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NEVADA Elko District, Tuscarora Field Office

Wilson Mountain Allotment Grazing Permit Renewal

Environmental Assessment

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1 – INTRODUCTION

The Bureau of Land Management (BLM), Tuscarora Field Office proposes to issue a grazing permit renewal decision to provide area-specific direction and management actions for the Wilson Mountain Allotment in the northwestern portion of Elko County, Nevada. See Map 1 for the location of the allotment.

This Environmental Assessment (EA) has been prepared for compliance with the National Environmental Policy Act (NEPA). This EA tiers to the Environmental Impact Statement (EIS) for the 1987 Elko Resource Management Plan (RMP) and incorporates by reference relevant portions of the 2012 Draft Standards and Guidelines Assessment for the Wilson Mountain Allotment. These documents are available for review at the BLM Elko District Office, 3900 E. Idaho Street, Elko, NV 89801, telephone 775-753-0200.

1.1 Purpose and Need

The purpose for this analysis is to determine whether or not the proposed action is in conformance with applicable laws, regulations, and policies. The analysis is needed because a new permit renewal is required for all BLM grazing allotments including the Wilson Mountain Allotment. Grazing management objectives should meet, or make significant progress toward meeting, the Standards and Guidelines for Rangeland Health, Resource Management Plan goals and objectives, and other pertinent multiple use objectives for the allotment.

1.2 Relationship to Laws, Policies and Land Use Plans

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

1.2.1 BLM Land Use Plan Conformance

The proposed action and alternatives conform to the following decisions and objectives of the Elko Resource Management Plan (RMP), as approved 11 March 1987, and it's Amendment for Elk Management, approved 14 February 1996. They are further consistent with allotment specific objectives and directives from the Elko Rangeland Program Summary (RPS) dated 23July1987, which provided additional management guidance and objectives for each grazing allotment affected by the Elko RMP.

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

Elko Resource Management Plan

1. Livestock Grazing (Elko RMP Record of Decision, pages 20-29)

- Maintain or improve the condition of the public rangelands to enhance productivity for all rangeland values.
- Livestock grazing will continue in all allotments.
- Monitor and adjust grazing management systems and livestock numbers as required.

2. Terrestrial Wildlife Habitat (Elko RMP Record of Decision, pages 29-32)
   - Conserve and/or enhance terrestrial, riparian, an aquatic wildlife habitat.
   - Eliminate all of the fencing hazards in crucial big game habitat, most of the fencing hazards in non-crucial big game habitat.
   - Eliminate all of the high and medium priority terrestrial riparian habitat conflicts in coordination with other resource uses.
   - Improve and maintain high and medium priority riparian/stream habitat.
   - Prevent undue degradation of all riparian/stream habitat due to other uses.

Elko Rangeland Program Summary

Wilson Mountain Allotment

1. Livestock Grazing
   - Manage livestock to improve ecological status from late to PNC on 60 acres.
   - Enhance native vegetation with utilization levels not to exceed 50 percent utilization.
   - Provide forage to sustain 412 AUMs for livestock grazing.
2. Wildlife Habitat
   - Manage rangeland habitat to provide forage for 90 AUMs for a reasonable number of mule deer.
   - Maintain or improve to at least good condition all mule deer crucial habitats.
   - Manage rangeland to protect or enhance crucial sage-grouse strutting and nesting habitat.
   - Improve and maintain meadow and riparian areas for mule deer and sage-grouse.
   - Utilization levels will not exceed 50 percent utilization on meadows and riparian areas.

1.2.2 Standards and Guidelines for Rangeland Health Conformance

The proposed action and alternatives would also continue to or provide for attainment of the following applicable Standards for Rangeland Health for the Northeastern Great Basin Area of Nevada approved on February 12, 1997.
1. Upland Sites: Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate and land form.
2. Riparian and Wetland Sites: Riparian and wetland areas exhibit a properly functioning condition and achieve state water quality criteria.
3. Habitat: Habitats exhibit a healthy, productive, and diverse population of native and/or desirable plant species, appropriate to the site characteristics, to provide suitable feed, water, cover and living space for animal species and maintain ecological processes. Habitat conditions meet the life cycle requirements of threatened and endangered species.
4. Cultural Resources: Land use plans will recognize cultural resources within the context of multiple uses.

1.2.3 Consistency with Non-BLM Authorities

The proposed action is further consistent with other State and local land use policies, such as are listed in the following two sections:

1.2.3.1 Nevada Statewide Policy Plan for Public Lands, 1986

Agriculture. (p. 9) Goals for Agriculture. Recognize that agricultural production in Nevada will be necessary to help meet the requirements of future state populations and is especially important to the economies of rural counties of the state. Develop policies and regulations that provide for the long-term productivity and availability of public land resources for agricultural purposes.

1.2.3.2 Elko County Public Lands Policy Plan, 2008

Agricultural production is necessary to help maintain the historical, cultural and economic viability of Elko County. Elko County requires that federal land management agencies use of the 2006 Elko County Grazing Economic Impact study, 2010 Federal Land Policy and its Impacts to the Economy of Elko County, or other updated studies, in all environmental analysis on livestock grazing related decisions.

Directive 7-1: Preserve agricultural land and promote the continuation of agricultural pursuits, both traditional and non-traditional;

Directive 7-2: The pursuit and production of renewable agricultural resources are consistent with the long term heritage of Elko County. This private industry benefits the County economically and culturally;

Directive 7-3: Opportunities for agricultural development on public lands should continue at levels that are consistent with historical customs, culture and compatibility with other multiple uses;

Directive 7-4: Grazing should utilize sound adaptive management practices. Elko County encourages the federal land management agencies to include flexibility into their grazing management plans that allow for grazing management that is beneficial to the health of the land, the economic viability of the producer, and enhances all other multiple uses of our public lands. Elko County acknowledges that periodic updates of the Nevada Rangeland Monitoring Handbook may be required to help establish proper levels of grazing, but does not support loss of federally managed public lands used for grazing purposes;

Directive 7-5: Allotment management strategies should be developed that provide incentives to optimize stewardship by the permittee. Flexibility and acknowledgement of stewardship should be given to the permittee to allow the operator the ability to reach condition standards for the range. Monitoring should utilize the use of long-term trend studies as described above. Elko County also supports the use of

cooperative monitoring utilizing the Nevada Rangeland Monitoring Handbook Second Edition;

Directive 7-6: Encourage agencies managing public lands to coordinate with the N-1 Grazing Board and appropriate Conservation District on all manners affecting livestock grazing on public lands within the County;

Directive 7-7: Range water rights and improvements such as those associated with seeps, springs, streams, lakes and wells used by livestock should be protected in the long term for that use. Encourage cooperation between the federal land management agencies and the grazing operator in protecting the riparian values of these water sources. The county does not support the transfer of water rights from livestock to wild horses or wildlife. Nevada Revised Statue 533.367 requires water developments to not restrict use by wildlife;

Directive 7-8: The Nevada Congressional Delegation should be encouraged to develop regionally variable grazing fees that are based on the quality and quantity of forage, accessibility and infrastructure.

Directive 7-9: Elko County requests federal agency notification of all actions regarding permit renewals for potential request by Elko County for status as a cooperating agency in such action.

Directive 7-10: Elko County considers mandatory, set time period, post-wild land fire grazing closures are inconsistent with good range science. The County expects that burned pastures be allowed one year to recover, and then be evaluated for their condition relative to grazing. If, after one year of recovery, the forage is suitably restored to allow grazing, grazing should be restored, even if on a limited basis. Elko County strongly encourages the USFS and BLM to restore retired or discontinued grazing privileges on all Federally Managed Public Lands.

1.2.3.3 Relationship to regulatory or statutory authorities

Table 1 identifies elements of the human environment that are regulated by a statutory or regulatory authority that would be affected and are analyzed in Chapter 3 of this EA, as well as those that BLM determined would not be affected.

Table 1: Review of Statutory Authorities

Element/Resource	Present?	Affected?	Comment
Critical Elements			
Air Quality	No	No	Air Quality will not be affected by the proposed action or any of the alternatives
Area of Critical Environmental Concern	No	No	No ACEC's exist within the allotment
Cultural Resources	Yes	Yes	See section 3.3.1
Environmental Justice	No	No	The Proposed Action or Alternatives would not disproportionately impact any low income or minority populations as

Table 1: Review of Statutory Authorities			
Element/Resource	**Present?**	**Affected?**	**Comment**
			described in the Environmental Justice Executive Order (EO 12898).
Farm Land -Prime/Unique	No	No	There is no Prime/Unique Farm Land within the allotment
Human Health & Safety	No	No	Human Health and Safety will not be affected by any of the alternatives
Migratory Birds	Yes	Yes	See section 3.3.9
Native American Traditional Values	Yes	Yes	See section 3.3.6
Non-Native Invasive and Noxious Species	Yes	Yes	See section 3.3.3
Threatened/Endangered/Sensitive Species	Yes	Yes	See section 3.3.9
Visual Resource Management	Yes	No	Visual resources management will not be affected by any of the alternatives
Water Quality(Surface/Ground)	Yes	Yes	See section 3.3.11
Wastes, Hazardous/Solid	No	No	No Hazardous Wastes sites will be affected by any of the alternatives
Wetlands, Riparian Zones	Yes	Yes	See section 3.3.11
Wild & Scenic Rivers	No	No	There are no Wild & Scenic Rivers with the allotment
Wilderness	No	No	There are no wilderness designated lands within the allotment
Other Resources			
Lands/Realty	Yes	No	No Lands/Realty actions will be affected by any of the alternatives
Floodplains	Yes	No	No floodplains will be affected by any of the alternatives
Wild Horses & Burros	No	No	No wild horses or burros exist within the allotment
Recreation	Yes	Yes	See section 3.3.7
Lands With Wilderness Characteristics	Yes	Yes	See section 3.3.4
Wildlife	Yes	Yes	See section 3.3.9
Soils	Yes	Yes	See section 3.3.8
Fire Management	Yes	Yes	See section 3.3.2
Forests and Rangelands (HFRA)	Yes	No	No HFRA projects are proposed for the allotment
Woodland Products	Yes	No	No woodland products will be affected by any of the alternatives
Livestock Grazing	Yes	Yes	See section 3.3.5
Vegetation	Yes	Yes	See section 3.3.10
Access	Yes	No	Access will not be affected by any of the alternatives
Engineering	Yes	No	Engineering exists within the allotment; however the Proposed Action of this EA does not directly influence any engineering decisions.
Mining and Minerals	Yes	No	Mineral resources exist within the allotment; however, no major impacts to Mining/Minerals under the Proposed Action or Alternatives would occur. Therefore, mineral resources would not be

Table 1: Review of Statutory Authorities			
Element/Resource	**Present?**	**Affected?**	**Comment**
			impacted.
Socio-Economic	Yes	Yes	See section 3.3.5
Aquatic Species	Yes	No	No known aquatic species exist within the allotment
Climate Change	Yes	No	See section 3.2
Energy	Yes	No	No energy projects exist within the allotment; therefore no energy projects will be affected by any of the alternatives

2 – ALTERNATIVES

2.1 Alternatives Analyzed in Detail

2.1.1 Alternative 1 - No Action Alternative

Under this alternative, the grazing permit would be issued for a 10-year period to the holder of the preference for grazing privileges on the Wilson Mountain Allotment under the current terms and conditions of the permit. Livestock use would continue on the allotment as it has for the past 20 years. Seasonally Authorized AUMs called Temporary Non-Renewable (TNR) Use as analyzed by the BLM (BLM 2006) (BLM 2010) would also continue to occur during years when forage utilization is expected not to exceed 50 percent on key perennial grass species. The following grazing schedule would remain in place on the allotment and would be a term and condition of the grazing permit:

Table 2. No Action Alternative grazing permit schedule.						
Allotment	Pasture	Kind	Begin Date	End Date	Percent Public Land	AUMs
Wilson Mountain	-	Cattle	04/01	07/15	48	308
Wilson Mountain (TNR)	-	Cattle	04/01	07/15	48	166

Changes from the use described above may be allowed for reasons of drought, flooding, or any other reasons acceptable to the BLM Authorized Officer. However, these changes must be requested in writing at least 30 days before the requested changes are proposed to occur, and be approved by the BLM Authorized Officer in writing.

2.1.2 Alternative 2 - Proposed Alternative

Under this alternative, similar to the No Action Alternative, a grazing permit would be issued for a 10-year period to the holder of the preference for grazing privileges on the Wilson Mountain

Allotment under the current terms and conditions of the permit. Changes from the use described above may be allowed for reasons of drought, flooding, or any other reasons approved by the BLM Authorized Officer. However, these changes must be requested in writing at least 30 days before the requested changes are proposed to occur, and be approved by the BLM Authorized Officer in writing. Grazing use would occur annually on the allotment between the dates of 16 April to 09 July. TNR AUMs that have been previously analyzed by the BLM (BLM 2006) (BLM 2010) would be added to the active permitted use AUMs and TNR use would be eliminated. The new grazing permit would appear as follows:

Table 3. BLM Proposed Alternative grazing permit schedule.

Allotment	Pasture	Kind	Begin Date	End Date	Percent Public Land	AUMs
Wilson Mountain	-	Cattle	04/01	07/15	48	474

This alternative would allow also the BLM to treat small areas within the allotment that have been invaded by medusahead rye grass (*Taeniatherum canput-medusae)* as outlined in the 2012 Draft Standards and Guidelines Assessment. Treatment options may include using herbicides, mechanical, biological, prescribed fire, containment barriers, and/or combinations of BLM approved methods. Depending on results, treatments may take several years to complete. Areas treated by the BLM may be closed to livestock grazing during and after treatment periods and would be reopened based upon ground cover and soil stability criteria of 3 deep rooted perennial plants per meter^2. Areas closed to livestock grazing would be temporarily fenced with barbed wire fences, with a smooth bottom wire, to meet BLM specifications. For more information about areas invaded with medusahead please refer to Map 2.

2.1.3 Alternative 3 - Sagebrush-Associated Nesting Habitat Alternative

On 5 March 2010, the U.S. Fish & Wildlife Service (USFWS) designated the sage-grouse as a species warranted for protection under the Endangered Species Act but precluded from listing due to higher priority species. USFWS identified lack of regulatory mechanisms to protect sage-grouse as one of its primary rationales for reaching the listing decision, and in response to that BLM has begun the process of amending Land Use Plans to incorporate protective measures. On 22 December 2011, BLM issued Instructional Memorandum (IM) 2012-043 providing interim guidance for actions BLM authorizes within sage-grouse habitat until such time as the Land Use Plan amendments are complete. The IM recognizes two categories of sage-grouse habitat, termed Preliminary Priority Habitat (PPH) and Preliminary General Habitat (PGH), with differing levels of protection and analysis prescribed for each.

Nevada Department of Wildlife developed the habitat ratings upon which PPH and PGH designations have been developed for public lands administered by the BLM. All of the public lands within the allotment have been classified as PPH or PGH. See Map 5 in the 2012 Draft Standards and Guidelines Assessment for sage-grouse habitat delineations.

IM 2012-043 contains the following instructions for analyzing impacts in PGH:

"*The intent of these interim conservation policies and procedures in PGH is to reduce and mitigate adverse effects on sage-grouse and its habitat to the extent practical. These policies and procedures differ from those applied to PPH.*

- *When approving uses and authorizations, consider and analyze management measures that would reduce direct, indirect, and cumulative adverse effects on sage-grouse and its habitat. For example, consider alternatives that would increase buffer distances around active leks and timing restrictions within existing LUPs as needed to further reduce adverse effects on sage-grouse and its habitat.*
- *Consider deferring authorizations in PGH where appropriate, depending on local characteristics, new science and/or data (e.g., migratory corridors or habitat between PPH), and relative habitat importance if authorizations could result in sage-grouse population loss in PPH.*
- *Consider offsite mitigation measures in collaboration with state wildlife agencies and project proponents when authorizing activities.*
- *Evaluate and address anticipated fence collision risks within 1.25 miles[1] of leks and other seasonal habitats. Where NEPA analysis suggests that a deviation from this distance is warranted, modifications of this distance are acceptable."*

BLM resource specialists have observed juvenile grouse within the Wilson Mountain Allotment, indicating nesting within the allotment or nearby. Managing livestock grazing to maintain residual cover of herbaceous vegetation to reduce predation during nesting may be the most beneficial for sage-grouse populations (National Technical Team Report 2011). The No Action and Proposed Action Alternatives do not contain provisions for resting any of the pastures that are likely used for nesting by hens. Deferring turnout until as late as possible in the northern pasture during the nesting season (while still accommodating the livestock operation) ensures a minimal amount of disturbance to nesting hens when a pasture is actually grazed during the nesting season. Because sage-grouse are considered an umbrella species for other sagebrush obligate wildlife; any actions taken by the BLM to enhance sage-grouse habitat would likely also benefit other species.

In consideration of this information and in conformance with the IM guidance above, BLM has developed the following terms and conditions:

a. Issue the grazing permit for a 10-year period to the holder of the preference for grazing privileges on the Wilson Mountain Allotment.
b. Temporary Non-renewable Use may be authorized by the BLM for use in the north or south pasture only.
c. The grazing permit would appear as follows:

[1]Stevens, B.S. 2011. Impacts of Fences on Greater Sage-grouse in Idaho: Collision, Mitigation, and Spatial Ecology (Master's Thesis). University of Idaho, Moscow, Idaho.

Table 4. Sagebrush-Associated Nesting Habitat Alternative grazing permit schedule.						
Allotment	Pasture	Kind	Begin Date	End Date	Percent Public Land	AUMs
Wilson Mountain	South	Cattle	04/01	04/30	48	142
Wilson Mountain	North	Cattle	05/01	06/04	48	166

d. All domestic animals authorized to graze on public lands managed by the BLM would be required to be branded and /or marked with brands or marks registered with the State of Nevada as required by Nevada Revised Statutes (NRS) §564.025.

2.1.4 Alternative 4 - Increased Grazing Alternative

Under this alternative, the current terms and conditions of the grazing permit would stay the same, except livestock grazing would be increased and season of use would be changed. The 2012 Draft Standards and Guidelines Assessment outlined livestock use on key forage perennial grass species at less than 10 percent based on a twenty year average. The less than10 percent average is far under the maximum allowable 50 percent utilization average. This alternative would nearly double the amount of active AUMs from 308 to 615 and would also change the grazing schedule to allow for 65 days of use between 01 April and 31 October on an annual basis. This alternative would allow the BLM and permittee flexibility to adjust grazing to meet resource needs. This alternative would also eliminate TNR use within the allotment. The following table shows what the permitted use would be under this alternative:

Table 5. Increased Grazing Alternative grazing permit schedule.						
Allotment	Kind	Begin Date	End Date	Days	Percent Public Land	AUMs
Wilson Mountain	Cattle	04/01	10/31	65	48	615

2.1.5 Alternative 5 - No Grazing Alternative

Under this alternative, livestock grazing would be eliminated from the Wilson Mountain Allotment. The existing grazing permit would be cancelled, reducing the active AUMs from 308 to 0. This alternative would not authorize grazing and would initiate a process in accordance with the 43 CFR 4100 regulations to eliminate grazing, regardless of the lessees desire to continue grazing. All livestock would be removed from the allotment. A term grazing permit would not be issued. Since no grazing would occur, there would be no livestock capacity determinations, no utilization or grazing intensity guidelines, no grazing management system, and no implementation or effectiveness monitoring.

This alternative does not preclude livestock grazing or livestock management on this allotment in the future if a decision is made through another comprehensive analysis to resume these actions.

There are no range improvements or water catchments that would need to be reclaimed on public lands within allotment. There is roughly 6.1 miles of fence, either bordering or located on public land, serving as the allotment boundary. To prevent unauthorized grazing use on public lands, BLM would assume maintenance responsibility for these fences, and if needed, replace those portions that are no longer serviceable (Map 1). Any needed fence modification actions on public lands would continue and be completed, as prioritized, to facilitate wildlife movements and reduce collision hazard risks.

2.2 Alternatives Eliminated From Further Analysis

2.2.1 Reduced Grazing/Average Actual Use Alternative

Under this alternative grazing would be reduced to reflect the average actual use as found in the 2012 Draft Standards and Guidelines Assessment. This alternative would have reduced the amount of active AUMs for the Wilson Mountain Allotment from 308 to 305. Three less AUMs is fairly inconsequential and would not have any reduced impacts to the allotment. Since the ecological and economic irrelevances of this alternative, this alternative has been eliminated from further analysis.

3 AFFECTED ENVIRONMENT/EFFECTS OF ALTERNATIVES

This chapter 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 impacts 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 include impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-federal) or person undertakes.

3.1 Scope of Analysis

The Wilson Mountain Allotment is located in northern Elko County Nevada, approximately 60 miles northeast from the city of Elko (Map 1). The allotment is 4,495 total acres, including 3,168 acres of public lands (70 percent), and 1,327 (30 percent) acres of private lands. Elevations of the allotment are 5,550 feet above sea level at the lower elevations to 8,510 feet above sea level at the highest peak. 648 acres of private lands located within the allotment were burned by the 2007 Petan-Wilson fire (Map 3). 1,052 acres of public and private lands were burned by the 2012 Lime Fire (Map 3). The area that was burned in the 2012 Lime Fire is closed to livestock grazing until vegetation recovery objectives have been met.

Vegetation communities in the allotment are diverse; ranging from shrub (*Artemesia tridentate* spp., *Ericameria* spp.), forb (*Balsamriza saggitata*. *Astragalas* spp., *Lupine* spp.), and grass (*Festuca idahoensis, Poa secunda, Oryzopsis hymenoides*) dominated ecosystems to large stands

of aspen (*Populus tremuloides*), juniper (*Juniperius occidentalis*), subalpine fir (*Abies lasiocarpa*), and antelope bitterbrush (*Purshia tridentate*) dominated ecosystems. The areas that have been burned by recent wildfires have been type converted from shrub dominated ecosystems to grass and forb dominated ecosystems. There are small isolated patches of non-native species found throughout the lower elevation areas of the allotment. Most of the non-native species in the allotment are found along the county road that runs horizontal through the allotment (Map 1).

