

Virginia Mountains Vegetation Treatments Project

DRAFT ENVIRONMENTAL ASSESSMENT

DOI-BLM-NV-C020-2015-0034-EA

U.S. Department of the Interior
Bureau of Land Management
Carson City District
Sierra Front Field Office
5665 Morgan Mill Road
Carson City, NV 89701
775-885-6000

June 2016



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

DOI-BLM-NV-C020-2015-0034-EA

Table of Contents

1.0	INTRODUCTION	1
1.1	Background	1
1.2	Purpose and Need.....	2
1.3	Scoping and Issues Identification.....	3
1.4	Decision to be Made.....	4
1.5	Land Use Plan Conformance Statement.....	4
1.6	Relationships to Statutes, Regulations, and Other Plans.....	6
2.0	ALTERNATIVES.....	8
2.1	Description of Alternatives	8
2.1.1	Alternative A: Proposed Action	8
2.1.1.1	Treatment Units	8
2.1.1.2	Treatment Methods.....	10
2.1.1.3	General Treatment Specifications	14
2.1.1.4	Resource Commitments.....	14
2.1.1.5	Schedule.....	16
2.1.1.6	Adaptive Management/Monitoring	16
2.1.1.7	Maintenance.....	17
2.1.2	Alternative B: No Action	17
2.1.3	Alternatives Considered but Dismissed from Further Analysis.....	17
3.0	AFFECTED ENVIRONMENT.....	20
3.1	Setting.....	20
3.1.1	Resources Considered for Analysis.....	20
3.2	Cultural Resources	22
3.3	Native American Religious Concerns.....	24
3.4	Wetlands/Riparian Zones.....	25
3.5	General Wildlife.....	25
3.6	BLM Sensitive Species (Animals).....	27
3.7	Migratory Birds.....	29
3.8	Vegetation	30
3.9	BLM Sensitive Species (Plants).....	31
3.10	Fire Management	32
3.11	Forest Resources	35

3.12	Visual Resources.....	36
3.13	Air Quality	37
3.14	Wild Horses and Burros.....	39
3.15	Livestock Grazing.....	39
3.16	Noxious and Invasive Weeds.....	40
3.17	Lands with Wilderness Characteristics.....	41
3.18	Socioeconomics	42
4.0	ENVIRONMENTAL CONSEQUENCES.....	44
4.1	Introduction	44
4.1.1	Types of Effects	44
4.2	Cultural Resources	44
4.3	Native American Religious Concerns.....	45
4.4	Wetlands/Riparian Zones.....	45
4.5	General Wildlife.....	46
4.6	BLM Sensitive Species (Animals).....	48
4.7	Migratory Birds.....	50
4.8	Vegetation	51
4.9	BLM Sensitive Species (Plants).....	52
4.10	Fire Management	53
4.11	Forest Resources	54
4.12	Visual Resources.....	55
4.13	Air Quality	56
4.14	Wild Horses and Burros.....	56
4.15	Livestock Grazing.....	57
4.16	Noxious and Invasive Weeds.....	58
4.17	Lands with Wilderness Characteristics.....	58
4.18	Socioeconomics	59
4.19	Residual Effects	60
5.0	CUMULATIVE EFFECTS	61
6.0	CONSULTATION AND COORDINATION	69
6.1	Public Review and Comment.....	69
6.2	Individuals, Tribes, Organizations and Agencies Contacted	69
6.2.1	Individuals.....	69
6.2.2	Tribes.....	70

6.2.3	Organizations	70
6.2.4	Agencies	71
6.3	List of Preparers	71
7.0	REFERENCES	72

List of Tables

Table 1	Proposed Treatment Methods by Treatment Unit
Table 2	Summary of Acres by Treatment Method
Table 3	Supplemental Authorities
Table 4	Resources or Uses Other Than Supplemental Authorities
Table 5	PA Consulting Parties
Table 6	Big Game Species Habitat Within the Planning Area
Table 7	Greater Sage-Grouse Habitat Within the Planning Area
Table 8	Historic Large Fires/Vegetation Treatments
Table 9	Forest and Woodland Types Within the Planning Area
Table 10	VRM Classification
Table 11	Grazing Allotments
Table 12	CESA by Resource and Summary of Effects

List of Appendices

Appendix A	BLM Sensitive Animals and Migratory Birds That May be Present or Their Habitat May be Present in the Planning Area
------------	--

List of Figures

Figure 1	Project Vicinity
Figure 2	Project Area
Figure 3	Planning Area
Figure 4	FIAT Project Planning Area
Figure 5	Greater Sage-Grouse Management Areas
Figure 6	Proposed Treatment Methods
Figure 7	Vegetation
Figure 8	Fire History and Past Vegetation Treatments 2006-2015
Figure 9	Fire Regime Condition Class
Figure 10	Visual Resource Management
Figure 11	Herd Management Areas
Figure 12	Grazing Allotments
Figure 13	Lands With Wilderness Characteristics
Figure 14	Cumulative Effects Study Area

List of Attachments

Attachment A	Comments Received During Public Scoping
Attachment B	Draft Programmatic Agreement
Attachment C	Habitat Assessment Form

1.0 INTRODUCTION

1.1 Background

The Bureau of Land Management (BLM), Carson City District, Sierra Front Field Office is proposing a vegetation treatments project in the Virginia Mountains area north of Reno and west of Pyramid Lake in Washoe County, Nevada (Figure 1). The Virginia Mountains Vegetation Treatments Project (Project) is to implement treatments on approximately 22,388 acres of public lands managed by the BLM. The Project Area¹ is approximately 22,528 acres (Figure 2). The BLM has used a landscape-level approach to identify and prioritize treatment units. The Planning Area² is approximately 193,213 acres (Figure 3). The Project would be implemented over a 10-year period. Implementation of the Project would not be anticipated to occur until 2017. Due to seasonal restrictions for wildlife, most treatments would occur during the late summer and fall. Approximately 2,000 to 3,000 acres would be treated each year.

Vegetation management treatments are needed to restore ecological balance, diversity and resilience to plant communities, and reduce hazardous fuels to protect people, property, infrastructure, and resources from severe wildfire. Wildlife habitat quality is diminishing due to woodland expansion and is threatened by heavy accumulations of fuels that greatly increase the potential for large, high-intensity wildfires. Historically, periodic wildfires maintained a healthy balance of vegetation types and prevented fuels from accumulating; however, the existing patterns of vegetation are not conducive to favorable effects from fire without the intervention of proposed treatments. Hazardous fuels currently need to be managed to protect vegetation from uncharacteristic, severe wildfire.

A sage-grouse (*Centrocercus urophasianus*) habitat matrix links relative resilience and resistance of sagebrush ecosystems with sage-grouse habitat requirements for landscape cover of sagebrush to help decision makers assess risks and determine appropriate management strategies at landscape scales. It provides guidelines to identify effective management strategies/actions and habitat restoration needs across four primary federal agency program areas: fuels management, fire operations, habitat restoration/recovery, and post-fire rehabilitation (Chambers et al. 2014). Using this approach, the Greater Sage-Grouse Wildfire, Invasive Annual Grasses, and Conifer Expansion Assessment was developed. This assessment is referred to as the Fire and Invasive Assessment Tool (FIAT) Report. The Western Great Basin/Warm Springs Valley assessment was developed using methods described in the FIAT Report. As part of the FIAT process, the Virginia Ranges project planning area (PPA) was identified. Approximately 71,000 acres of the PPA is included within the Planning Area for this Project (Figure 4).

¹ In this document, the term “Project Area” consists of approximately 22,388 acres of BLM land identified for site-specific analysis in this draft EA. The Project Area also includes approximately 140 acres of private lands, however no Project activities would occur on private lands.

² In this document, the term “Planning Area” consists of approximately 170,698 acres of BLM land used to identify treatment units and determine which resources are likely to occur in individual treatment units. The Planning Area also includes approximately 22,515 acres of private lands, however no Project activities would occur on private lands. Both public and private lands were considered in establishing the cumulative effects study areas (CESA) (Section 5.0).

Altered disturbance regimes and climate change have resulted in major changes in plant community compositions. Since the 1850's, many bunchgrass and sagebrush-bunchgrass (*Artemisia* spp.-*Poaceae* spp.) communities, which dominated the Intermountain West, have shifted to woodlands or introduced annual dominated communities (West 1984, Miller et al. 1994). Although woodlands have increased dramatically in the last 150 years, they currently occupy far less than they are capable of under current climatic conditions (Miller and Tausch 2001). Woodland expansion affects soils, vegetation structure and composition, water, nutrient and fire cycles, forage production, and plant and wildlife biodiversity.

There are three transitional phases of juniper (*Juniperus* spp.) woodland development (Miller et al. 2005):

- Phase I – Trees are present but shrubs and herbs are the dominant vegetation that influence ecological processes (hydrologic, nutrient and energy cycles) on site.
- Phase II – Trees are co-dominant with shrubs and herbs, and all three vegetation layers influence ecological processes on the site.
- Phase III – Trees are the dominant vegetation and the primary plant layer influencing ecological processes on the site.

An increase in tree dominance results in a loss of understory vegetation, and fires in dense woodland could be extremely difficult to control and very damaging to healthy woodlands, sagebrush, and herbaceous vegetation. Goals of woodland management include an attempt to restore ecosystem function and a more balanced plant community that includes shrubs, grasses, and forbs, and to increase ecosystem resilience to disturbances. Wildlife species such as mule deer (*Odocoileus hemionus*) depend on woodland landscapes that have multi-aged stands with a more open canopy and park-like structure with a robust understory of forbs, grasses, and shrubs. In highly dense woodland stands, the understory vegetation is eliminated over time.

This draft environmental assessment (EA) is being prepared in accordance with the National Environmental Policy Act (NEPA) and is in compliance with applicable regulations and laws passed subsequently, including the President's Council of Environmental Quality Regulations (CEQ), U.S. Department of Interior requirements, and guidelines listed in BLM Manual Handbook H-1790-1. This draft EA analyzes the potential environmental impacts of the Proposed Action and Alternatives, and documents public participation as well as the decision-making process. An EA is intended to be an overview of environmental concerns, not an exhaustive study of all environmental issues.

1.2 Purpose and Need

The purpose and need of the proposed Project is to restore the balance of perennial grasses, shrubs, and trees in the Virginia Mountains area to:

- Reduce the potential of large-scale high severity wildland fire;
- Provide for public and firefighter safety and protection of property and infrastructure;
- Maintain sagebrush habitat, riparian plant communities, wet meadows, and springs;
- Protect and enhance juniper woodland habitat; and
- Provide woodland products to the public, tribes, and commercial entities.

1.3 Scoping and Issues Identification

This Project was developed over a 10-month period. The BLM held several meetings with the interdisciplinary team on December 17, 2014, January 26, February 23, and April 2, 2015. A final review of the Project by an interdisciplinary team occurred on September 28, 2015. The following issues were discussed:

- Would improvements to roads be needed to access treatment units?
- How would the requirements of the greater sage-grouse plan amendment be applied and affect the proposed treatments?
- How would the need for cutting and removal of trees be discussed with the tribes and what level of outreach would be needed prior to implementing treatments would occur?

The Project was also developed in coordination with the Nevada Department of Wildlife (NDOW) and Natural Resources Conservation Service.

Public Notice. On September 29, 2015 the BLM announced a 60-day public scoping period. The BLM published a news release on September 29, 2015 to local and regional media. The news released was published on September 29, 2015 in *High Beam* and *Targeted News Service* (websites). The BLM sent letters to 84 individuals or organizations on the Project mailing list, which included private land owners, grazing permittees, right-of-way holders, and environmental/conservation groups. The BLM also sent notification to 34 State agencies through the Nevada Clearinghouse. Information, maps and how to comment were published on the Project's website, which is a part of the BLM's national ePlanning "NEPA Register."

On October 21, 2015 the BLM hosted a workshop for the public at the BLM Palomino Valley Fire Station. The Fire Station is located at 5605 Grass Valley Road in Reno. The BLM also scheduled a field trip to the Virginia Mountains for October 24, 2015. No members of the public attended the workshop or requested to participate in the field trip.

The scoping period closed on November 27, 2015. The BLM received three comment letters and two emails with comments from the public to consider (Attachment A).

Tribal Notice. The BLM provided early information to the Pyramid Lake Paiute Tribe (PLPT), Reno-Sparks Indian Colony (RSIC), Washoe Tribe of Nevada and California (WTNC), and the Susanville Indian Rancheria (SIR) on February 20, 2015. Additional early information was provided to the tribes on September 24, 2015. Early coordination with the tribes also consisted of the following:

- On October 1, 2015 the BLM presented the Project to cultural and environmental representatives for the RSIC. On November 10, 2015 the BLM presented the Project to a council meeting for the RSIC. There were approximately 40 people, including council members, in attendance.
- On October 16, 2015 the BLM presented the Project to a council meeting for the WTNC. There were approximately 25 people, including council members, in attendance.

- On October 27, 2015 the BLM presented the Project to the cultural resources committee for the PLPT, consisting of six members. On November 6, 2015 the BLM presented the Project to a council meeting for the PLPT. There were approximately 38 people, including council members, in attendance.

