Lands and Realty (public acres)	576	0	7	583	0.3
Minerals (public acres)	0	0	0	0	0
Livestock grazing (acres within BLM Allotments)	166,754	166,754	166,754	166,754	

Wildfire

Within the pronghorn CESA, 88,938 acres (47% of CESA) have burned at least once during the past 20 years. Wildfires in Nevada have increased in size during this timeframe, and may continue to increase in the next 20 years due to climate change, increased fuel loading related to historic and current wildfire suppression, increased recreational demands on public lands, and other factors. The large areal extent of wildfires over 20 years has significantly affected pronghorn habitat by increasing the amount of perennial grasses and forbs. The effect has been a net benefit to pronghorn. The impact of both alternatives, when added to those from wildfire, would not present additional substantive cumulative impacts to pronghorn antelope.

Lands and Realty

The 583 acres (0.3% of CESA) in Table 7 include actions such as authorized Rights Of Way and land exchanges that could result in different management of the exchanged parcel. Possible impacts from both alternatives would not present substantive cumulative effects in addition to those already present or expected from lands and realty actions.

Mineral exploration

No mineral exploration activities were found in a query of the Legacy Host 2000 System (LR2000) database (date of access: 10 April, 2014).

Livestock Grazing

All or portions of 30 BLM grazing allotments occur within the pronghorn CESA, totaling 166,754 acres. Additional livestock grazing may occur on private lands within the CESA, but no reliable data exists to quantify level of livestock use on these lands. Livestock grazing is expected to continue on federally administered grazing allotments within the CESA, at approximately the same intensity as over the past 20 years. Cumulative impacts from grazing within the CESA would be in addition to resource competition that would be present under the No Action and Deferred Grazing Alternatives. However, Standard Terms and Conditions present within BLM grazing permits are intended to limit livestock use of resources to a level commensurate with use by pronghorn. Given these constraints, possible impacts from both

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alternatives would not present substantive cumulative effects in addition to what already occurs from livestock grazing in the CESA.

Recreation

Off Highway Vehicle use, driving for pleasure, hunting, antler collecting, hiking, camping and wildlife viewing are the primary recreational uses in the CESA. The Elko County population grew by 7.3% between 2010 and 2013 (<http://quickfacts.census.gov/qfd/states/32/32007.html>). If the trend continues, recreational activities are likely to increase concomitantly over the term (10 years) of the permit, potentially disturbing pronghorn by causing them to avoid areas around roads (deVos and Miller 2005) or otherwise stressing them through increased human activity on the landscape. When added to the impacts of current and expected increases in recreational activity within the pronghorn CESA, neither of the alternatives would be expected to result in additional substantive cumulative impacts.

Hunting

Pronghorn hunting occurs throughout the CESA. Estimates for pronghorn populations within the CESA were not possible due to grouping of Hunt Units for reporting purposes and the fact that the CESA does not conform to Hunt Unit boundaries. However, regarding pronghorn in the Unit Group, NDOW states:

This herd has been utilizing the northern portions of Unit 076 and Unit 081 more than in previous years. This is a result of the recovering burns, higher precipitation and thus better forage quality. These burned areas will likely facilitate increases in the pronghorn herd in coming years (NDOW 2013).

The positive outlook for pronghorn within the area indicates that pronghorn hunting within the CESA will likely continue to be a major recreational use of the resource and the major tool used to manage the population. The impact of both alternatives on pronghorn would be negligible relative to impacts from harvest and ancillary disturbance. There would be no additional substantive cumulative effects from either of the alternatives.

Elk

The elk CESA was comprised of NDOW Hunt Unit 076, displayed in Appendix B-Figure 3. The majority of elk within this Hunt Unit generally use habitats within the unit boundary throughout the year (Kari Huebner, NDOW, personal communication). The elk CESA encompassed 447,227 acres.

Table 8- Quantitative description of Past, Present and Reasonably Foreseeable Future Actions within the Elk Cumulative Effects Study Area (CESA).

Action	Past	Present	Future (pending)	Total	Percent of CESA
Wildfire (public and private acres)	109,017 (burned at least once in past 20 years)	Not applicable	Not applicable	109,017	24.4

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Action	Past	Present	Future (pending)	Total	Percent of CESA
Lands and Realty (public acres)	23,111	0	3,431	26,542	5.9
Minerals (public acres)	36.2	50	0	86.2	0.02
Livestock grazing (public acres)	444,191	444,191	444,191	444,191	99.3

Wildfire

Within the elk CESA, 109,017 acres (24% of CESA) have burned at least once during the past 20 years. Wildfires in Nevada have increased in size during this timeframe, and may continue to increase in the next 20 years due to climate change, increased fuel loading related to historic and current wildfire suppression, increased recreational demands on public lands, and other factors. The effect of these wildfires has been to increase the amount of perennial shrubs and forbs available to elk, which has been a net benefit. The impact of both alternatives, when added to those from wildfire, would not present additional substantive cumulative impacts to elk.

Lands and Realty

The 26,542 acres (5.9% of CESA) in Table 8 include actions such as authorized Rights Of Way for energy transmission lines, fiber optic and other communication lines, roads and railroads. Possible impacts from both alternatives would not present substantive cumulative effects in addition to those already present or expected from lands and realty actions.

Mineral exploration

Nine locatable (“3809 Mining”) notices and a single plan of operations were correlated with surface disturbance within the CESA. The plan has been closed and a total of 9 acres were reclaimed. With regard to the nine notices, disturbance on eight has been reclaimed for a total of 23.15 acres; the ninth notice expired in 1999 with 4 acres of disturbance unreclaimed. A single 50-acre dedicated community borrow pit (travertine, decorative stone) is located within the CESA. Use has been minimal, the last sale made in 2008. Based on historical activity, it would appear there is little likelihood of any more than minimal disturbance for the foreseeable future. Possible impacts from both alternatives would not present substantive cumulative effects in addition to those already present or expected from mineral exploration.

Livestock Grazing

All or portions of eight BLM grazing allotments occur within the Elk CESA, totaling 444,191 acres. A portion of these acres may include livestock grazing on private lands, but no reliable data exist to quantify level of livestock use on these lands. Livestock grazing is expected to continue on federally administered grazing allotments within the CESA, at approximately the same intensity as over the past 20 years. Cumulative impacts from grazing within the CESA would be in addition to resource competition that would be present under the No Action and Deferred Grazing Alternatives. However, given the scale of livestock grazing within the CESA possible impacts from both alternatives would not present additional substantive cumulative effects to elk over what already occurs.

Recreation

Off Highway Vehicle use, driving for pleasure, hunting, antler collecting, hiking, camping and wildlife viewing are primary recreational uses in the CESA. The Elko County population grew by 7.3% between 2010 and 2013 (<http://quickfacts.census.gov/qfd/states/32/32007.html>). If the

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trend continues, recreational activities are likely to increase concomitantly over the term of the permit (10 years), potentially disturbing elk by causing them to avoid areas around roads (Rost and Bailey 1979, Sawyer et al. 2007) or otherwise stressing them through increased human activity on the landscape. When added to the impacts of current and expected increases in recreational activity within the elk CESA, neither of the alternatives would be expected to result in additional substantive cumulative impacts.

Hunting

Elk hunting occurs throughout the CESA. An estimate for the elk population within the CESA was not possible due to grouping of Hunt Units for reporting purposes. However, the positive outlook for elk within the area indicates that elk hunting within the CESA will continue to be a major use of the resource and the primary tool used to manage the population. The impact of all three alternatives on elk would be negligible relative to impacts from harvest and ancillary disturbance. There would be no additional substantive cumulative effect from either alternative.

Special Status Species

The CESA for Special Status Species was based on known movements of sage-grouse in the area of the Barton Allotment. As a landscape-scale indicator species, the CESA for sage-grouse is appropriate to use for other Special Status Species. Sage-grouse management units (PMUs in Nevada and Sage-Grouse Planning Areas in Idaho) and local knowledge of particular use areas within those units (including telemetry data) were used to delineate the CESA. Although the Barton Allotment lies wholly within Nevada and the Gollaher PMU, some of the sage-grouse in this area have been documented to use the adjacent Shoshone Basin Planning Area in Idaho (Kari Huebner, NDOW, personal communication). Portions of these two sage-grouse management units comprised in the Special Status Species CESA. This CESA is displayed in Appendix B-Figure 4 and encompassed 212,623 acres.