BLM 2013 directives include incorporating data, where available, from BLM initiated rapid ecological assessments. The Wilson Allotment is geographically located within the Northeastern Great Basin REA. The Assessment was initiated in 2011 and is expected to be published in a Final format toward late 2013. Until such time, Elko provides peer-reviewed data that uses modeling to predict potential climate change related impacts. Citations and references for predictions made are provided where appropriate.

There are roughly 21 riparian areas found throughout the allotment. These areas are typically dominated by various types of willows (*Salix* spp.), rushes (*Juncus* spp.), sedges (*Carex* spp.), and grasses (*Poa pratensis*, *Deschampsia cespitosa*). Water quality is good within the allotment and falls within state of Nevada standards (BLM 2012).

There are no Threatened or Endangered plant or wildlife species found within the allotment. The allotment provides seasonal and yearlong habitat for over 250 species of wildlife; including various types of big game, small mammals, game birds, passerine/songbirds birds, and BLM special status species such as Pygmy rabbits and sage-grouse.

3.2 Impacts Common to All Alternatives

This subsection discusses the impacts of climate change, wildfire, and threats of disease (i.e. West Nile Virus) in general. Specific effects/impacts are described within the analysis for each affected element.

Events that can impact rangeland health, such as wildfire and climate change, can be difficult to predict and may appear speculative. However, BLM acknowledges direction in Secretarial Order 3226 to consider activities that could have long-term impacts.

For this EA, "long-term" projects are defined as those where impacts (positive[2] or negative[3]) are expected to last ten years or more. One decade has been selected for reasons that include, but are not limited to: Observations made by BLM resource specialists with regards to their professional

[2] Positive impacts: Impacts expected to improve rangeland conditions beyond the existing status.
[3] Negative impacts: Impacts expected to reduce rangeland conditions to or below the minimum Standards and guidelines as stated in the Elko RMP (1987).
[3] 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).

experience and understanding of cause and effect relationships for their respective resources in the BLM Elko District.

- Native vegetation can, depending upon the species, take more than ten years to become firmly established in arid environments where water is a growth limiting factor.
- Soils exposed to both fire severity (duration) and intensity (temperature) (not uncommon where drought resistant vegetation exists) can remove viable seed sources, as well as result in the mortality of biological activity in the upper 3 inches of a soil horizon, resulting in delayed decomposition and nutrient cycling necessary for plant growth.
- Grazing permits are typically issued for a ten year period.
- BLM guiding documents (Resource Management Plans, Standards and Guidelines for Rangeland Health, etc.) are normally reviewed and revised every five to fifteen years.

Climate Change

Predictions[4] associated with climate change, identified during a 2011 literature review for impacts that could occur within the BLM-Elko District include:

Temperature increase predicted of 1 to 2 degrees F (Karl et al. 2009) between now and 2020, leading to:

- earlier snow melt and onset of spring (Stewart et al. 2005; Mote 2005; ; Bernstein 2007; Feng 2007; Barnett 2008),
- longer growing season for forage production (Bernstein 2007), but potentially lower quality forage (Karl et al. 2009),
- an increase in evapotranspiration (Hamlet 2006),
- threat of an increase for diseases, insects, and non-native and noxious species (Chambers et al. 2009),
- reduction in soil moisture for plants (Izaurralde et al. 2011),
- increase in drought frequency and severity (Bernstein 2007),
- likely increase to stream temperature in non-shaded riparian areas, and
- an increase in wildfires[4] resulting from a combination of the above factors (Ehrenfeld 2003, Norton 2003).
- Increase in length of fire season.

[4]Within the Elko District, fire specialists' field observations over the last decade suggest that wildfires of higher intensity and severity in sagebrush dominated landscapes are closely related to the amount of cheatgrass production that has occurred in an area. Wet springs and winters typically yield more than the 400-500 pounds of cheatgrass on the District (the average for annual production during years with average precipitation), (i.e., 2005 cheatgrass production was estimated at 2000 pounds). Based on this observation and the prediction that precipitation could be reduced in the future, it is possible that there would not be a substantive increase in wildfires.

- Precipitation could vary from **no change** to as much as **15 percent less** than present (Timmerman et al. 1999; Meehl 2006; Karl et al. 2009) suggesting the:
  - potential for species shifting geographically to adapt to changing conditions (Crozier 2003, 2004; Inouye et al. 2000),
  - mortality of species unable to adapt to changing conditions (Beever et al. 2003; Galbreath et al. 2009),
  - increase of storm intensity (Bernstein 2007),
  - higher potential for floods and subsequent erosion on soils with high clay content (CCSP 2008; Furniss 2010), and
  - higher demand for water in urban, rural, and agricultural areas, as well as from increasing demands for diverted flow to areas like Las Vegas, Nevada (Deacon et al. 2007).
  - Increased severity of wildfires with a decrease in vegetation response.

Two of the predicted events expected to occur as a result of climate change, an increase of wildfire and shifts or increases for insects/disease, are events that directly affect (or have the potential to effect) resources within the Wilson Mountain Allotment that can be effectively managed and/or mitigated against through agency actions and are therefore considered further.

Anthropogenic (Human) Induced Fire(s) and Wildfire(s)

Fire impacts affect resource conditions and wildlife. Repopulation of native species can require as many as (or more than) ten years in areas where restoration is left to natural recovery and water is a limiting factor. As a result of 2006 Petan-Wilson and 2012 Lime Fire, substantial portions of the shrub dominated plant communities have been temporarily converted to areas dominated by perennial grasses.

Fire is possible under all alternatives from a variety of ignition sources, including humans (manual or mechanical) or climatic events (i.e. lightning). BLM has an annual fire staff and fire suppression equipment, and seasonally enlists the support of Engine[5] and Type II Hand Crews[6], as well as Helitack[7] and Hotshot Crews[8] when necessary.

Spread of Insects and Disease

Insect populations (some of which can carry infectious disease) expected to increase because of geographic shifting and adaptation to increasing temperatures could impact the BLM-Elko District. Through previous scoping (for another project) a concern was identified about possible sage-grouse mortality because of West Nile Virus from infected mosquitoes breeding in manmade water sources.

West Nile Virus (WNV) is a mosquito-borne flavivirus [9] that can cause debilitating or fatal neuroinvasive[10] disease in humans and animals. The virus attacks the brain causing

[9] 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 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.

inflammation and swelling. The virus persists largely within a mosquito-bird-mosquito infection cycle. Mosquitos get the virus by feeding on infected birds and can then pass it on to other birds, and occasionally to other animals and people. The virus is not spread from person-to-person (Walker 2009). Mosquito season in northeastern Nevada is typically May to October.

WNV has been reported in every county in Nevada. The number of WNV cases reported in humans in Nevada between 2005 and 2010 totaled 196 cases with 26 of those cases reported for Elko County. (Nevada Dept. of Health and Human Services 2011). Less than 1 percent of humans infected with WNV develop a serious neurological infection (MayoClinic.com). Vaccines for humans are in clinical trials but not yet available. (Nevada Dept. of Agriculture 2009).

Some bird species have experienced population declines attributed to WNV including the American crow, Western scrub-jay, blue jay, yellow-billed magpie, Steller's jay, American robin, tufted titmouse, house wren, and sage-grouse.

The dominant vector of WNV in sagebrush habitats is the Western Encephalitis mosquito (*Culex tarsalis*). This species prefers sites with submerged vegetation on which to oviposit[11], and warm standing water that promotes rapid larval development, including ephemeral[12] puddles, vegetated pond edges, and surface water held in slow draining formations such as in hummocky areas (hoof prints), and road-side trenches. The larvae mature from 7 days to 4 weeks to become full-fledged mosquitos, depending on temperature and food availability. *Culex tarsalis* mosquitos are most active the first few hours after sunset (Walker 2009).

Collaborative efforts continue between Federal, state, and other organizations (i.e. academia, Institute of Medicine, the Centers for Disease Control and Prevention and the National Institutes of Health) to meet and examine issues of shared concern regarding 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

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[6]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.

[7]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.

[8]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.

[9] Flavivirus: a virus that is capable of reproducing within its arthropod (jointed leg) vector and that can cause a number of serious human diseases.

[10] Neuroinvasive: a disease agent capable of entering or infecting the central nervous system.

[11] Oviposit: to deposit or lay eggs.

[12] Ephemeral: drainage area receiving only seasonal precipitation or during high rainfall events (then subject to gullying and erosion) that are able to support a variety of wildlife and plant species that often cannot not grow on other sites.

Health Dept.; USGS; Animal and Plant Health Inspection Service and US Fish and Wildlife Service.

Methods suggested from the above agencies and 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 Effects of Alternatives

The degree to which resources/uses may be affected by the proposed activities are discussed in the following subsections. Each subsection includes discussion of the:

(1) Affected Environment (current condition) of the resource or use
(2) Effects (direct and indirect) of each alternative
(3) Cumulative Impacts, if identified

3.3.1 Cultural Resources

Affected Environment

Regulatory Framework: Projects requiring federal funds and permits require compliance with the National Historic Preservation Act (NHPA) of 1966, as amended (16 USC 470) and its implementing regulations, Protection of Historic Properties (36 CFR 800; Section 106). Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on historic properties (i.e., those properties deemed eligible for listing or formally listed on the National Register of Historic Places) and affords the Advisory Council on Historic Preservation, State Historic Preservation Office (SHPO), and interested tribal governments an opportunity to comment on the findings of these federal agencies, as appropriate. Regulations in 36 CFR 800 provide a process for satisfying the requirement of Section 106, namely, resource identification (inventory or survey), significance evaluation, assessment of adverse effects on the significant historic properties, and the resolution of adverse effects through consultation to avoid, minimize, or provide mitigation. Adverse effects include, but are not limited to, destruction or alteration of all or part of a property, removal from or alteration of its surrounding environment; introduction of visual, audible, or atmospheric elements that are out of character with the property or that alter its setting; transfer, sale or lease of property out of federal ownership without adequate conditions or restrictions regarding preservation, maintenance, or use; and neglect of a property resulting in its deterioration or destruction (36 CFR 800.5) . The Nevada State Protocol Agreement outlines the manner in which the BLM and the SHPO agree that the BLM will meet NHPA compliance.

Range allotment permitted activities, including livestock grazing and any associated range development projects, have the potential to adversely affect historic properties within the Wilson Mountain Allotment. The Nevada State Protocol Agreement Appendix F, Subsection K defines the utilization of a Class II survey sampling strategy in acquiring archaeological data for this assessment.

A cultural resource or cultural property is "…a definite location of human activity, occupation, or use identifiable through field inventory (survey), historical documentation, or oral evidence" (USDI-BLM Manual 8100). The term includes historic or architectural sites, structures, or places with important public and scientific uses, and may include definite locations (sites or places) of traditional cultural or religious importance to specific social and/or cultural groups" (USDI-BLM Manual 8100).

Background: Nevada has been inhabited by humans for at least 12,000 years. The Western Shoshone claim this area as aboriginal territory with Northern Paiute territory cross-over documented in the oral histories of both peoples. The Euro-American settlement of this territory began with the establishment of trading posts along the California Trial from 1845-1869. Euro-American settlement of the area as well as an influx of Chinese immigrant workers began in earnest in the 1870s with the completion of the California Pacific Railroad in 1869 and the discovery of gold along the Carlin Trend in the early 1870s.

Inventories in the Owyhee Desert to the north and west of the Allotment have demonstrated that historic properties (i.e., cultural resources eligible for the NRHP) are concentrated in close proximity to natural water sources, such as springs, streams, and playas. With approval and review by the Nevada State Historic Preservation Office (SHPO), BLM continues to utilize, refine, and evaluate this predictive model for historic properties. The Wilson Mountain Allotment is located just outside and to the east of the boundaries for the area included within this model, but the model may still have applicability to this allotment.

Assessment data: Sixty-six (66) acres within the allotment have been surveyed as part of two earlier projects: BLM 1-1069 (1989) and 1-1733 (1998). Two sites located within the allotment boundaries were documented during these surveys). Both sites are unevaluated for eligibility to the National Register of Historic Places (NRHP) and will, therefore, maintain management oversight.

In order to evaluate the distribution and likelihood for historic properties within the allotment, utilizing the prediction model for historic properties, and in consideration of the more intensive use areas within the allotment by rangeland livestock, the flowing springs located on public land were inventoried in the spring of 2012. No additional cultural resources were located during this inventory.

The paucity of sites located within regionally identified areas of high probability for the location of cultural resource sites indicates an extremely low density of cultural resources within the allotment.

Direct and Indirect Effects Common to All Alternatives

In general, grazing has been documented as an impact agent on archaeological sites, specifically surface lithic scatters in Osburn and Hartley (1987), Attaman (1996), and others. While the effects of trampling and increased erosion in areas near water sources can be extremely detrimental in some cases, in this situation the effects appear to be minimal to non-existent. The area is known to have been extensively utilized for 70 years prior to the Taylor Grazing Act, and has been in continuous use under Division of Grazing, and then BLM monitoring since the

Taylor Grazing Bill was enacted in 1934. While no baseline monitoring data exists for any of the sites located within the allotment, site condition is good to extremely good based upon the number of nearly complete projectile points, limited trampling evidence on other tools, and the presence of complete or nearly complete glass bottles in historic sites.

Alternative 1– No Action

Under the No Action (status quo) alternative, grazing would continue to impact any undocumented cultural resources within the allotment. However, inventories conducted by BLM archaeologists show an extremely low density of cultural resources within the allotment. Therefore impacts would be expected to continue to be minimal. A cultural resource inventory of any proposed action (i.e., noxious weeds treatment, installation of range improvements, etc.) would be completed prior to proposed action implementation.

Alternative 2 – Proposed Alternative

Grazing would continue to minimally impact undocumented cultural resources within the allotment. Impacts from grazing to cultural resources would likely be similar to the No Action Alternative. The proposed treatment of medusahead-rye grass is excluded from areas in close proximity to water resources and will, therefore, likely have little, if any, impacts to cultural resources. A cultural resource inventory of any proposed action (i.e., noxious weeds treatment, installation of range improvements, etc.) would be completed prior to proposed action implementation.

Alternative 3 – Sagebrush-Associated Nesting Habitat Alternative

Under this alternative, AUMs would stay the same as they currently are. The effects of this alternative are nearly identical to the No Action Alternative in regards to potential impacts to cultural resources. As with the No Action Alternative, a cultural resource inventory of any proposed action (i.e., noxious weeds treatment, installation of range improvements, etc.) would be completed prior to proposed action implementation.

Alternative 4 – Increased Grazing Alternative

Under this alternative, potential impacts to undocumented cultural resources within the allotment would likely increase. However, since cultural resources are determined to be of extremely low density across the allotment, cultural resources would not likely be subjected to increased adverse impact. A cultural resource inventory of any proposed action (i.e., noxious weeds treatment, installation of range improvements, etc.) would be completed prior to proposed action implementation.

Alternative 5 – No Grazing Alternative

Under this alternative grazing would be eliminated. Impacts to cultural resources from grazing within the allotment would be minimal due to the removal of livestock grazing in the area.

Cumulative Impacts

The Cumulative Effects Study Area (CESA) has been identified as the Wilson Mountain Allotment with a ¼ mile buffer beyond the allotment boundary. The boundary for the CESA is based upon the potential for impacts to cultural resources from livestock uses within the allotment boundaries and the wildlife being drawn to and congregating near the periphery of the allotments due to beneficial range improvements.

The No Action Alternative has slightly negative effects, resulting over the long-term in adverse impacts upon cultural resources. The Sagebrush Nesting Habitat alternative provides for periods of rest for the northern pasture of the allotment, minimizing the potential for adverse impacts and ensures positive effects for cultural resources through monitoring. The increased grazing alternative would likely increase the amount of impacts to cultural resources within the allotment even though impacts would continue to be minimal. The No Grazing Alternative would have overall positive impacts because of the elimination of grazing within the allotment reducing the amount of disturbance to cultural resources.

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

PPRFFAs within this CESA include livestock grazing, proposed vegetation treatments, mining, fuel woodcutting, commercial wood products, and commercial and dispersed recreation. No direct or indirect impacts from the Proposed Action or alternatives would occur to cultural resources outside of this CESA boundary. The potential exists for future impacts to cultural resources within the CESA area, but are expected to continue to be minimal.

3.3.2 Fire Management

Affected Environment

Fire history and fire effects in the Great Basin are a vital component of resource health. Historically, the Wilson Mountain Allotment was fire adapted. Fire played a regular disturbance role in the ecosystem. Fire exclusion has occurred throughout the west since Europeans arrived, which is thought to have affected the natural role of fire. Vegetation volume has increased, and vegetative composition has changed as a result of this natural disturbance alteration resulting in mature sagebrush with increasing dead to live woody material and decreasing understory grasses and forbs. Fires prior to European settlement once carried through fine fuels and created structural and age class diversity in sagebrush sites. According to Miller and Tausch (2001), infrequent fires in the past 130 years have allowed small patches of juniper to establish on sagebrush sites within the allotment. This pinyon-juniper fuel type presents a unique fire hazard as the potential for crown fire is higher.

Wildfire, overgrazing, Off Highway Vehicles, and other anthropogenic disturbances have facilitated the expansion of cheatgrass and other non-native plants on the landscape. Non-native plants have an ecological advantage over native plants by having the ability to use resources earlier and more efficiently than most native plants. Cheatgrass has created severe fuel loading

on the landscape and is primarily responsible for the recent large acreage fire years (i.e., 2001 and 2006).

The 2004 Northeast Nevada Fire Management Plan (NEN FMP) identified eleven Fire Management Units (FMUs) within the Elko District BLM. The Wilson Mountain Allotment is located within the Owyhee Desert FMU. The Owyhee Desert (Owyhee) FMU is located in the northwestern portion of the NEN Fire Planning Unit (FPU). This FMU lies generally within the Owyhee plateau in Nevada and is comprised of 983,929 acres. Fire history and statistics were developed from the 2004 NEN FMP and updated with more recent fire history data collected through BLM Geographic Information System (GIS). Within the Owyhee FMU a total of 41 fires have occurs for a cumulative total of 283,825 acres have burned within the last 30 years. Table 6 shows the number of fires and total acres burned for the last 30 years within the Wilson Mountain Allotment.

Table 6. Fires that have occurred within the allotment within the past 30 years

Year	Fire Name	Acres
2007	Petan-Wilson	648
2012	Lime	1,052

Direct and Indirect Effects of Alternatives

Alternative 1- No Action

Under this alternative the livestock grazing permit would remain the same. Cheatgrass has been identified within the Wilson Mountain Allotment as a minor component in the burned and unburned areas. Without any expected soil disturbances associated with new range improvements, cheatgrass would not be expected to invade into new areas of the allotment. Grazing would continue to reduce fine fuels within the allotment and may reduce fire rate of spread.

Alternative 2 – Proposed Alternative

Under this alternative, grazing effects would be similar to the No Action Alternative. TNR AUMs would be added to the active grazing preference. Adding TNR to the active preference would likely continue to help reduce fine fuel loading and may help reduce fire rate of spread. In the areas where medusahead rye grass has invaded, BLM treatments would likely have positive effects on fire management. As noted in the 2012 Draft Standards and Guidelines Assessment, medusahead has a high silica content which takes several years to decompose. This allows medusahead to crowd out other plants before they become established and creates an extremely heavy fuel load. Reducing medusahead within the allotment will likely create more favorable conditions for fire suppression and management.

Alternative 3 – Sagebrush-Associated Nesting Habitat Alternative

Under this alternative, the grazing system proposed for this alternative would allow for deferment of grazing in the northern and southern pastures of the allotment. Fine fuels (grasses) may increase throughout the deferred and rested pastures and may pose an increased threat of wildfire throughout the allotments. Pastures that have been rested would contain larger concentrations of fine fuels and this could increase the threat of a wildfire.

Alternative 4 – Increased Grazing Alternative

Under this alternative grazing would be increased. This would likely cause a reduction in fine fuel continuity and loading within the allotment. This would likely help with fire suppression if a fire started within the allotment. An increase in grazing may also have negative effects on the allotment as non-native plants may be spread through increased disturbance. Increased grazing may also help facilitate conversion of areas dominated by grasses and forbs to areas dominated by woody plants (e.g., sagebrush). This would likely increase woody fuel loading within the allotment and may make fire management and suppression more difficult in the future.

Alternative 5 – No Grazing Alternative

Under this alternative grazing would be eliminated on the allotment. Fuel loading on the public lands within the allotment would likely increase as a result of the grazing elimination. Wildfires would be harder to contain under this alternative as fuel continuity and loading would likely increase.

Cumulative Impacts

The CESA for Fire Management is the Owyhee Fire Management Unit. The Owyhee FMU is described in the Northeastern Nevada Fire Management Plan and is 1 of 28 FMUs within the Northeastern Nevada FPU. This FMU lies generally within the Owyhee plateau sub-basins and ranges from roughly 5,000 and 9,000 feet above sea level. Map 3 shows the locations of the two fires that have recently occurred within the allotment and the Owyhee FMU boundary. The Owyhee-desert FMU is the fire planning unit for the Owyhee plateau area and sets forth objectives and strategies for fire management within the Owyhee-desert FMU.

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

PPRFFAs within this CESA include livestock grazing, proposed vegetation treatments, mining, fuel woodcutting, commercial wood products, and commercial and dispersed recreation. No direct or indirect impacts from the Proposed Action or alternatives would occur to fire management outside of this CESA boundary. The potential exists for future wildfire events in the area, as does the potential for additional fuels management activities and possible wildland fire management for resource benefit. Some indirect effects from the Proposed Action and the Sagebrush Nesting Habitat Alternative include the possibility of increased fine fuels (perennial or annual grasses) due to deferred grazing. However, the amount of fine fuels that may occur onsite site due to deferred grazing would be relatively small; therefore, there are no cumulative impacts related to any of the alternatives that are of concern related to Fire Management.