The BLM sent follow-up letters on December 7, 2015 notifying the tribes of the conclusion of the public scoping period and an overview of the tribal outreach to date. The BLM initiated formal government-to-government consultation with the four tribes on the Project on January 5, 2016. The consultation letters included an invitation to participate in the development of a Programmatic Agreement (PA).

On January 14, 2016 the BLM presented the Project to the tribal liaison committee for the SIR. There were approximately seven people in attendance.

On April 18, 2016 the BLM presented the Project to natural resources staff for the PLPT. There were two people were in attendance.

During public scoping, the BLM had described 7,859 acres for post-wildfire treatments. The three Emergency Stabilization and Rehabilitation (ES&R) units previously identified have been removed from the Proposed Action due to public confusion during scoping regarding the need for these units to be considered in this draft EA. The BLM is separately revising and updating the NEPA analysis for the ES&R program which would analyze such treatments.

1.4 Decision to be Made

The Authorized Officer would decide whether to implement the vegetative treatments as described in the Proposed Action, consisting of 13 units and approximately 22,388 acres of public lands.

1.5 Land Use Plan Conformance Statement

This draft EA is in conformance with the Carson City Field Office Consolidated Resource Management Plan (CRMP) (BLM 2001). Applicable sections include:

- FIR-2.1 “Restore fire as an integral part of the ecosystem, improve the diversity of vegetation and to reduce fire hazard fuels”;
- FOR-1.1 “Forest and woodland management will be based on the principles of multiple use, sustained yield, and ecosystem management”;
- LSG-1.1 “Maintain or improve the condition of the public rangelands to enhance productivity for all rangeland and watershed values”;
- RIP-2.1 “Protect and maintain existing and potential fisheries and riparian areas in good or better condition (proper functioning condition)”;

- WLD-2.4 “Maintain and improve wildlife habitat, including riparian/stream habitats, and reduce habitat conflicts while providing for other appropriate uses”; and
- WLD-6.4 “Wildlife habitat improvement projects will be guided, in the most part, by provisions in activity level plans such as habitat management plans, or interdisciplinary activity plans. These plans will be developed through consultation with interested parties and will be coordinated with livestock, wild horse, and wilderness plans. These plans will be focused on rehabilitation and improvement of wildlife habitat through protective fencing, water developments, grazing management, and vegetation treatments.”

This draft EA is in conformance with the *Vegetation Treatment on BLM Lands in Thirteen Western States Environmental Impact Statement* (BLM 1991) and the *Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement* (PEIS) (BLM 2007), both hereby incorporated by reference.

This draft EA is in conformance with the *Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment* (ARMPA), which is hereby incorporated by reference (BLM 2015a). The Planning Area includes BLM lands delineated as Priority Habitat Management Area (PHMA), General Habitat Management Area (GHMA), and Other Habitat Management Area (OHMA) for the greater sage-grouse (GRSG) (Figure 5). Key objectives of this plan amendment applicable to this Project include, but are not limited to:

- 2.2.1 Special Status Species (SSS), Goal SSS 1: “Conserve, enhance, and restore the sagebrush ecosystem upon which GRSG populations depend in an effort to maintain and/or increase their abundance and distribution, in cooperation with other conservation partners”;
- 2.2.2 Vegetation (VEG), Objective VEG 2: “On public lands, establish, maintain, and enhance a resistant and resilient sagebrush vegetative community and restore sagebrush vegetation communities to reduce GRSG habitat fragmentation and maintain or reestablish GRSG habitat connectivity over the long term”;
- 2.2.2 Vegetation (VEG), Objective VEG 5: “Reduce the amount of GRSG habitat loss due to wide-spread wildfires and invasion by nonnative species”;
- 2.2.3 Fire and Fuels Management (FIRE), Objective FIRE 2: “Use pre-suppression efforts to reduce the size and impact of wildfires in Sagebrush Focal Areas, PHMAs, and GHMAs”;
- 2.2.3 Fire and Fuels Management (FIRE), Objective FIRE 5: “Protect and enhance PHMAs and GHMAs and areas of connectivity that support GRSG populations, including large contiguous blocks sagebrush, through fuels management and incorporation of the FIAT assessment”;

- 2.2.3 Fire and Fuels Management (FIRE), MD FIRE 20: “In PHMAs and GHMAs, apply fuels treatments on a landscape level to modify fire behavior, intensity, complexity (fire patchiness), size, and effects in which fire management efforts are enhanced”;
- 2.2.3 Fire and Fuels Management (FIRE), MD FIRE 21: “Establish and maintain fuel breaks to protect GRSG and its habitat to limit fire size and mitigate fire behavior to increase suppression effectiveness. When possible, establish fuel breaks next to roads or other previously disturbed areas”;
- 2.2.3 Fire and Fuels Management (FIRE), MD FIRE 25: “Design fuels treatments through an interdisciplinary team process to expand, enhance, maintain, and protect PHMAs and GHMAs. Fuel reduction techniques, such as prescribed fire and chemical, biological (including targeted grazing), and mechanical treatments, are acceptable. Use green strips and fuel breaks, where appropriate, to protect seeding from subsequent fires”;
- 2.2.4 Livestock Grazing (LG), MD LG 20: “In PHMA and GHMA, rest areas that have received vegetative treatments from livestock grazing until resource monitoring data verifies the treatment objectives are being met and an appropriate grazing regime has been developed. Any livestock grazing temporary suspended use or other management changes per 43 CFR Part 4110.3-2a for the purpose of a vegetation treatment will be done through a grazing decision, prior to treatment”; and
- 2.2.4 Livestock Grazing (LG), MD LG 22: “After grazing rest associated with vegetation treatments in PHMAs and GHMAs, monitor annually for a minimum of 5 years to ensure project objectives are being maintained.”

1.6 Relationships to Statutes, Regulations, and Other Plans

Executive Orders, Laws, Regulations, and State Statutes

Applicable statutes and regulations include:

- Migratory Bird Treaty Act (16 U.S.C. §§ 703-712, July 3, 1918, as amended 1936, 1960, 1968, 1969, 1974, 1978, 1986 and 1989);
- Executive Order 13186—Responsibilities of Federal Agencies to Protect Migratory Birds (2001);
- National Environmental Policy Act of 1969;
- The National Fire Plan, Review and Update of the 1995 Federal Wildland Fire Management Policy (January 2001);
- Protecting People and Natural Resources, A Cohesive Fuels Treatment Strategy (2006);
- Secretary Order 3336, Rangeland Fire Prevention, Management and Restoration (2015);
- Memorandum of Understanding Between the BLM and U.S. Fish and Wildlife Service to Promote the Conservation of Migratory Birds – BLM 2010-110;
- National Historic Preservation Act (16 USC 470f), implemented through the *State Protocol Agreement between BLM Nevada and the Nevada State Historic Preservation Office for Implementing the National Historic Preservation Act* (2012) under the

provisions of the National Programmatic Agreement between the BLM and the Advisory Council on Historic Preservation; and

- Consultation and Coordination with Indian Tribal Governments – EO 13175.

Other Plans

- This draft EA is consistent with the Carson City District Integrated Weed Management Plan Final Programmatic EA (IWMP) (BLM 2015b).

2.0 ALTERNATIVES

This chapter describes and compares the alternatives considered for vegetation treatments proposed for BLM lands within the Planning Area. The alternatives were developed through a collaborative effort based on issues identified during internal and external scoping. As this Project progressed from conceptualization to alternative description, refinements to the Proposed Action were made to minimize the potential for adverse effects, as described below.

2.1 Description of Alternatives

2.1.1 Alternative A: Proposed Action

The Proposed Action is to implement approximately 22,388 acres of vegetation treatments in 13 strategically located treatment units in the Virginia Mountains as described below to meet land management objectives (Figure 2). Treatment units have been evaluated to determine the most appropriate treatment method and resource protection measures based on slope, aspect, terrain, soil, vegetation composition, vegetation condition, amount of fuel/biomass needed to be removed, overall access on site, visual disturbance, and proximity to major roads. It is anticipated that the Project would be implemented over a 10-year period; however, the time to complete the Project would ultimately depend on funding and environmental conditions.

Treatments would selectively thin or remove juniper trees from within the 13 treatment units except where trees would be retained for unique characteristics (such as late-seral, nest/cavity trees, snags, cultural concerns or erosion concerns). Within juniper woodland, treatments would selectively thin young junipers that have expanded into the sagebrush islands located within the interior of the stands. Treatments would focus on increasing the health of the woodland stands, maintaining the irregularly shaped sagebrush openings, and creating more edge habitat between the two plant communities. Within the sagebrush steppe, where juniper expansion is categorized as Phase I (Miller et al. 2005) treatments would focus on removing all junipers. In most cases this would be accomplished by hand cutting using hand tools and chainsaws. However, in areas containing higher densities of junipers, large machinery may be used to remove trees.

2.1.1.1 Treatment Units

The following strategic fuel break treatment units would be designed to modify wildland fire behavior and are located along existing road systems in the Planning Area. The vegetation in the units would be modified to reduce horizontal and vertical continuity. The resource objectives for these treatment units would be to modify wildland fire behavior. Shrubs would be removed within 75 feet to either side of the existing road system: 1) for the first 15 feet to either side of the road, 100 percent of the shrubs would be removed; 2) for the next 50 feet, approximately 60 percent of the shrubs would be removed to create an uneven mosaic pattern; and 3) for the last 10 feet, approximately 30 percent of the shrubs would be removed to create an uneven mosaic pattern. The outside edge of the treatment would be an uneven edge versus a straight linear edge. Along with shrubs, trees would also be removed in the units. For 200 feet to either side of the existing road system, 80 to 100 percent of the trees would be removed. For the remainder of the unit beyond 200 feet, tree spacing would be adjusted to prevent the spread of wildfire through tree crowns by creating approximately 20 feet of space between individual tree canopies or the canopies of small groups of trees. The distribution and arrangement of untreated vegetation would be irregular to avoid long-lasting visual impacts to the treatment units. In order to meet

the above resource objective the BLM has determined that it would not be necessary to modify or close treatment areas to grazing. The following is a summary of each treatment unit:

1. Winnemucca Ranch (578 acres): The treatment unit is located along the Winnemucca Ranch Road for approximately 2.1 miles north of Dry Valley Creek. The fuel break is strategically located to reduce the potential for a large-scale high severity wildland fire that could threaten greater sage-grouse habitat located in the Spanish Flat area. The juniper density varies from low to high. While the understory is present, juniper trees are in the process of increasing in dominance. The primary treatment method would be mastication/mowing. Chemical treatments and seeding would be used in conjunction with the mastication/mowing to control non-native annual grass growth.
2. Dry Valley South (1,214 acres): The treatment unit is located along a dirt road that runs for approximately 5.3 miles east to west between Dry Valley and Winnemucca Valley. The fuel break is strategically located to reduce the potential for a large-scale high severity wildland fire that could threaten greater sage-grouse habitat located in the Sugarloaf, Vinegar Peak and Spanish Flat areas. The juniper density varies from low to high. While the understory is present, juniper trees are in the process of increasing in dominance. The primary treatment method would be mastication/mowing. Chemical treatments and seeding would be used in conjunction with the mastication/mowing to control non-native annual grass growth.
3. Dry Valley North (512 acres): The treatment unit runs along two parallel dirt roads that run north from Dry Valley for approximately 7.0 miles. This area burned in the 1999 Fish 2 fire. The vegetation is currently a mixture of annual and perennial grasses (primarily cheatgrass [*Bromus tectorum*]). The fuel break would break up the horizontal continuity of the existing vegetation in order to slow fire progression. The primary treatment method would be mastication/mowing. Chemical treatments and seeding would be used in conjunction with the mastication/mowing to control non-native annual grass growth.
4. Dogskin (1,703 acres): This treatment unit is a north to south dirt road system for approximately 6.5 miles that is strategically located between the Dogskin and Seven Lakes Mountain ranges. This area is heavily encroached with juniper, but still exhibits good understory values. Permits for the collection of the forest products would be issued to the public, local tribal members, commercial forest product businesses, and other interested parties for forest products generated by treatments in this unit. The primary treatment method would be mechanical removal for firewood before mastication/mowing. Chemical treatments and seeding would be used in conjunction with the mastication/mowing to control non-native annual grass growth.

The following treatment units are in sagebrush steppe in Phase I juniper woodland development. Trees are present, but shrubs and grasses are the dominant vegetation that influences ecological processes on the site. All junipers would be removed in these units and removal of the trees would improve greater sage-grouse habitat characteristics and modify fire behavior by reducing fire intensity and spotting potential. The primary treatment method would be cutting trees by hand with hand tools and chainsaws.