Table 9- Quantitative description of Past, Present and Reasonably Foreseeable Future Actions within the Special Status Species Cumulative Effects Study Area (CESA).

Action	Past	Present	Future	Total	Percent of CESA
Wildfire (public and private acres)	95,855 (burned at least once in past 20 years)	Not applicable	Not applicable	95,855	45
Lands and Realty (public acres)	1,958	0	25	1,983	0.9
Minerals (public acres)	0	0	0	0	0
Livestock grazing (public acres)	191,640	191,640	191,640	191,640	

Wildfire

Within the Special Status Species CESA, 98,855 acres (45% of CESA) have burned at least once during the past 20 years. Wildfires in Nevada have increased in size during this timeframe, and may continue to increase in the next 20 years due to climate change, increased fuel loading related to historic and current wildfire suppression, increased recreational demands on public lands, and other factors.

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The effect of these wildfires on sage-grouse has been to significantly decrease the amount of mature sagebrush habitat, a negative impact to the species that has resulted in a significant number of leks becoming inactive in burned areas. Other sagebrush obligate or sagebrush-associated species have also been negatively affected, while those that benefit from increased perennial grasses have been positively affected. When added to the widespread effects of wildfire, impacts from both alternatives would not present additional substantive cumulative impacts to sage-grouse or other Special Status Species.

Lands and Realty

The 1,983 acres (0.9% of CESA) in Table 9 include actions such as authorized Rights Of Way and land exchanges that could result in different management of the exchanged parcel. Possible impacts from both alternatives would not present substantive cumulative effects in addition to those already present or expected from lands and realty actions.

Mineral exploration

No mineral exploration activities were found within the CESA in a query of the Legacy Host 2000 System (LR2000) database (date of access: 10 April, 2014).

Livestock grazing

All or portions of 30 BLM grazing allotments occur within the Special Status Species CESA. Livestock grazing is expected to continue on federally administered grazing allotments within the CESA, at approximately the same intensity as over the past 20 years. Cumulative impacts from grazing within the CESA would be in addition to resource competition that would be present under the No Action and Deferred Grazing Alternatives. However, Standard Terms and Conditions present within BLM grazing permits are intended to limit livestock use of resources to a level commensurate with use by wildlife, including sage-grouse and other Special Status Species. Possible impacts from both alternatives would not present additional substantive cumulative effects to Special Status Species over what already occurs.

Recreation

Off Highway Vehicle use, driving for pleasure, hunting, antler collecting, hiking, camping and wildlife viewing are the primary recreational uses in the CESA. The Elko County population grew by 7.3% between 2010 and 2013 (<http://quickfacts.census.gov/qfd/states/32/32007.html>). If the trend continues, recreational activities are likely to increase concomitantly over the term (10 years) of the permit, potentially causing increased disturbance at sage-grouse leks, in other seasonal habitats or otherwise stressing them through increased human activity on the landscape. Other Special Status Species are subject to the same potential recreation-related disturbances. However, when added to the impacts of current and expected increases in recreational activity within the CESA, neither of the alternatives would be expected to result in additional substantive cumulative impacts to sage-grouse or other Special Status Species.

Hunting

Hunting occurs throughout the CESA beginning in late summer. In general, hunting may disturb wildlife, including Special Status Species, through increased human presence on the landscape. This may result in changes in behavior and potentially reduced survival and/or productivity,

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depending on the species. Some scavenger species may benefit from the entrails left after game animals are harvested or carcasses of wounded animals that die and are not recovered.

The direct effect of hunting on sage-grouse populations is equivocal; there is evidence that harvest mortality may be either compensatory (does not reduce the subsequent spring breeding population below what it would have been due to natural mortality) or additive (reduces the breeding population the subsequent spring) (Reese and Connelly 2011). Partial compensation or partial additivity may also occur. Connelly et al. (2000) suggested that a harvest rate $\leq 10\%$ of the fall population is not additive. Reese and Connelly (2011) suggested that harvest equal to 5-10% of the fall population may be appropriate, although adequately estimating fall population size is often problematic. Although an appropriate harvest rate has not been determined, Reese and Connelly (2011) suggested 5% of the breeding season population would ensure that harvest impacts are not additive.

Maximum sage-grouse harvest in Nevada from 2004-2011 was estimated at a maximum of 6.1% of the fall population in any one year (2009) (S. Espinosa, NDOW, personal communication, 4/24/2014). Average harvest was 4.1% (range: 2.0-6.1%) over that time span. Given these conservative harvest estimates, NDOW does not believe that harvest mortality is additive. Thus, the effects of both alternatives, when added to the effects of hunting, would not be expected to result in additional population-level, cumulative impacts to sage-grouse. Likewise, the effects of both alternatives, when added to the potential ancillary disturbance effects of hunting discussed above, would not be expected to result in additional population-level effects to other Special Status Species.

Other wildlife including migratory birds

Many wildlife populations leave the project area entirely during a portion of the year, such as migratory birds. Other species may use the project area at any time during the year (e.g., Golden Eagle). This presents a challenge when trying to describe the CESA for other species, as there could be different delineations depending on the species. Therefore, it is often useful to discuss a CESA in terms of watershed boundaries, which tend to encompass local populations of many different wildlife species, whether they are wholly or partially migratory, or resident. Watershed boundaries often follow the tops of mountain ranges or other topographical features when present, which often act as natural barriers for movement of many wildlife species.

Hydrologic units can be defined along a gradient of scales, ranging from entire river basins within a region, such as the entire Great Basin (Level 1), down to the smallest scale such as a 10-40,000 acre sub-watershed (Level 12). The Hydrologic Unit Code (HUC) 10 watershed, a smaller-scale hydrologic unit size, was used to describe the CESA for migratory birds and the remainder of wildlife species. The Migratory Bird/Other Wildlife CESA was comprised of the Shoshone Creek Hydrologic Unit 10 Watershed (Appendix B, Figure 4), encompassing 80,240 acres.

Table 10- Quantitative description of Past, Present and Reasonably Foreseeable Future Actions within the Other Wildlife Cumulative Effects Study Area (CESA).

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Action	Past	Present	Future	Total	Percent of CESA
Wildfire (public and private acres)	52,545 (burned at least once in past 20 years)	Not applicable	Not applicable	52,545	65
Lands and Realty (public acres)	1,152	0	0	1,152	1.4
Minerals (public acres)	0	0	0	0	0
Livestock grazing (public acres)	78,023	78,023	78,023	78,023	97.2

Wildfire

Within the Migratory Birds/Other Wildlife CESA, 52,545 acres (65% of CESA) have burned at least once during the past 20 years. Wildfires in Nevada have increased in size during this timeframe, and may continue to increase in the next 20 years due to climate change, increased fuel loading related to historic and current wildfire suppression, increased recreational demands on public lands, and other factors.

The effect of these wildfires on migratory birds and other wildlife has been to significantly decrease the amount of mature sagebrush habitat and increase perennial grasses and forbs. This has resulted in negative, positive, or neutral effects, depending on the species. However, when added to the effects from wildfire, impacts from both alternatives would not present additional cumulative impacts to migratory birds and other wildlife.

Lands and Realty

The 1,152 acres (1.4% of CESA) in Table 10 include actions such as authorized Rights Of Way and land exchanges that could result in different management of the exchanged parcels. Possible impacts from both alternatives would not present substantive cumulative effects in addition to those already present or expected from lands and realty actions.

Mineral exploration

No mineral exploration activities were found within the CESA in a query of the Legacy Host 2000 System (LR2000) database (date of access: 10 April, 2014).

Livestock grazing

All or portions of 14 BLM grazing allotments occur within the Special Status Species CESA. Livestock grazing is expected to continue on federally administered grazing allotments within the CESA, at approximately the same intensity as the past 20 years. Cumulative impacts from grazing within the CESA would be in addition to resource competition that would be present under both alternatives. However, Standard Terms and Conditions present within BLM grazing permits are intended to limit livestock use of resources to a level commensurate with use by wildlife, including sage-grouse and other Special Status Species. Possible impacts from both alternatives would not present additional substantive cumulative effects to migratory birds and other wildlife populations.