3.3.3 Invasive, Non-native Plant Species

Affected Environment

A "noxious weed" is defined as any species of plant that is, or is likely to be, detrimental or destructive and difficult to control or eradicate (Nevada Revised Statute [NRS] 555.010-555.220). Noxious weeds have become a growing concern in Nevada based on their ability to increase in cover relative to surrounding vegetation and exclude native plants from an area. The spread of noxious weeds has resulted in substantial economic impacts on some sectors of the State of Nevada (State). As a result, the State has enacted laws requiring the control of noxious weed species (NRS 555.005, NAC 555.010). In addition, the federal Noxious Weed Act of 1974, as amended (7 United States Code [USC] 2801 et. seq.) requires cooperation with State, local, and other federal agencies in the application and enforcement of all laws and regulations relating to the management and control of noxious weeds. Recognizing these regulations, the Bureau of Land Management (BLM) requires that National Environmental Policy Act documents consider and analyze the potential for the spread of noxious weed species and provide preventative rehabilitation measures for each management action involving surface disturbance.

The BLM considers plants "invasive" if they have been introduced into an environment where they did not evolve (i.e., non-native). As a result, invasive species usually have no natural enemies to limit their reproduction and spreading (Westbrooks 1998). Some invasive plant species can produce substantial changes to vegetation composition, structure, or ecosystem function (Cronk and Fuller 1995).

Noxious weeds and invasive species have the ability to readily establish and spread rapidly, particularly in disturbed areas, and may cause damage to agriculture, rangeland resources, and forestry, as well as increase fire susceptibility. Noxious weeds and invasive species are spread by a variety of means including vehicles, construction equipment, construction and reclamation materials, livestock, wildlife and wind. Vehicle traffic is a major contributor to weeds invading a new area because seeds and plant parts can become embedded in tire treads and any mud carried on a vehicle from an infested area. Weeds could then establish themselves most easily along roadways.

Cheatgrass is a concern within the understory of the sagebrush plant community as cheatgrass provides very little habitat for threatened and sensitive species such as the sage-grouse and the pygmy rabbit that rely upon sagebrush vegetation for food and shelter. Cheatgrass also is able to alter the natural fire regimes of the sagebrush community which often leads to an increase in noxious weed or invasive species infestations. The dry, dead cheatgrass stems produce a continuous layer of fuel to carry large and rapidly growing wildfires.

Under NRS 555.010-555.220, noxious weeds are classified into three categories: A, B, and C. Each category has specific control requirements, with the most stringent requirements for those species found in Category A.

Category A includes noxious weeds, which are:

- Not found or limited in distribution throughout the state;

- Actively excluded from the state and actively eradicated wherever found; and
- Controlled by the state for all infestations.

Category B includes noxious weed species, which are:

- Established in scattered populations in some counties of the state;
- Actively excluded where possible; and
- Controlled by the state in areas where populations are not well established or previously unknown to occur.

Category C includes noxious weeds, which are:

- Currently established and generally widespread in many counties of the state; and
- Controlled and abated at the discretion of the state quarantine officer (Nevada Department of Agriculture 2006).

Baseline vegetation studies, which included field assessments and subsequent documentation of invasive non-native plant species occurrences, are ongoing throughout the Elko District BLM. Invasive non-native species found within or adjacent to these allotments include: Canada thistle (*Cirsium arvense*), Scotch thistle (*Onopordum acanthium*), and medusahead rye grass (*Taeniatherum caput-medusae*). Cheatgrass (*Bromes tectorum*) is a non-native invasive grass species that is present in recently burned areas within the allotment. It is also a minor component of the undisturbed plant communities throughout the allotment.

Direct and Indirect Effects of Alternatives

Alternative 1- No Action

The No Action Alternative would have minimal effects on populations of noxious and invasive species in the allotment. Data from the 2012 Draft Standards and Guidelines Assessment shows the current grazing system is allowing resilience against non-native plant invasion.

Alternative 2 - Proposed Alternative

Under this alternative, AUMs would stay the same as currently authorized and impacts from livestock grazing would be similar to the No Action Alternative. The areas that have been invaded by medusahead rye grass would be treated by the BLM. As noted in the 2012 Draft Standards and Guidelines Assessment, medusahead is an extremely invasive plant that has the capability to take over rangelands. Treatment of the medusahead using various methods would likely have positive impacts on the allotment and would allow native plants to fill ecological niches that the medusahead is currently occupying.

Alternative 3 – Sagebrush-Associated Nesting Habitat Alternative

The Sagebrush Nesting Habitat Alternative would likely have similar impacts to the No Action Alternative. This alternative would not likely have any adverse effects on the plant communities within the allotment. The deferred grazing schedule would likely reduce the amount of overall disturbance on some of the upland and riparian areas within the allotment. Because the amount

of AUMs would not change, this alternative would likely continue to provide resiliency to invasion by invasive or noxious plants.

Alternative 4 – Increased Grazing

Under this alternative, grazing would be increased within the allotment. The increased disturbance may allow an increase in noxious or invasive plants in areas where they are already established or to spread to areas where they are currently not located because of the increased disturbance to soil, water and vegetation resources.

Alternative 5 – No Grazing Alternative

Under this alternative grazing would be eliminated from the allotment. This would likely help minimize the amount of noxious weeds spread through livestock transfer of seeds. This alternative would likely increase the amount of fuels within the allotment and may increase the potential for fire which may facilitate the expansion of noxious or invasive plants.

Cumulative Impacts

The CESA for noxious weeds and invasive species is the Wilson Mountain Allotment boundary. The past, present, and reasonably foreseeable future actions associated with these allotments include anything that could transport seeds and ground disturbing activities. Examples within this CESA include: potential mine exploration/development, past and future wildland fires, County Road 226 (associated construction/maintenance and travel), power lines, and recreational uses.

Invasive and noxious weed populations already exist within the CESA in un-reclaimed previously disturbed areas and along existing roads. The common elements associated with most weed infestations are anything that causes ground disturbance such as: wildfire, grazing, or use of motorized vehicles (transportation and disturbance), mining and exploration activities. Surface disturbances associated with mining typically create areas that are devoid of vegetation or are sparsely vegetated until desirable vegetation can become established after reclamation. Intensive long-term grazing in localized areas and burned areas as a result of wildfires can reduce the vegetative cover provided by native vegetation. Recent wildfires have converted what was once primarily sagebrush habitat to expanses of cheatgrass in some areas. Surface disturbances from off road recreational vehicle use and road maintenance vehicles can result in the loss of vegetative cover that will increase the risk of noxious and invasive weed cover and dominance.

Noxious weeds and invasive species readily become established in areas that have been subjected to surface disturbances that have removed or reduced vegetative cover. After weeds are introduced into an area, they generally continue to spread into adjacent areas. The spread of weeds results in the displacement of native vegetation important to wildlife.

Although all of these activities within the CESA increase the cumulative risk of noxious weed and invasive plant invasions, the risks posed by the Alternatives when added to the PPRFFAs are minor.

3.3.4 Lands with Wilderness Characteristics

Affected Environment

Managing the wilderness resource is part of the BLM's multiple use mission. Lands with wilderness characteristics provide a range of uses and benefits in addition to their value as settings for solitude or primitive and unconfined recreation. Guidance and general procedures for conducting wilderness characteristics inventories is found under Section 201 of the Federal Land Policy and Management Act of 1976 (FLPMA) and supersedes all previous guidance on inventorying lands with wilderness characteristics.

Section 201 of FLPMA requires the BLM to maintain on a continuing basis an inventory of all public lands and their resources and other values, which includes wilderness characteristics. FLPMA also provides that the preparation and maintenance of the inventory shall not, of itself, change or prevent change of the management or use of public lands. Regardless of past inventories, the BLM must maintain and update as necessary, its inventory of wilderness resources on public lands. In some circumstances conditions relating to wilderness characteristics may have changed over time, and an area that was once determined to lack wilderness characteristics may now possess them. The proposed action may impact wilderness characteristics; therefore a wilderness characteristics inventory of the project area is required per BLM Manual 6310 Conducting Wilderness Characteristics Inventory on BLM Lands.

The 1980 Intensive Inventory was conducted on unit NV-010-135, Bull Run, which was an 8,700 acre unit that was found to lack wilderness characteristics. On August 5, 2013 a Lands with Wilderness Characteristics (LWC) inventory was conducted on NV-EK-02-441, Bull Run, a 8,967 acre area. It was determined that Bull Run does contain wilderness characteristics.

Direct and Indirect Effects of Alternatives

The Wilson Mountain Allotment is used for dispersed recreational activities. Bull Run has been determined to have wilderness characteristics however because no developed recreation facilities exist within the allotment there will be no impacts to the naturalness. Most recreation activities occurring on these allotments are camping and off-road vehicle use associated with the late summer and fall big game hunting seasons. Other dispersed recreation activities include camping, photography, wildlife viewing, sightseeing, and upland game hunting leaving the area largely unaffected by human-use.

Alternative 1 – No Action

Under this alternative dispersed recreation use would continue in the same way as is occurring now. Recreationists see the grazing operation while recreating; as they go through gates at fences, and/or use existing springs and other water sources. Livestock are seen throughout the area but to the casual user, this presence is random and the norm. There are livestock trails present through the vegetation, and recreationists use them rather than walking cross-country.

Alternative 2 – Proposed Action

Actions under this alternative would be the same as the No Action Alternative described above.

Alternative 3 – Sagebrush-Associated Nesting Habitat Alternative

Actions under this alternative would be the same as the No Action Alternative described above.

Alternative 4 – No Grazing

Under this alternative the casual user would not see grazing operations while recreating. Trails created by livestock through the vegetation would not be as abundant or maintained by livestock using them and recreationist users would end up walking cross-country.

Cumulative Impacts

There are no cumulative impacts of concern for Land with Wilderness Characteristics.

3.3.5 Livestock Grazing and Socio-Economics

Affected Environment

Livestock grazing is one of the most important economic activities in Elko County. A 2003 study identified 142 economic sectors within the Elko County economy. 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 percent of the total workforce, which ranked this sector 9th out of the 142 sectors; the industry realized $43.5 million in export sales, representing 5.77 percent 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, Jonathan, et al., 2007; Fadali, Elizabeth, et al., 2009; Fadali, Elizabeth, and Thomas R. Harris., 2006; Harris, Thomas R., et al., 2007).

Elko County has a land base of just less than eleven million acres, of which 71.5 percent is in Federal ownership. Private farm and rangelands occupy another 26 percent of the county's land base, with the remaining 2.5 percent 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 percent of all Elko County beef cow operations held federal grazing permits. The average Elko county ranch derives 49 percent 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 annual production value of $38 and a total annual 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.

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 low, usually averaging about two percent. Volatile cattle and energy input prices and ever increasing equipment capital 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 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.

The role of western rangelands in the livestock industry has been declining in recent decades, largely through the abundant availability of cheap grains fueled by cheap oil. However, the increased demand for grains (mostly corn) for competing uses, especially energy production, has reversed these trends in the past several years. 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 percent 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.

The current grazing permit for the Wilson Mountain Allotment allows cattle grazing from 01 April to 15 July annually with a total permitted use of 308 AUMs. The BLM also allows TNR use on the allotment when utilization levels are not expected to reach 50 percent on key forage species. TNR is typically authorized from 05 June to 15 July for a total of 166 AUMs. A management plan further specifies where livestock can be in each allotment within the date ranges on the permit. The combined 308 ($25,872) AUMs plus 166 ($13,944) TNR AUMs represent a total potential annual economic impact of $39,816 to the grazing preference holder. The combined 308 ($45,584) AUMs plus 166 ($24,568) TNR AUMs represent a total potential annual economic impact of $70,152 to the Elko County economy for the public and private land AUMs associated with the Wilson Mountain Allotment.

Direct and Indirect Effects of Alternatives

<u>Alternative 1- No Action</u>

Under the No Action Alternative, a 10-year grazing permit with existing terms and conditions would be issued to the grazing preference holder for the Wilson Mountain Allotment. The current management plan would remain in effect. The overall economic impact to Elko County would be unchanged from the current situation as described in the affected environment section.

<u>Alternative 2 – Proposed Alternative</u>

Under this alternative, a 10-year permit would be issued. The terms and conditions of the permit would stay the same as the current grazing permit except TNR AUMs and dates previously analyzed by the BLM (BLM 2006 and BLM 2010) would be added to the active grazing preference. The overall economic impact to Elko County economy would be unchanged from the

current situation described in the affected environment. Areas that have been invaded by medusahead rye grass would be treated by the BLM. The treatment of medusahead would likely have benefits to wildlife and livestock as the grass can cause serious injury to when caught in the throat of herbivores.

Alternative 3 – Sagebrush-Associated Nesting Habitat Alternative

Under this alternative a ten year permit would be issued. The terms and conditions of the permit would stay the same as the current grazing permit. The overall impacts to livestock grazing would be similar to those described in the No Action and Proposed Action Alternative. AUM numbers would stay the same as currently permitted and would provide the same economic output for the permit holder and Elko County.

Alternative 4 – Increased Grazing Alternative

Under this alternative a 10-year permit would be issued. The terms and conditions of the permit would stay the same except grazing would be increased from 308 to 615 AUMs and the season of use would be extended to allow more flexibility into the grazing system. Using the figures in the affected environment section, this alternative would increase the economic impact for the grazing preference holder from $39,816 to $51,660. The overall economic impact for Elko County would increase from $70,152 to $91,020.

Alternative 5 – No Grazing Alternative

Under this alternative all grazing would be eliminated within the allotment. The current grazing permit would be cancelled and BLM would inherit all maintenance responsibilities for the allotment boundary fences. Eliminating grazing would likely have negative impacts to the public lands portion of the allotment as the private land owner would likely fence the private sections of the allotment with non-wildlife friendly fencing. This would restrict wildlife movements and migrations and may result in increased fatalities to wildlife species including sage-grouse. Eliminating grazing would likely cause economic uncertainty to the grazing preference holder and would result in loss of revenue to the preference holder as wells as the Elko County economy.

Under this alternative no grazing would occur, there would be no livestock capacity determinations, no utilization or grazing intensity guidelines, no grazing management system, and no implementation or effectiveness monitoring. This alternative does not preclude livestock grazing or livestock management on this allotment in the future if a decision is made through another comprehensive analysis to resume these actions.

Cumulative Impacts

The CESA for Livestock Grazing is the Wilson Mountain Allotment boundary. Livestock grazing would continue under any of the alternatives except the No Grazing Alternative. The No Action and Sagebrush Nesting Habitat Alternatives would continue using the current AUMs and dates and would continue the positive economic impacts to the agricultural sector of the Elko

County economy. The Proposed Action Alternative would authorize grazing with the addition of previously analyzed TNR AUMs added to the active grazing preference. This action would likely have positive impacts to the Elko County economy as it would directly add 166 AUMs to the active grazing preference. The Increased Grazing Alternative would increase the amount of livestock on the allotment and would have a positive impact on the Elko County economy. The No Grazing Alternative would remove all livestock grazing from the allotment. This alternative would likely have a negative impact on the grazing preference holder and the Elko County economy. Past, Present, and Reasonably Foreseeable Future Actions within this CESA include livestock grazing, vegetation treatments, mining and minerals exploration, and commercial and dispersed recreation. No direct or indirect impacts from the Proposed Action or Alternatives would occur to livestock grazing outside of this CESA boundary.

3.3.6 Native American Traditional Values

Affected Environment

Regulatory Framework: Federal law and agency guidance require the BLM to consult with Native American tribal governments concerning the identification of cultural values, religious beliefs, and traditional practices of the Native American peoples that may be affected by actions on BLM-administered lands. This consultation includes the identification of places (i.e., physical locations) of traditional cultural importance to the affected Native American tribes. Places that may be of Native American traditional cultural importance include, but are not limited to:

- Locations associated with the traditional beliefs concerning tribal origins, cultural history, or the nature of the world;
- Locations where religious practitioners go, either in the past or the present, to perform ceremonial activities based on traditional cultural rules or practice; Ancestral habitation sites; Trails; Burial sites; and Places from which plants, animals, minerals, and waters believed to possess healing powers or used for other subsistence purposes, may be taken.
- Some of these locations may be considered sacred to particular Native American individuals or tribes.

In 1992, the National Historic Preservation Act (NHPA) was amended to explicitly allow that "properties of traditional religious and cultural importance to an Indian tribe may be determined to be eligible for inclusion on the National Register of Historic Places." If a resource has been identified as having importance in traditional cultural practices and the continuing cultural identity of a community, it may be considered a "traditional cultural property" (TCP). To qualify for nomination to the National Register of Historic Places (NRHP), a TCP must:

- Be more than 50 years old;
- Be a place with definable boundaries;
- Retain integrity; and

- Meet certain eligibility criteria as outlined for cultural resources in the NHPA (Section 3.8, Cultural Resources).

In addition to NRHP eligibility, some places of cultural and religious importance also must be evaluated to determine if they should be considered under other federal laws, regulations, directives, or policies. These include, but are not limited to, the Native American Graves Protection and Repatriation Act of 1990, American Indian Religious Freedom Act of 1978, Archaeological Resources Protection Act (ARPA) of 1979, and Executive Order (EO) 13007 (Sacred Sites) of 1996.

The effects of federal undertakings on properties of religious or cultural significance to contemporary Native Americans are given consideration under the provisions of EO 13007, American Indian Religious Freedom Act, and recent amendments to the NHPA. As amended, the NHPA now integrates Indian tribes into the Section 106 compliance process and also strives to make the NHPA and National Environmental Policy Act procedurally compatible. Furthermore, under Native American Graves Protection and Repatriation Act, culturally affiliated Indian tribes and the BLM jointly may develop procedures to be taken when Native American human remains are discovered on federal land.

Tribal Consultation: The BLM, Elko District, Tuscarora Field Office has consulted and shared information with the groups listed in Table 5. Consultation and communication with these tribal/band governments have included letters, phone calls, and visits with the individual Tribal/Band Councils.

Table 7. Summary of Native American Consultation (Consultation is On-Going).

Name of Tribe or Band	Date of contact	Type of Contact	Comments/Notes
Te-Moak Tribe of Western Shoshone	2-27-2013	Letter from BLM	Invitation to open government-to-government consultation
	3-6-2013	Council meeting	Information sharing at Councils request. No Comments or concerns provided.
Battle Mountain Band	2-27-2013	Letter from BLM	Invitation to open government-to-government consultation
	4-24-2013	Council Meeting	Information sharing at Councils request. No Comments or concerns provided.
Elko Band	2-27-2013	Letter from BLM	Invitation to open government-to-government consultation
	4-17-2013	Council Meeting	Information sharing at Councils request. No Comments or concerns provided.
South Fork Band	2-27-2013	Letter from BLM	Invitation to open government-to-government consultation
	3-5-2013	Council meeting	Information sharing at Councils request. No Comments or concerns provided.

Table 7. Summary of Native American Consultation (Consultation is On-Going).			
Name of Tribe or Band	**Date of contact**	**Type of Contact**	**Comments/Notes**
Wells Band	2-27-2013	Letter from BLM	Invitation to open government-to-government consultation
	3-11-2013	Council meeting	Information sharing at Councils request. No Comments or concerns provided.
Shoshone Paiute Tribes of the Duck Valley Indian Reservation	2-27-2013	Letter from BLM	Invitation to open government-to-government consultation
Confederate Tribes of the Goshute Indian Reservation	2-27-2013	Letter from BLM	Invitation to open government-to-government consultation
	5-3-2013	Council meeting	Information sharing at Councils request. No Comments or concerns provided.
Duckwater Shoshone Tribe	2-27-2013	Letter from BLM	Invitation to open government-to-government consultation
Yomba Shoshone Tribe	2-27-2013	Letter from BLM	Invitation to open government-to-government consultation
	3-8-2013	Council meeting	Information sharing at Councils request. No Comments or concerns provided.
Ely Shoshone Tribe	2-27-2013	Letter from BLM	Invitation to open government-to-government consultation

Tribal ethnographic resources are associated with the cultural practices, beliefs, and traditional history of a community. In general, ethnographic resources include places in oral histories or traditional places, such as particular rock formations, the geothermal water sources, or a rock cairn; large areas, such as landscapes and viewscapes; sacred sites and places used for religious practices; social or traditional gathering areas, such as racing grounds; natural resources, such as plant materials or clay deposits used for arts, crafts, or ceremonies; and places and natural resources traditionally used for non-ceremonial uses, such as trails or camping locations.

Assessment data: No currently known, documented, or Tribally identified areas of concern have been identified within or immediately adjacent to the allotment. This does not mean to imply, however, that resources utilized by the tribal communities (i.e., edible/medicinal plants and other items that aid in the maintenance of traditional lifeways).

Consultation is ongoing and new information may be provided by participating tribal representatives that could alter BLM project design and location, proposed implementations, and/or decision making.

Alternative 1– No Action Alternative

Grazing would continue within the allotment, with the low likelihood of any effect to spiritual, religious, or traditional use resources. For further discussion of cultural resources (archaeological sites) see section 3.3.1 of this document.

Alternative 2 – Proposed Action Alternative

The effects of this alternative would be similar to those found in the No Action Alternative. The area that would be treated for Medusahead-rye grass would not likely have any adverse impacts to any spiritual, religious, or tradition use resources. Cultural resources within the area would also not likely be adversely impacted. For further discussion of cultural resources (archaeological sites) see section 3.3.1 of this document.

Alternative 3 – Sagebrush-Associated Nesting Habitat Alternative

The direct and indirect effects of this alternative would be similar to those found in the No Action Alternative.

Alternative 4 – Increased Grazing Alternative

Under this alternative grazing use on the allotment would be increased, potentially increasing negative impacts to native plant species utilized by tribal communities. For further discussion of cultural resources (archaeological sites) see section 3.3.1 of this document.

Alternative 5 – No Grazing Alternative

Under this alternative grazing would be eliminated, potentially increasing positive impacts to native plant species utilized by tribal communities. For further discussion of cultural resources (archaeological sites) see section 3.3.1 of this document.