5. Pah Rah (173 acres)
6. Little Valley (3,453 acres)
7. Big Canyon (3,116 acres)
8. Winnemucca Valley South (2,978 acres)
9. Vinegar (1,289 acres)
10. Sugarloaf (833 acres)
11. Fort Sage (1,379 acres)
12. Hardscrabble (326 acres)

The following unit is a combination of Phase I, II, and II juniper woodland development:

13. Winnemucca Valley North (4,834 acres): The unit is strategically located along approximately 3.1 miles of the existing road system in Winnemucca Valley to reduce fire behavior and create a wildlife corridor between the high country around Spanish Flat and the Dogskin Range. The resource objectives for this treatment unit would be to modify wildland fire behavior. In order to meet the above resource objective the BLM has determined that it would not be necessary to modify or close treatment areas to grazing. Permits for the collection of the forest products would be issued to the public, local tribal members, commercial forest product businesses, and other interested parties for forest products generated by treatments in this unit. The treatment methods would be a combination of mechanical removal for firewood before mastication and hand cutting. Chemical treatments and seeding would be used in conjunction with the mastication to control non-native annual grass growth.

2.1.1.2 Treatment Methods

Specific treatment units have been evaluated to determine the most appropriate treatment method and resource protection measures based on slope, aspect, terrain, soil, vegetation composition, vegetation condition, amount of fuel/biomass needed to be removed, overall access on site, visual disturbance, and proximity to major roads. The following is a summary of each treatment method. Table 1 below shows which treatment methods are proposed for each treatment unit (see also Figure 6). Table 2 below shows the approximate number of acres to be treated by each treatment method. This draft EA includes analysis of all treatment methods, and considered worst-case impacts in units with multiple treatment methods.

The following is a summary of the proposed treatment methods:

- Mastication/Mowing: Juniper trees and/or shrubs would be removed by mechanical equipment, which grinds up woody plant material. Due to mechanical limitations of the equipment, mastication/mowing is limited to areas with less than a 30 percent slope. Juniper trees and/or shrubs would be ground with an attachment mounted on machinery such as front- end loaders, tractors, excavators, skidders, etc. The machinery may have rubber tires, rubber tracks, or metal tracks. Tree stump height would be less than six inches and the shredded woody material would be scattered over the landscape. Machinery would be parked and serviced daily in small (less than ¼ acre) staging areas accessible by existing roads located on public land in the units designated for mastication.

A general overview of masticating equipment is found in the Understory Biomass Reduction Methods and Equipment Catalog (USDA Forest Service 2000).

- Mechanical Removal: Trees would be removed by rubber tired/tracked or metal tracked machinery. The machinery could be used to cut, skid or above ground haul, and remove entire trees or portions of trees. Trees would be cut less than six inches from the ground. Once the trees are cut, they would be skidded or hauled to a designated landing or processing area and then hauled off site. Skid trails would be no closer than 75 feet apart in order to limit the amount of ground disturbance. Machinery would be parked and serviced daily in small (less than ¼ acre) staging areas accessible by existing roads located on public land in the units designated for mechanical removal.
- Hand Cutting: Hand cutting treatments would include lop and scatter, or piling. The treatment would be conducted by personnel on foot using hand tools and chainsaws. Crew size would vary but typically ranges from two to 20 people. Stump height of cut trees would be less than six inches and branches left on site would not exceed three feet in height.
- Chemical Treatments: Herbicide applications may be required following mastication/mowing and mechanical removal treatments to reduce the occurrence of invasive species/noxious weeds. The herbicide Imazapic would be used to suppress non-native annuals including cheatgrass in order to establish native grasses, forbs, and shrubs in the treatment areas. Imazapic kills plants by inhibiting the production of branched chain amino acids, which are necessary for protein synthesis and cell growth. Imazapic would be used as a pre-emergent and is best applied in late fall or early spring. Imazapic would be incorporated into a tank mix of water, surfactants, and adjuvants, and applied at a rate in accordance with the label and State law. The use of Imazapic on BLM lands in Nevada was authorized by the Record of Decision for the PEIS (BLM 2007). The PEIS identifies potential impacts to the natural and human environment from the use of herbicides, incorporates standard operating procedures and mitigation measures to ensure the protection of resources, and approves active ingredients in specific herbicides for use on western BLM lands. The use of herbicides would also be consistent with the IWMP (BLM 2015b).
- Pile Burning: Pile burning would be considered in order to manage surface fuel loading. The treatment includes the burning of hand-constructed piles of residual biomass (e.g. branches, twigs) resulting from mechanical removal and hand cutting. Piles are typically no larger than six feet tall and six feet in diameter. Piles are scattered within a treatment area, and the number of piles per acre would vary depending on tree density and the treatment prescription. Pile burning is expected to be up to 10 percent of each treatment unit. Hand held tools such as flares, drip torches and/or flammable gel packs may be used to ignite piles. Pile burns would be conducted under a burn plan, a site-specific implementation document which is a legal document that provides the agency administrator the information needed to approve the plan and the burn boss with all the information needed to safely and effectively implement the burn. Several factors are considered when determining whether to burn or not and designing a burn plan and

implementing a prescribed burn. These factors include location, weather conditions, vegetation types, slope, fuel moisture content, risks to property and structures and potential impacts to air quality and land use. Pile burns would only be conducted in the late fall, winter and spring under low spread potential conditions (e.g. following precipitation, with snow on ground). The objective of pile burning would be to consume 80-100 percent of the piled biomass.

- Seeding: The seeding of native and non-native species may be conducted as a follow up for any treatment unit where existing herbaceous understory has been compromised and is not sufficient for natural establishment. The use of non-native species may be considered when one or more of the following criteria are met: 1) suitable native species are not available; 2) the natural biological diversity of the treatment area would not be diminished; 3) the use of non-native species would achieve treatment objectives; or 4) the treatment area would not support reestablishment of a species that historically was part of the natural environment. Seeding methods could include ground-based broadcast, drill seeding, or aerial broadcast. Seeding method would be determined based on terrain, soil type, soil moisture, and seed species. Seedlings may be planted with hand tool or using gas powered augers to dig a 4 inch diameter by 18 inch deep hole. Seedlings would be planted by hand. Seedlings may be temporarily fenced or tubed. Fencing would consist of barbwire, chicken wire, construction fence or other type of fencing with t-posts.

Table 1. Proposed Treatment Methods by Treatment Unit.

Treatment Unit	Treatment Method					
	Mastication/ Mowing	Mechanical Removal	Hand Cutting	Chemical Treatments	Pile Burning	Seeding
Winnemucca Ranch	X			X	X	X
Dry Valley South	X			X	X	X
Dry Valley North	X			X		X
Dogskin	X	X		X	X	X
Pah Rah			X			
Little Valley			X			
Big Canyon			X			
Winnemucca Valley South			X			
Vinegar			X			
Sugarloaf			X			
Fort Sage			X			
Hardscrabble			X			
Winnemucca Valley North	X	X	X	X	X	X

Table 2. Summary of Acres by Treatment Method.

Treatment Method	Acres*	% of Planning Area	% of Project Area
Mastication/Mowing	6,424	3	29
Hand Cutting	15,964	8	71
Total	22,388		100
Mechanical Removal	4,120	2	18
Chemical Treatments	6,424	3	29
Pile Burning	5,912	3	26
Seeding	6,424	3	29

*Acres reflects that multiple treatment methods may overlap therefore the total acres does not add up to 22,388 acres.

All acres are for public lands; no Project activities would occur on private lands.

2.1.1.3 General Treatment Specifications

- BLM specialists would collaborate to design site-specific treatment prescriptions;
- Prescriptions for individual treatment sites may vary somewhat to address specific site characteristics;
- To the extent possible, thinning would be designed to restore a broad variety of seral stages, stand ages, openings and tree clumping; and
- Existing roads in the treatment areas would remain open. They would be managed to prevent generation of excessive dust and erosion.

2.1.1.4 Resource Commitments

The following measures would be implemented to minimize or avoid adverse impacts during Project implementation:

- For any treatment implemented in greater sage-grouse PHMA, GHMA, and OHMA (BLM 2015a) the following commitments may apply:

In PHMA and GHMA (ARMPA MD SSS 2 page 2-6, ARMPA MD SSS 3 page 2-9):

- Seasonal restrictions will be applied during the following periods:
 1. In breeding habitat within four miles of active and pending leks from March 1 through June 30.
 - a. Lek – March 1 to May 15.
 - b. Lek hourly restrictions – 6 p.m. to 9 a.m.
 - c. Nesting – April 1 to June 30.
 2. Brood-rearing habitat from May 15 to September 15.
 3. Winter habitat from November 1 to February 28.
- Limit noise to not exceed 10 decibels above ambient sound levels at least 0.25 mile from active and pending leks, from two hours before to two hours after sunrise and sunset during the breeding season.

In OHMA (ARMPA MD SSS 4 page 2-10, Appendix C):

- Implement Required Design Features (RDFs).
- Migratory bird clearance surveys would be conducted for treatments implemented during the nesting season for migratory birds (May 15 – July 15) or raptors (March 1 – August 31). Clearance surveys would be conducted in the treatment unit including a 300 foot

buffer for migratory birds and a ¼ mile buffer for raptors. Surveys would be conducted a maximum of two weeks prior to treatment and are valid for a maximum of two weeks. Additional surveys would be required after two weeks have elapsed if treatment has not been initiated. If an active nest is found, treatment would not occur (or resume) until after young birds have fledged or nests are abandoned unless a 300 foot buffer could be provided around active migratory bird nests and a ¼ mile buffer could be provided around active raptor nests;

- Surveys for BLM sensitive plant species would be conducted in mechanical treatment units and in units proposed for herbicide application. Surveys would occur in areas that have high potential for their occurrence based on known environmental factors such as soil type, elevation, aspect and within appropriate vegetation community types. Should surveys find occupied habitat for sensitive plant species, implementation may be delayed, hand thinning of trees may replace use of mechanized equipment, or the occupied habitat may be delineated as an avoidance/exclusion area. Special consideration for herbicide applications would be made according to the level of sensitivity for any sensitive plant species found in the Planning Area. Considerations could include avoidance, utilizing spot herbicide applications or seasonal restrictions on herbicide application depending on special status plant species phenology. Other considerations may include those listed within the IWMP pages 53-54 (BLM 2015b).
- There is no designated critical habitat or other occupied habitat for Webber's ivesia (*Ivesia webberi*) within the Planning Area, however surveys would be conducted prior to mechanized treatments or for areas proposed for herbicide application. If occupied habitat for Webber's ivesia is found, the occupied habitat along with a ½ mile buffer would be established and mechanical treatments or the application of herbicides would be excluded;
- Cultural resources evaluated as eligible for the National Register of Historic Places (NRHP) and unevaluated cultural resources (identified prior to implementation of treatments) would be avoided. Respect for all cultural resources would be maintained;
- All live pinyon pine (*Pinus monophylla*), aspen (*Populus tremuloides*), cottonwood (*Populus spp.*) and mountain mahogany (*Cercocarpus ledifolius*) would be retained;
- Old-growth trees³ and trees with obvious signs of wildlife use, such as nest cavities or raptor nests, would be retained;
- Individual old-growth trees and snags would be retained within younger stands unless other resource objectives such as forest health, fuels reduction, and greater sage-grouse habitat require their removal to meet treatment goals;
- No new roads would be constructed;

³ Old-growth characteristics include rounded or flat crowns, tree ring analysis indicating age >150 years, and a diameter at root collar >21 inches.

- Existing maintained (graded) roads may be improved to facilitate movement of vehicles, equipment or wood products;
- Areas of public/private property boundaries would be clearly signed during public firewood removal activity;
- Following public firewood removal, any off-road travel routes would be obliterated, all stumps would be cut to a height than of up to six inches, all slash lopped to a height not to exceed two feet in depth and all trash picked up;
- Mechanical treatments would be scheduled to avoid wet soil conditions;
- Staging areas/landings would be minimized by utilizing existing/natural landings where practicable;
- After use any skid trails and staging areas/landings would be restored by restoring the contour and applying mulch and/or seeding where necessary;
- Shredded or cut vegetation would generally be left in place to reduce dust generation, contribute organic matter, obliterate vehicle tracks, stabilize the soil surface, and protect vegetation;
- All equipment moved on and off public land would be free of soil, seeds, and vegetative matter or other debris that could contain or hold seeds; and
- All State and federal regulations would be followed.

2.1.1.5 Schedule: Treatment could occur any time of the year but the preferred timing of treatment would be late summer and fall. Based on the availability of funding, staff resources and other priorities, the BLM anticipates that over a 10-year period, approximately 2,000 acres would be treated each year. Treatments would occur on 12 percent of the Planning Area over the life of the Project (or one percent of the Planning Area per year).

2.1.1.6 Adaptive Management/Monitoring: The principle of adaptive management would be used as treatments are applied and monitored for effectiveness in meeting Project objectives. Monitoring would be conducted within the treatment units before, during, and after treatment implementation. Monitoring would consist of surveys to:

- Ensure that the initial treatment objectives are met;
- Evaluate vegetation/fuel load recovery; and
- Identify invasive species for subsequent treatment under a separate action.