Recreation

As discussed for the other identified CESAs, when added to the impacts of current and expected increases in recreational activity within the migratory birds/other wildlife CESA, neither of the

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alternatives would be expected to result in additional substantive cumulative impacts to sage-grouse or other Special Status Species.

Hunting

Hunting occurs throughout the CESA beginning in late summer after migratory birds and most other wildlife species have concluded breeding. In general, hunting may disturb migratory birds and other wildlife species through increased human presence on the landscape, resulting in changes in behavior and potentially in reduced survival and/or productivity if disturbance is severe or prolonged. Some scavenger species may benefit from entrails left after game animals are harvested or carcasses of wounded animals that die and are not recovered.

Because hunting seasons occur primarily after migratory birds and most other wildlife species have completed breeding activities, the potential ancillary disturbance from hunting activities are not likely to affect population parameters such as productivity. Neither of the alternatives is expected to result in additional substantive cumulative impacts to migratory birds or other wildlife.

3.8 Vegetation

Existing Conditions and CESA Selected

The CESA for vegetation is the area within the allotment boundaries, because this vegetation has the potential to be impacted by livestock grazing.

Vegetation present in any area is a function of climate, soils, and disturbance. The limitations posed by the combination of these three factors dictate the plant communities present. Interrelations among these three factors can also dictate the plant communities present. The potential of each site can and does change through time depending on changes in the controlling factors. Traditional plant ecology held that each combination of these factors supports one “climax” plant community. However, current range science holds that a site may support multiple stable states, with disturbances and other factors controlling which state a site is in and how and when the community transitions from one state to the next. Plant communities in the Great Basin tend to remain static until a change in any one of the controlling factors or introduction of a new factor, such as a new plant species, can truncate this process and change the potential of a site, unless intensive management is applied.

The plant communities within the Great Basin have responded in spatial distribution and relative abundance by species in response to climatic changes, often dramatically. In recent history (10,000 years), most of the Great Basin big sagebrush range types supported vegetation communities of approximately 75% grass and 25% shrubs, with a minor but important forb component. Fire return intervals of between 20 and 100 years maintained this sage to grass balance.

A number of factors have combined over the past 150-200 years to create the current vegetation communities, chiefly fire exclusion, grazing, and climate change. Widespread arrival of Europeans brought hundreds of thousands of cattle into the Great Basin. Grazing on the public

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range was completely unregulated until the early 1900's, and cattle decimated the preferable bunchgrass communities and more palatable shrubs. The removal of the competition from grasses, plus a coinciding relatively wet period and active fire suppression, allowed the woody species to dramatically increase their abundance across the region. New weed species principally halogeton, cheatgrass, Russian thistle, and various knapweeds, quickly exploited and occupied niches in the sagebrush grasslands opened by the decreased abundance of perennial bunchgrasses.

The passage of the Taylor Grazing Act in 1934 ended the unregulated use of the public range, and implementation of grazing systems coupled with active restoration and rehabilitation projects have led to vastly improved ecological conditions across much of the landscape. Duration, timing and intensity of livestock grazing are basic tenets in ensuring proper grazing management and are key factors in ensuring the health, vigor and long-term persistence of native perennial grasses and forbs in sagebrush-steppe ecosystems.

Most plants in the Barton allotment are cool season plants. Most grasses and forbs start growth in early to mid-Spring (April) and complete flowering by late spring or early summer. Annual plants complete their life cycle at that point, while perennial plants enter a period of dormancy that lasts through the summer. Some regrowth in perennial grasses may occur in the fall if sufficient moisture is present. The dominant shrub species persist throughout the year, with flowering occurring in the late fall.

The site potential composition within the majority of the Barton allotment is 70% grasses, 10% forbs and 20% shrubs by dry weight (USDA-NRCS 2003). In 2010, the site composition was 55% forbs, 37% grasses, and 8% shrubs. The most abundant and ecologically important native grasses within the allotment are Idaho fescue (*Festuca idahoensis*) and bluebunch wheatgrass (*Pseudoroegneria spicata*), which provide important forage for livestock and wild ungulates and forage and cover for a host of bird, small mammal and other wildlife species. In 2010, the aggregate composition of these two grasses was 20% (Barton Standards and Guidelines Assessment 2014). Both of these grasses require occasional growing season rest to successfully reproduce and increase over time.

Plants have both community and individual responses to defoliation by grazing animals. Plant growth is largely fed by carbohydrate reserves stored within the plant materials, which is resupplied by photosynthesis conducted by new growth areas. Defoliation of the plant by any means, including fire or grazing by wildlife or livestock species, forces the plant to use more of its reserves to re-grow the removed portions. Repeated defoliations during the critical growing seasons can seriously weaken plants as they devote higher percentages of their stored energies to regrowth. Repeated grazing of this type over years can lead to plant mortality. The principle grass species in the Great Basin have been shown to be especially susceptible to grazing damage occurring during the growing season, especially when the plants have to compete with other plants for resources while trying to re-grow. A niche opened by a grazed or recovering plant can provide openings for other species in the community to occupy, either through a decrease in shade or a sudden increase in the availability of moisture and nutrients in the soil.

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Direct and Indirect Effects

No Action Alternative

Under this alternative all parts of the allotment would be open to grazing at any time within the limits of the current permitted season of use. If the current grazing management continues, improvements in the vegetation communities would be expected to continue along the same rate as they have been occurring.

If the permittee were to use the allotment for its full permitted season of use on an annual basis it could prove to be detrimental to the vegetation communities in some areas of the allotment (see Table 2). A full season of use would mean fewer animals would graze the allotment for a longer time period. This would likely result in less homogenous use of the allotment. Certain areas of the allotment would see heavier use and declining vegetative communities. Other areas, especially those farther from water would receive less use and improved vegetation. The net change across the whole allotment would likely be minimal.

Under this alternative either of these scenarios could occur.

Two Pasture Deferred Grazing Alternative

This alternative would be expected to benefit vegetation in the allotment. Deferment of grazing on half the allotment until after July 15th will allow perennial grasses to complete their growth and reproduction cycles prior to the onset of grazing at least every other year. This is likely to improve plant carbohydrate reserves and resiliency as well as relative abundance.

Some loss of vegetation can be expected during construction of the pasture division fence. Additional impacts could be expected from livestock trailing along the new fence and to and from water and salt areas. The disturbance associated with this project could serve as an entry points for invasive species. Adherence to the fencing stipulations in the BLM Fencing Handbook (BLM, 1989) would help to minimize some of the direct impacts of this project to vegetation resources. The increased disturbance caused by the construction of this fence would be fairly minimal and the net impact to the plant community as a whole would be positive.

Cumulative Effects

Vegetation currently present on the Barton Allotment is the product of many factors. The greatest mechanism impacting vegetation on the Barton Allotment is wildfire. Recurrent fires have removed much of the brush component on the allotment creating a niche for both perennial and annual grass species. Under current grazing management these grasses have expanded and filled this niche to the point that at current use levels cattle make very little impact on standing forage within the allotment. The result is a dense fine fuel load and shortened fire interval.

Off Highway Vehicle travel from recreationists, hunters, and others can result in both soil compaction and plant and soil disturbance.

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Disturbances within the plant community caused by and associated with these activities can lead to the disturbance and potential loss of vegetation within the project area and can also be a vector for introduction of noxious weeds and other invasive plants, which can impair the ability of the plant communities to function.

4 CONSULTATION AND COORDINATION

Persons, Groups or Agencies Consulted

Public consultation for the S&G assessment of the Barton Allotment began in 2013. In August of 2013 the BLM mailed a public consultation letter to the livestock permittee and members of the interested public explaining our intent to proceed with the Barton permit renewal. Three comments came back during the comment period. These comments were not applicable to the S&G Assessment, but they were addressed in this EA inasmuch as they were pertinent and within the scope of this document.