Cumulative Impacts

It is believed that cultural resources (including tribal resources and sites of cultural, traditional, spiritual use and associated activities) as well as activities on public lands that are integral to the continuation of traditional way of life are increasingly in danger of losing their physical and spiritual integrity. As populations grow, public interest in utilizing lands administered by the BLM increases and thus the potential for the decline of culturally sensitive areas also increases. Different world views and social and spiritual practices and beliefs often conflict with each other. Because the traditional territory of the Western Shoshone, Goshute, and Paiute encompass the majority of the State of Nevada, including the Elko District, Tuscarora Field Office, it is imperative that BLM and affected Tribes remain flexible and open to productive and proactive communication in order to assist each other in making decisions that will significantly reduce or eliminate any adverse effects to all parties involved.

A Native American Religious Concerns Cumulative Effects Study Area (CESA) boundary includes the Bull Run Watershed and Owyhee Plateau. Traditional Native American use of the area has been suggested to be largely dependent upon the availability of water (Stewart, 1936). No areas of religious, spiritual or traditional concern have been identified through consultation.

Over 70 years of active rangeland grazing practices, improvements at water sources and other areas, and other actions in relation to rangeland management within the CESA have altered the

traditional balance of the native plant species' ecosystem and other resources that were traditionally the economic base of the local tribal communities. Historic fires, rehabilitation efforts, and other management practices have further altered the historic ecosystem, increasing both forage and noxious weed communities and decreasing native and traditional use species. Rangeland improvement actions to water sources (creeks and springs) have impacted traditional use types, areas, and belief systems.

The actions outlined within the allotment alternatives will continue to impact the Native American traditional lifeway's and economic base in both positive and negative ways.

Continued active grazing at either current or increased levels will likely not allow for the re-establishment or increase in native traditional use plant species. The continued redirection of water sources for livestock use will inhibit traditional daily life or spiritual use.

The reduction of noxious and invasive plant species will aid in remedying historic adverse effects to Native American concerns.

3.3.7 Recreation

Affected Environment

The Wilson Mountain Allotment is used for dispersed recreational activities. No developed recreational facilities exist within the allotment. Most recreational activities occurring on these allotments are camping and off-road vehicle use associated with the late summer and fall big game hunting seasons. Other dispersed recreation activities include photography, wildlife viewing, sightseeing/exploring, and upland game hunting.

Direct and Indirect Effects of Alternatives

Alternative 1- No Action

Under this alternative dispersed recreation use would continue in the same way as is occurring now. Recreationists see the grazing operation while recreating; they go through gates at fences, and know of or use existing springs and other water sources. Livestock are seen throughout the area but to the casual user, this presence is random and is a standard practice on the allotment. There are livestock trails present through the vegetation, and recreationists use them rather than walking cross-country.

Alternative 2 - Proposed Action

Under this alternative, grazing use would continue to occur on the allotment. The impacts of this alternative are similar to the No Action Alternative. The area that would be treated for medusahead rye grass would not likely have any adverse impacts to recreational activities or recreationists. Increasing the health of the plant community would potentially benefit wildlife which in turn may indirectly benefit recreationists.

Alternative 3 – Sagebrush-Associated Nesting Habitat Alternative

Under this alternative, grazing use would continue to occur on the allotment. Impacts of this alternative would be similar to those under the No Action and Proposed Action Alternatives.

Alternative 4 – Increased Grazing Alternative

Under this alternative, grazing use would be increased and season of use would be changed. While more cattle would be on the allotment, the impacts of this alternative would be similar to the No Action Alternative, Proposed Alternative, and the Sagebrush Nesting Habitat Alternative. Hunters may be negatively impacted by the increase in grazing because the grazing may occur during hunting season.

Alternative 5 – No Grazing Alternative

Under this alternative, grazing use would be eliminated within the allotment. Recreational activities would likely not change. Recreationists would likely not notice any impacts from the grazing closure.

Cumulative Impacts

The CESA for recreation is the Wilson Mountain allotment boundary. Recreational use will likely continue no matter which alternative is selected. Livestock grazing is a standard practice in Northern Nevada and doesn't impact recreationists negatively. Mining operations in the area will likely impact recreation use more than livestock grazing. There are no cumulative impacts of concern.

3.3.8 Soil Resources

Affected Environment

Soils in the project area are Aridisols that vary in depth, texture, erosion potential, and other characteristics based upon several soil forming factors. These soils have a mesic temperature regime and aridic soil moisture regime. Isolated patches of hydric soils are present near water resources. Topography within the project area consists of a Pleistocene lake bed and dissected alluvial fans. Soils on these features are generally deep and formed from parent materials that were deposited by water or wind. The surface textures of the soils ranges from fine silty loams to very gravelly loams on the eastern edge of the project area. Hazard of erosion by wind is high for 8 percent, moderate for 67 percent and low for 25 percent of soils in the project area. Hazard of erosion by wind is highest with fine soils in the eastern portion of the project area and decreases as soils become coarser to the east. Hazard of erosion by water when soils are disturbed is slight throughout the area. More information regarding soil characteristics can be found in the Standards and Guidelines assessment (BLM 2012) or the NRCS soil survey (USDA, 2002).

A large portion of the allotment has soils that are capable of producing a biological soil crust cover. The remaining area has soils which either have too coarse a soil texture, or are flooded too

frequently to develop soil crusts. Observations indicate that moss crusts are present in areas capable of producing crusts on public land. Cyanobacterial crusts have been observed throughout the allotment. Areas of livestock concentration and other disturbance such as near springs, watering wells, fence lines and roads most likely do not contain biological soil crusts because of the increased disturbance. Biological soil crusts are important for reducing wind erosion, inhibiting weed growth, improving infiltration and preventing soil splash erosion (BLM 2001).

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, road construction, and mining exploration, which result in small scale, potentially severe impacts to soils. These activities result in removal of vegetation, soil compaction, and other impacts to soil quality factors. Short term impacts such as dispersed recreational use have not been observed to impact soil quality in the long term. Continued use of roads will 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 climatic variability. The area has been grazed historically by cattle likely resulting in some impacts to soil quality. Recent drought and climatic variability in general has likely affected soil quality by reducing vegetative productivity, infiltration, aggregate stability, and other soil quality factors. These impacts are likely exacerbated by the effects of global climate change (Karl et. al 2009).

Direct and Indirect Effects Common to All Alternatives

Grazing and related activities can potentially impact soil resources within the project area by affecting the soil's physical properties and through removal of vegetation. Direct impacts include compaction, hoof sheer and other physical impacts which reduce aggregate stability increasing the likelihood of erosion by wind and water (USDA 2001). These direct impacts also occur to biological soil crusts where present. The effects of these impacts are similar to those described above with the addition that affected biological soil crusts would take longer to recover. 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.

Alternative 1- No Action

Under the No Action Alternative, the current impacts to soils within the allotment appear to be minimal and would be expected to continue. Soil compaction and disturbance is expected with most anthropogenic activities including livestock grazing.

Alternative 2 - Proposed Action

Under this alternative, impacts to soils would be similar to the No Action Alternative, as AUMs and season of use would not differ from the current schedule and numbers (including TNR).

Soils in the area that have been invaded by medusahead rye grass would likely be impacted by the treatments. Any of the proposed medusahead treatments may open the soil to accelerated erosion and other effects noted in the Direct and Indirect Effects section.

Alternative 3 – Sagebrush-Associated Nesting Habitat Alternative

The effects of this alternative would be similar to those described for the Proposed Action Alternative. A resting period for the northern end of the allotment during the month of April may lessen soil compaction in that area. Soils in the southern pasture may be adversely impacted by this alternative as grazing would occur during April when soils in the allotment are typically wet.

Alternative 4 – Increased Grazing Alternative

Under this alternative, grazing use would be increased in the allotment. Increased grazing use may negatively impact soils through increased trampling and hoof action. Increased use may also accelerate soil erosion through decreased vegetative cover. Other effects to soils from this alternative are noted in the Direct and Indirect Effects section.

Alternative 5 – No Grazing Alternative

Under this alternative grazing use would be eliminated in the allotment. Direct impacts to soils from livestock grazing would cease. This alternative would likely increase vegetation in the allotment, which could increase fire potential. Increased fire potential may have adverse impacts to soils through increased erosion if hydrophobicity occurs and or depending upon the intensity or severity of a wildfire on the allotment.

Cumulative Impacts

The Cumulative effects study area (CESA) is the Bull Run Watershed Basin. The CESA is defined as this area because water consumption and use within this watershed may indirectly affect or be affected by soil resources within the project area, and grazing use also impacts soils within the project area as described above. Impacts to basin wide water supply are described in the water resources section of this document. Water supply within the basin has likely affected soils by decreasing the amount of available water and changing the soil structure in much of the project area. Other cumulative effects to soils such as impacts from roads, invasive species, and recreation are described above for the affected environment. These cumulative impacts have already resulted in minimal cumulative effects which would continue to occur and may slightly increase or decrease under all of the alternatives. The incremental change in impacts that could occur under the alternatives on the allotment is very small when compared to the cumulative impacts that occur as a whole.

3.3.9 Wildlife including Special Status Species, and Migratory Birds

Affected Environment

The 2012 Draft Standards and Guides Assessment documented that current livestock grazing was in conformance with guidelines for Standard 3: Habitat.

Regarding this subsection for affected wildlife, the following is an excerpt from the June 2012 Wilson Mountain Allotment Draft Standards And Guidelines For Rangeland Health Assessment (BLM 2012)**:**

"There are approximately 350 species of vertebrate wildlife that potentially occur in northeastern Nevada. As listed in Appendix 2, the allotment provides habitat for many of these species on a seasonal or yearlong basis in association with sagebrush/grassland steppe. The allotment also provides aspen, juniper, sagebrush, montane shrub (mountain brush), cliffs and talus, dry and wet meadow, and montane riparian habitat types.

Wildlife habitat cover and forage needs are provided by riparian/meadow areas interspersed within ecological sites characterized by the bitterbrush-big sagebrush, low sagebrush, and mountain shrub vegetation types and associated understory forbs and perennial grasses. Isolated Western juniper (Juniperus occidentalis) trees at mid elevations, to more scattered stands at upper elevations, provide additional cover and forage. Isolated quaking aspen and common chokecherry stands provide additional cover and forage for wildlife, primarily on drainage areas at mid to upper elevations.

Although riparian areas comprise a relatively small portion of the available habitat within the allotment, they provide a disproportionately higher habitat value for wildlife. As indicated above under 6.1 Riparian-wetland Functioning Condition Assessments Proper Functioning Condition (PFC) data, the vast majority (8 of 10) of areas sampled were in PFC. This, in turn, helps to provide satisfactory riparian/meadow and wetland habitat for wildlife that utilize these areas on a seasonal or yearlong basis."

The table shown in Appendix 3 in the 2012 Draft Standards and Guidelines Assessment (see BLM notation) includes a list of wildlife species that have the potential to occur on the allotment on a seasonal or yearlong basis.

With the exception of Columbia sharp-tailed grouse (*Tympanuchus phasianellus columbianus*) mentioned below, there have been no changes in affected terrestrial wildlife species input and this information is considered "Incorporation by Reference" within the Draft S and G. There are also approximately 10 acres of sub-alpine fir (A*bies lasiocarpa*) (isolated stands and scattered and individual trees) within the allotment on the north side of Wilson Peak. Since the Draft S and G, approximately 1,052 acres were affected, including extensive stands of bitterbrush, by the 2012 Lime Fire on the South Pasture of the allotment. The burn area would provide habitat for wildlife species that inhabit post-wildfire perennial grassland-dominated areas on a seasonal or yearlong basis with wildlife species use changes over time with natural and artificial (seeding and planting efforts) shrub recruitment.

<u>Columbia sharp-tailed grouse</u>
A total of 50 sharp-tailed grouse were trans-located from Southern Idaho to private lands in the Bull Run Basin several miles east of the allotment by the Nevada Department of Wildlife

(NDOW) during Spring 2013. This species was petitioned for listing under the Endangered Species Act in 2004. A 90-day finding, in 2006, concluded that a listing was not warranted. Information regarding this finding from the U.S. Fish and Wildlife Service is found on the following internet website: http://www.fws.gov/mountain-prairie/pressrel/06-67.htm. (It was previously petitioned for listing as a threatened species in 1995. In 2000, the US Fish and Wildlife Service completed a 12-month review of the status of the species and concluded that the species did not warrant range-wide protection at that time.) Sharp-tailed grouse could potentially utilize the Wilson Mountain Allotment for seasonal use needs.

Excerpt from NDOW's 2012-13 SMALL GAME RELEASE SITE PLANNING AND APPROVAL SUMMARY within the 2012 & 2013 NEVADA UPLAND GAME RELEASE *HABITAT EVALUATION* PLAN*: The Bull Run (or Columbia) Basin area contains several habitat types conducive to supporting sharp-tailed grouse. The lower elevation areas support sagebrush-steppe grassland communities that are in good to excellent ecological condition. Grasses, especially Idaho fescue, bluebunch wheatgrass and Sandberg's bluegrass dominate the understory. There are also wet meadows with healthy willow corridors scattered throughout much of the area. The mid-elevation areas are characterized by excellent mountain brush communities. Serviceberry, which is the sharp-tailed grouse's winter mainstay, is well represented throughout the basin. Aspen stands and chokecherry pockets dominate the draws in the mountains. These stands also are represented by a healthy herbaceous community.*

Excerpt from Draft Standards and Guidelines Assessment - Appendix 3

Special Status Species

BLM's policy for management of special status species is found in BLM Manual Section 6840. Special status species include the following:

- Federally Threatened or Endangered Species: Any species that the United States Fish and Wildlife Service (USFWS) has listed as an endangered or threatened species under the ESA throughout all or a significant portion of its range.
- Proposed Threatened or Endangered Species: Any species that the USFWS has proposed for listing as a federally endangered or threatened species under the ESA.
- Candidate Species: Plant and animal taxa that are under consideration for possible listing as threatened or endangered under the ESA.
- BLM Sensitive Species: 1) Species that are currently under status review by the USFWS; 2) Species whose numbers are declining so rapidly that federal listing may become necessary; 3) Species with typically small and widely dispersed populations; or 4) Species that inhabit ecological refugia or other specialized or unique habitats.
- State of Nevada Listed Species: State-protected animals that have been determined to meet BLM's Manual 6840 policy definition.

Nevada BLM policy is to provide State of Nevada listed species and Nevada BLM sensitive species with the same level of protection provided to candidate species in BLM Manual 6840.06C. Nevada protected animals that meet BLM's 6840 policy definition are those species of animals occurring on BLM-managed lands in Nevada that are: 1) 'protected' under authority of the Nevada Administrative Code; 2) have been determined to meet BLM's policy definition of "listing by a state in a category implying potential endangerment or extinction;" and 3) are not

already included as federally listed, proposed, or candidate species (BLM Information Bulletin NV-2003-097).
Special Status Species - Wildlife: With the exception of additional information narratives shown below, there have been no changes in affected environment for wildlife species designated as Special Status Species. This information is already mentioned in the Draft Standards and Guidelines Assessment and is considered as "Incorporation by Reference." Since June 2012, the 2012 Lime Fire affected Special Status Species habitat on the allotment. Follow-up actions, included seeding/planting of native shrubs, grasses and forbs, as an effort to rehabilitate habitat for sage-grouse and other wildlife species including those species designated as SSS or Migratory Birds.

Special Status Species – Plants: There are no known Special Status plant species within the allotment.

Additional Information:

BLM Instruction Memorandum 2012-043 delineated two categories of Greater Sage-Grouse (sage-grouse) habitat for management purposes: Preliminary Priority Habitat (PPH) and Preliminary General Habitat (PGH). PPH comprises 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. PGH comprises areas of occupied seasonal or year-round habitat outside of priority habitat, and these areas have also been identified.
Over 95 percent of the Wilson Mountain is categorized as Preliminary General Habitat or Preliminary Priority Habitat (BLM 2012 Map 5). In contrast to a number of recommended conservation measures for PPH, management direction for PGH in IM 2012-043 is limited to the following:

The intent of these interim conservation policies and procedures in PGH is to reduce and mitigate adverse effects on Greater Sage-Grouse and its habitat to the extent practical. These policies and procedures differ from those applied to PPH.

When approving uses and authorizations, consider and analyze management measures that would reduce direct, indirect, and cumulative adverse effects on sage-grouse and its habitat. For example, consider alternatives that would increase buffer distances around active leks and timing restrictions within existing LUPs as needed to further reduce adverse effects on sage-grouse and its habitat.

Consider deferring authorizations in PGH where appropriate, depending on local characteristics, new science and/or data (e.g., migratory corridors or habitat between PPH), and relative habitat importance if authorizations could result in sage-grouse population loss in PPH.

Consider offsite mitigation measures in collaboration with state wildlife agencies and project proponents when authorizing activities.

Evaluate and address anticipated fence collision risks within 1.25 miles of leks and other seasonal habitats. Where NEPA analysis suggests that a deviation from this distance is warranted, modifications of this distance are acceptable.
As mentioned in the 2012 Draft Standards and Guidelines Assessment : "The majority of the allotment provides potential breeding habitat including lek areas (traditional locations for courtship display by male grouse, also called "strutting grounds"), lek-associated rest/roost/foraging areas, and nesting habitat. Worthy of note is the observation of sage-grouse egg fragments found near the key area transect on May 28, 2009. However, these fragments could have come from outside the allotment with any nest predation or scavenging of egg fragments by predatory bird species, and transport to the allotment. The area also provides "early" (upland) and "late" (meadow/riparian) brood-rearing/summer and fall/winter habitat for sage-grouse. (BLM 2012 Appendix 3, Map 4).

"The confirmation of a lek site on the allotment is pending. An individual male grouse was documented in courtship display on a potential lek area during an April 11, 2008 aerial survey. However, a follow-up survey on April 16, 2010 did not confirm the location as a lek. Otherwise, there are four known lek locations approximately 2.0 to 3.5 miles from the allotment boundary. In addition, there could be sage-grouse movements into the area from outside the allotment area as individual or groups of grouse seek seasonal use areas."

Direct and Indirect Effects of Alternatives

The narrative shown below in italics is excerpts from Subsection 2.1 Alternatives Analyzed in Detail - please see this subsection for more details regarding the alternatives.
Sage-grouse are considered an "umbrella species" (Rowland 2006) where maintenance or improvement of their habitat also helps to maintain or improve the habitat of many other wildlife species designated as SSS that are dependent (e.g., "sagebrush obligates" such as pygmy rabbits) on sagebrush habitat or otherwise utilize these areas on a yearlong or seasonal basis.
As mentioned earlier in this EA, approximately 1,052 acres were affected on the 1,400-acre South Pasture by the Lime Fire in 2012. Livestock wildfire closures would remain in effect until closure lift objectives are determined to be met.

<u>No Action Alternative</u>

Under this alternative, the grazing permit would be issued for a 10-year period to the holder of the preference for grazing privileges on the Wilson Mountain Allotment under the current terms and conditions of the permit. Livestock use would continue on the allotment as it has for the past 20 years. Temporary Non-Renewable (TNR) Use as analyzed by the BLM (BLM 2006) (BLM 2010) would also continue to occur during years when forage utilization is expected not to exceed 50 percent on key perennial grass species. The following grazing schedule would remain in place on the allotment and would be a term and condition of the grazing permit:

Table 8. No Action Alternative grazing permit schedule.						
Allotment	Pasture	Kind	Begin Date	End Date	Percent Public Land	AUMs
Wilson Mountain	-	Cattle	04/01	07/15	48	308
Wilson Mountain (TNR)	-	Cattle	04/01	07/15	48	166

Changes from the use described above may be allowed for reasons of drought, flooding, or any other reasons acceptable to the BLM Authorized Officer. However, these changes must be requested in writing at least 30 days before the requested changes are proposed to occur, and be approved by the BLM Authorized Officer in writing.

Wildlife Including RMP-Featured Species: Mule Deer and Pronghorn Antelope –

The "Good" Mule Deer Habitat Condition Rating, as indicated by 2010 monitoring efforts, would likely continue. Key Browse (bitterbrush) would likely remain in satisfactory age and form class similar to what was monitored in 2010 and 2012.

These factors mentioned above, along with slight (6-20 percent) to light (21-40 percent) native perennial grass utilization and the majority of riparian/meadow areas in Proper Functioning Condition would help to maintain the Habitat Standard for wildlife that inhabits the allotment. The TNR would not be authorized if circumstances such as extended drought conditions occur over a number of years, nominal key plant growth occurs, and maximum allowable utilization is projected to be exceeded. This would be the "safety net" to help allow for the maintenance of wildlife habitat to the Habitat Standard under the Standards and Guidelines for this alternative. Ongoing allotment and pasture fencing modifications to BLM standards would still be completed, as prioritized, on public lands/BLM fence projects to facilitate wildlife movements and reduce the potential for bird-in-flight collisions. The same efforts would be requested on private lands that are not BLM fence projects. A Cooperative Agreement would be requested to maintain these same modified fence areas on public lands, or are BLM projects on private lands, to BLM standards.

Special Status Species (SSS)* Including RMP-featured species: Sage-Grouse - Candidate Species as an "Umbrella Species"

Sage-grouse breeding habitat (nesting and potential lekking), early (upland) brood-rearing habitat and winter habitat quality is within appropriate WAFWA guidelines, per monitoring data collected in 2010, and would likely remain the same under this alternative. Sage- grouse summer and late (riparian/meadow) brood-rearing habitat would likely continue to be maintained or improved including areas to expand and increase in size. The projected slight to light key perennial grass utilization would reflect approximately "topped or slightly used" to 60 to 80 percent of the current seed stalks remaining intact, respectively, as residual nesting cover the following year. Perennial native herbaceous cover and forage diversity would likely be maintained per WAFWA guidelines.