The BLM has considered resources that may be present in the Planning Area. Adjustments to treatment units, or treatment unit boundaries may be necessary in order to meet Project

objectives, to make boundary adjustments due to implementation constraints, or as a result of monitoring and adaptive management over the life of the Project. The BLM would:

1. Identify the new treatment unit or the boundary adjustment needed;
2. Complete any required compliance under Section 106 of the National Historic Preservation Act (NHPA), such as completing a class III cultural resources inventory for units with mechanical treatments and/or notifying any tribes pursuant to the approved Programmatic Agreement (PA);
3. Document whether there is any new information or circumstances (in a Determination of NEPA Adequacy [DNA]) (BLM 2008); and
4. Issue a Decision Record authorizing the modifications, if applicable. The DNA and Decision Record would be made available through the BLM's national "NEPA Register," also known as ePlanning.

2.1.1.7 Maintenance: Treatments would be maintained as necessary so that original objectives may be met or continue to be met. Maintenance of the previously mentioned treatments may include any of the described actions in single or in any combination. No new authorization is necessary to conduct maintenance activities, however the BLM could document whether there is any new information or circumstances (in a DNA) prior to initiating such maintenance activities. The DNA would be made available through the BLM's national "NEPA Register," also known as ePlanning.

2.1.2 *Alternative B: No Action*

Under the No Action Alternative, the BLM would not implement the vegetative treatments described in the Proposed Action. The purpose of the No Action Alternative is to provide the baseline conditions under the current management of the Planning Area. On the basis of the No Action Alternative, the BLM is able to evaluate the degree of change from the current situation to what would occur under implementation of any other alternative. The Proposed Action would represent a change in BLM's current management of the Planning Area.

The current trends in vegetation would continue. Juniper trees would continue to increase in density and expand into sagebrush communities, and the health of shrub and understory plants would continue to decline. Hazardous fuel conditions would continue to accumulate beyond levels representative of the natural (historic) fire regime and threaten to damage the woodland, sagebrush, and riparian habitats through the high risk of intense wildfires that would be difficult to control. The strategic fuel breaks would not be created allowing higher severity wildfires to occur in the Planning Area. Overall, health of the vegetation communities in the Planning Area would continue to decline.

2.1.3 *Alternatives Considered but Dismissed from Further Analysis*

The BLM received two new alternatives to consider during public scoping. These new alternatives are summarized below:

Reduced Livestock Grazing/Habitat Restoration Alternative

This proposed alternative, submitted by Western Watersheds Project would:

- Reduce livestock grazing in sagebrush habitat by 50 percent of current actual use;
- Close pastures to livestock grazing where [pending or active] leks are located; and
- Implement season of use restrictions [on livestock grazing] for the protection of greater sage-grouse during nesting and brood-rearing seasons.

The stated objectives of these proposed measures would:

- Reduce invasive species and fine fuels;
- Maintain and improve healthy stands of sagebrush plant communities;
- Reduce predation on sage-grouse by removing fences and other infrastructure (e.g. stock tanks) associated with livestock grazing;
- Reduce predation on sage-grouse by cattle;
- Reduce displacement of sage-grouse during nesting;
- Allow recovery of meadows and allow recruitment of sagebrush; and
- Protect juniper communities.

Reduced/Close Areas to Livestock Grazing Alternative

This proposed alternative, submitted by Wildlands Defense and Deep Green Resistance Great Basin would:

- Close treated areas to livestock grazing permanently; and
- Reduce livestock Animal Month Units (AUMs) in pastures/allotments.

The stated objectives of these proposed measures would:

- Ensure the public investment in vegetation treatments is protected; and
- Ensure that [livestock grazing] use will not be shifted and intensified in other [non-treatment] areas, if livestock grazing is removed from the pastures/allotments where treatments would take place.

Rationale for Not Evaluating These Proposed Alternatives

Several of the objectives in these alternatives would be met by the Proposed Action, however the means to the objectives would be different. Under these new proposed alternatives, the means to the objectives are through eliminating or reducing livestock grazing

The BLM did not fully evaluate these alternatives and provides the following rationale:

- As described in Section 3.15, the Planning Area is overlapped by eight livestock grazing allotments. Changing the status of a grazing allotment from “available” to “unavailable” would be inconsistent with the Carson City Field Office CRMP, which has identified the eight allotments as available for livestock grazing (BLM 2001). Under 43 CFR 1610.5-3, “all actions approved or authorized by the BLM must conform to the existing land use plan.” Actions out of conformance with the CRMP would require a land use plan amendment, therefore changing the status of a grazing allotment from “available” to “unavailable” (aka “permanently closing”) is outside the scope of this draft EA;

- The BLM evaluated a Reducing Grazing Alternative in the on-going land use plan revision. Under Alternative C, the BLM considered reducing the number of acres available for livestock grazing by 56 percent, and reducing the number of AUMs by 73 percent from the currently authorized levels (BLM 2014a).
- Reducing the level of authorized grazing and removing range improvements is outside the scope of this draft EA. AUMs for grazing and range improvements are authorized by the BLM during consideration of a term livestock grazing permit. The NEPA analysis considers the direct, indirect and cumulative effects from actions including: AUMs, season of use, pasture rotation, and range improvements (including fencing). As a part of this process, the BLM completes an allotment evaluation, and standards and guidelines determination based on the land health standards for the Sierra-Front-Northwestern Great Basin Area;
- In Section 1.2 the BLM is proposing to “Maintain sagebrush habitat...” through implementation of the Project;
- The BLM’s review of the reference cited with regards to “predation on sage-grouse by cattle” (Coates et al. 2008) is a mischaracterization of the literature and warrants no further comment;
- Best management practices stated in Section 2.1.1.4 would decrease the potential for spread or establishment of invasive weeds. Monitoring of treatment areas would determine where and when treatments to remove invasive species may be needed. Authorization for such treatment would occur at a later time and under a separate process through the IWMP;
- No specific meadow was identified, and no specific area was identified that lacks sagebrush recruitment. In Section 1.2 the BLM stated that an objective of the Proposed Action is to “Maintain sagebrush habitat...”; and
- In Section 1.2 the BLM stated an objective of the Proposed Action is to “Protect and enhance juniper woodland habitat.”

3.0 AFFECTED ENVIRONMENT

3.1 Setting

The Planning Area is in the Virginia Mountains area located in Washoe County, Nevada. The topography of the range varies from rolling hills, approximately 4,000 feet in elevation, to over 7,500 feet in elevation at the tops of the tallest peaks. Vegetation is typical of the western Great Basin and is dominated by a mix of grasses (*Poa* spp.), sagebrush, rabbitbrush (*Chrysothamnus* spp.), bitterbrush (*Purshia tridentata*), and juniper trees. Average annual precipitation is strongly influenced by elevation and varies from 6 to 16 inches.

3.1.1 Resources Considered for Analysis

The BLM is required to address specific elements of the environment that are subject to requirements in statute or regulation or by executive order (BLM 2008). Table 3 lists the elements that must be addressed in all environmental analysis and indicates whether the Proposed Action and Alternatives affect those elements. Other resources of the human environment that have been considered for analysis are listed in Table 4.

Table 3. Supplemental Authorities*.

Resource	Present Yes/No	May be Affected Yes/No	Rationale
Air Quality, including Greenhouse Gas Emissions and Global Climate Change	Y	Y	Carried forward for analysis.
Areas of Critical Environmental Concern	Y	N	The Incandescent Rocks ACEC occurs in the Planning Area, but is outside the Project Area. The Hardscrabble treatment unit is approximately 0.7 mile east of the ACEC and Winnemucca Valley South is approximately 0.7 mile west of the ACEC. The Carson Wandering Skipper ACEC is outside the Planning and Project areas. The Winnemucca Valley South is the closest treatment unit, approximately 1.7 miles north of the ACEC.
Cultural Resources	Y	Y	Carried forward for analysis.
Environmental Justice	Y	Y	Potential effects to traditional resource uses by tribal members from the application of herbicides was analyzed in the IWMP, pages 45-46 and 84-86, which is hereby incorporated by reference.
Farm Lands (prime or unique)	N	N	Resource not present.
Floodplains	N	N	Resource not present.
Noxious and Invasive Weeds	Y	Y	Carried forward for analysis.
Migratory Birds	Y	Y	Carried forward for analysis.
Native American Religious Concerns	Y	Y	Carried forward for analysis.
Threatened or Endangered Species (Animals)	N	N	There is no designated critical habitat for the Carson Wandering Skipper (<i>Pseudocopaeodes eunus obscurus</i>), which occupies habitat in the Carson Wandering Skipper ACEC. This ACEC occurs outside the Planning and Project areas. The Winnemucca Valley South is the closest treatment unit, approximately 1.7 miles north of the ACEC. Implementation of the Proposed Action would have no effect on Carson wandering skipper.
Threatened or Endangered Species (Plants)	N	N	Designated critical habitat for Webber's ivesia occurs outside the Planning and Project areas. Fort Sage is the closest treatment unit, approximately 3.2 miles northeast of the critical habitat. Implementation of the Proposed Action would have no effect on Webber's ivesia. If new populations of Webber's ivesia are mapped in the Planning Area during the life of this Project, such populations would be avoided during implementation (see Section 2.1.1.4).
Wastes, Hazardous or Solid	Y	Y	Best management practices described in SOPs of the IWMP (Appendix A) would be implemented to minimize potential accidental spills during the application of herbicides, which is hereby incorporated by reference.
Water Quality (Surface/Ground)	Y	Y	The application of herbicides has a potential to effect water quality. This resource was analyzed in the IWMP, pages 28-29 and 57-61, which is hereby incorporated by reference.
Wetlands/Riparian Zones	Y	Y	Carried forward for analysis.
Wild and Scenic Rivers	N	N	Resource not present.
Wilderness/WSA	N	N	Resource not present.

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

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

Supplemental Authorities determined to be Present/May Be Affected may be carried forward in the document.

Table 4. Resources or Uses Other Than Supplemental Authorities.

Resource or Issue*	May be Present Yes/No	May be Affected Yes/No	Rationale
BLM Sensitive Species (Animals)	Y	Y	Carried forward for analysis.
BLM Sensitive Species (Plants)	Y	Y	Carried forward for analysis.
Fire Management/Vegetation	Y	Y	Carried forward for analysis.
Forest Resources	Y	Y	Carried forward for analysis.
General Wildlife	Y	Y	Carried forward for analysis.
Human Health and Safety	Y	Y	The application of herbicides has a potential to effect human health and safety. This resource was analyzed in the IWMP, pages 37-48 and 88-92, which is hereby incorporated by reference.
Lands and Realty	Y	N	Although right-of-ways are present in the Planning Area, the Proposed Action would have no effect to these authorizations and activities.
Lands with Wilderness Characteristics	Y	Y	Carried forward for analysis.
Livestock Grazing	Y	Y	Carried forward for analysis.
Minerals	Y	N	Although mining claims are present in the Planning Area, none of the alternatives would affect any on-going exploration activities.
Paleontological	Y	N	Although paleontological resources may be present in the Planning Area, the Proposed Action does not include surface-disturbing activities that would expose or adversely affect the resources, if present.
Recreation	Y	N	Although dispersed recreation is present in the Planning Area, none of the alternatives would affect recreational activities.
Socioeconomics	Y	Y	Carried forward for analysis.
Soils	Y	Y	The application of herbicides has a potential to effect soils. This resource was analyzed in the IWMP, pages 38-40 and 72-77, which is hereby incorporated by reference.
Travel Management	Y	N	Although dispersed recreation is present in the Planning Area, none of the alternatives would affect public access.
Vegetation	Y	Y	Carried forward for analysis.
Visual Resource Management	Y	Y	Carried forward for analysis.
Wild Horses and Burros	Y	Y	Carried forward for analysis.

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

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

3.2 Cultural Resources

Regulatory Setting

This draft EA includes the site-specific analysis for each of the treatment units in the Planning Area. Certain treatment methods, such as hand cutting, do not involve ground disturbance and

therefore have a very low potential to adversely⁴ affect historic properties. Other methods, such as those that involve mechanized equipment, have the potential to adversely affect historic properties. All treatment methods would occur temporarily on the landscape, which means that there would be no lasting auditory, visual, olfactory, or other indirect effects from the use of chainsaws, masticators, and other equipment. The proposed vegetation treatments would protect and maintain healthy juniper woodlands and sagebrush habitats, which are native vegetative landscapes congruent with the types of landscapes that have existed in the region over a long period of time.

Due to the phased approach of this Project, anticipated to be implemented over a 10-year period, there is the potential for historic properties to be adversely affected by the treatments. To resolve potential adverse effects, in accordance with 36 CFR 800.14 (b), the BLM has prepared and made the draft PA available for public input (Attachment B). Table 5 lists those who participated in the development of the draft PA and their status. The draft PA defines the methods through which the BLM would identify historic properties and avoid or resolve adverse effects for each phase of the Project. Adverse effects would typically be prevented through avoidance of ground disturbing activities in historic properties.

On January 5, 2016 the BLM sent correspondence to four tribes to invite them to participate in the development of the draft PA. On April 13, 2016 the BLM sent a follow-up letter with a schedule for the development of the draft PA. Table 5 lists the parties that were invited to participate in the development of the draft PA and their status.