In March 2014 the BLM mailed a scoping letter and Draft S&G Assessment to the livestock permittee and members of the interested public for the Barton Allotment. One comment was received from the permittee. They indicated that they preferred no changes to their current permit and explained their reasoning. Their comments were in line with the No Action Alternative and no further alternatives were required.

List of Preparers

Mark Dean- Air Quality, Soils, Water Quality
Clay Stott- Lead Preparer, Livestock Grazing, Vegetation
Clint Mothershead- Lands and Realty
Terri Barton- Non-Native Invasive and Noxious Species
Blaine Potts- Recreation, Wilderness Study Areas, Visual Resources
Cameron Collins- Migratory Birds, Threatened/Endangered Species, Sensitive Species, Wildlife
Victoria Anne - LUP Conformance, NEPA Coordination
Norman Henrikson- Cultural Resources

Distribution

The final version of this EA has been posted and is available on the BLM public web site at:

http://www.blm.gov/nv/st/en/fo/elko_field_office.html

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6 APPENDICES

Appendix A- Additional Information

Master list of all animal species that may occur within northeastern Nevada.

Birds

Order: *Gaviiformes* (Diver/Swimmers)

Family: *Gaviidae* (Loons)

Common Loon *Gavia immer*

Order: *Podicipediformes* (Flat-toed Divers)

Family: *Podicipedidae* (Grebes)

Pied-billed Grebe *Podilymbus podiceps*
Horned Grebe *Podiceps auritus*
Eared Grebe *Podiceps nigricollis*
Western Grebe *Aechmophorus occidentalis*
Clark's Grebe *Aechmophorus clarkii*

Order: *Pelecaniformes* (Four-toed Fish eaters)

Family: *Pelecanidae* (Pelicans)

American White Pelican *Pelecanus erythrorhynchos*

Family: *Phalacrocoracidae* (Cormorants)

Double-crested Cormorant *Phalacrocorax auritus*

Order: *Ciconiiformes* (Long-legged Waders)

Family: *Ardeidae* (Bitterns, Herons, Egrets)

American Bittern *Botaurus lentiginosus*
Least Bittern *Ixobrychus exilis*
Great Blue Heron *Ardea herodias*
Great Egret *Ardea alba*
Snowy Egret *Egretta thula*
Cattle Egret *Bubulcus ibis*
Green Heron *Butorides virescens*
Black-crowned Night Heron *Nycticorax nycticorax*

Family: *Threskiornithidae* (Ibises)

White-faced Ibis *Plegadis chihi*

Family: *Cathartidae* (New World Vultures)

Turkey Vulture *Cathartes aura*
California Condor *Gymnogyps californianus*(loc.ex)

Order: *Anseriformes* (Waterfowl)

Family: *Anatidae* (Ducks, Geese, Swans)

Greater White-fronted Goose *Anser albifrons*
Snow Goose *Chen caerulescens*
Canada Goose *Branta canadensis*
Tundra Swan *Cygnus columbianus*
Trumpeter Swan *Cygnus buccinator*
Wood Duck *Aix sponsa*
Gadwall *Anus strepera*
American Widgeon *Anus americana*
Mallard *Anus platyrhynchos*
Blue-winged Teal *Anas discors*
Cinnamon Teal *Anas cyanoptera*
Northern Shoveler *Anas clypeata*
Northern Pintail *Anas acuta*

Green-winged Teal *Anas crecca*
Canvasback *Aythya valisineria*
Redhead *Aythya americana*

Ring-necked Duck *Aythya collaris*
Lesser Scaup *Aythya affinis*
Bufflehead *Bucephala albeola*
Common Goldeneye *Bucephala clangula*
Barrow's Goldeneye *Bucephala islandica*
Hooded Merganser *Lophodytes cucullatus*
Common Merganser *Mergus merganser*
Red-breasted Merganser *Mergus serrator*
Ruddy Duck *Oxyura jamaicensis*

Order: *Falconiformes* (Diurnal Flesh Eaters)

Family: *Accipitridae* (Hawks, Eagles, Osprey)

Osprey *Pandion haliaetus*
Bald Eagle *Haliaeetus leucocephalus*
Northern Harrier *Circus cyaneus*
Sharp-shinned Hawk *Accipiter striatus*
Cooper's Hawk *Accipiter cooperii*
Northern Goshawk *Accipiter gentilis*
Red-shouldered Hawk *Buteo lineatus*
Broad-winged Hawk *Buteo platypterus*
Swainson's Hawk *Buteo swainsoni*
Red-tailed Hawk *Buteo jamaicensis*
Ferruginous Hawk *Buteo regalis*
Rough-legged Hawk *Buteo lagopus*
Golden Eagle *Aquila chrysaetos*

Family: *Falconidae* (Falcons)

American Kestrel *Falco sparverius*
Merlin *Falco columbarius*
Gyr Falcon *Falco rusticolus*
American Peregrine Falcon *Falco peregrinus*
Prairie Falcon *Falco mexicanus*

Order: *Galliformes* (Chicken Relatives)

Family: *Phasianidae* (Grouse, Partridge)

Chukar *Alectoris chukar*
Himalayan Snowcock *Tetraogallus himalayensis*
Gray Partridge *Perdix perdix*
Ruffed Grouse *Bonasa umbellus*
Greater Sage-Grouse *Centrocercus urophasianus*
Blue Grouse *Dendragapus obscurus*
C. Sharp-tailed Grouse *Tympanuchus phasianellus columbianus*
Wild Turkey *Meleagris gallopavo*

Family: *Odontophoridae* (New World Quail)

California Quail *Callipepla californica*
Mountain Quail *Oreortyx pictus*

Order: *Gruiformes* (Cranes and Allies)

Family: *Rallidae* (Rails, Coots)

Virginia Rail *Rallus limicola*
Sora *Porzana carolina*

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Common Moorhen	<i>Gallinula chloropus</i>
American Coot	<i>Fulica americana</i>
Family: Gruidae (Cranes)	
Greater Sandhill Crane	<i>Grus canadensis tabida</i>

Order: Charadriiformes (Wading Birds)

Family: Charadriidae (Plovers)

Black-bellied Plover	<i>Pluvialis squatarola</i>
Snowy Plover	<i>Charadrius alexandrinus</i>
Semi-palmated Plover	<i>Charadrius semipalmatus</i>
Killdeer	<i>Charadrius vociferus</i>
Mountain Plover	<i>Charadrius montanus</i>

Family: Recurvirostridae (Avocets)

Black-necked Stilt	<i>Himantopus mexicanus</i>
American Avocet	<i>Recurvirostra americana</i>

Family: Scolopacidae (Sandpipers, Phalaropes)

Greater Yellowlegs	<i>Tringa melanoleuca</i>
Lesser Yellowlegs	<i>Tringa flavipes</i>
Solitary Sandpiper	<i>Tringa solitaria</i>
Willet	<i>Catoptrophorus semipalmatus</i>
Spotted Sandpiper	<i>Actitis macularia</i>
Long-billed Curlew	<i>Numenius americanus</i>
Marbled Godwit	<i>Limosa fedoa</i>
Western Sandpiper	<i>Calidris mauri</i>
Least Sandpiper	<i>Calidris minutilla</i>
Baird's Sandpiper	<i>Calidris bairdii</i>
Long-billed Dowitcher	<i>Limnodromus scolopaceus</i>
Wilson's Snipe	<i>Gallinago delicata</i>
Wilson's Phalarope	<i>Phalaropus tricolor</i>
Red-necked Phalarope	<i>Phalaropus lobatus</i>

Family: Laridae (Gulls, Terns)

Franklin's Gull	<i>Larus pipixcan</i>
Bonaparte's Gull	<i>Larus philadelphia</i>
Ring-billed Gull	<i>Larus delawarensis</i>
California Gull	<i>Larus californicus</i>
Herring Gull	<i>Larus argentatus</i>
Caspian Tern	<i>Sterna caspia</i>
Forster's Tern	<i>Sterna forsteri</i>
Black Tern	<i>Chlidonias niger</i>

Order: Columbiformes (Pigeons and Allies)

Family: Columbidae (Doves)