See fence modification language above under Wildlife. BLM IM 2012-043 provides interim conservation policies and procedures for reducing fence hazards to sage-grouse with these same actions reducing hazards for other wildlife species designated as SSS. To reduce sage-grouse collision/other SSS hazard risks, the installation of flight diverter markers would be considered, in consultation with the NV Department of Wildlife, on public lands fence locations associated with the allotment boundary, as well as those near leks closest to the allotment. The livestock permittee/private landowner would be consulted for those fences that are not BLM project fences, and would, otherwise, be made aware of proposed actions on fences located on public lands.

Migratory Birds

See Special Status Species column in regard to potential positive impacts for upland and riparian habitat for migratory birds. The habitat conditions for migratory bird species are likely to be in "good" condition considering mule deer and sage-grouse habitat conditions and PFC ratings mentioned above.

Proposed Alternative

Under this alternative, similar to the No Action Alternative, a grazing permit would be issued for a 10-year period to the holder of the preference for grazing privileges on the Wilson Mountain Allotment under the current terms and conditions of the permit. Changes from the use described above may be allowed for reasons of drought, flooding, or any other reasons acceptable to the BLM Authorized Officer. However, these changes must be requested in writing at least 30 days before the requested changes are proposed to occur, and be approved by the BLM Authorized Officer in writing. Grazing use would occur annually on the allotment between the dates of 16 April to 09 July. TNR AUMs that have been previously analyzed by the BLM (BLM 2006) (BLM 2010) would be added to the active permitted use AUMs and TNR use would be eliminated. The new grazing permit would appear as follows:

Table 9. BLM Proposed Alternative grazing permit schedule.

Allotment	Pasture	Kind	Begin Date	End Date	Percent Public Land	AUMs
Wilson Mountain	-	Cattle	04/01	07/15	48	474

Livestock wildfire closure and fence modifications: See narratives for Wildlife, Special Status Species and Migratory Birds under 2.1.1 Wildlife above. Proposed fence modification actions would be similar under this alternative.

Wildlife Including RMP-Featured Species: Mule Deer and Pronghorn Antelope –

The "Good" Mule Deer Habitat Condition Rating, as indicated by 2010 monitoring efforts, would likely continue. Key Browse (bitterbrush) would likely remain in satisfactory age and form class similar to what was monitored in 2010 and 2012.

These factors mentioned above, along with projected slight to light native perennial grass utilization and the majority of riparian/meadow areas in Proper Functioning Condition, would help to maintain the Habitat Standard for wildlife that inhabit the allotment. Periods of extended drought conditions occurring over a number of years and nominal key plant growth could result in light (21-40 percent) to "low" moderate (41-47 percent) native perennial grass utilization. This would reflect approximately 60 to 80 percent to 25 percent of the current seed stalks remaining intact, respectively, as residual cover for wildlife the following year. The maintenance of wildlife habitat to the Habitat Standard under the Standards and Guidelines would likely continue under this alternative.

Special Status Species (SSS)* Including RMP-featured species: Sage-Grouse - Candidate Species as an "Umbrella Species"

The effects would be similar to what is shown above under the No Action alternative. Periods of extended drought conditions occurring over a number of years and nominal key plant growth could result in light (21-40 percent) to "low" moderate (41-47 percent) native perennial grass utilization. This would reflect approximately 60 to 80 percent to 25 percent of the current seed stalks remaining intact, respectively, as residual sage-grouse nesting cover the following year. The maintenance of SSS habitat to the Habitat Standard under the Standards and Guidelines would likely continue under this alternative.

Migratory Birds

The effects would be similar to what is shown above under the No Action alternative.
The habitat conditions for migratory bird species would likely continue to be in "good" condition on the North Pasture considering mule deer and sage-grouse habitat conditions and PFC ratings mentioned above.

<u>Sagebrush-Associated (Sagebrush) Nesting Habitat Alternative</u>

In consideration of this information and in conformance with the IM guidance above, BLM has developed the following alternatives:
a. Issue the grazing permit for a 10-year period to the holder of the preference for grazing privileges on the Wilson Mountain Allotment.
b. Temporary Non-renewable Use may be authorized by the BLM for use in the North or South Pasture only.
c. The grazing permit would appear as follows:

Table 10. Sagebrush-Associated Nesting Habitat Alternative grazing permit schedule.

Allotment	Pasture	Kind	Begin Date	End Date	Percent Public Land	AUMs
Wilson Mountain	South	Cattle	04/01	04/30	48	142
Wilson Mountain	North	Cattle	05/01	06/04	48	166

d. All domestic animals authorized to graze on public lands managed by the BLM would be required to be branded or branded and marked with brands registered in the State of Nevada as required by Nevada Revised Statutes (NRS) §564.025.

Livestock wildfire closure and fence modifications: See narratives for Wildlife, Special Status Species and Migratory Birds under 2.1.1 Wildlife above. Proposed fence modification actions would be similar under this alternative.

Wildlife Including RMP-Featured Species: Mule Deer and Pronghorn Antelope –

The "Good" Mule Deer Habitat Condition Rating, as indicated by 2010 monitoring efforts, would likely continue as indicated on a wildlife habitat monitoring transect on the North Pasture. Key Browse (bitterbrush) would likely remain in satisfactory age and form class similar to what was monitored in 2010 and 2012. Livestock wildfire closures would remain in effect for bitterbrush until closure lift objectives are determined to be met.
These factors mentioned above, along with projected slight to light native perennial grass utilization and the majority of riparian/meadow areas in Proper Functioning Condition would help to maintain the Habitat Standard for wildlife that inhabit the allotment.

Special Status Species (SSS)* Including RMP-featured species: Sage-Grouse - Candidate Species as an "Umbrella Species"

Sage- grouse summer and late (riparian/meadow) brood-rearing habitat would likely continue to be maintained or improved including areas to expand (re-saturation of existing peripheral moist soils) and increase in size.
North Pasture

Sage-grouse breeding habitat (nesting and potential lekking), early (upland) brood-rearing habitat and winter habitat quality is within appropriate WAFWA guidelines, per monitoring data collected in 2010, and would likely remain the same under this alternative. Perennial native herbaceous cover and forage diversity would likely be maintained per WAFWA guidelines.
South Pasture

The same seasonal sage-grouse habitat mentioned above for the North Pasture has been negatively affected on a large portion (approx. 75 percent) of the South Pasture. The area received high priority for rehabilitating affected wildfire burn areas designated as primarily sage-grouse PPH. Resumption of livestock utilization after the livestock closure lift would likely result in no higher than light key perennial grass utilization. This would reflect approximately 60 to 80 percent of the current seed stalks remaining intact as residual cover for wildlife species designated as SSS the following year. This potential light use, coupled with successful shrub seeding and planting efforts, would help to provide, or make progress towards, sage-grouse nesting habitat to WAFWA guidelines.

The recruitment of young bitterbrush that either naturally re-sprouts from live root crown mass of mature plants, germinates naturally or artificially (rehab seeding) from seed in the ground, or seedling planting efforts, could increase with "light grazing use" of perennial herbaceous

vegetation. Kindschy (1987) found that cattle grazing of grasses "opened" an area in southeastern Oregon and aided antelope bitterbrush establishment, whereas fewer plants established in un-grazed areas. Bitterbrush, and its potential umbrella-type growth form, complements sagebrush as a shrub for needed overstory nesting cover, and cover for other seasonal uses.

Sage-grouse nesting, including efforts deemed as successful, has occurred less than five to six years post-fire on rehabilitated burn areas with seeded bitterbrush/sagebrush/perennial grass cover that had livestock fire closure "lifts." This has been documented via telemetry by NDOW and U. S. Geological Survey on the 2005 Esmeralda Fire within the Squaw Valley Allotment to the southwest and the 2006 Snow Canyon Fire within the Bucket Flat Allotment area to the south, respectively.

Migratory Birds

North Pasture - See Special Status Species column in regard to potential positive impacts for upland and riparian habitat for migratory birds. The habitat conditions for migratory bird species are likely to remain in "good" condition considering mule deer and sage-grouse habitat conditions and PFC ratings mentioned above.

South Pasture - See Special Status Species column in regard to potential positive impacts for upland and riparian habitat for migratory birds. The wildfire burn has affected the habitat for migratory bird species that are sagebrush-obligates or utilize sagebrush on a seasonal or yearlong basis. The effects could be temporary with natural shrub recruitment and successful rehabilitation seeding and planting efforts to more long-term with any delayed reestablishment. The burn area and undetermined number of follow-up years dominated by perennial herbaceous vegetation would benefit migratory bird species that nest in relatively open habitat.

Increased Grazing Alternative

Under this alternative, the current terms and conditions of the grazing permit would stay the same, except livestock grazing would be increased and season of use would be changed. The 2012 Draft Standards and Guidelines Assessment outlined livestock use on key forage perennial grass species at less than 10 percent based on a twenty year average. The less than10 percent average is far under the maximum allowable 50 percent utilization (during normal precipitation years) average. This schedule would nearly double the amount of active AUMs from 308 to 615. This alternative would also change the grazing schedule to allow for 65 days of use between 01 April and 31 October on an annual basis. This would allow the BLM and permittee flexibility to adjust grazing to meet resource needs. This alternative would also eliminate TNR use within the allotment. The following table shows what the permitted use would be under this alternative:

Table 11. Increased Grazing Alternative grazing permit schedule.

Allotment	Kind	Begin Date	End Date	Days	Percent Public Land	AUMs
Wilson Mountain	Cattle	04/01	10/31	65	48	615

Livestock wildfire closure and fence modifications: See narratives for Wildlife, Special Status Species and Migratory Birds under 2.1.1 Wildlife above. Proposed fence modification actions would be similar under this alternative.

Wildlife Including RMP-Featured Species: Mule Deer and Pronghorn Antelope –

The "Good" Mule Deer Habitat Condition Rating, as indicated by 2010 monitoring efforts, could be affected, particularly, if no active permitted use adjustments are considered by both the permittee and BLM during periods of drought, nominal perennial grass/forb and shrub leader growth and any impacts from the prior year(s). This alternative could be considered "high intensity - short duration" grazing if AUM use is intensified over a 65-day period (e.g., 4/1 to 6/4). This alternative could affect mule deer habitat forage and cover diversity.

Key Browse (bitterbrush) Form Class could be negatively affected, particularly, with any intensified livestock utilization during the late summer to fall period after the majority of perennial grass and forb species fully "cure-out"/lose succulence, nutritive quality is reduced and livestock seek bitterbrush and other browse plants for succulence and dietary intake needs.

Special Status Species (SSS)* Including RMP-featured species: Sage-Grouse - Candidate Species as an "Umbrella Species"

This alternative and any 50 percent utilization would reflect approximately 15 percent to 25 percent of the current key perennial grass seed stalks remaining intact as residual cover for wildlife species designated as SSS the following year. Re-growth of perennial native grasses could occur post-livestock grazing during the 4/1 to 10/31 period under certain conditions albeit, that monitoring would still reflect key grass utilization immediately after livestock are removed from the allotment or allotment pasture. The potential moderate use could result in not meeting the Standards and Guidelines Habitat Standard and not providing appropriate sage-grouse nesting habitat quality to WAFWA guidelines.

Sage-grouse herbaceous cover and forage diversity could be affected if no active permitted use adjustments are considered for drought periods and nominal native grass and forb growth. Without "adaptive" management practices (e.g., active day-to-day herding and alternative artificial water sources away from natural sources), grazing on an annual basis during the "hot season" would likely impact SSS habitat associated with riparian/meadow areas including sage-grouse summer/late brood-rearing habitat. In regard to raptor designated as SSS, it would affect habitat utilized by prey species.

Migratory Birds

There is the potential for negative impacts on both upland and riparian/meadow habitat during those years with nominal growth (e.g. drought) without permittee-initiated grazing adjustments. See Special Status Species column in regard to potential negative impacts to riparian habitat.

<u>No Grazing Alternative</u>

Under this alternative, livestock grazing would be eliminated from the Wilson Mountain Allotment. The existing grazing permit would be cancelled, reducing the active AUMs from 308 to 0 AUMs. The permittee would likely fence the private portions of the allotment and would continue to graze livestock in that area. Depending on fence construction specifications, a private landowner-built fence along the private portions of the allotment could inhibit wildlife migration and movements and might result in wildlife fatalities.

There are no range improvements or water catchments that would need to be reclaimed within the allotment. There is roughly 11.5 miles of fence, either bordering or located on public land, serving as the allotment boundary. To prevent unauthorized grazing use on public lands, BLM would assume maintenance responsibility for these fences, and if needed, replace those portions that are no longer serviceable (Map 1). Any needed fence modification actions on public lands would continue and be completed, as prioritized, to both facilitate wildlife movements and reduce collision hazard risks.

Fence modifications: See narratives for Wildlife, Special Status Species and Migratory Birds under 2.1.1 Wildlife above. Proposed allotment boundary fence modification actions would be similar under this alternative. The interior pasture boundary fence would be removed, as prioritized with other ongoing modification actions on the Tuscarora Field Office area.

Wildlife Including RMP-Featured Species: Mule Deer and Pronghorn Antelope –

Elimination of livestock grazing would result in maintenance of big game habitat in good or better condition. Any increase in grass and forb availability would enhance wildlife habitat forage and cover diversity.

Natural and seeded/planted shrub reestablishment on areas affected by Lime Fire in 2012, which includes the majority of the South Pasture, could be suppressed. Bitterbrush, big sagebrush and other shrubs that provide browse plants as forage were negatively impacted by this fire. The recruitment of young bitterbrush could increase with “light grazing use” of perennial herbaceous vegetation. Kindschy (1987) found that cattle grazing of grasses “opened” an area in southeastern Oregon and aided antelope bitterbrush establishment, whereas fewer plants established in un-grazed areas. It is unknown if any increased big game/other wildlife use, with fence modifications and the absence of livestock use, would still provide for herbaceous plant utilization [e.g., light (21-40 percent)] that would aid in bitterbrush establishment.

Special Status Species (SSS)* Inc. RMP-featured species: Sage-Grouse - Candidate Species as an “Umbrella Species”

Elimination of livestock grazing would help to maintain or improve upland areas on intact “unburned” areas with shrub cover that provide SSS habitat including sage-grouse nesting and fall/winter habitat. An increase in balanced sagebrush and bitterbrush shrub cover could be suppressed with any competition with ecological site dominance by perennial grasses and forbs on recent 2006 wildfire burn areas, as mentioned above.

There would be no potential "hot season" livestock grazing or intensified use as potential actions under the Increased Grazing Alternative, nor would there be any more dispersed livestock use under the other three alternatives. This would help to maintain proper functioning condition of riparian and meadow areas that provide SSS habitat including sage-grouse summer/late brood-rearing habitat. However, without other use by elk, mule deer, pronghorn or other wildlife, vegetation on riparian/meadow system areas could become tall, dense and rank where use by SSS species could primarily occur only on outer edges and any expanding moist areas due to visual and movement barriers associated with herbaceous plant height (e.g. Nebraska sedge/other mixed forbs and grasses to 21 inches or higher).

Sage-grouse use on riparian/wet meadow areas for water intake efforts could be impacted by any dense and tall riparian vegetation. Sage-grouse have been observed on several occasions to fly within several hundred feet, or less, of water sources in the early morning or early evening and "walk-in" to the same source, likely to detect danger, prior to obtaining a drink of water. Free (standing or running) water, for needed water intake, could be tied within the interior water channel flow of spring courses or mid portion of pooled water and surrounded by dense and tall vegetation. This could deter use by some species designated as SSS including sage-grouse.

Migratory Birds

The habitat conditions for migratory bird species are likely to be maintained in "good" condition, or improve to better condition, considering existing mule deer and sage-grouse habitat conditions and PFC ratings mentioned above under Wildlife.

Elimination of livestock grazing would help to maintain or improve riparian/meadow (see SSS above) and intact upland areas that provide habitat for many migratory bird species. Movements for foraging for some species and obtaining free water on any areas with dense and tall riparian vegetation on riparian/wet meadow areas could be restricted (see SSS above).
Any suppression of sagebrush and bitterbrush shrub cover over time on recent 2006 wildfire burn areas, due to perennial grass and forb competition, could continue to affect the habitat of sagebrush-obligate species or other species that utilize sagebrush habitats on a seasonal or yearlong basis (see Wildlife and SSS above).

<u>Cumulative Impacts</u>

The cumulative impact assessment area for this EA area is Nevada Department of Wildlife-delineated Management Area Six, units 061, 062, 064, 066, 067, and 068 which also include the Desert Sage-Grouse PMU and the Wilson Mountain Allotment. The cumulative impact assessment area is approximately 1,719,382 acres in size.

Past and Present Actions

Past and Present Actions occurring within the assessment area include livestock grazing, recreation and wildfires.

Livestock Grazing – See Section 3.3.5 Livestock Grazing Forage allocation of vegetation on a multiple use basis to livestock has occurred from 30 August 1967 to the present. The BLM establishes resource management objectives and livestock grazing management actions by livestock grazing allotment. Grazing is dispersed and seasonal throughout the area.

Agriculture –The cultivation of hay crops occurs along stream and river courses on private lands. Pivot irrigation for alfalfa production occurs primarily in Boulder Valley and Humboldt River Valley within Unit 068 north of Battle Mountain.

Recreation – Past and present recreation uses include dispersed recreation activities such as off-highway vehicle (OHV) travel, small game and big game hunting, shed deer and elk antler search and gathering, and hunting-related activities (e.g., pre-hunt reconnaissance – "scouting" - of areas). These activities have increased dramatically in recent years, due, in part, to increased human populations in Elko County and surrounding in-State and out-of-state areas, increased number of two-track roads, increased pronghorn hunting opportunities over the past two decades, and elk hunting opportunities on the area since 2009. A major increase in OHV travel has occurred within the area as part of these activities.

Wildfire - Historically, wildland fires have impacted the area. Wildfires have been aggressively suppressed by the BLM, U.S. Forest Service, State of Nevada-Division of Forestry and trained volunteers in, at least, the last 20-30 years. Included in the Appendices, Map 4 displays the Fire History of the CESA from 1985 to present. Fires have impacted approximately 283,825 acres on the CESA since 2000. Other impacted lands making up the remaining acres were on intermingled private lands. Fire impacts have affected the resource conditions and wildlife. As a result of these fires, some areas have been converted from sagebrush/mixed shrub and perennial grass and forb-dominated plant communities to native perennial grass and forb communities. In terms of losses to wildlife habitat due to fire, sage-grouse are among the most impacted species. The species is considered a sagebrush-obligate species that require healthy and diverse age structures of sagebrush to provide habitat for successful nesting, brood-rearing, winter and lek-associated use areas.

Thousands of acres have been seeded by the BLM on public lands as part of rehabilitation efforts on the CESA area associated with wildfires between 2000 and 2012. This includes the seeding of big sagebrush/ perennial grass and forb species in swaths (e.g. seed 80-foot strip and leave 80-foot strip to where 250 acres seeded in a 500-acre area) to where larger areas could have establishment and recruitment into unseeded areas. Seeding efforts have resulted in the establishment of big sagebrush, and perennial grasses and forbs on large areas within the watershed with documented post-wildfire sage-grouse use. Several hundred acres were mowed in a pattern as an effort to establish fuel breaks; these efforts have resulted in the establishment of relatively low-statured native vegetation which would help to slow down or stop a wildfire on many areas and allow for fire-fighter anchor points to help control any future wildfires.

Reasonably Foreseeable Future Actions (RFFAs)

Reasonably foreseeable future actions are likely to remain consistent with past and present actions within the cumulative impact assessment area. However, changes in the relative frequency and intensity of some of these actions are likely.
Livestock Grazing – Livestock grazing practices would continue on public lands with adherence to the recommendations presented in the Standards and Guidelines of Rangeland Health

Agriculture – The cultivation of hay crops occurs along stream and river courses and upland valley areas would continue on private lands.

Recreation –Recreation use on public lands within the assessment area is increasing based on continued population growth within Nevada with increasing interest from individuals from other areas. Increasing uses are related primarily to OHV travel and hunting. More restrictive access routes, including locked gates and signage across intermingled private lands, to public lands closer to Elko and Spring Creek, Nevada, would increase use on the mid to upper portions of the CESA.

Wildfires - Wildfires would continue to be aggressively suppressed by the BLM, U.S. Forest Service, State of Nevada-Division of Forestry and trained volunteers with ongoing emphasis to protect priority sage-grouse habitat and big game winter range areas.

Impacts Associated with Past, Present, and Reasonably Foreseeable Future Actions

Impacts associated with past, present, and reasonably foreseeable future actions are generally created by ground or vegetation-disturbing activities that effect natural and cultural resources in various ways. Of particular concern is the accumulation of these impacts over time. This section of the EA considers the degree to which the proposed action and alternatives contribute to the collective impact.

As presented in Table 12, past and present livestock grazing, recreation and wildfire has imparted impacts of variable severity to the resources within the cumulative assessment area. In general, impacts from past and present actions have been the result of vegetation and ground disturbances that have led to impacts to wildlife habitat. Within the cumulative impact assessment area, these impacts are regarded as minor to moderate in severity. In recent times, the implementation of grazing regulations has limited the accumulation of impacts.

Table 12. Cumulative Impacts by Resource.				
Resource	**Impacts from Past and Present Actions →**	**Impacts from RFFA's →**	**Impacts from the Alternatives →**	**= *Cumulative Impact***
Wildlife	Past grazing practices between the mid to late 1800s and the late 1900s have resulted in negative impacts to habitat with improvements since the early 1990s. Creation of water catchments, emphasized for livestock use, has benefitted many species by allowing additional water and foraging sources. Livestock control fencing is a hazard to many species and entanglement mortalities have been documented on the Elko District. Large spans have been modified since the 1990s and plans for modification are ongoing. Past and present agriculture has had positive impacts associated with forage and cover diversity for wildlife on riparian stream course and meadow areas and pivot irrigation areas. Some negative impacts have occurred where habitat has been altered or is largely inaccessible (e.g., fencing construction that restricts access). Present recreation has	Adherence to the Standards for Rangeland Health should limit impacts to wildlife from grazing. Increased recreation, without an enforced travel management plan and actions to help increase access to public lands, could result in ongoing habitat impacts and seasonal wildlife displacement. Sagebrush seedling planting efforts would be completed on approx. 167 during Spring 2014 within Unit 068. Wildfire rehabilitation work including seeding of shrub/grass/forb mix and planting of bitterbrush seed is proposed on the 2013 Wieland Fire burn area. Additional efforts could be proposed on any additional wildfire burn areas in 2013 and beyond. These efforts would	The proposed grazing systems under the No Action, Proposed, and Sagebrush-Associated Nesting alternatives should prevent substantial impacts. The Increased Grazing Alternative would have a minor impact. The No Grazing alternative would have a beneficial impact for most species but would still require ongoing long-term management considerations and actions for some species.	The collective impact for the No Action, Proposed, and Sagebrush-Associated Nesting alternative would likely be minor. The impact for the Increased Grazing Alternative would likely be minor with the potential to be to moderate. The impact for the No Grazing Alternative would likely be minor.