Table 5. PA Consulting Parties.

Agencies, Tribes and Individuals	Invited	Status
Advisory Council on Historic Preservation	√	Declined to Participate
Pyramid Lake Paiute Tribe	√	Participating
Reno-Sparks Indian Colony	√	Declined to Participate
State Historic Preservation Officer	√	Participating
Susanville Indian Rancheria	√	Has not Participated*
Washoe Tribe of Nevada and California	√	Participating

*As of June 7, 2016.

Mandatory signatories for the PA are the BLM and the SHPO.

The BLM defined the Area of Potential Effect (APE) as approximately 193,213 acres, of which 170,698 acres are public lands. The APE has the same boundary and acreage as the Planning Area (Figure 3). On these 170,698 acres, treatments have been identified on 22,388 acres of public lands (Figure 2). The BLM has reviewed the APE for historic properties. Based on a review of the files and geodatabase at the Carson City District Office, the Nevada Cultural Resource Information System (NVCRIS), General Land Office records, and current literature, known historic properties represent important past human use of the landscape in and immediately adjacent to the Project APE. Site types include prehistoric lithic scatters and camp sites representing at least 12,000 years of human history. Sites dating to the historic period are

⁴ In Sections 3.2, 3.3, 4.2 and 4.3 the term “adverse” is used consistent with 36 CFR 800.5(a)(1) defined as “alter... the characteristics of a historic property that qualify it for inclusion in the National Register of Historic Places in a manner that would diminish its integrity.”

also present in the Planning Area. Historic debris scatters, mines and mining exploration areas, ranching sites, railroad segments, and roads associated with mining, ranching, timber cutting, and settlement of the area are some of the historic site types present. Ethno-historic (or ethnographic) sites are also present, representing traditional activities such as hunting, tool-making, mineral collection, and plant harvesting. Further details on local site types and the potential for effects to historic properties from the implementation of this Project are available in confidential technical reports, including BLM Report #CRR 3-2653 and NSM Reports 16-0751 and 16-0641.

Based upon the results the BLM literature review, about three percent of the APE has been subject to Class III cultural resource inventory, with 91 inventories conducted between 1974 and 2011. Approximately 276 cultural resources (prehistoric, historic, and ethno-historic) were documented and evaluated. Five sites were determined eligible for the NRHP, and the majority of the remaining sites were unevaluated or lacked information regarding eligibility.

3.3 Native American Religious Concerns

Regulatory Setting

Native American Tribes that have affiliation with the Project Area include the PLPT, the RSIC, the WTNC, and the SIR. To date, the BLM has received the following comments from early discussions with the tribes mentioned above. Several tribal members have stated that they do not support the use of herbicides to control non-native and noxious weeds, such as cheatgrass, due to their concern of the effects of herbicides on wildlife and native plants. The PLPT cultural resources committee requested that the BLM conduct class III cultural resources inventories for the treatment units that are located immediately adjacent to the PLPT reservation (Big Canyon). There was a general interest in the firewood component of this Project. Some tribal members and one tribal Vice-Chairman stated that the Project would have positive effects on the landscape, especially in regards to preventing large-scale, high-severity wildfires. Past and ongoing consultation with these tribes has indicated that general concerns include avoidance of historic properties, avoidance of sites regardless of NRHP eligibility, avoidance of burials, and the protection of native plant gathering resources.

At each new phase for the Project that would involve ground disturbance or mechanical treatments, a Class III cultural resources inventory would be conducted. Each phase of treatment may have an effect on tribal concerns. The BLM would continue to consult with Tribes in accordance with NHPA, implementing regulations at 36 CFR 800, and the PA.

Traditional Values

In the Planning Area there are a number of resources of interest and concern to area Tribes. Areas of interest include: pre-contact and historic sites, human burials, and native plants traditionally used for food, medicine, and fiber. Juniper trees are valued for their medicinal uses and have also been used to produce bow staves. Other valued plants that may occur in the Planning Area include Indian tobacco/*Pui Bamó* (*Nicotiana* spp.), Indian balsam/*Todzá* (*Lomatium* spp.), Sand Dock root/*Teu Ah Konó Giba* (*Rumex* spp.), flat cedar/*Pah wáapi* (*Thuja* spp.), wild onions (*Allium* spp.), Indian potatoes (*Orogenia* spp.), Mormon tea (*Ephedra nevadensis*), sage, and whitestem blazingstar/*ku ha* (*Mentzelia albicaulis*). Minerals used medicinally and for paint also occur in the Planning Area.

3.4 Wetlands/Riparian Zones

Wetlands and riparian areas cover a relatively small amount of land in Nevada and within the Planning Area. High quality riparian habitat generally supports more species than most other habitat types due to the presence of water and a productive nutrient-rich environment. The Planning Area includes three types of riparian ecosystems including: perennial springs/seeps; intermittent and ephemeral streams, and aspen stands (which could indicate a shallow water table).

Riparian and wetland areas adjacent to surface waters are the most productive and important ecosystems in the Planning Area. These areas play an integral role in restoring and maintaining the chemical, physical and biological integrity of water resources. Riparian and wetland habitats have a greater diversity of plant and animal species than adjoining areas. Healthy riparian and wetland areas have the potential for multi-canopy vegetation layers with trees, shrubs, grasses, forbs, sedges and rushes and are valuable habitat for a wide variety of wildlife species. Healthy systems also filter and purify water, reduce sediment loads, enhance soil stability, provide micro-climatic moderation and contribute to ground water recharge and base flow. They stabilize water supplies, ameliorating both floods and droughts. Wetlands provide multiple uses, such as biodiversity conservation, fish production, migrating bird habitat, water purification, and erosion control.

Principal tree species in lowland riparian areas include Fremont cottonwood (*P. fremontii*) and black cottonwood (*P. trichocarpa*). Principal shrub species include buffalo berry (*Shepherdia argentea*), chokecherry (*Prunus virginiana*), and several species of willow, such as grey willow (*Salix exigua*), Lemmon's willow (*S. lemmonii*), and yellow willow (*S. lutea*). Grass species (*Poaceae* spp.) include creeping wildrye (*Leymus triticoides*) and a variety of wetland species, including sedges (*Carex* spp.), rushes (*Juncus* spp.), and cattails (*Typha* spp.). Multiple drainages within the Planning Area have riparian corridors with vegetation communities that support a diversity of wildlife.

3.5 General Wildlife

Habitats

The Nevada Wildlife Action Plan describes 22 key habitat types and identifies wildlife species assemblages for each (WAPT 2012). The vegetation in the Planning Area occurs within three major types: sagebrush, juniper woodland, and desert scrub (Figure 7). Riparian areas also provide habitat for wildlife species (see Wetlands/Riparian Zones).

Sagebrush: Sagebrush communities are important to a variety of wildlife. Sagebrush and the native perennial grasses and forbs of the shrub steppe are important sources of food and cover for wildlife. During winter the evergreen foliage of sagebrush is often the only available green vegetation, and its protein level and digestibility are higher than most other shrubs and grasses (Paige and Ritter 1999). Species such as Brewer's sparrow (*Amphispiza bilineata*), sage thrasher (*Oreoscoptes montanus*), sage sparrow (*Amphispiza belli*), sagebrush vole (*Lemmiscus curtatus*), and sagebrush lizard (*Sceloporus graciosus*) are predominantly dependent on sagebrush habitat for most of their life history needs (WAPT 2012). Other wildlife species associated with sagebrush habitat include pronghorn (*Antilocapra americana*), mule deer, black-throated

sparrow (*Amphispiza bilineata*), ferruginous hawk (*Buteo regalis*), vesper sparrow (*Pooecetes gramineus*), loggerhead shrike (*Lanius ludovicianus*), and gray flycatcher (*Empidonax wrightii*). The various shrew species that live in sagebrush are insectivores and depend on the productivity of the herbaceous component to produce their prey items. Raptors, such as ferruginous hawks, spend most of their time hunting over sagebrush where they primarily prey on ground squirrels and jack rabbits.

Juniper Woodlands: Juniper woodlands provide a variety of sheltering functions for wildlife that range from hiding cover to nest sites for birds, bats, and small mammals (WAPT 2012). For birds and bats in particular, woodland provides structure for nesting and roosting, and locations for foraging. As an evergreen cover, juniper provides important thermal protection during winter. Juniper berries are also an important food source for birds and mammals, and are eaten by rabbits, a variety of rodents, black bears (*Ursus americanus*), coyotes (*Canis latrans*), mountain bluebirds (*Sialia currucoides*), and Townsend’s solitaire (*Myadestes townsendi*) (Gillihan 2006). Townsend’s solitaires eat primarily juniper berries during winter. Other wildlife species associated with this habitat type include gray flycatcher, ferruginous hawk and mule deer. Ferruginous hawks rely on older trees of sufficient size and structure to support their large nests.

Desert Scrub: Ricegrass (*Achnatherum hymenoides*) and shadscale (*Atriplex confertifolia*) seeds are important food sources in cold desert shrub habitat, and soils tend to be loose and sandy or gravelly and easily excavated by burrowing animals. Wildlife species associated with this habitat type include kit fox (*Vulpes macrotis*), long-nosed leopard lizard (*Gambelia wislizenii*), desert horned lizard (*Phrynosoma phatyrhinos*), and Great Basin collared lizard (*Crotaphytus bicinctores*) (WAPT 2012). Many wildlife species use both cold desert shrub and sagebrush habitats. For example, kit foxes den in sandy soils in desert scrub habitat and forage for prey in sagebrush plant communities.

Game Species

Primary game species within the Planning Area include mule deer, pronghorn, and bighorn sheep (*Ovis canadensis*). The Planning Area is also considered habitat for black bear. Upland game species occurring in the Planning Area include California quail (*Callipepla californica*) and chukar (*Alectoris chukar*). Table 6 shows the for distribution of big game species.

Table 6. Big Game Species Habitat Within the Planning Area.

Species	Habitat Status/Type	Acres	% of Planning Area
Mule Deer	Occupied/Year-Round	21,013	11
	Occupied/Crucial Summer	42,329	22
	Occupied/Crucial Winter	115,226	60
Total		178,568	93
Pronghorn	Occupied/Year-Round	59,031	31
	Occupied/Crucial Summer	71,062	37
	Occupied/Crucial Winter	59,820	31
Total		189,913	99
Bighorn Sheep	Occupied/Year-Round	115,038	60
Black Bear	Current Range	183,023	95

Source: NDOW GIS data (2016).

Mule Deer: Mule deer in Nevada inhabit areas primarily classified as sagebrush steppe (Cox et al. 2009). Mule deer are largely browsers, with a majority of their diet comprised of forbs and browse (leaves and twigs of woody shrubs), and the presence and condition of the shrub component is important to deer populations. Woodland encroachment and maturation in shrubland habitat decreases understory diversity and productivity, resulting in less forage for deer. Conifer expansion and infill is a threat to shrub-obligate species such as mule deer, which are experiencing population declines due to deteriorating habitat quantity and quality (Maestas et al. 2015).

Pronghorn: Pronghorn prefer gentle rolling to flat, wide-open topography. Low sagebrush and desert shrubs are the preferred vegetation communities. Areas such as these with low understory allow pronghorn to see far distances and allow them to move quickly to avoid predators. They require open space with good forb and shrub availability (Yoakum et al. 1996). They are opportunistic feeders, selecting palatable, nutritious, succulent forage. They prefer forbs in spring and summer, and browse shrubs such as sagebrush, rabbitbrush, and bitterbrush yearlong. Shrubs, especially sagebrush, dominate their diet during winter. Grasses are used lightly during all seasons. Pronghorns inhabit juniper woodland to a limited extent depending upon the density of the forest canopy (Tsukamoto 2003).

3.6 BLM Sensitive Species (Animals)

BLM Instruction Memorandum (IM) No. 2009-039 transmits the BLM 6840 - Special Status Species Manual, the principal policy instrument detailing BLM management of special status species. Special status species are those species listed or proposed for listing under the Endangered Species Act (ESA) together with species designated internally as Bureau sensitive by State Directors. Species designated as BLM sensitive must be native species found on BLM-administered lands for which the BLM has the capability to significantly affect the conservation status of the species through management, and either:

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

A list of Nevada BLM sensitive species was released in 2011 (BLM IM No. NV-2011-059 with the final list released in October 2011). Appendix A provides a list of BLM sensitive animals that may be present in the Planning Area. Appendix A is supported by Attachment C, which provides information on the potential occurrence of BLM sensitive animals in the Planning Area. BLM sensitive animal species use a variety of habitats in the Planning Area; habitats consist of sagebrush, juniper woodland, cold desert shrub, and riparian areas (Figure 7). See Section 3.5 General Wildlife for information about the habitat types.