Rock Dove	<i>Columba livia</i>
White-winged Dove	<i>Zenaida asiatica</i>
Mourning Dove	<i>Zenaida macroura</i>
Eurasian Collared Dove	<i>Streptopelia decaocto</i>

Order: Cuculiformes (Cuckoos and Allies)

Family: Cuculidae (Cuckoos and Roadrunners)

Yellow-billed Cuckoo	<i>Coccyzus americanus</i>
Greater Roadrunner	<i>Geococcyx californianus</i>

Order: Strigiformes (Nocturnal Flesh Eaters)

Family: Tytonidae (Barn Owls)

Barn Owl	<i>Tyto alba</i>
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Family: Strigidae (Owls)

Flammulated Owl	<i>Otus flammeolus</i>
Western Screech-Owl	<i>Megascops kennicottii</i>
Great Horned Owl	<i>Bubo virginianus</i>
Burrowing Owl	<i>Athene cunicularia</i>

Long-eared Owl	<i>Asio otus</i>
Short-eared Owl	<i>Asio flammeus</i>
Northern Saw-whet Owl	<i>Aegolius acadicus</i>
Northern Pygmy-Owl	<i>Glaucidium gnoma</i>

Order: Caprimulgiformes (Night Jars)

Family: Caprimulgidae (Goatsuckers)

Common Nighthawk	<i>Chordeiles minor</i>
Common Poorwill	<i>Phalaenoptilus nuttallii</i>

Order: Apodiformes (Small Fast Fliers)

Family: Apodidae (Swifts)

White-throated Swift	<i>Aeronautes saxatalis</i>
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Family: Trochilidae (Hummingbirds)

Black-chinned Hummingbird	<i>Archilochus alexandri</i>
Calliope Hummingbird	<i>Stellula calliope</i>
Broad-tailed Hummingbird	<i>Selasphorus platycercus</i>
Rufous Hummingbird	<i>Selasphorus rufus</i>

Order: Coraciiformes (Cavity Nesters)

Family: Alcedinidae (Kingfishers)

Belted Kingfisher	<i>Ceryle alcyon</i>
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Order: Piciformes (Cavity Builders)

Family: Picidae (Woodpeckers)

Lewis' Woodpecker	<i>Melanerpes lewis</i>
Williamson's Sapsucker	<i>Sphyrapicus thyroideus</i>
Red-naped Sapsucker	<i>Sphyrapicus nuchalis</i>
Downy Woodpecker	<i>Picoides pubescens</i>
Hairy Woodpecker	<i>Picoides villosus</i>
Three-toed Woodpecker	<i>Picoides tridactylus</i>
Northern Flicker	<i>Colaptes auratus</i>

Order: Passeriformes (Perching Birds)

Family: Tyrannidae (Flycatchers)

Olive-sided Flycatcher	<i>Contopus cooperi</i>
Western Wood-Pewee	<i>Contopus sordidulus</i>
Willow Flycatcher	<i>Epidonax traillii</i>
Hammond's Flycatcher	<i>Epidonax hammondii</i>
Gray Flycatcher	<i>Epidonax wrightii</i>
Dusky Flycatcher	<i>Epidonax oberholseri</i>
Cordilleran Flycatcher	<i>Epidonax occidentalis</i>
Black Phoebe	<i>Sayornis nigricans</i>
Say's Phoebe	<i>Sayornis saya</i>
Ash-throated Flycatcher	<i>Myiarchus cinerascens</i>
Western Kingbird	<i>Tyrannus verticalis</i>
Eastern Kingbird	<i>Tyrannus tyrannus</i>

Family: Laniidae (Shrikes)

Loggerhead Shrike	<i>Lanius ludovicianus</i>
Northern Shrike	<i>Lanius excubitor</i>

Family: Vireonidae (Vireos)

Plumbeous Vireo	<i>Vireo plumbeus</i>
Warbling Vireo	<i>Vireo gilvus</i>

Family: Corvidae (Jays)

Western Scrub-Jay	<i>Aphelocoma californica</i>
Pinyon Jay	<i>Gymnorhinus cyanocephalus</i>
Clark's Nutcracker	<i>Nucifraga columbiana</i>
Black-billed Magpie	<i>Pica pica</i>
American Crow	<i>Corvus brachyrhynchos</i>

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Common Raven	<i>Corvus corax</i>	Virginia's Warbler	<i>Vermivora virginiae</i>
Family: Alaudidae (Larks)		Yellow Warbler	<i>Dendroica petechia</i>
Horned Lark	<i>Eremophila alpestris</i>	Yellow-rumped Warbler	<i>Dendroica coronata</i>
Family: Hirundinidae (Swallows)		Black-throated Gray Warbler	<i>Dendroica nigrescens</i>
Tree Swallow	<i>Tachycineta bicolor</i>	Townsend's Warbler	<i>Dendroica townsendi</i>
Violet-green Swallow	<i>Tachycineta thalassina</i>	MacGillivray's Warbler	<i>Oporornis tolmiei</i>
Bank Swallow	<i>Riparia riparia</i>	Common Yellowthroat	<i>Geothlypis trichas</i>
N. Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	Wilson's Warbler	<i>Wilsonia pusilla</i>
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	Yellow-breasted Chat	<i>Icteria virens</i>
Barn Swallow	<i>Hirundo rustica</i>	Family: Thraupidae (Tanagers)	
Family: Paridae (Chickadees, Titmice)		Western Tanager	<i>Piranga ludoviciana</i>
Black-capped Chickadee	<i>Poecile atricapillus</i>	Family: Emberizidae (Sparrows, Towhees, Juncos)	
Mountain Chickadee	<i>Poecile gambeli</i>	Green-tailed Towhee	<i>Pipilo chlorurus</i>
Juniper Titmouse	<i>Baeolophus griseus</i>	Spotted Towhee	<i>Pipilo maculatus</i>
Family: Aegithalidae (Bushtits)		American Tree Sparrow	<i>Spizella arborea</i>
Bushtit	<i>Psaltriparus minimus</i>	Chipping Sparrow	<i>Spizella passerina</i>
Family: Sittidae (Nuthatches)		Brewer's Sparrow	<i>Spizella breweri</i>
Red-breasted Nuthatch	<i>Sitta canadensis</i>	Vesper Sparrow	<i>Poocetes gramineus</i>
White-breasted Nuthatch	<i>Sitta carolinensis</i>	Lark Sparrow	<i>Chondestes grammacus</i>
Pygmy Nuthatch	<i>Sitta pygmaea</i>	Black-throated Sparrow	<i>Amphispiza bilineata</i>
Family: Certhiidae (Creepers)		Sage Sparrow	<i>Amphispiza belli</i>
Brown Creeper	<i>Certhia americana</i>	Savannah Sparrow	<i>Passerculus sandwichensis</i>
Family: Troglodytidae (Wrens)		Grasshopper Sparrow	<i>Ammodramus bairdii</i>
Rock Wren	<i>Salpinctes obsoletus</i>	Fox Sparrow	<i>Passerella iliaca schistacea</i>
Canyon Wren	<i>Catherpes mexicanus</i>	Song Sparrow	<i>Melospiza melodia</i>
Bewick's Wren	<i>Thyromanes bewickii</i>	Lincoln's Sparrow	<i>Melospiza lincolni</i>
House Wren	<i>Troglodytes aedon</i>	White-throated Sparrow	<i>Zonotrichia albicollis</i>
Winter Wren	<i>Troglodytes troglodytes</i>	Harris's Sparrow	<i>Zonotrichia querula</i>
Marsh Wren	<i>Cistothorus palustris</i>	Gambel's White-crowned Sparrow	<i>Zonotrichia leucophrys gambelii</i>
Family: Cinclidae (Dippers)		Mountain W-crowned Sparrow	<i>Zonotrichia leucophrys oriantha</i>
American Dipper	<i>Cinclus mexicanus</i>	Golden-crowned Sparrow	<i>Zonotrichia atricapilla</i>
Family: Regulidae (Kinglets)		Dark-eyed Junco (Oregon)	<i>Junco hyemalis therhuri</i>
Golden-crowned Kinglet	<i>Regulus satrapa</i>	Dark-eyed Junco (Gray-headed)	<i>Junco hyemalis caniceps</i>
Ruby-crowned Kinglet	<i>Redulus calendula</i>	Lapland Longspur	<i>Calcarius lapponicus</i>
Family: Sylviidae (Gnatcatchers)		Family: Cardinalidae (Grosbeaks, Buntings)	
Blue-gray Gnatcatcher	<i>Poliopitila caerulea</i>	Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>
Family: Turdidae (Thrushes)		Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>
Western Bluebird	<i>Sialia mexicana</i>	Blue Grosbeak	<i>Iraca caerulea</i>
Mountain Bluebird	<i>Sialia currucoides</i>	Lazuli Bunting	<i>Passerina amoena</i>
Townsend's Solitaire	<i>Myadestes townsendi</i>	Indigo Bunting	<i>Passerina cyanea</i>
Veery	<i>Catharus fuscescens</i>	Family: Icteridae (Blackbirds, Orioles)	
Swainson's Thrush	<i>Catharus ustulatus</i>	Bobolink	<i>Dolichonyx oryzivorus</i>
Hermit Thrush	<i>Catharus guttatus</i>	Red-winged Blackbird	<i>Agelaius phoeniceus</i>
Family: Turdidae (Thrushes) (continued)		Western Meadowlark	<i>Sturnella neglecta</i>
American Robin	<i>Turdus migratorius</i>	Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>
Varied Thrush	<i>Ixoreus naevius</i>	Brewer's Blackbird	<i>Euphagus cyanocephalus</i>
Family: Mimidae (Thrashers, Mockingbirds)		Great-tailed Grackle	<i>Quiscalus mexicanus</i>
Northern Mockingbird	<i>Mimus polyglottos</i>	Brown-headed Cowbird	<i>Molothrus ater</i>
Sage Thrasher	<i>Oreoscoptes montanus</i>	Family: Icteridae (Blackbirds, Orioles continued)	
Family: Sturnidae (Starlings)		Bullock's Oriole	<i>Icterus bullockii</i>
European Starling	<i>Sturnus vulgaris</i>	Scott's Oriole	<i>Icterus parisorum</i>
Family: Motacillidae (Pipits)		Family: Fringillidae (Finches, Grosbeaks)	
American Pipit	<i>Anthus rubescens</i>	Gray-crowned Rosy-Finch	<i>Leucosticte tephrocotis</i>
Family: Bombycillidae (Waxwings)		Black Rosy-Finch	<i>Leucosticte atrata</i>
Bohemian Waxwing	<i>Bombycilla garrulus</i>	Pine Grosbeak	<i>Pinicola enucleator</i>
Cedar Waxwing	<i>Bombycilla cedrorum</i>	Purple Finch	<i>Carpodacus purpureus</i>
Family: Parulidae (Wood-Warblers)		Cassin's Finch	<i>Carpodacus cassinii</i>
Orange-crowned Warbler	<i>Vermivora celata</i>	House Finch	<i>Carpodacus mexicanus</i>
Nashville Warbler	<i>Vermivora ruficapilla</i>	Red Crossbill	<i>Loxia curvirostra</i>
		Common Redpoll	<i>Carduelis flammea</i>
		Pine Siskin	<i>Carduelis pinus</i>
		Lesser Goldfinch	<i>Carduelis psaltria</i>