Table 12. Cumulative Impacts by Resource.				
Resource	**Impacts from Past and Present Actions →**	**Impacts from RFFA's →**	**Impacts from the Alternatives →**	**= *Cumulative Impact***
	likely resulted in seasonal wildlife displacement as the following has increased: local human population and use seven days a week (e.g., mining shift work), OHV purchases, creation of two-track roads, opportunities and interest for elk and pronghorn scouting and hunting, and elk and deer antler gathering. Wildfires have impacted hundreds of thousands of acres since Year 2000 with a mix of negative and positive impacts depending on the species. For RMP-featured species, mule deer have had primarily negative impacts with some positive impacts. Pronghorn have primarily positive impacts with some negative impacts. A variety of shrub, grass and forb seed mixtures, as part of post-wildfire rehabilitation efforts, have been seeded or planted on scores of thousands of acres seeded on the CESA since 1991.	be a positive impact to allow for shrub and herbaceous cover to help provide forage and cover diversity. Ongoing proposed fence modification work would help to both facilitate wildlife movements and reduce the potential for collisions with fence wire.		
Special Status Species	Some past grazing practices between the mid to late 1800s and the late	Adherence to the Standards for Rangeland Health	The proposed grazing systems under the No	The collective impact for

Table 12. Cumulative Impacts by Resource.				
Resource	**Impacts from Past and Present Actions →**	**Impacts from RFFA's →**	**Impacts from the Alternatives →**	**= *Cumulative Impact***
(SSS) Sage-grouse as Umbrella-Species Emphasis	1900s have resulted in negative impacts to habitat with improvements since the early 1990s. Creation of water catchments, emphasized for livestock use, has benefitted many SSS by allowing additional water, foraging, resting, nesting and young-rearing sources, and areas for other seasonal uses. Livestock control fencing is a hazard to many species and collisions by sage-grouse and burrowing owls have been documented on the Elko District. Some spans have been marked with flight diverters. Past and present agriculture has had positive impacts associated with forage and cover diversity for wildlife on riparian /meadow areas and pivot irrigation areas. Some negative impacts have occurred where habitat has been altered or fencing is a hazard. Present recreation has likely resulted in seasonal wildlife displacement as	should limit impacts to SSS from grazing. Adherence to BLM instruction memoranda, plans, MOUs and guidance for SSS (e.g., sage-grouse, eagles, bats, pygmy rabbits) would help to improve habitat. This would also help to improve the habitat of many species designated as SSS. Flight diverters would installed on scores of miles of fence, on a priority basis, as an effort to reduce potential collisions with fencing. Increased recreation, without an enforced travel management plan or increased access to public lands, could result in ongoing habitat impacts and seasonal wildlife displacement. Wildfire rehabilitation would continue to be a priority with emphasis on sage-	Action, Proposed, and Sagebrush-Associated Nesting alternatives should prevent substantial impacts. The Increased Grazing Alternative would have a minor impact. The No Grazing Alternative would have a beneficial impact for most species designated as SSS but would still require ongoing long-term management considerations and actions for some species.	the No Action, Proposed, and Sagebrush-Associated Nesting alternative would likely be minor. The impact for the Increased Grazing Alternative would likely be minor with the potential to be to moderate. The impact for the No Grazing Alternative would likely be minor.

Table 12. Cumulative Impacts by Resource.				
Resource	**Impacts from Past and Present Actions →**	**Impacts from RFFA's →**	**Impacts from the Alternatives →**	**= *Cumulative Impact***
	mentioned above under Wildlife. BLM Instruction memoranda provide policies and procedures, and direction for SSS management including sage-grouse habitat management. Wildfires have impacted hundreds of thousands of acres since Year 2000 with a mix of negative and positive impacts – perennial forb and grass composition has increased while sagebrush/bitterbrush shrub cover has decreased. A variety of shrub, grass and forb seed mixtures, as part of post-wildfire rehabilitation efforts, have been seeded or planted on scores of thousands of acres within the CESA since, at least, 1991.	grouse, bald and golden eagles, bat and pygmy rabbit habitat. Ongoing efforts to augment previous wildfire rehabilitation seeding efforts, as mentioned above under Wildlife, would help to improve SSS habitat. Proposed fence modification and marking (flight diverter) work on grazing allotments, within thousands of acres of SSS habitat, with emphasis on sage-grouse habitat, would help to reduce the potential for sage-grouse/other wildlife collisions with fence wire.		
Migratory Birds	Some past grazing practices between the mid to late 1800s and the late 1900s have resulted in negative impacts to habitat with improvements since the early 1990s. Creation of	Ongoing adherence to the 2001 Executive Order and 2010 MOU with the U.S. Fish and Wildlife Service should limit impacts to migratory birds	The proposed grazing systems under the No Action, Proposed, and Sagebrush-Associated Nesting	The collective impact for the No Action, Proposed, and Sagebrush-

Table 12. Cumulative Impacts by Resource.				
Resource	**Impacts from Past and Present Actions →**	**Impacts from RFFA's →**	**Impacts from the Alternatives →**	**= *Cumulative Impact***
	water catchments, emphasized for livestock use, have benefitted many migratory bird species by allowing additional water, foraging, resting, nesting and young-rearing sources. Livestock control fencing are hazards to many species and collisions have been documented on the Elko District. Some spans have been marked. Past and present agriculture has had positive impacts associated with forage and cover diversity for migratory birds on riparian /meadow areas and pivot irrigation areas. Some negative impacts have occurred where habitat has been altered or fencing is a hazard. Present recreation has likely resulted in seasonal bird displacement as mentioned above under Wildlife. BLM Instruction memoranda, 2001 Executive Order and MOUs with U.S. Fish and Wildlfie Service provide policies, procedures, and	from grazing. Adherence to BLM Instruction memoranda would help to improve habitat. Increased recreation, without an enforced travel management plan or increased access to public lands, could result in ongoing habitat impacts and seasonal migratory bird displacement. Wildfire rehabilitation would continue to occur with beneficial impacts to migratory bird habitat. Ongoing efforts to augment previous wildfire rehabilitation seeding efforts, as mentioned above under Wildlife, would help to improve habitat. Proposed fence modification and marking (flight diverter) work on grazing allotments, within thousands of	alternatives should prevent substantial impacts. The Increased Grazing Alternative would have a minor impact. The No Grazing alternative would have a beneficial impact for many migratory bird species but would still require ongoing long-term management considerations and actions for some species.	Associated Nesting alternative would likely be minor. The impact for the Increased Grazing Alternative would likely be minor with the potential to be to moderate. The impact for the No Grazing Alternative would likely be minor.

Table 12. Cumulative Impacts by Resource.				
Resource	**Impacts from Past and Present Actions →**	**Impacts from RFFA's →**	**Impacts from the Alternatives →**	**= *Cumulative Impact***
	direction for habitat management. Wildfires have impacted hundreds of thousands of acres since Year 2000 with a mix of negative and positive impacts for different bird species– perennial forb and grass composition has increased while sagebrush/bitterbrush shrub cover has decreased. Migratory birds have benefitted from years of wildfire rehabilitation – see Wildlife and SSS above	acres of habitat, would help to reduce the potential for collisions with fence wire.		

3.3.10 Vegetation

Affected Environment

Vegetation present in any area is a function of climate, soils, photosynthesis regimes, available plant species, and disturbance regimes. The limitations posed by and interrelations between these five factors dictate the plant communities present on any given site at any given time. Traditional thoughts of 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 another. Movement between these various states is not necessarily linear and may require high energy inputs, such as fire or mechanical treatments, for a site to move from one stable state to another. In other words, movement may not always be accomplished through passive changes in management.

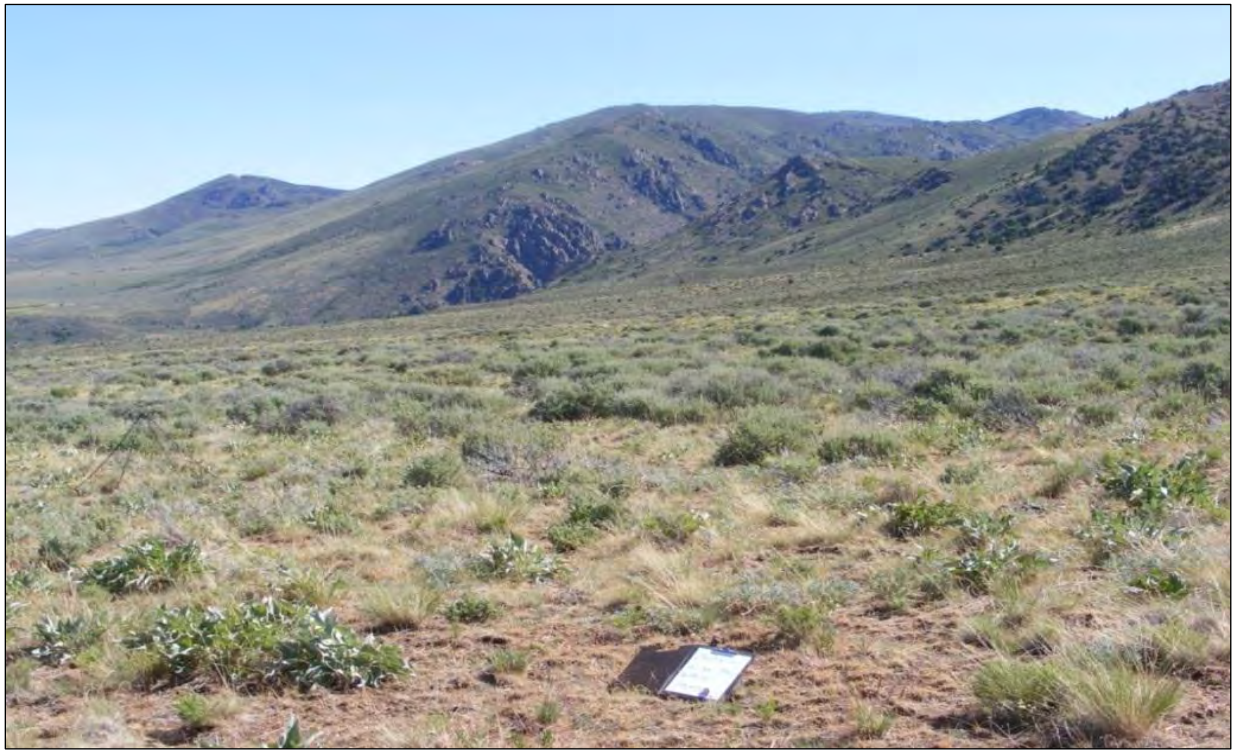
Vegetation present in the Great Basin at the time of European contact was a direct product of the above events. Uplands were primarily vegetated by bunchgrasses and sagebrush, along with a smaller but vitally important forb component. The relative quantities of each plant class vary

greatly both across the landscape and across time. Fire return intervals averaged between twenty and one-hundred years; more frequent fires would maintain more of a grassland and forb ecosystem. In the long-term absence of fire, shrub species - especially sagebrush - would start to increase in density. Grasses and forbs would start decreasing in abundance when sagebrush canopy cover reached +15 percent, and shrub canopy covers of 30-40 percent excluded almost all herbaceous vegetation from the plant communities.

A number of factors have combined over the past 150 years to create the current vegetation communities, chiefly fire exclusion, domestic livestock grazing, introduction of invasive non-native species, and continued climate change. Widespread arrival of Europeans brought hundreds of thousands of cattle and millions of sheep into the Great Basin. Grazing on the public range remained completely unregulated until the early 1900's, and the cattle and sheep decimated the preferable bunchgrass and forb communities and more palatable shrubs. The removal of the competition from grasses, plus a coinciding relatively wet period, active fire suppression, increasing temperatures, and increasing levels of carbon dioxide in the atmosphere allowed the woody species- both shrubs and Pinyon/juniper woodlands- to dramatically increase their abundance and geographic distribution across the region. New weed species accidentally introduced by the Europeans, principally halogeton, cheatgrass, Russian thistle, and various knapweeds, quickly exploited and occupied niches inherent in the sagebrush-grasslands. The passage of the Taylor Grazing Act in 1934 ended the unregulated use of the public rangelands, and implementation of grazing systems coupled with active restoration and rehabilitation projects- including seeding both native and non-native grass species into areas depleted by the historical grazing- have led to vastly improved ecological conditions across much of the landscape.

Figure 1: Photograph of Key area 01 in the Wilson Mountain Allotment taken in 1992.

Figure 2: Repeat photograph in 2012. Note increases in Sagebrush cover.



Livestock in Elko County traditionally graze on grass and forb species during the spring months of the year. In the late summer, after the forbs complete their life cycle and desiccate and grass

species enter dormancy and lose much of their nutritional values, livestock tend to shift to eating more woody plants- principally antelope bitterbrush- to meet their nutritional needs. Livestock are primarily fed hay through the winter months which is raised on private land.

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, forces the plant to use more of its reserves to re-grow to replace the removed portions. Plants in the Great Basin ecosystem generally did not evolve, at least in recent eras, under heavy grazing pressures. Part of this evolution had to do with the general absence of large ungulate herbivores, which was in turn influenced by climate and possibly native hunting pressures. As a result of lack of adaption to heavy grazing pressure, the growing points (the parts of the plant that produce new plant growth) in the native grasses are elevated in the plant structure; if a growing point is removed, the grass must regenerate the growing point, which is extremely costly in terms of energy output and use of carbohydrate reserves. This makes the principle grass species in the Great Basin especially susceptible to repeated grazing damage occurring during the growing season, especially when the plants have to compete with other plants for resources while trying to grow or re-grow. Plants that did evolve under grazing pressure- including crested wheatgrass- have their growing points at or below ground level, which allows them to tolerate grazing pressures during the growing season.

Repeated defoliations during the critical growing seasons can seriously weaken the native grass plants as they devote more of their stored energies to regrowth. Repeated grazing during the critical growing season over years can lead to plant mortality. 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. Native grasses tend to produce low numbers of seeds, and the seeds produced have low viability and generally do not survive more than a season. The lack of a seed bank in the soil can mean the eventual disappearance of species from a plant community, creating openings for other species, particularly shrubs or invasive species in the Great Basin.

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 by mid- to late summer, 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 spring for bitterbrush and the late fall for the other species present.

The Wilson Mountain Allotment supports mostly native vegetation consisting of big sagebrush, aspen, Sandberg's bluegrass, bluebunch wheatgrass, Idaho Fescue, needle and thread grass, and large patches of antelope bitterbrush. Utah juniper is encroaching into the sagebrush habitat in the northern end of the allotment. Cheatgrass is present in the allotment in small concentrations, although monitoring data shows declines in the abundance of this plant since 1992.

The 2006 Petan-Wilson Fire and the 2012 Lime Fire have affected roughly 1,700 acres within the Wilson Mountain Allotment. As a result of the burn, these areas were type converted from sagebrush and bitterbrush dominated plant communities to perennial grass and forb dominated plant communities. No herbaceous plant rehabilitation was completed by the BLM after the fires due to the upland areas of the allotment being in good ecological condition. The dominate species in these areas is now Idaho fescue, lupine, and Arrow-leaf balsamroot.

Direct and Indirect Effects of Alternatives

Alternative 1- No Action

Existing livestock management would continue under this alternative. Grazing during the growing season on a yearly basis would continue. Use levels as stated in the 2012 Draft Standards and Guidelines Assessment indicate use on perennial grass key forage species is at less than 10 percent (based on a 20 year average). With utilization levels so low, many perennial plants are ungrazed, allowing them to grow and reproduce without being defoliated on a yearly basis. The 2012 Draft Standards and Guidelines Assessment also indicated there are no adverse impacts happening to the plant community with the current grazing system (BLM 2012).

Alternative 2 - Proposed Action

The grazing system implemented would be similar enough in nature to the No Action Alternative in that there would be no substantially different impacts to vegetation resources as compared to the No Action Alternative. Gazing use levels would likely stay similar to levels outlined in the 2012 Draft Standards and Guidelines Assessment.

The treatment of the medusahead rye grass infested areas would benefit vegetation in the allotment because the medusahead would be controlled and would not be able to invade other areas. Depending on which treatment methods are chosen; vegetation in the allotment may be impacted by prescribed fire, herbicides, biological (increased grazing), mechanical (mowing), and/or other BLM approved methods.

Alternative 3 – Sagebrush-Associated Nesting Habitat Alternative

Under this alternative, Impacts from grazing would be similar to the No Action Alternative since no AUM changes would be made. However with a deferred grazing system in place, there would be changes to the season of use in areas of the allotment that may change the time of year vegetation is grazed even though it would still be during the growing season. Under this alternative grazing use would be deferred in the north pasture to allow nesting birds time to establish nests without grazing disturbance. This will likely lead to more vegetation utilization in the south pasture even though levels will still be under the 50 percent utilization limit.

Alternative 4 – Increased Grazing Alternative

Under this alternative grazing use would be increased. The number of AUMs in the allotment would be almost doubled. Even though the number of AUMs would be substantially increased,

the amount of vegetation utilization would still likely fall under the 50 percent average utilization limit. Impacts to vegetation may include increases in shallow rooted perennial grasses (e.g., *Poa secunda*), forbs, and sagebrush cover. This alternative may also facilitate a decrease in deep rooted perennial grasses (e.g., *Pseudoroegneria spicata*). In areas where grazing use is heavy, non-native plants may become established because of weakened ecosystem resilience and competition for open ecological niches in the disturbed area.

Alternative 5 – No Grazing Alternative

Under this alternative grazing use on the allotment would be eliminated. Eliminating grazing would likely lead to increases in fuels within the allotment. Increases in fuels may lead to larger, hotter burning wildfires that may have adverse impacts on the vegetation in the allotment by allowing non-native plants to become established. The elimination of grazing may also lead to "wolfy" plants with reduced carbohydrate and nutrient reserves.

Cumulative Impacts

The CESA for Vegetation is the Wilson Mountain Allotment boundary.

Actions that have impacted vegetation resources are power and telephone transmission lines, the various disturbances associated with roads, and mining exploration. While not an action planned or undertaken by the BLM, wildfires are an occurrence that can have an impact on the vegetation communities. During the last 30 years there have been only two wildfires of any size within the allotment, the 2006 Petan-Wilson and the 2012 Lime Fire. However, the potential exists for additional large fires to burn in the allotments, especially as Pinyon/juniper woodlands and sagebrush continue to expand and increase in density. The Bureau and cooperating agencies have and would be expected to continue to aggressive wildfire suppression on the lands in and around the allotments and conduct subsequent post-fire rehabilitation actions to appropriately stabilize the vegetative communities and to restore plant communities, such as reseeding sagebrush, as appropriate. Based on a combination of active suppression and stabilization and restoration, the long-term impacts from wildfire on the Wilson Mountain Allotment have been minor. There are no cumulative impacts of concern relating to vegetative resources within the allotment.

3.3.11 Water and Riparian Resources

Affected Environment

Water resources in the allotment include springs/seeps (springs) and several intermittent streams and ponds. The project area falls within the Snake River Basin Hydrographic Region and South Fork of the Owyhee River Administrative Basin as identified by the Nevada Division of Water Resources (NDWR). Water resource inventory data collected from 1979 to 2012 along with Proper Functioning Condition Assessments provide much of the following information regarding flow, condition, and other characteristics of these water resources. Detailed data are only available for sources on BLM administered lands.

The project area contains roughly 20 springs on public land and about 2 similar springs on private land. Discharge from springs on public land ranges from no overland flow to about 10 gallons per minute (gpm). These discharge measurements are not a quantification of total water produced by the spring since a portion or all water coming from a spring is evaporated, utilized by nearby vegetation, or seeps into groundwater near the spring source. Most springs are sources that express indications of a spring source as evidenced by riparian vegetation and/or surface ponding, but do not have any measurable overland flow. The lack of overland flow from springs in the project area is a result of their small discharge as well as their existence on flat topography (see figure 3).

Figure 3. An unnamed spring within the Wilson Mountain Allotment which expresses no overland flow.

None of the springs within the public portions of the allotment have been developed. There are no known surface water quality conditions within the project area that have resulted in any inability to use water resources for their current beneficial uses. Some water quality data have been collected, but these data are insufficient to determine trends at local springs and do not include any nutrient or bacteria data. For purposes of evaluation, riparian condition assessments can be used to determine whether and to what extent water quality is under anthropogenic influence; for example, a spring is more likely to have issues with water quality if its riparian area has been rated as non-functional more than if it is at proper functioning condition. Other anecdotal data such as presence of moss, or lack of vegetation at a spring source could indicate problems with water quality. While there have been some recorded observations of natural accumulation of dissolved solids and physical impacts to springs in the project area, these have

has not resulted in conditions which preclude use by livestock and wildlife (BLM 2012). The Nevada Division of Environmental Protection has not listed any of the water bodies within the project area on the State of Nevada List of Impaired Water Bodies (Section 303(d) of the Clean Water Act).

The project area contains several riparian areas which are associated with springs/seeps (springs) and ponded areas. These areas provide water, forage and habitat diversity for wildlife and livestock. These systems occupy a small portion of the watershed as a whole, but are disproportionally important for biodiversity and users of the landscape including humans (USDI 2001).