Greater Sage-Grouse

Sage-grouse distribution is strongly correlated with the distribution of sagebrush vegetation. As sagebrush obligates, sage-grouse rely on sagebrush for virtually all aspects of their life cycle

(Oyler-McCance and Quinn 2011). Sage-grouse depend on sagebrush for much of their annual food and cover (Connelly et al. 2011). Winter habitats of sage-grouse are dominated by sagebrush and they rely almost exclusively on sagebrush exposed above snow for forage and shelter. Sage-grouse use a variety of sagebrush species such as mountain big sagebrush (*Artemisia tridentata vaseyana*), Wyoming big sagebrush (*A. t. wyomingensis*), low sagebrush (*A. arbuscula*), black sagebrush (*A. nova*), fringed sagebrush (*A. frigida*), and silver sagebrush (*A. cana*) (USFWS 2015). Sage-grouse depend on mature shrubs for nesting structure, protection from predators, and thermal cover. They nest on the ground under low-growing sagebrush bushes enhanced with thick bunchgrass understory. Diverse plant communities with abundant insects are particularly important during the early brood-rearing period; chick survival is directly linked to availability of food and cover of grasses (Great Basin Bird Observatory 2010). High quality brood-rearing habitat with sufficient moisture to allow persistence of green forbs until late summer may be a limiting factor in Nevada (Great Basin Bird Observatory 2010). Winter areas are characterized by large expanses of big sagebrush and tall shrubs, predominantly located on relatively gentle south- or west-facing slopes that provide more favorable thermal conditions and above snow forage.

Habitat loss and fragmentation due to a variety of causes such as wildfire, invasive plants, and conifer encroachment is the greatest threat to the species (USFWS 2010, USFWS 2015). Wildfire has been a substantial contributor to habitat loss and fragmentation, particularly in the Great Basin portion of the species range. Altered fire intensity, size, and frequency, due in part to the presence of invasive annual grasses, has resulted in fire posing an increasing threat to sage-grouse. The positive feedback process between cheatgrass and wildfires facilitates future fires, sagebrush loss, and cheatgrass dominance, resulting in sagebrush habitat conversion to nonnative annual grassland. Areas encroached by conifers do not provide suitable sage-grouse habitat. For example, when juniper increases, shrub cover declines and the season of available succulent forbs is shortened due to soil moisture depletion. Sage-grouse have been found to avoid areas where conifers have encroached. Trees may also offer perch sites for avian predators, potentially increasing the predation risk. Within the Planning Area juniper is expanding into existing sagebrush habitats and there is a high overall risk of wildfire.

The Planning Area contains PHMA, GHMA, and OHMA, and five active leks (Table 7, Figure 5). According to NDOW, the minimum spring breeding population estimate for the Virginia/Pah Rah Population Management Unit, which includes the Virginia Mountains area as well as the Pah Rah Range to the south, is 627 birds (Pers. Comm. NDOW 2016). NDOW trend lek data for the Virginia Mountains area show a population increase over the last eight years. The U.S. Geological Survey (USGS) has been monitoring sage-grouse in the Virginia Mountains since 2009 and has tracked over 200 sage-grouse by radio telemetry (Figure 5). Based on this recent telemetry data, the core area of use appears to be located at Spanish Flat. Most radio-marked sage-grouse were relocated in the Spanish Flat area. The majority of birds use the Spanish Flat area throughout spring and summer before moving to wintering areas. The area is relatively rich in green vegetation compared to surrounding areas and seems to provide a particularly important late summer/fall food source for brood-rearing hens before they move for the winter.

Table 7. Greater Sage-Grouse Habitat Within the Planning Area.

Habitat Management Area	Acres	% of Planning Area
PHMA	47,988	25
GHMA	62,144	32
OHMA	47,749	25
Total	157,881	82

Source: BLM GIS data (2016).

Pygmy Rabbit

Pygmy rabbits (*Brachylagus idahoensis*) are highly dependent on sagebrush to provide food and shelter throughout the year and are typically associated with tall, dense stands of big sagebrush growing in deep, loose soils in which they are able to construct burrows. Big sagebrush is the primary food source, but grasses and forbs are also eaten (WAPT 2012). The BLM and the NDOW have not documented pygmy rabbits or their habitat in the Planning Area.

3.7 Migratory Birds

In 2001, President Clinton signed Executive Order (EO) 13186 placing emphasis on the conservation and management of migratory birds. Migratory birds are protected under the Migratory Bird Treaty Act (MBTA) of 1918 and EO 13186 addresses the responsibilities of federal agencies to protect migratory birds by taking actions to implement the MBTA. BLM policy for migratory bird management is provided in Information Bulletin (IB) No. 2010-110 and is based on the 2010 Memorandum of Understanding (MOU) between the BLM and the U.S. Fish and Wildlife Service (USFWS) for the conservation of migratory birds. According to the MOU, BLM priority migratory birds are those migratory birds that are those listed in the periodic USFWS report *Birds of Conservation Concern* (USFWS 2008), and those identified by the USFWS Division of Migratory Bird Management as game birds below desired condition. Bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) are also protected by the Bald and Golden Eagle Protection Act (1940 as amended 1959, 1962, 1972, 1978). Appendix A provides a list of BLM migratory birds that may be present in the Planning Area. Appendix A is supported by Attachment C, which provides information on the potential occurrence of BLM migratory birds in the Planning Area. BLM priority migratory birds use a variety of habitats in the Planning Area; habitats consist of sagebrush, juniper woodland, cold desert shrub, and riparian areas (Figure 7). See Section 3.5 General Wildlife for information about the habitat types.

Sage sparrow, sage thrasher, and Brewer's sparrow distribution is closely tied with that of sagebrush. These species require tall sagebrush shrubs for nesting or song perches and an open understory of native bunchgrasses and forbs. They depend heavily on the shrub component for nesting substrate. Loggerhead shrikes also use mature shrubs for nesting structure, protection from predators, and thermal cover. Species such as mourning doves (*Zenaida macroura*) use sagebrush habitat, but are also dependent on woodland. Migratory birds benefit most from juniper woodland that has a mostly open canopy with a substantial shrub understory (Great Basin Bird Observatory 2010). Woodland birds need high-quality habitat, not large amounts of dense woodland; they prefer a mixed-age mosaic of woodland transitioning into or interspersed with sagebrush (Great Basin Bird Observatory 2010).

Multiple species of raptors likely occur in the Planning Area. Current diversity exists because of the proximity of different habitat types that provide nesting, roosting, and foraging sites. For example, northern goshawks (*Accipiter gentilis*) nest in mature aspen stands surrounded by coniferous forest and/or shrubland for foraging. Ferruginous hawks nest in juniper trees, but prefer open sagebrush for foraging. Ferruginous hawks and golden eagles spend most of their time hunting over sagebrush for ground squirrels, jackrabbits, and other prey. These raptors are limited by prey densities and need sagebrush habitat with a productive herbaceous understory that provides an abundant prey base (Great Basin Bird Observatory 2010). Increasingly dense woodlands decrease foraging opportunities for these species as well as others.

3.8 Vegetation

Vegetation provides an enormous variety of functions in an ecosystem, and also provides for a variety of human and animal uses. Vegetation stabilizes soils, prevents erosion, reduces carbon dioxide, releases oxygen, increases species diversity, and provides habitat and food for animals and resources for human use (Prevey et al. 2010). A vegetative community is the basic unit of vegetation that allows for the representation of an assemblage of ecologically interrelated vegetative species (Daubenmire 1968). There are eight vegetation communities within the Planning Area (Figure 7).

Sagebrush

The Planning Area contains approximately 95,000 acres of sagebrush vegetation. There are several different types of sagebrush systems throughout the Planning Area. Elevation, amount of precipitation, and type of soil are all important factors on the species present. Although some other types are present throughout this vegetative community, the predominant species assemblages are detailed below.

Great Basin Xeric Mixed Sagebrush Shrubland: This system occurs on dry flats and plains, alluvial fans, rolling hills, rocky hillslopes, and saddles, usually at lower elevations between 3,200 and 8,500 feet. These sites are dry, with vegetation dominated by black sagebrush and low sagebrush. These sites may also have rabbitbrush, shadscale, Mormon tea, spiny hopsage (*Grayia spinosa*), greasewood (*Sarcobatus vermiculatus*), and horsebrush (*Tetradymia* spp.) as shrub components. The grass and forb component is often sparse and is composed of perennial bunchgrasses such as Indian ricegrass (*Achnatherum hymenoides*), Thurber's needlegrass (*Achnatherum thurberianum*), squirreltail (*Elymus elymoides*), and Sandberg bluegrass (*Poa secunda*).

Inter-Mountain Basins Big Sagebrush Steppe: This is widespread throughout the Great Basin. This system is found at slightly higher elevations, and the soils are typically deep and non-saline, sometimes with a microphytic crust. The shrub-steppe is dominated by perennial grasses and forbs, with basin big sagebrush (*Artemisia tridentata* ssp. *tridentata*), Wyoming big sagebrush, and bitterbrush dominating or co-dominating the shrub component. Other shrub species often present include shadscale, rabbitbrush, and horsebrush. The native perennial grasses associated with this system include Indian ricegrass, Idaho fescue (*Festuca idahoensis*), prairie junegrass (*Koeleria macrantha*), Sandberg bluegrass, and bluebunch wheatgrass (*Pseudoroegneria spicata*).

Inter-Mountain Basins Big Sagebrush Shrubland: This system occurs in broad basins between mountain ranges, usually between 4,900 and 7,500 feet in elevation. The soils are typically deep and well-drained. These shrublands are co-dominated by basin big sagebrush and Wyoming big sagebrush. There is often a scattered juniper component, as well as greasewood, Atriplex species (*Atriplex* spp.), rabbitbrush, and bitterbrush. The grass component is usually about 25 percent or less of the vegetative cover, and species include Indian ricegrass, needle-and-thread grass (*Hesperostipa comata*), Idaho fescue, Basin wildrye (*Leymus cineris*), Sandberg bluegrass, and bluebunch wheatgrass.

Intermountain Cold Desert Scrub

The Planning Area contains approximately 23,000 acres of desert scrub vegetation. There are two different types of cold desert scrub systems within the Planning Area.

Inter-Mountain Basins Semi-Desert Shrub-Steppe: This system occurs at lower elevation on alluvial fans and flats with moderate to deep soils. This system is dominated by grasses, with an open shrub layer. The most typical grasses include Indian ricegrass, needle-and-thread grass, and Sandberg bluegrass. Shrubs present include fourwing saltbush, rabbitbrush, Mormon tea, and winterfat (*Krascheninnikovia lanata*). Although big sagebrush may be present, it would not be a dominant component of this system. This system is open and spotty, with uneven distribution of vegetation.

Inter-Mountain Basins Mixed Salt Desert Scrub: This system is extensive and is found in saline basins, alluvial slopes, and plains. This system experiences very low amounts of annual precipitation and has very open canopies. Shrub species often present include an Atriplex component, such as shadscale or fourwing saltbush. Other shrubs present include Wyoming big sagebrush, rabbitbrush, Mormon tea, spiny hopsage, and winterfat. The herbaceous layer varies greatly, being quite sparse in some areas and fairly dense in other areas. Grasses commonly include Indian ricegrass, thickspike wheatgrass (*Elymus lanceolatus* ssp. *lanceolatus*), western wheatgrass (*Pascopyrum smithii*), and Sandberg bluegrass.

Forests and Woodlands

The Planning Area contains approximately 56,000 acres of juniper woodland. Utah juniper (*Juniperus osteosperma*) and western juniper (*Juniperus occidentalis*) both occur in the Planning Area. Junipers are capable of growing in a broad range of soils. Prior to European settlement, juniper was primarily confined to rocky surfaces or ridges with sparse vegetation. Mountain mahogany stands are typically located on rocky, coarse textured soils and occur as either pure stands of mountain mahogany or transitional stands that are mixed with juniper trees. The riparian deciduous community type is the most dispersed forest and woodland type. These stands are generally found where there is surface water or a shallow water table. Dominant trees include quaking aspen and black poplar (*Populus balsamifera* ssp. *trichocarpa*) at higher elevations, and Fremont cottonwood and pacific willow (*Salix lasiandra*) at lower elevations.

3.9 BLM Sensitive Species (Plants)

The following are brief descriptions of BLM sensitive plant species that may occur in the Planning Area:

Lavin's milkvetch (*Astragalus oophorus* var. *lavinii*) is a perennial herb that occurs at elevations of 5,700 to 7,467 feet. It grows in soil typically on northeast to southeast facing slopes, badlands, small hills, or slopes that are dry, open, and barren containing gravel with clay originating from volcanic ash or carbonate.

Margaret rushy milkvetch (*Astragalus convallarius* var. *margaretiae*) typically grows at an elevation of 4,700 to 7,800 feet in rocky soils on slopes and flats in mixed juniper and sagebrush landscapes.

Sierra Valley mousetails (*Ivesia aperta* var. *aperta*) is found on flats and benches between 4,870 and 7,300 feet in elevation. It is restricted to shallow, rocky to sandy soils derived from volcanic rock or alluvium. These soils have shallow clayey sub-soils that result in slow drainage and/or vernal saturation and thus, the depth of the local perched water table and spring dry-down rate may be crucial to the distribution of this species. This species is dependent on Nevada wetland margins in the mountain sagebrush and mountain mahogany zones (BLM 2014a).