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American Goldfinch	<i>Carduelis tristis</i>
Evening Grosbeak	<i>Coccothraustes vespertinus</i>
Family: <i>Passeridae</i> (Old World Sparrows)	
House Sparrow	<i>Passer domesticus</i>

Mammals

Order: *Insectivora* (Insect Eaters)

Family: *Soricidae* (Shrews)

Merriam's Shrew	<i>Sorex meriammi</i>
Dusky Shrew	<i>Sorex monticolus</i>
Vagrant Shrew	<i>Sorex vagrans</i>
Water Shrew	<i>Sorex palustris</i>
Preble's Shrew	<i>Sorex preblei</i>

Order: *Chiroptera* (Bats)

Family: *Vespertilionidae* (Plainnose Bats)

California Myotis	<i>Myotis californicus</i>
Small-footed Myotis	<i>Myotis ciliolabrum</i>
Long-eared Myotis	<i>Myotis evotis</i>
Little Brown Bat	<i>Myotis lucifugus</i>
Fringed Myotis	<i>Myotis thysanodes</i>
Long-legged Myotis	<i>Myotis volans</i>
Yuma Myotis	<i>Myotis yumanensis</i>
Western Red Bat	<i>Lasiurus blossomii</i>
Hoary Bat	<i>Lasiurus cinereus</i>
Silver-haired Bat	<i>Lasionycteris noctivagans</i>
Western Pipistrelle	<i>Pipistrellus hesperus</i>
Big Brown Bat	<i>Eptesicus fuscus</i>
Townsend's Big-eared Bat	<i>Corynorhinus townsendii</i>
Spotted Bat	<i>Euderma maculata</i>
Pallid Bat	<i>Antrozous pallidus</i>

Family: *Molossidae* (Freetail Bats)

Brazilian Free-tailed Bat	<i>Tadarida brasiliensis</i>
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Order: *Lagomorpha* (Pikas, Hares, Rabbits)

Family: *Ochotonidae* (Pikas)

Pika	<i>Ochotona princeps</i>
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Family: *Leporidae* (Hares, Rabbits)

White-tailed Jackrabbit	<i>Lepus townsendi</i>
Snowshoe Hare	<i>Lepus americanus</i>
Black-tailed Jackrabbit	<i>Lepus californicus</i>
Mountain Cottontail	<i>Sylvilagus nuttalli</i>
Pygmy Rabbit	<i>Brachylagus idahoensis</i>

Order: *Rodentia* (Rodents)

Family: *Sciuridae* (Squirrels)

Least Chipmunk	<i>Tamias minimus</i>
Cliff Chipmunk	<i>Tamias dorsalis</i>
Uinta Chipmunk	<i>Tamias umbrinus</i>
Yellow-bellied Marmot	<i>Marmota flaviventris</i>
White-tailed Antelope Squirrel	<i>Ammospermophilus leucurus</i>
Townsend Ground Squirrel	<i>Spermophilus townsendii</i>
Belding Ground Squirrel	<i>Spermophilus beldingi</i>

Family: *Geomyidae* (Gophers)

Botta's Pocket Gopher	<i>Thomomys bottae</i>
Northern Pocket Gopher	<i>Thomomys talpoides</i>
Southern Pocket Gopher	<i>Thomomys umbrinus</i>

Family: *Heteromyidae* (Kangaroo Rodents)

Little Pocket Mouse	<i>Perognathus longimembris</i>
Great Basin Pocket Mouse	<i>Perognathus parvus</i>
Dark Kangaroo Mouse	<i>Microdipodops megacephalus</i>
Ord Kangaroo Rat	<i>Dipodomys ordii</i>
Chisel-toothed Kangaroo Rat	<i>Dipodomys microps</i>

Family: *Castoridae* (Beavers)

Beaver	<i>Castor canadensis</i>
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Family: *Cricetidae* (Mice, Rats, Voles)

Western Harvest Mouse	<i>Reithrodontomys megalotis</i>
Canyon Mouse	<i>Peromyscus crinitus</i>
Deer Mouse	<i>Peromyscus maniculatus</i>
Pinion Mouse	<i>Peromyscus truei</i>
Northern Grasshopper Mouse	<i>Onychomys leucogaster</i>
Desert Woodrat	<i>Neotoma lepida</i>
Bushy-tailed Woodrat	<i>Neotoma cinerea</i>
Mountain Vole	<i>Microtus montanus</i>
Long-tailed Vole	<i>Microtus longicaudus</i>
Sagebrush Vole	<i>Lemmiscus curtatus</i>
Muskrat	<i>Ondatra zibethica</i>

Family: *Zapodidae* (Jumping Mice)

Western Jumping Mouse	<i>Zapus princeps</i>
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Family: *Erethizontidae* (New World Porcupines)

Porcupine	<i>Erethizon dorsatum</i>
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Order: *Carnivora* (Flesh-Eaters)

Family: *Canidae* (Dogs, Wolves, Foxes)

Coyote	<i>Canis latrans</i>
Gray Wolf	<i>Canis lupus</i> (locally extirpated)
Gray Fox	<i>Urocyon cinereoargenteus</i>
Kit Fox	<i>Vulpes macrotus</i>
Red Fox	<i>Vulpes vulpes</i>

Family: *Procyonidae* (Raccoons and Allies)

Raccoon	<i>Procyon lotor</i>
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Family: *Mustelidae* (Weasels and Allies)

Short-tailed Weasel	<i>Mustela erminea</i>
Long-tailed Weasel	<i>Mustela frenata</i>

Family: *Mustelidae* (Weasels and Allies) (cont.)