Riparian condition assessments were conducted in 2009 to evaluate condition of selected areas. Riparian condition assessments are qualitative assessment of riparian areas based on quantitative science. The methodology evaluates the functionality of riparian areas based on hydrological, vegetation, and soils/erosional factors, within the context of the geologic setting and the potential of the area. The results of these assessments can be found in the Standards and Guidelines assessment. In summary, the Standards and Guidelines assessment (S&G) explains that most riparian areas were rated in properly functioning condition. A few areas were rated as functional at risk; however, livestock grazing was not a causal factor. The S&G concluded that the standard for riparian and wetland sites was being met (BLM 2012).

Direct and Indirect Effects Common to All Alternatives

Water consumed by livestock would be very small when measured against all available water in the project area, but consumption from individual springs may represent a large portion of available water at these sources. Most livestock watering comes from seasonally ponded areas. This type of use would have no impact on water availability for other uses.

Livestock can also affect riparian areas associated with water sources and by physically altering riparian soils, and by impacting vigor of riparian vegetation. Physical disturbance caused by hoof action can compact and disturb riparian soils making them less productive and less stable. Subsequent erosion of riparian soils can change water flow patterns resulting in shrinkage of the riparian area and decreased riparian value. Overuse of riparian vegetation decreases its ability to reproduce and survive disturbance. These impacts increase when more animals are present on riparian areas and when riparian areas occur on steep slopes (USDI 2001).

Heavy livestock impacts to water sources and associated riparian areas are generally considered to be negative; however some impacts have positive consequences. Physical impacts from livestock use within a riparian area can create flow paths and ponding areas for surface water which can be utilized by stock and wildlife. This water might not be available on the surface in the absence of disturbance. Occasional grazing of riparian vegetation increases vegetative vigor and productivity.

Use of surface water by livestock can impact water quality directly through physical disturbance, and bacterial, nutrient, and sediment loading. These impacts are most likely to occur on undeveloped and unprotected springs that have available surface water. Physical impacts to

spring sources from hoof action can alter flow patterns in the source area and result in less water being available at the surface for beneficial users. Less water at the source would concentrate and exacerbate any poor water quality conditions that may exist (BLM 1999).

Alternative 1- No Action

Under the No Action Alternative the current types of impacts to water resources are expected to continue. It is expected that the riparian and water quality standards would continue to be met as outlined in the 2012 Draft Standards and Guidelines Assessment (BLM 2012). Water and riparian resources within the allotment are well "armored" with plants and can easily handle light to moderate grazing pressure.

Alternative 2 - Proposed Action

Under the Proposed Action grazing impacts would be similar to those found in the No Action Alternative. The area that is infested with medusahead rye grass that would be treated by BLM is not in close proximity to any water resources, therefore no water resources would be impacted from the treatments.

Alternative 3 – Sagebrush-Associated Nesting Habitat Alternative

Under this alternative the amount of AUMs in the allotment would stay the same. Grazing use would be concentrated to certain areas of the allotment during specific periods; but the overall impacts to water resources under this alternative would be the same as the No Action Alternative.

Alternative 4 – Increased Grazing Alternative

Under this alternative grazing use on the allotment would be increased. The amount of AUMs currently grazed on the allotment would be nearly doubled. It is likely that the allotment would be able sustain productive water resources with the increase in livestock use since water resources within the allotment are healthy and are meeting current standards. However, increasing the amount of disturbance from grazing may have adverse impacts by denuding riparian vegetation, increasing non-native species, and stream bank trampling.

Alternative 5 – No Grazing Alternative

Under this alternative grazing use on the allotment would be eliminated. Eliminating grazing would likely have positive impacts on the water resources within the allotment. Water and riparian areas would have time to rest from grazing and would likely flourish. This alternative would likely improve water quality because of the removal of fecal matter and increased vegetation which filters and traps sediment in water. Increased vegetation would also lead to higher water holding capacities in some of the lower elevation areas of the allotment.

Cumulative Impacts

The Cumulative effects study area (CESA) is the South Fork of the Owyhee River basin. The CESA is defined as this area because water consumption and use within this watershed may indirectly affect water resources within the project area. Cumulative effects to water resources occur as a result of a combination of occurrences on both public and private land within the watershed including climate, water diversion, and livestock grazing. Consumptive water uses within the basin likely decrease the amount of available water in springs, streams and ponds in the project area. The Nevada State Engineer's Office reports that of the 8000 acre feet of water that can be withdrawn from this basin, 2,433 acre feet is appropriated for use by water right holders. The primary use of this water is for irrigation. In the absence of these diversions more water would likely be present in the springs, streams and ponds in the project area. Impacts to water supply also occur as a result of climate change and climate variability which can affect the amount of water available in the area in the short and long term.

All of the alternatives could potentially result in an incremental increase in cumulative effects to the riparian areas adjacent to water resources. These impacts are not expected to result in a major change over current conditions because the incremental change in impacts is very small when compared to the cumulative impacts that occur within the basin as a whole.

3.4 BLM Monitoring

Traditional methods for monitoring upland and riparian areas will continue to be implemented by the BLM for monitoring in the Wilson Mountain Allotment. However, the Elko District has started to implement the Assessment, Inventory, and Monitoring (AIM) protocol on all of the allotments within the Tuscarora Field Office. This method combines several upland vegetation monitoring methods into one method for quick and accurate vegetation monitoring. Contracted personnel are current establishing AIM monitoring sites within allotments. The Wilson Mountain Allotment is tentatively scheduled for 2014 to have the AIM protocol established at several new key areas. This will provide the BLM with more data than is currently available for the allotment and should help the BLM in making future decisions regarding livestock grazing and vegetation management.

4 CONSULTATION AND COORDINATION

4.1 Persons, Groups or Agencies Consulted

On 29 June 2012, the BLM mailed a notice of availability of the Draft Standards and Guidelines for Rangeland Health Assessment for the Wilson Mountain Allotment to the permittee, state and local governments, and members of the public interested in livestock grazing management on the allotment. The Draft S&G document remained available for public review on the Elko District's website. No comments, data, and/or alternatives were submitted to the BLM.

4.2 Preparers

Casey Addy, Lead Preparer, Rangeland Management Specialist
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Elizabeth Bigelow, Archaeologist
John Daniel, Hydrologist
Matt Murphy, Natural Resource Specialist (Fuels/Forestry)
Zack Pratt, Outdoor Recreation Planner
Ken Wilkinson, Wildlife Biologist

4.3 Distribution

This EA is being posted for public review at the Elko District website at the following link:

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

The EA will remain available for review through Thursday, 05 September 2013.

5 REFERENCES

Acker, Duane and Merle Cunningham. 1998. Animal Science & Industry, Fifth Edition. Prentice-Hall, Inc./Simon & Schuster, Upper Saddle River, New Jersey. 704pp.

Arizona Game and Fish Department (AGFD). 1993. Bats of Arizona, a special Heritage Edition of the Arizona Wildlife Views (August 1993). Arizona Game and Fish Department, Phoenix, Arizona.

Ataman, Kathryn. 1996. A Short Position Paper supporting incorporation of effects of grazing practices on cultural resources located on public lands into BLM Grazing Standards and Guidelines. NE Nevada RAC meeting notes, 3/22/96.

BLM. 1999. Riparian Area Management: A User Guide to Assessing Proper Functioning Condition and the Supporting Science for Lentic Area. Technical Reference 1737-16. U.S. Department of the Interior, Bureau of Land Management, National Applied Resource Sciences Center.

BLM. 2001. "Biological Soil Crusts: Ecology and Management" Technical Reference 1730-2.

BLM, 2006. "Wilson Mountain Allotment Temporary Non-Renewable Use Environmental Assessment."

BLM 2010. "Wilson Mountain Allotment Temporary Non-Renewable Use Determination of NEPA Adequacy."

BLM. 2012. "Wilson Mountain Allotment Grazing Permit Renewal- Standards and Guidelines for Rangeland Health Assessment".

Barnett, T. P., D. W. Pierce, H. G. Hidalgo, C. Bonfils, B. D. Santer, T. Das, G. Bala, A. W. Wood, T. Nozawa, A. A. Mirin, D. R. Cayan, M. D. Dettinger. 2008. Human-Induced Changes in the Hydrology of the Western United States. Science. 19: 1080-1083.

Beever, E. 2003. Management Implications of the Ecology of Free-Roaming Horses in Semi-Arid Ecosystems of the Western United States. Wildlife Society Bulletin 31 (3):887-895.

_____, P. F. Brussard, J. Berger. 2003. Patterns of apparent extirpation among isolated populations of pikas (*Ochotona princeps*) in the Great Basin. Journal of Mammalogy. 84: 37–54.

_____, R.J. Tausch, and P.F. Brussard. 2003. Characterizing Grazing Disturbance in Semiarid Ecosystems Across Broad Scales, Using Diverse Indices. Ecological Applications 13 (1):119-136.

_____, and P.F. Brussard. 2004. Community- and Landscape-level Responses of Reptiles and Small Mammals to Feral-Horse Grazing in the Great Basin. Journal of Arid Environments 59:271-297.

_____, and J.E. Herrick. 2006. Effects of Feral Horses in Great Basin Landscapes on Soils and Ants: Direct and Indirect Mechanisms. Journal of Arid Environments 66:96-112.

Belsky, A.J., A. Matzke, and S. Uselman. 1999. Survey of Livestock Influences on Stream and Riparian Ecosystems of the Western United States. Journal of Soil and Water Conservation 54:419-431.

Berger, J. 1985. Interspecific interactions and dominance among wild Great Basin ungulates. Journal of Mammalogy 66:571-573.

Bernstein, L., P. Bosch, O. Canziani, Z. Chen, R. Christ, O. Davidson, W. Hare, S. Huq, D. Karoly, V. Kattsov, Z. Kundzewicz, J. Liu, U. Lohmann, M. Manning, T. Matsuno, B. Menne, B. Metz, M. Mirza, N. Nicholls, L. Nurse, R. Pachauri, J. Palutikof, M. Parry, D. Qin, N. Ravindranath, A. Reisinger, J. Ren, K. Riahi, C. Rosenzweig, M. Rusticucci, S. Schneider, Y. Sokona, S. Solomon, P. Stott, R. Stouffer, T. Sugiyama, R. Swart, D. Tirpak, C Vogel, G Yohe. 2007. Climate Change Synthesis Report: An Assessment of the Intergovernmental Panel on Climate Change. IPCC Plenary XXVII (Valencia, Spain, 12-17 November 2007).

Blake, Phill. 2010. Horse Pasture Management- Basic Land Stewardship Concepts. USDA-NRCS.

Bradley, P. V., M. J. O'Farrell, J. A. Williams, and J. E. Newmark. 2006. The Revised Nevada Bat Conservation Plan. Nevada Bat Working Group. Reno, Nevada. 216 pp.

Buehler. D.A. 2000. Bald Eagle (*Haliaeetus leucocephalus*). *In* The Birds of North America, No. 506 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia.

CCSP 2008: The effects of climate change on agriculture, land resources, water resources, and biodiversity. A Report by the U.S. Climate Change Science Program and the Subcommittee on

Global Change Research. P. Backlund, A. Janetos, D. Schimel, J. Hatfield, K. Boote, P. Fay, L. Hahn, C. Izaurralde, B.A. Kimball, T. Mader, J. Morgan, D. Ort, W. Polley, A. Thomson, D. Wolfe, M. Ryan, S. Archer, R. Birdsey, C. Dahm, L. Heath, J. Hicke, D. Hollinger, T. Huxman, G. Okin, R. Oren, J. Randerson, W. Schlesinger, D. Lettenmaier, D. Major, L. Poff, S. Running, L. Hansen, D. Inouye, B.P. Kelly, L. Meyerson, B. Peterson, R. Shaw. U.S. Environmental Protection Agency, Washington, DC., USA, 362 pp.

Chambers, J. C. and M. J. Wisdom. 2009. Priority Research and Management Issues for the Imperiled Great Basin of the Western United States. Restoration Ecology Vol. 17, 5: 707–714.

Coates, P.S., J.W. Connelly, and D.J. Delehanty. 2008. Predators of sage-grouse nests identified by video monitoring. Journal of Field Ornithology 79:421-428.

Collins, C.P. and T.D. Reynolds. 2005. Ferruginous Hawk (*Buteo regalis*): a technical conservation assessment. [Online]. USDA Forest Service, Rocky Mountain Region. Available: http://www.fs.fed.us/r2/projects/scp/assessments/ferruginoushawk.pdf [6/2012].

Connelly, J.W., A.D. Apa, R.B. Smith, and K.P. Reese. 2000. Effects of predation and hunting on adult sage grouse *Centrocercus urophasianus* in Idaho. Wildlife Biology 6:227-232.

_____, K.P. Reese, E.O. Garton, and M.L. Commons-Kemner. 2003. Response of sage-grouse *Centrocercus urophasianus* populations to different levels of exploitation in Idaho, USA. Wildlife Biology 9:335-340.

Crozier, L. 2003. Winter warming facilitates range expansion: cold tolerance of the butterfly *Atalopedes campestris*. Oecologia. 135: 648–656.

Crozier, L. 2004. Warmer winters drive butterfly range expansion by increasing survivorship. Ecology. 85:231–241.

Deacon J. E., A. E. Williams, C. Deacon-Williams, and J. E. Williams. 2007. Fueling Population Growth in Las Vegas: How Large-scale Groundwater Withdrawal Could Burn Regional Biodiversity. Source: BioScience, 57(8):688-698. American Institute of Biological Sciences. DOI: 10.1641/B570809.

Doherty, M.K. 2007. Mosquito populations in the Powder River Basin, Wyoming: A comparison of natural, agricultural and effluent coal bed natural gas aquatic habitats. Thesis, Montana State University, Bozeman, MT. 95 pp.

_____, J.D. Tack, J.S. Evans, and D.E. Naugle. 2010a. Mapping breeding densities of sage-grouse: A tool for range-wide conservation planning. BLM Completion Report: Interagency Agreement # L10PG00911.

_____, D.E. Naugle, H.E. Copeland, A. Pocewicz, and J.M. Kiesecker. 2010b. Energy conservation tradeoffs: systematic planning for sage-grouse in their eastern range. Pp. 505-516 in S.T. Knick and J.W. Connelly (editors). sage-grouse: ecology and conservation of a landscape

species and its habitats. Studies in Avian Biology, Vol 38, University of California Press, Berkeley, CA.

deVos, Jr., J.C., and W.H. Miller. 2005. Habitat Use and Survival of Sonoran Pronghorn in Years with Above-Average Rainfall. Wildlife Society Bulletin 33:35-42.

Ehrenfeld, J. G. 2003. Effects of Exotic Plant Invasions on Soil Nutrient Cycling Processes. Ecosystems 6: 503–523. DOI: 10.1007/s10021-002-0151-3.

Espinosa, S. and R. Phenix. 2008. Effects of wildfire (1999-2007) on sage-grouse (*Centrocercus urophasianus*) and key ecological systems that they depend on in Nevada. Nevada Department of Wildlife, Reno, NV.

Feng, S. and Q. Hu, 2007: Changes in winter snowfall/precipitation ratio in the contiguous United States. Journal of Geophysical Research, 112, D15109, DOI:10.1029/2007JD008397.

Furniss, Michael J.; Staab, Brian P.; Hazelhurst, Sherry; Clifton, Cathrine F.; Roby, Kenneth B.; Ilhadrt, Bonnie L.; Larry, Elizabeth B.; Todd, Albert H.; Reid, Leslie M.; Hines, Sarah J.; Bennett, Karen A.; Luce, Charles H.; Edwards, Pamela J. 2010. Water, climate change, and forests: watershed stewardship for a changing climate. Gen. Tech. Rep. PNW-GTR-812. Portland, OR: U.S. Department of Agriculture, Forest Service. Service, Pacific Northwest Research Station. 75 p.

Galbreath, Kurt E., David J. Hafner, and Kelly R. Zamudio. 2009. WHEN COLD IS BETTER: CLIMATE-DRIVEN ELEVATION SHIFTS YIELD COMPLEX PATTERNS OF Climate Change Relative to BLM Nevada - Elko District, Tuscarora and Wells Field Offices Pg | 10 M a y 2 3 , 2 0 1 1 DIVERSIFICATION AND DEMOGRAPHY IN AN ALPINE SPECIALIST (AMERICAN PIKA, *OCHOTONA PRINCEPS*). The Society for the Study of Evolution. Evolution 63-11: 2848–2863.

Ganskopp, D.C. 1983. Habitat use and Spatial Interactions of Cattle, Wild Horses, Mule deer, and California Bighorn Sheep in the Owyhee Breaks of Southeast Oregon. PhD Dissertation, Oregon State University.

Ganskopp, D.C. and M. Vavra. 1986. Habitat Use by Feral Horses in the Northern Sagebrush Steppe. Journal of Range Management 39(3):207-211.

_____. 1987. Slope Use by cattle, feral horses, deer, and bighorn sheep. Northwest Science, 61(2):74-80.

GBBO (Great Basin Bird Observatory). 2010. Nevada Comprehensive Bird Conservation Plan, ver. 1.0. Great Basin Bird Observatory, Reno, NV. Available: www.gbbo.org/bird_conservation_plan.html

Hamlet, A. F. and D. P. Lettenmaier. 2007. Effects of 20th century warming and climate variability on flood risk in the western U.S. Water Resources Research, 43, W06427, DOI:10.1029/2006WR005099.

Hanley, T. A. 1982. The nutritional basis for food selection by ungulates. Journal of Range Management 35:146–151.

_____, and K.A. Hanley. 1982. Food Resource Partitioning by Sympatric Ungulates on Great Basin Rangeland. Journal of Range Management 35(2):152-158.

Hansen, R.M., R.C. Clark, and W. Lawhorn. 1977. Foods of Wild Horses, Deer, and Cattle in the Douglas Mountain Area, Colorado. Journal of Range Management 30(2):116-118.

Harvey, M. J., J. S. Altenbach, and T.L. Best. 1999. Bats of the United States. Arkansas game and Fish Commission. 62 pp.

Heilmann, T.J., R.A. Garrott, L.L. Caldwell, and B.L. Tiller. 1998. Behavioral response of free-ranging elk treated with an immunocontraceptive vaccine. Journal of Wildlife Management 62:243-250.

Holloran, M. J., and S.H. Anderson. 2005. Spatial distribution of sage-grouse nests in relatively contiguous sagebrush habitats. Condor 107:742-752.

Hubbard, R.E., and R. M. Hansen. 1976. Diets of Wild Horses, Cattle, and Mule Deer in the Piceance Basin, Colorado. Journal of Range Management 29(5):389-392.

Inouye, D. W., B. Barr, K. B. Armitage and B. D. Inouye. 2000. Climate change is affecting altitudinal migrants and hibernating species. Proceedings of the National Academy of Sciences. 97: 1630–1633.

Izaurralde, R. C., A. M. Thomson, J. A. Morgan, P. A. Fay, H. W. Polley, and J. L. Hatfield. 2011. Climate Impacts on Agriculture: Implications for forage and Rangeland Production.

Karl, T. R., J. M. Melillo and T. C. Peterson. 2009. Global Climate Change Impacts in the United States. Cambridge University Press. (eds.).

Keinath, D.A., and M. McGee. 2004. Species assessment for pygmy rabbit (*Brachylagus idahoensis*) in Wyoming. USDI, BLM, Cheyenne, WY.

Kindschy, Robert R. 1987. Sagehen exclosure: a history of bitterbrush reproduction. Rangelands. 9(3): 113-114. [1340]

Kochert, M.N., K. Steenhof, C.L. McIntyre, and E.H. Craig. 2002. Golden Eagle (*Aquila chrysaetos*). *In* The Birds of North America, No. 684 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA.

Krebs, C.J. 1972. Ecology. Harper and Row, New York, NY.

Krysl, L.J., M.E. Hubbert, B.F. Sowell, G.E. Plumb, T.K. Jewett, M.A. Smith, and J.W. Waggoner. 1984. Horses and Cattle Grazing in the Wyoming Red Desert, I. Food Habits and Dietary Overlap. Journal of Range Management 37:72-76.

McCort, W.D. 1984. Behavior of Feral Horses and Ponies. Journal of Animal Science 58:493-499.

McInnis, M.A. 1984. Ecological Relationships among Feral Horses, Cattle, and Pronghorn in Southeastern Oregon. PhD Dissertation. Oregon State University.

_____ and M. Vavra. 1987. Dietary Relationships Among Feral Horses, Cattle, and Pronghorn in Southeastern Oregon. Journal of Range Mgt 40(1):60-66.

Meehl, G.A., T.F. Stocker, W.D. Collins, P. Friedlingstein, A.T. Gaye, J.M. Gregory, A. Kitoh, R. Knutti, J.M. Murphy, A. Noda, S.C.B. Raper, I.G. Watterson, A.J. Weaver and Z.-C. Zhao, 2007: Global Climate Projections. In: Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

Meeker, J.O. 1979. Interactions Between Pronghorn Antelope and Feral Horses in Northwestern Nevada. Master's Thesis. University of Nevada, Reno, Reno, Nevada.

Menard, C., P. Duncan, G. Fleurance, J. Georges, and M. Lila. 2002. Comparative Foraging and Nutrition of Horses and Cattle in European Wetlands. Journal of Applied Ecology 39(1):120-133.

Mote, P.W., A.F. Hamlet, M.P. Clark, and D.P. Lettenmaier. 2005. Declining mountain snowpack in western North America. Bulletin of the American Meteorological Society, 86(1):39-49.

Musha, J.M., Hild, A.L. 2006. Biological soil crusts in grazed and ungrazed Wyoming Sagebrush Steppe. Journal of Arid Environments 67:195-205.

NDOW. 2006. Nevada Wildlife Action Plan. Nevada Department of Wildlife, Reno, NV.