3.10 Fire Management

Fire plays a critical role in shaping vegetative characteristics. Fire suppression practices of the twentieth century have pushed some ecosystems outside their historic range of variability due to increased fuel accumulations, higher densities of trees and shrubs, and increased ladder fuels. As a result, these areas are prone to higher-intensity wildfires than historically experienced.

The Planning Area is included in the Reno-Sparks and Fish Springs fire management units (FMU) of the Carson City Field Office Fire Management Plan (BLM 2002). A FMU is a specific land management area that is defined by fire management objectives, management constraints, topographic features, access, values to be protected, political boundaries, fuel types, and major fire regime groups. In general, wildfire is not wanted or it may be needed, but is not wanted due to constraints imposed by social, political, or resource concerns. Aggressive initial attack and full suppression is the general rule. Opportunities for prescribed fire exist, but are limited by these same constraints and fuel treatments are primarily limited to mechanical and/or chemical methods. Fire education and prevention programs are a priority.

The occurrence of wildland fire varies from year-to-year depending on weather, climatic, and other conditions. Fire occurrence and size depend on a range of factors, including elevation, vegetative community, fuel moisture, precipitation or lack of precipitation, the ability of fire to carry in specific types of vegetation, and other climatic dynamics such as dry summer weather following a wet spring or extended periods of drought.

The BLM is responsible for fire management, including fuels management, within the Planning Area on BLM lands.

Fire History and Past Vegetation Treatments

The weather and fuel structure in the mountain ranges north of Reno provide an opportunity for ignitions from frequent summer storms. Lightning-ignited fires have traditionally been an integral factor in the formation and arrangement of vegetation types across the Planning Area. Between 1980 and 2014, there has been an average of eight wildfire starts per year within the

Planning Area. Between 1980 and 2015, there have been 20 documented large wildfires, covering approximately 88,300 acres within the Planning Area. Lightning accounts for 86 percent of all starts. Cigarettes, vehicles, firearms, children, and unattended campfires account for most human-caused starts.

More recently, the combination of wildfire suppression and changing land use patterns has altered the natural cycle and role of fire. Suppression actions have resulted in large, unnatural fuel loads across the landscape, while invasive species such as cheatgrass are fire-adapted and tend to dominate the understory after a fire occurs on lower elevations. Future wildland fires are likely to burn with greater intensities and spread more rapidly, consuming more acres than in the past under these altered landscape conditions.

The fire season normally extends from late April to early November. The most critical fire conditions are often present from mid-June until October or November when season-ending winter weather arrives. Natural-caused fire could burn several acres to several thousand acres during one event. In modern times, the area is also subject to man-caused wildfire in addition to natural (lightning-caused) fire. The wildfire history and past vegetation treatments for the Planning Area are shown in Table 8 and Figure 8.

Table 8. Historic Large Fires*/Vegetation Treatments.

Fire Name	Year	Fire Cause	Acres
Ft. Sage	2015	Natural	297
Red Rock	2013	Human	5,369
Dry	2012	Human	100
Wildcat	2011	Natural	1,875
Trailer 1	2009	Human	1,349
Gooseberry	2008	Natural	3,042
Vinegar	2008	Natural	385
Bootlegger	2006	Natural	6,683
Treatment	Year	Status	Acres
Paiute Canyon Juniper Removal	2015	Approved	2,173
Pah Rah Juniper Removal	2013	Approved/Ongoing	500
Wildcat ESR**	2012	Completed	1,875

*Fires greater than 100 acres that burned between 2006 and 2015 (10 years).

**Emergency Stabilization and Rehabilitation (ESR)

Source: BLM Wildland Fire Management Information (2015).

Fire Regimes

A natural fire regime is a general classification of the role fire would play across a landscape in the absence of modern human mechanical intervention, but including the influence of aboriginal burning (Agee 1993, Brown 1995). Fire regimes are used as part of the fire regime condition class (FRCC) discussion to describe fire frequency (average number of years between fires) and fire severity (effect of the fire on the dominant overstory vegetation—low, mixed, or stand replacement). These regimes represent fire intervals prior to Euro-American settlement and are calculated and classified by analyzing natural vegetation and known fire cycles.

The Planning Area is characterized by fire regime groups III and IV. Fire regime groups III and IV both have a natural historical fire frequency of 35-100+ years with fire regime III having a

mixed fire severity and fire regime group IV having a stand replacement fire severity (Hann and Bunnell 2001).

Fire Regime Condition Class

FRCC is a classification system that describes the amount of departure an area or landscape has experienced from its historic regime to the present condition. It is used to classify existing ecosystems by looking at the condition of ecosystem components. Departures from the historic fire regimes are caused by fire exclusion, timber harvesting, grazing, introduction and establishment of exotic plant species, insects and disease, and other management activities. Wildland fire and fuels management works towards modifying fire behavior to protect identified values at risk from wildfire. The condition class in the Planning Area varies across the landscape with all three condition classes present (Figure 9).

- *Condition Class 1:* The risk of losing key ecosystem components is low. Vegetation attributes (species composition and structure) are intact and functioning within a natural (historical) range. Where appropriate, these areas could be maintained within the historical fire regime by treatments such as hand treatment. Non-native species are currently not present or present in limited extent. Through time or following disturbance, sites are potentially vulnerable to invasive species.
- *Condition Class 2:* Fire regimes have been moderately altered from their historical range. The risk of losing key ecosystem components is moderate. Fire frequencies have departed from historical frequencies by one or more return intervals (either increased or decreased) resulting in moderate changes to one or more of the following: fire size, intensity and severity, and landscape patterns. Vegetation attributes have been moderately altered from their historical range. Where appropriate, these areas may need active management, such as hand or mechanical treatments, to be returned to a more natural (historical) fire regime. Populations of non-native invasive species may have increased, thereby increasing the potential risk for these populations to expand following disturbances, such as wildfires.
- *Condition Class 3:* Fire regimes have been substantially altered from their historical range. Fire frequencies have departed from historical frequencies by multiple return intervals. Because fire regimes have been extensively altered, risk of losing key ecosystem components from fire is high. Overly dense woodland sites where understory herbaceous life is degraded and rangeland sites entirely dominated by invasive annual grasses would be considered condition class 3. Where appropriate, these areas may need intensive levels of restoration treatments, such as multiple hand or mechanical treatments and/or reseeding, to be returned to a more natural (historical) fire regime. Invasive species may be common and in some cases the dominant species on the landscape. Any disturbance would likely increase both the dominance and geographic extent of these invasive species.

Wildland Urban Interface (WUI)

The Planning Area is surrounded by WUI. The intermixed landscape of public and private lands means wildland fires have the potential to spread onto private property, destroying homes and

valued landscapes. The BLM coordinates with other federal, State, county, and local agencies and participates in proactive community projects to reduce wildfire risks and damages.

The BLM works with other fire departments and local and State government to identify communities and other WUI values at risk from wildfire and to set priorities for the mitigation of those threats.

Trends

The trend in FRCC is likely to continue as vegetation types move further outside their historic fire regime due to fire suppression and an increase in nonnative species. Fires in areas infested with cheatgrass have and would continue to become more frequent, with potential to burn once every few years. Fires in areas with overly dense juniper would continue to burn with high intensity and severity. The WUI would continue to expand, bringing urban development pressures to these vegetative communities. In response, suppression and fire exclusion activities would increase in an effort to protect economic values. WUI and recreation use creates higher potential for human-caused fires. Costs to protect associated infrastructure from wildland fires is likely to increase.

3.11 Forest Resources

There are 56,034 acres of forest/woodland communities within the Planning Area, which represents 29 percent of the Planning Area (Table 9). BLM forest and woodland inventory protocols require that only areas of greater than 10 percent stocking be typed out and mapped (FORVIS manual). The juniper woodland community type is dominated by Utah juniper. The juniper woodlands in the Planning Area are described in terms of relative stand development (Miller et al. 2005). There are three transitional phases of woodland development:

- Phase I (low density) – Trees are present but shrubs and grasses are the dominant vegetation that influences ecological processes (hydrologic, nutrient, and energy cycles) on site.
- Phase II (medium density) – Trees are co-dominant with shrubs and herbs, and all three vegetation layers influence ecological processes on the site.
- Phase III (high density) – Trees are the dominant vegetation and the primary plant layer influencing ecological processes on the site.

Within the Planning Area, Phase I and II woodlands are typically located on gentle terraces adjacent to sagebrush dominated shrublands. Occasionally, Phase I woodlands are located on steep, extremely rocky slopes that receive low precipitation. Phase II and III woodlands are located on gentle, moderate and steep slopes, and are typically in large contiguous blocks dominated by juniper, with the occasional high elevation meadow or shrubland interspersed. Historically, as well as currently, there was very little to no Phase III woodland due to low precipitation levels and high fire frequency in the area.

Table 9. Forest and Woodland Types Within the Planning Area.

Forest/Woodland Type	Density (% Canopy Closure)	BLM Acres
Utah juniper	Low (10 to 20)	53,677
	Medium (20 to 70)	623
	High (>70)	0
Mountain Mahogany/ Riparian/Other	No data available	270
Non-woodland inclusions	<10	1,464
	Total	56,034

Source: BLM GIS (2016).

Low density juniper stands are indicative of expansion of this woodland type into adjacent sagebrush habitats. The scattered young trees have little economic value since they are typically too small and inaccessible for firewood or fence posts. Medium density stands still contain an understory grass, forb, and shrub component. High density stands have little to no understory and are typically dominated by large trees that form a continuous canopy. Medium and high density stands are most susceptible to stand replacing fire, insects, and disease due to high fuel loads and low individual tree vigor caused by competition with neighboring trees for water, light, and nutrients. Harvest of firewood currently comes almost exclusively from these medium to high density stands because of the high levels of mortality.

3.12 Visual Resources

Visual resources are the visible physical features on a landscape, such as land, water, vegetation, animals, and structures. Through its visual resource management (VRM) classification, the BLM ensures that the scenic values of BLM lands are considered before authorizing uses that may result in adverse visual impacts. VRM Classes II, III, and IV occur within the Planning Area (Table 9, Figure 10). The visual resources and aesthetics information below provide a baseline for analyzing potential impacts as a result of this Project. Management objectives for the VRM classifications are described below:

- Class I Objective: “To preserve the existing character of the landscape. The level of change to the characteristic landscape should be very low and must not attract attention.”
- Class II Objective: “To retain the existing character of the landscape. The level of change to the characteristic landscape should be low.”
- Class III Objective: “To partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate.”
- Class IV Objective: “To provide for management activities, which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high.”

The visual contrast rating stage involves determining whether or not potential visual impacts from proposed surface-disturbing activities or developments would conform to management objectives established for the area or whether Project design adjustments would be required. Using the analysis from the visual contrast rating worksheet as a guide, developers could reduce visual impacts caused by a project (BLM 2003). VRM classes and their associated resource

management objectives apply only to public land. Table 10 shows the existing VRM classes for BLM land within the Planning and Project areas categorized as Class II, III, or IV (BLM 2001) as follows:

Table 10. VRM Classification.

Class	Acres	% of Planning Area	Acres	% of Project Area
II	12,940	8	1,355	6
III	87,972	52	14,932	67
IV	69,806	40	5,772	27

Source: BLM GIS (2016).

3.13 Air Quality

Air quality regulations for the Planning Area fall under the jurisdiction of the Environmental Protection Agency (EPA) and the Nevada Department of Environmental Protection’s Bureau of Air Quality (NDEP BAQ).

Air quality is defined by ambient air concentrations of specific pollutants determined to be of concern with respect to the health and welfare of the general public. Under the Clean Air Act Amendments of 1990, the EPA established National Ambient Air Quality Standards (NAAQS) and designated six common pollutants, known as criteria pollutants, in order to improve air quality throughout the country. These criteria pollutants are lead, ozone, sulfur dioxide, oxides of nitrogen, carbon monoxide, and particulate matter.

The EPA established standards for each pollutant that must not be exceeded. Areas that exceed a federal air quality standard are designated as non-attainment areas. Nevada has adopted the EPA air quality standards and has the right to establish more stringent State or county standards but may not lessen the federal standards. With minor exceptions, ambient air quality standards must not be exceeded in areas where the general public has access.

Washoe County is a serious non-attainment area for PM₁₀, and is a maintenance area for carbon monoxide. Particulate matter concentrations are expected to be higher near towns because of local combustion sources and unpaved roads. Suspended particles are probably due to fugitive dust that is primarily windblown.

Greenhouse Gas Emissions

Greenhouse gases are compounds in the atmosphere that absorb infrared radiation and re-radiate a portion of that radiation back to the earth’s surface, thus trapping heat and warming the atmosphere. Greenhouse gases have the potential to affect climate patterns, which in turn could affect resource management. The most important naturally occurring greenhouse gas compounds are carbon dioxide, methane, nitrous oxide, ozone, and water vapor. Carbon dioxide, methane, and nitrous oxide are produced naturally by the following processes:

- Respiration and other physiological processes of plants, animals, and microorganisms;
- Decomposition of organic matter;
- Volcanic and geothermal activity;
- Naturally occurring wildfires; and
- Natural chemical reactions in soil and water.