Mink	<i>Mustela vison</i>
American Marten	<i>Martes americana</i> (l. extirpated)
Wolverine	<i>Gulo gulo</i> (locally extirpated)
River Otter	<i>Lutra canadensis</i>
American Badger	<i>Taxidea taxus</i>
Striped Skunk	<i>Mephitis mephitis</i>
Western Spotted Skunk	<i>Spilogale gracilis</i>

Family: *Felidae* (Cats)

Mountain Lion	<i>Felix concolor</i>
Lynx	<i>Lynx lynx</i> (locally extirpated)
Bobcat	<i>Lynx rufus</i>

Order: *Artiodactyla* (Hoofed Mammals)

Family: *Cervidae* (Deer)

Rocky Mountain Elk	<i>Cervus canadensis</i>
Mule Deer	<i>Odocoileus hemionus</i>

Family: *Antilocapridae* (Pronghorn)

Pronghorn	<i>Antilocapra americana</i>
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Family: *Bovidae* (Bison, Sheep, Goats)

Bison	<i>Bison bison</i> (locally extirpated)
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Mountain Goat *Oreamnos americanus*
Bighorn Sheep *Ovis canadensis*

Reptiles

Order: Squamata (Lizards, Snakes)

Family: Iguanidae (Iguanas and Allies)

Western Fence Lizard *Sceloporus occidentalis*
Sagebrush Lizard *Sceloporus graciosus*
Side-blotched Lizard *Uta stansburiana*
Pigmy Short-horned Lizard *Phrynosoma douglassii*
Greater Short-horned Lizard *Phrynosoma hernandesi*
Desert Horned Lizard *Phrynosoma platyrhinos*

Family: Scincidae (Skinks)

Western Skink *Eumeces skiltonianus*

Family: Teiidae (Whiptails)

Western Whiptail *Cnemidophorus tigris*

Family: Boidae (Boas, Pythons)

Rubber Boa *Charina bottae*

Family: Colubridae (Solid-toothed Snakes)

Ringneck Snake *Diadophis punctatus*
Striped Whipsnake *Masticophis taeniatus*
Great Basin Gopher Snake *Pituophis cantenifer deserticola*
Common Kingsnake *Lampropeltis getulus*
Sonoran Mountain Kingsnake *Lampropeltis pyromelana*
Long-nosed Snake *Rhinocheilus lecontei*
Western Terrestrial Garter *Thamnophis elegans*
Ground Snake *Sonora semiannulata*
Night Snake *Hypsiglena torquata*

Family: Viperidae (Vipers)

Great Basin Rattlesnake *Crotalus viridis lutosus*

Amphibians

Order: Anura (Frogs and Toads)

Family: Pelobatidae (Spadefoots)

Great Basin Spadefoot Toad *Scaphiopus intermontanus*

Family: Ranidae (True Frogs)

Columbia Spotted Frog *Rana luteiventris*
Northern Leopard Frog *Rana pipiens*
Bullfrog *Rana catesbeiana*

Family: Bufonidae (Toads)

Western Toad *Bufo boreas*

Family: Hylidae (Treefrogs)

Pacific Treefrog *Hyla regilla*

Note: This list is a combination of wildlife sight record data and our best effort to predict what wildlife species live in this area in all seasons and under optimum habitat conditions.

*With the exception of the European Starling, House Sparrow, Eurasian Collared Dove, and Rock Dove, all birds are protected in Nevada by either the International Migratory Bird Treaty Act or as game species. Several mammal and one amphibian species are also protected as game species.

Updated: 4/2005 - Peter V. Bradley - Nevada Department of Wildlife - Elko, Nevada.

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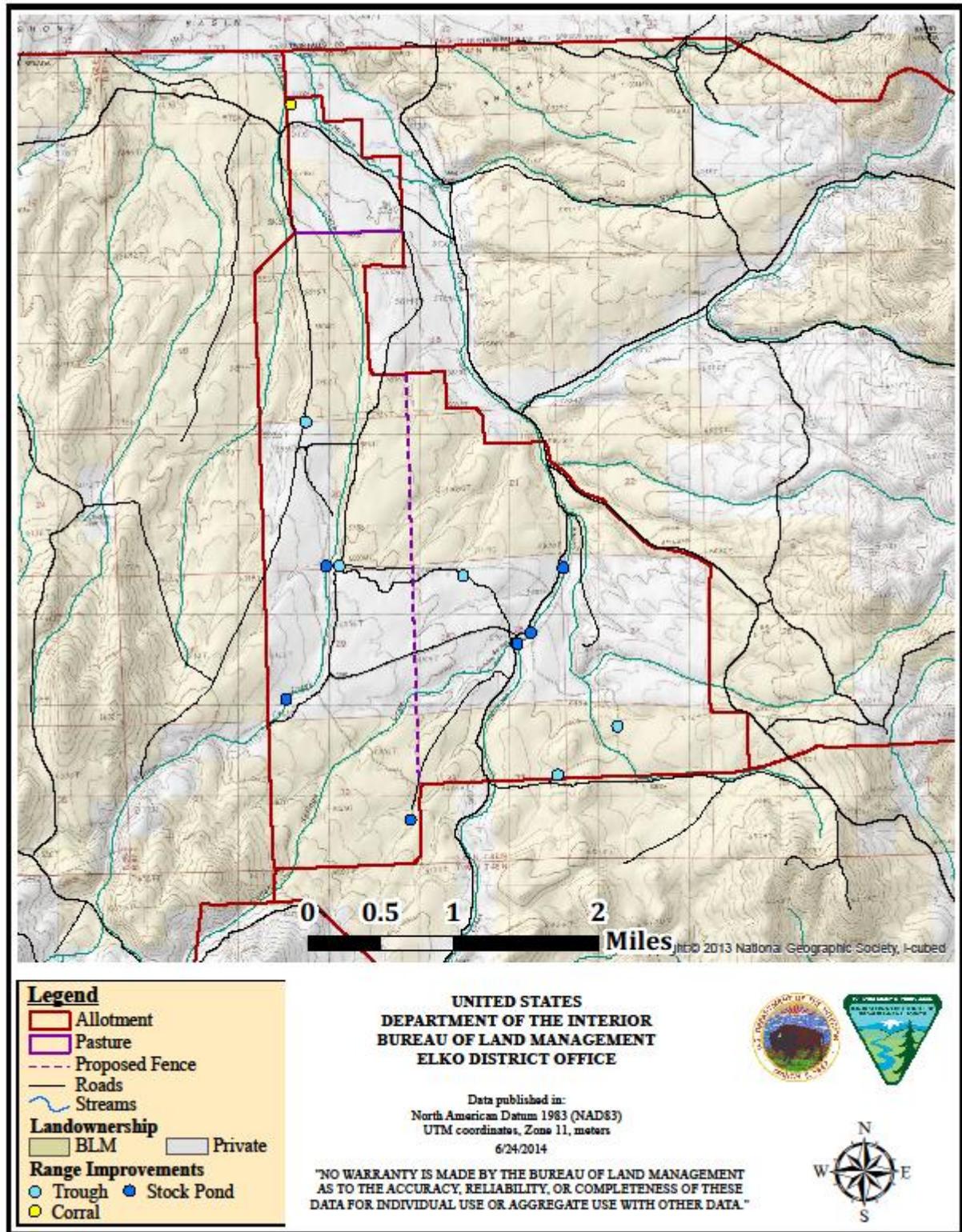
Appendix B- Maps