_____. 2011a. 2010-2011 Big Game Status report. Nevada Department of Wildlife, Reno, NV.

_____. 2011b. Upland and Migratory Game Bird, Rabbit and Furbearing Mammals; Harvest Data and Population Status Reports. Nevada Department of Wildlife, Reno, NV.
Nevada Natural Heritage Program. 2011. Special Status Species GIS database. Carson City, NV.

Norton, J. B., T. A. Monaco, J. M. Norton, D. A. Johnson, T. A. Jones. 2003. Soil morphology and organic matter dynamics under cheatgrass and sagebrush-steppe plant communities. Journal of Arid Environments (2004). 54: 445–466.

Nowak, Cheryl L., Robert S. Nowak, Robin J. Tausch, and Peter E. Wigand. 1994. A 30,000 year record of vegetation dynamics at a semi-arid locale in the Great Basin. Journal of Vegetation Science 5:579-590.

Osburn, A. S. Vetter, R. Hartley, L. Walsh and J. Brown. 1987. Impacts of Domestic Livestock Grazing on Archaeological Resources of Capital Reef National Park, Utah. Midwest Archaeological Center Occasional Studies in Anthropology, No. 20.

Ostermann-Kelm , S. E.R. Atwill, E.S. Rubin, M.C. Jorgensen, and W.M. Boyce. 2008. Interactions between Feral Horses and Desert Bighorn Sheep at Water. Journal of Mammology 89:459-466.

_____, S.D., E.A. Atwill, E.S. Rubin, L.E. Hendrickson, and W.M. Boyce, 2009. Impacts of Feral Horses on a Desert Environment. BMC Ecology 9:22.

Ports, M.A., and S.B. George. 1990. *Sorex preblei* in the Northern Great Basin. Great Basin Naturalist 50:93-95.

Reese, K.P., and J.W. Connelly. 2011. Harvest Management for sage-grouse: a changing paradigm for game bird management. Pp. 101-111 *in* S.T. Knick and J.W. Connelly (editors). sage-grouse: ecology and conservation of a landscape species and its habitats. Studies in Avian Biology, Vol. 38, University of California Press, Berkeley, CA.

Reuven, Y. 1996. Loggerhead Shrike (*Lanius ludovicianus*), The Birds of North America Online (A. Poole, editor.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/review/species/231

Reynolds, T.D., and C.H. Trost. 1980. The response of native vertebrate populations to crested wheatgrass planting and grazing by sheep. Journal of Range Management 33:122-125.

Rost, G.R., and J.A. Bailey. 1979. Distribution of Mule Deer and Elk in Relation to Roads. The Journal of Wildlife Management 43:634-641.

Rowland, Mary M.: Wisdom, Michael J.: Suring, Lowell H.: Meinke, Cara W. 2006. sage-grouse as an umbrella species for sagebrush-associated vertebrates. Biological Conservation. 129: 325-335.

Salter, R.E., and R.J. Hudson. 1982. Social Organization of Feral Horses in Western Canada. Applied Animal Ethology 8:207-223.

Sawyer, H., R.M. Nielson, F.G. Lindzey, L. Keith, J.H. Powell, and A.A. Abraham. 2007. Habitat Selection of Rocky Mountain Elk in a Nonforested Environment. The Journal of Wildlife Management 71:868-874.

Sauer, J.R., J.E. Hines, and J. Fallon. 2008. The North American Breeding Bird Survey, Results and Analysis 1966 - 2007. Version 5.15.2008. USGS Patuxent Wildlife Research Center, Laurel, MD; http://www.mbr-pwrc.usgs.gov/bbs/bbs.html; Accessed on 4/16/2010.

Schultz, Brad, and Kent McAdoo. Sagebrush Regions in Nevada: Climate and Topography influences Species Composition. University of Nevada Reno-Cooperative Extension Fact Sheet 02-12.

Smith, M.A. and J.W. Waggoner, Jr., et al. 1982. Vegetation Utilization, Diets, and Estimated Dietary Quality of Horses and Cattle Grazing in the Red Desert of Westcentral Wyoming. BLM Contract No. AA851-CTO-31.

Stewart, I. T., D. R. Cayan and M. D. Dettinger. 2005. Changes toward earlier streamflow timing across western North America. Journal of Climate, 18(8):1136-1155.

Society for Range Management, 1989. A Glossary of Terms Used in Range Management (Third ed.). Society for Range Management, Denver, Colo.

Steward, Julian H. 1936. Basin-Plateau Aboriginal Sociopolitical Groups. University of Utah, Salt Lake City.

Tausch, Robin J. 1999. Historic Pinyon and Juniper Woodland Development. USDA Forest Service Proccedings RMRS-P-9:12-19.

Tausch, Robin J., Peter E. Wigand, and J. Wayne Burkhardt. 1993. Viewpoint: Plant community thresholds, multiple steady states, and multiple successional pathways: legacy of the Quaternary? Journal of Range Management 46:439-447.

Timmerman, A., J. Oberhuber, A. Bacher, M. Esch, M. Latif, E. Roeckner. 1999. Increased El Niño frequency in a climate model forced by future greenhouse warming. Nature. 398: 694-697.

Ulmschneider, H. 2008. Surveying for pygmy rabbits (*Brachylagus idahoensis*). Interagency Pygmy Rabbit Working Group.

U.S. Department of the Interior. 2001. Riparian area management: A guide to managing, restoring, and conserving springs in the Western United States. Technical Reference 1737-17. Bureau of Land Management, Denver, Colorado. *BLM/ST/ST-0I/OOI+1737.* 70 pp.

USDA Natural Resources Conservation Service May 2001. Soil Quality Information Sheet. Rangeland Sheets.

USDA Natural Resources Conservation Service 2002. Soil Survey of Elko County, Nevada, Southeast Part.

United States Fish and Wildlife Service (USFWS). 2003. Endangered and Threatened Wildlife and Plants; Final Rule to List the Columbia basin District Population Segment of the Pygmy Rabbit (*Brachylagus idahoensis*) as Endangered. Federal Register Vol. 68, No. 43. March 5, 2003. 10388-10409.

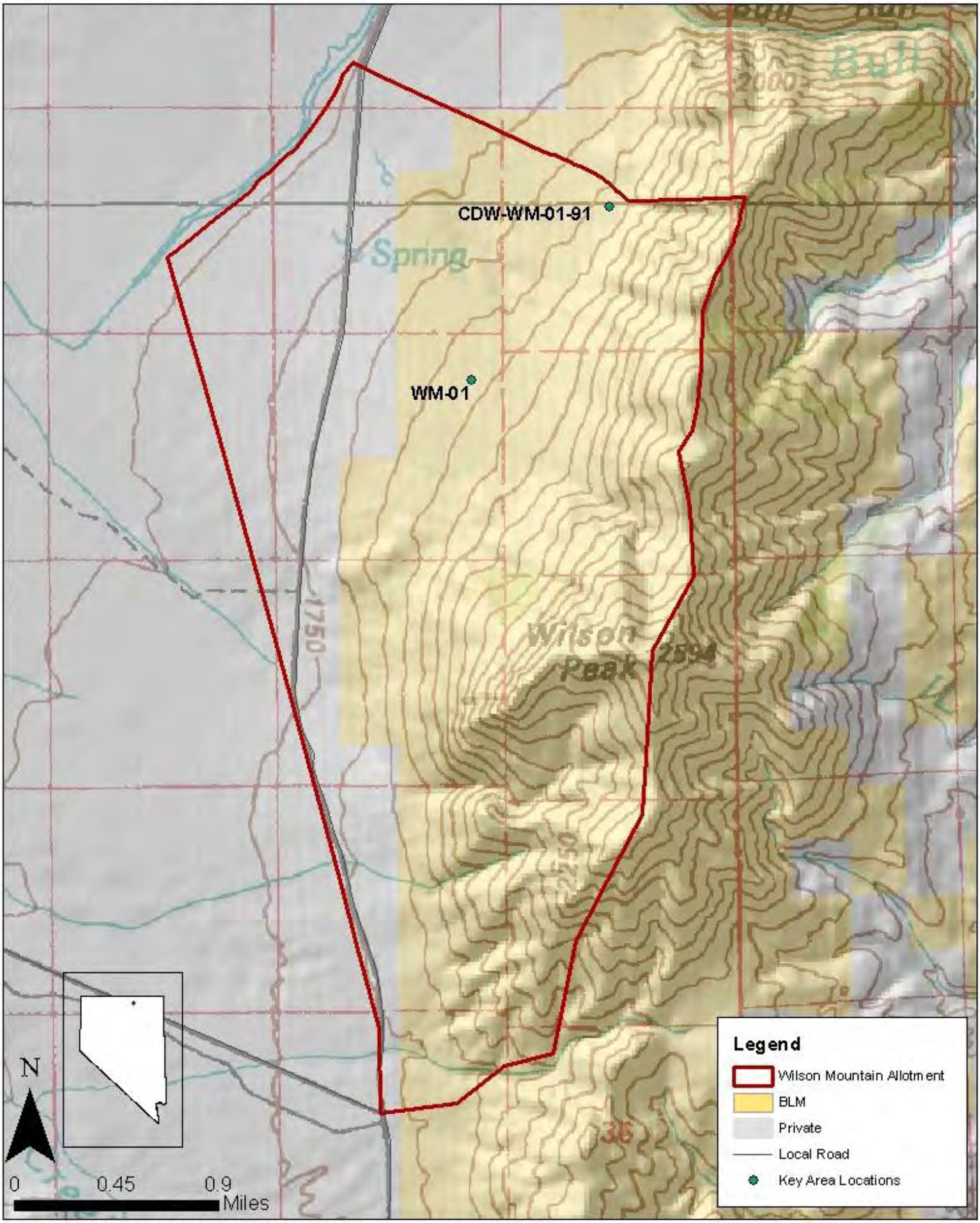
Weiss, N.T., and B.J. Verts. 1984. Habitat and distribution of pygmy rabbits (*Brachylagus idahoensis*) in Oregon. Great Basin Naturalist 44:563-571.

Wenninger, E.J., and R.S. Inouye. 2008. Insect community response to plant diversity and productivity in a sagebrush–steppe ecosystem. Journal of Arid Environments 72:24-33.

Zou, L., S.N. Miller, and E.T. Schidtmann. 2006. Mosquito Larval Habitat Mapping Using Remote Sensing and GIS: Implications of Coalbed Methane Development and West Nile Virus. Journal of Medical Entomology 43(5):1034-1041.

6 – MAPS

Map 1. Wilson Mountain Allotment - Boundary and Key Area Locations



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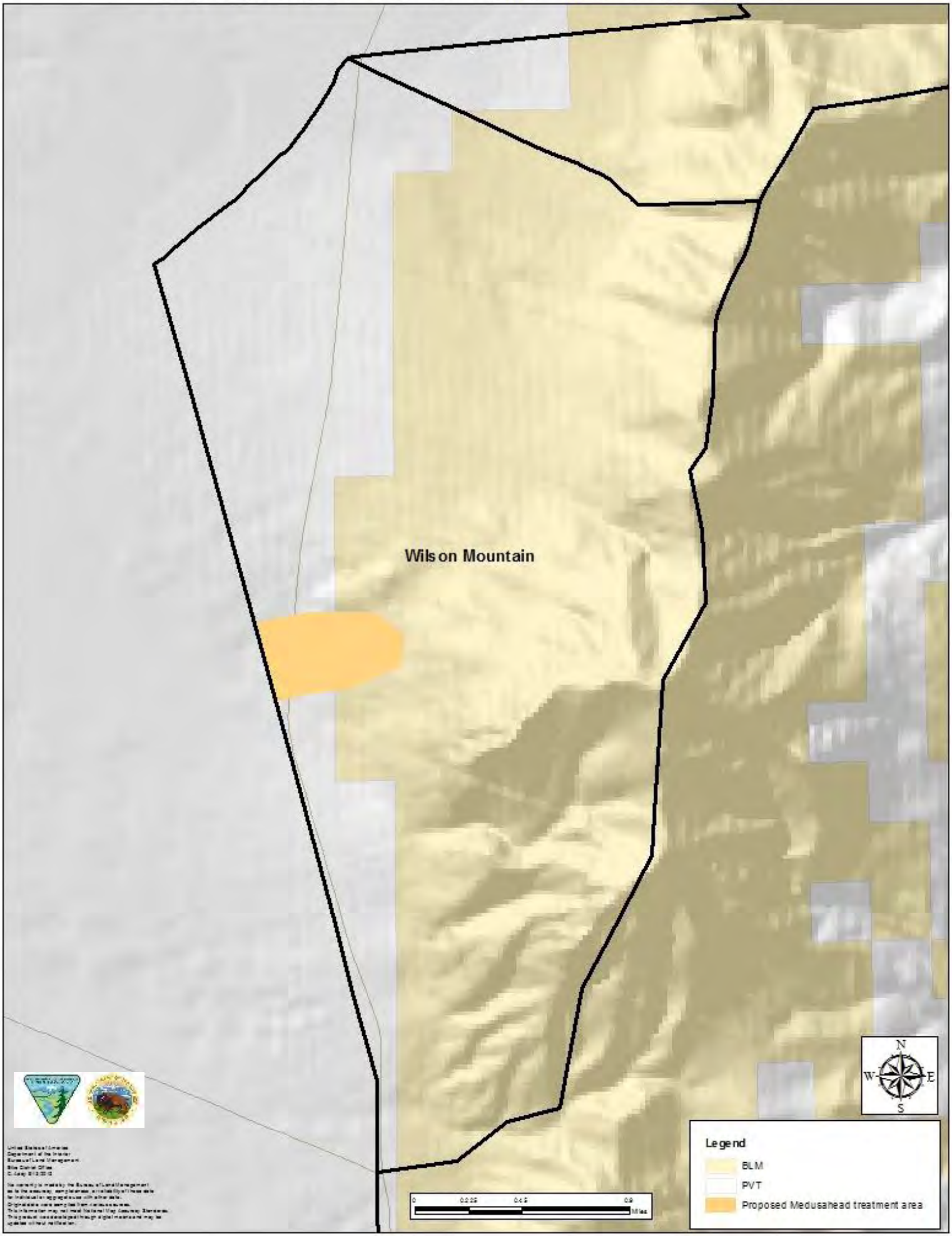
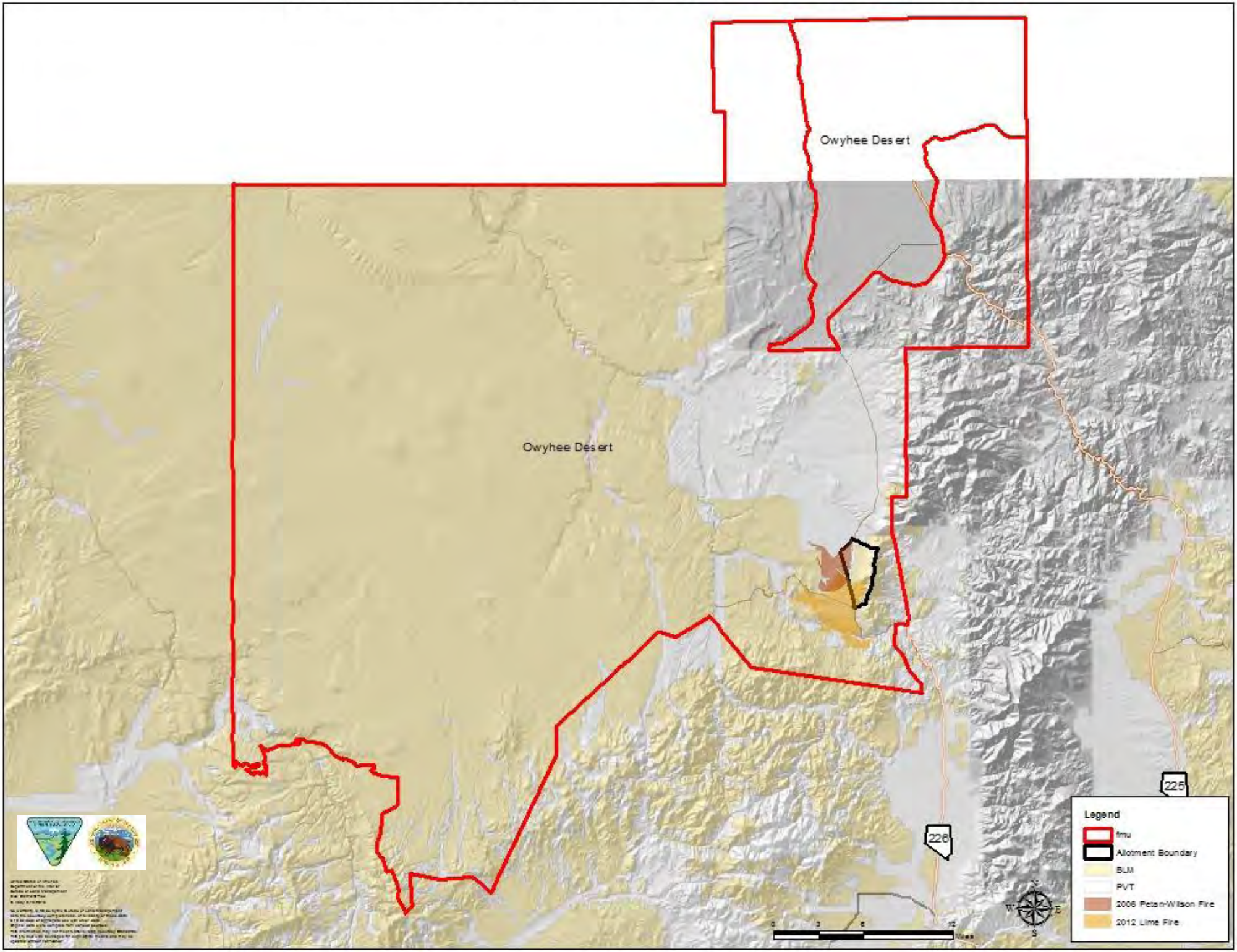
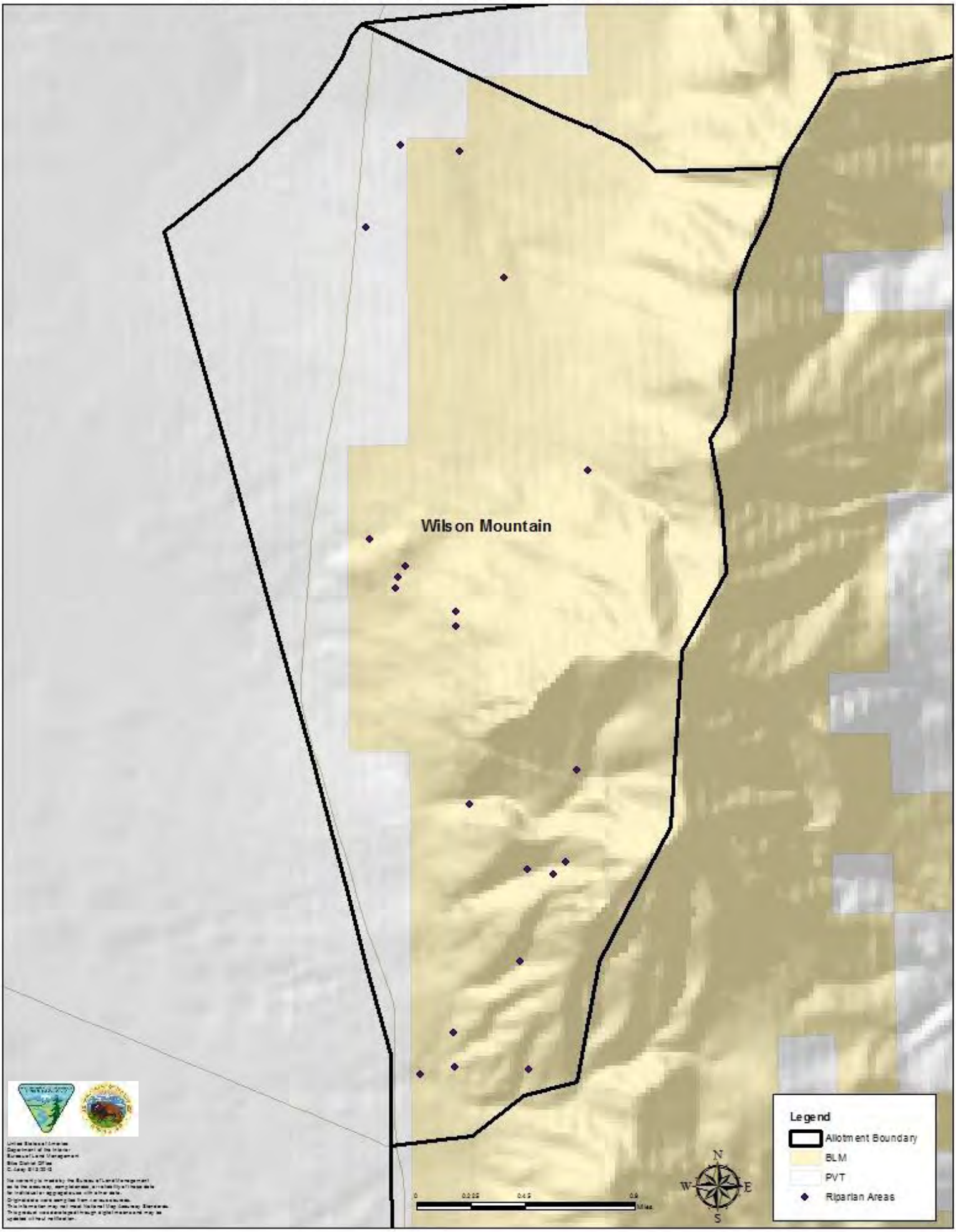
Data Published in:
North American Datum (NAD83)
UTM Coordinates, Zone 11, Meters

Elko District Office
June 15, 2012

Map 2. Alternative 2 - Proposed Action Medusahead Treatment Area



Map 3. Owyhee Desert Fire Management Unit and the 2006 Petan-Wilson and 2012 Lime Fire boundaries.



Map 4. Riparian Areas found within the Wilson Mountain Allotment