Figure 1-Allotment Location



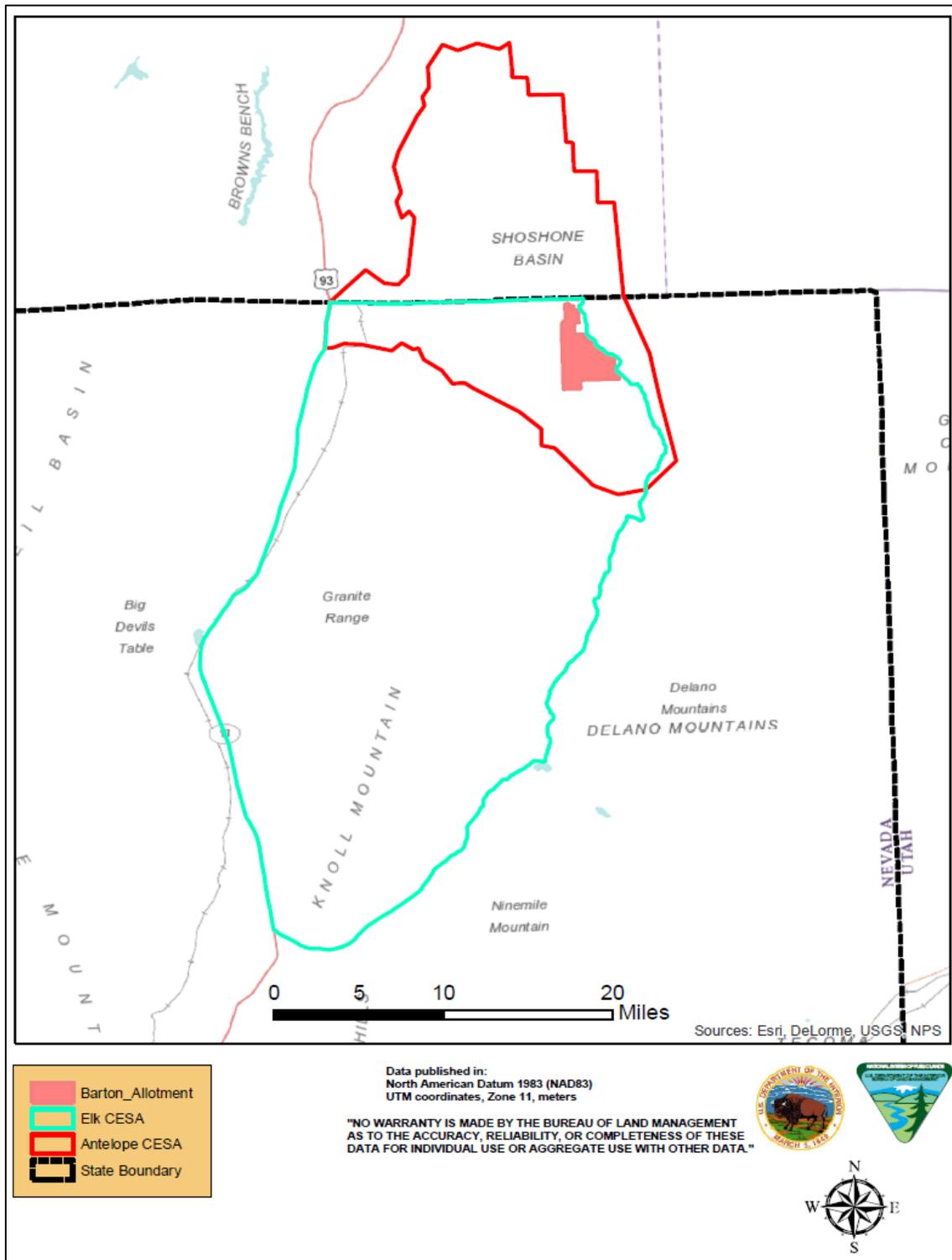
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Figure 2-Allotment Boundary



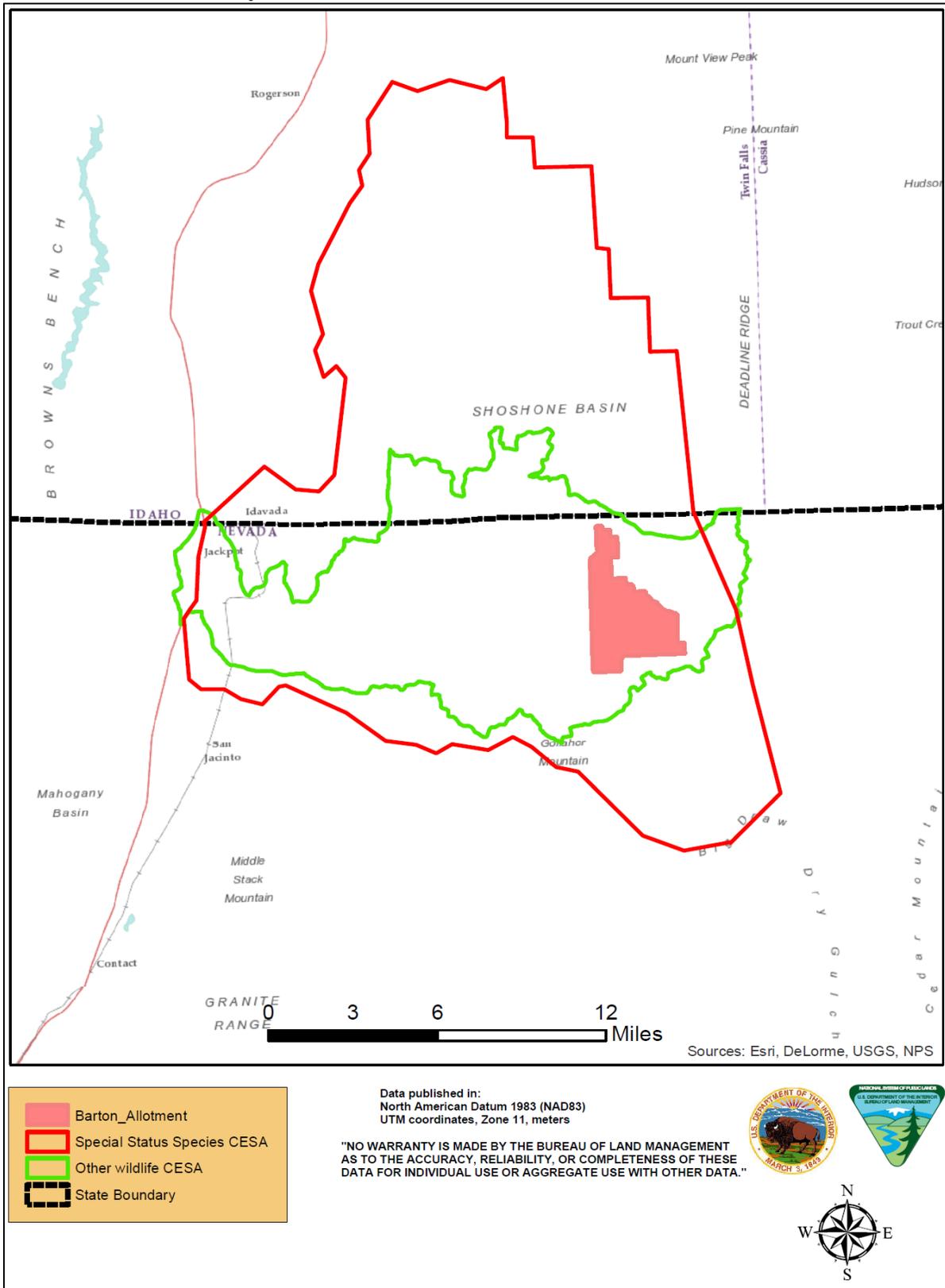
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Figure 3- Elk and pronghorn antelope Cumulative Effects Study Areas (CESA).



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Figure 4- Special Status Species and Other (including Migratory Birds) Wildlife Cumulative Effects Study Areas (CESA).



	Barton_Allotment
	Special Status Species CESA
	Other wildlife CESA
	State Boundary

Data published in:
 North American Datum 1983 (NAD83)
 UTM coordinates, Zone 11, meters

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