Ozone is not released directly by natural sources but forms during complex chemical reactions in the atmosphere among organic compounds and nitrogen oxides in the presence of ultraviolet radiation. While water vapor is a strong greenhouse gas, its concentration in the atmosphere is primarily a result and not a cause of changes in surface and lower atmospheric temperature conditions.

Although naturally present in the atmosphere, concentrations of carbon dioxide, methane, and nitrous oxide are also produced by industrial processes, transportation technology, urban development, agricultural practices, and other human activity. NDEP estimated that Nevada's statewide greenhouse gas emissions in 2010 (the most recent year for which State data has been tabulated) totaled 45 million metric tons of carbon dioxide equivalents. This was 0.7 percent of 2010 U.S. greenhouse gas emissions (NDEP 2012).

The major sectors contributing to Nevada's greenhouse gas emissions in 2010 were as follows (NDEP 2012):

- Electric power generation (38 percent)
- Transportation (34 percent)
- Industrial processes (12 percent)
- Agriculture (3 percent)
- Commercial and residential (13 percent)

Sources of greenhouse gas emissions in the Planning Area include wildfires and prescribed burns, vehicles (including off-highway vehicles [OHV]), construction and operation for mineral and energy development, and grazing animals.

Global Climate Change

Climate change is defined by the Intergovernmental Panel on Climate Change (IPCC) as “a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties, and persist for an extended period, typically decades or longer. It refers to any change in climate over time, whether due to natural variability or as a result of human activity (IPCC 2007).”

The earth has a natural greenhouse effect, wherein naturally occurring gases such as water vapor, carbon dioxide, methane, and nitrous oxide absorb and retain heat. Climate change is caused in part by the increase in greenhouse gases in the atmosphere beyond naturally occurring levels. Over time the amount of energy sent from the sun to the earth's surface should be approximately the same as the amount of energy radiated back into space, leaving the temperature of the earth's surface roughly constant. Increased levels of greenhouse gases trap more heat in the atmosphere rather than allowing it to escape back into space.

Over the last century average temperatures within the Great Basin have increased 0.6 – 1.1 °F. Increased precipitation has been documented in parts of Nevada, along with changes in species distribution and populations. Snowpack has been documented to be on the decline since 1950. The earlier arrival of spring runoff, greater frequencies and intensities of wildland fire and

invasion of non-native species such as cheatgrass are attributable to global climate change. Winter temperatures have risen faster than any other season (Chambers 2008, Dugelby 2011).

3.14 Wild Horses and Burros

Wild horses (*Equus ferus*) and burros (*E. africanus*) on public lands are managed under the Wild Free-Roaming Horses and Burros Act of 1971 (Public Law 92-195) and 43 CFR Part 4700 – Protection, Management and Control of Wild and Free-Roaming Horses and Burros.

The general management objectives for wild horses and burros are to protect, maintain, and control viable, healthy herds while retaining their free-roaming nature; provide adequate habitat through the principles of multiple use and environmental protection; maintain a thriving natural ecological balance with other resources; provide opportunities for the public to view wild horses and burros; and protect wild horses and burros from unauthorized capture, branding, harassment, or death. There are no burros in the Planning Area and this species is not discussed further.

There are three Herd Management Areas (HMA) within the Planning Area: Fort Sage HMA, Flanigan HMA, and Dogskin Mountains HMA (Figure 11). The Fort Sage HMA consists of approximately 1,975 acres and is managed by the Eagle Lake Field Office in California. The Appropriate Management Level (AML) for wild horses is 29-36 animals. The Flanigan HMA consists of approximately 17,362 acres and has an AML of 80-124 animals. The Dogskin Mountains HMA consists of approximately 6,605 acres and has an AML of 10-15 animals. One hundred and ninety-six acres of the Flanigan HMA overlap with two treatment units in the Project Area (Little Valley and Big Canyon units).

3.15 Livestock Grazing

For BLM lands, the authority that provides for grazing on public land is the Taylor Grazing Act. This act was passed on June 28, 1934, to protect public rangelands and their resources from degradation, to provide an orderly use to improve and develop public rangelands, and to stabilize the livestock industry. Following various homestead acts, the Taylor Grazing Act established a system for allotting grazing privileges. The Federal Land Policy and Management Act (FLPMA) and the Public Rangeland Improvement Act of 1978 also provide authority for managing grazing on public rangelands (BLM 2014a).

Historically, livestock grazing is known to have occurred in the Planning Area since the 1930's under BLM permitting, although sheep and/or cattle grazing are likely to have been occurring in the Planning Area since the late 1800's. The Planning Area overlaps with eight livestock grazing allotments (Figure 12). Areas that are "available" for livestock grazing are determined through a land use plan. Authorization of AUM's, season of use and range improvements is made through a term livestock grazing permit process that includes and public involvement with analysis under the NEPA. Table 11 lists the allotment name, season of use, Animal Month Units (AUMs), and type of use (cattle or sheep).

Table 11. Grazing Allotments.

Name	Acres in Planning Area*	Acres in Project Area*	Type	Animal Month Units**	Season of Use**
Antelope Mountain	14,679	526	Cattle	6,358	4/15 to 10/31
Big Canyon	13,958	5,387	Cattle	63	4/1 to 4/30
				282	5/1 to 5/31
				2,650	6/1 to 12/31
Constantia North	6,860	0	Cattle	459	6/15 to 9/15
Constantia South	8	0	Cattle	650	4/15 to 8/31
Flanigan	41,868	13	Cattle	1,352	4/16 to 6/15
				2,367	6/16 to 9/30
				1,297	12/1 to 4/15
Hardscrabble Canyon	12,536	1,396	Cattle	1,221	3/1 to 12/31
Pah Rah	4,359	171	Cattle	180	9/1 to 12/31
Paiute Canyon	31,877	3,163	Cattle	3,000	6/1 to 3/31
Winnemucca Ranch	44,489	11,401	Cattle	258	5/20 to 5/31
				175	6/1 to 6/9
				305	6/1 to 10/31
				944	6/10 to 10/15
				1,548	6/10 to 10/15

* Acres for public lands only; many grazing permittees use public and private lands for their operations.

**For the entire allotment, including portions outside the Planning Area.

Source: BLM 2014a.

3.16 Noxious and Invasive Weeds

“Invasive species” include plants able to establish on a site where they were not present in the original plant composition, and are of particular concern following a disturbance. Invasive species aggressively outcompete native species within a community and often alter the physical and biotic components enough to deteriorate the entire ecological community. They are often exotic species that do not have naturally occurring, local predators. Invasive species make efficient use of natural resources difficult and may interfere with management objectives for that site.

“Noxious weeds” are a subset of invasive species, specified by federal or State laws as being especially undesirable, troublesome, or difficult to control. Noxious weeds grow and spread in places where they interfere with the growth and production of desired species. The diversity of noxious and invasive weeds may indicate the effectiveness of current management efforts or may reflect new pressures on the land. Indicators of potential infestation areas include site disturbance, such as wildfire, road construction, and overgrazing. Many noxious and invasive weeds are aggressive early successional species that colonize recently disturbed sites. Human-caused disturbances are generally responsible for most weed infestations. Below is a brief description of the noxious and invasive weeds that may occur in the Planning Area.

African rue (*Peganum harmala*) is a weed that has a woody, branched taproot with creeping roots. This perennial weed reproduces by seeds and roots. All plant parts are poisonous to livestock and humans and grows best in dry disturbed areas, and often infests roadsides, washes. Bull thistle (*Cirsium vulgare*) is a biennial weed that generally grows between three to seven feet tall with one upright branched stem. This weed reproduces by seed and colonizes areas such as pastures, roadsides and ditch banks. Canada thistle (*Cirsium arvense*) is a perennial weed that

has a deep, extensive creeping root system. This weed reproduces by both roots and seeds and is often found in patches or colonies due to the spreading root system. This weed grows best in moist areas and also found in pastures. Dalmatian toadflax (*Linaria dalmatica*) is a perennial weed that reproduces by seed and roots and has a creeping root system. This weed grows best in dry, well drained soils, often in rangelands and roadsides. Hoary cress (*Cardaria draba*) is a perennial weed that grows best in disturbed, alkaline soils. This weed reproduces through roots and seed. Mediterranean sage (*Salvia aethiopsis*) is a biennial weed that has a stout, deep taproot. It reproduces by seed, dried plants detach and “tumble” which disperses their seeds.

Medusahead (*Taeniatherum caput-medusae*) is an annual weed that reproduces by seed. It is unpalatable to grazing animals and grows best in clay soils, often in rangelands. Musk thistle (*Carduus nutans*) is a biennial weed that has a deep, fleshy taproot and reproduces by seed, and often infests roadsides. Perennial pepperweed/tall whitetop (*Lepidium latifolium*) is a perennial weed that has a creeping root system and can be found in moist areas and pastures. This weed reproduces by roots and seed. Poison hemlock (*Conium maculatum*) is a biennial weed that has a thick, deep taproot and reproduces by seed. It is highly toxic to animals and humans when consumed. Puncturevine (*Tribulus terrestris*) is an annual weed that reproduces by seed. Spines on its fruit could cause injury to grazing animals and humans and also puncture tires. It grows best in dry, sandy soils and often infests roads.

Purple loosestrife (*Lythrum salicaria*) is a perennial weed that reproduces by seed and stem fragments. This weed has a taproot with some spreading roots. This weed grows best in wet areas, often near springs and waterways. Russian knapweed (*Acroptilon repens*) is a perennial weed that has a creeping root system. It reproduces by roots and seed. Scotch thistle (*Onopordum ancanthium*) is a biennial weed that reproduces by seed and can form dense stands that are difficult to penetrate. This weed has a fleshy taproot and often infests roadsides. Spotted knapweed (*Centaurea stoebe ssp. Minckleyi*) reproduces by seed and lateral roots. It has a deep, stout taproot. Tamarisk or salt cedar (*Tamarix sp.*) is a perennial weed that reproduces by seed, roots and stem fragments. This weed is often found along the edges of waterways and springs. Yellow star-thistle (*Centaurea solstitialis*) is an annual that reproduces by seed and can have a long tap root. This weed often infests rangeland and roadsides (Nevada Department of Agriculture 2016).

Approximately 14,800 acres of the Planning Area has been converted to annual grassland comprised of invasive non-native species. As native species lose dominance in the ecosystem, invasive species such as cheatgrass, are provided an avenue to gain dominance in the system (Prevey et al. 2010). Cheatgrass then provides a fine fuel with great horizontal continuity that creates different fire behavior than native fuels would. Cheatgrass germinates early in the season, before the majority of native perennials have come out of dormancy. Cheatgrass often becomes established in the understory of a Sagebrush or Intermountain Cold Desert Scrub system and then gains dominance once a disturbance, such as fire, temporarily eliminates the native overstory competition (BLM 2014a).

3.17 Lands with Wilderness Characteristics

The authority to inventory BLM lands for wilderness characteristics (LWC) is found in Sections 201 and 202 of FLPMA. An area with wilderness characteristics may also contain other values

not necessary for the determination of wilderness character. These supplemental values including the following:

- *Size*: An area must be a roadless area of 5,000 acres of contiguous BLM lands, or if less than 5,000 acres, must be contiguous with BLM lands that have been formally determined to have wilderness or potential wilderness values.
- *Naturalness*: Lands and resources exhibit a high degree of naturalness when affected primarily by the forces of nature and where the imprint of human activity is substantially unnoticeable.
- *Outstanding Opportunities for Solitude or Primitive and Unconfined Types of Recreation*: Visitors may have outstanding opportunities for solitude or primitive and unconfined types of recreation when the sights, sounds, and evidence of other people are rare or infrequent where visitors can be isolated, alone, or secluded from others; where the use of an area is non-motorized, non-mechanical means; and where no or minimal recreation facilities are encountered.
- *Supplemental Values*: The area may contain ecological, geological, or other features of scientific, educational, scenic, or historical values (BLM 2014a).

Within the Planning Area, the BLM has one inventoried LWC unit, the 36,400 acre Tule Peak unit (NV-030-605) (Figure 13) (BLM 2014a). For more information see the *Report on Lands with Wilderness Characteristics* (BLM 2014b).

3.18 Socioeconomics

The Planning Area is located in Washoe County, Nevada. The county covers 6,302 square miles or approximately six percent of Nevada. BLM lands make up approximately 386,496 acres (nine percent) of this county. The population of Washoe County in 2013 was estimated to be 433,731 compared to 339,486 in 2000. Persons under 18 years make up approximately 30 percent of the population, while persons over 65 years make up about 13 percent of the population (Census 2014). Farming (including livestock) makes up approximately two percent of employment in Washoe County (Headwaters Economics 2014).

The BLM collects annual grazing fees from permittees based on the number of permitted AUMs. An AUM represents the amount of forage required to sustain one cow and one calf for one month. The CRMP provides for 142,979 active permitted AUMs for all Allotments within the Carson City District (BLM 2001). At the current rate of \$2.11 per AUM. The BLM distributes 50 percent of the grazing revenues to range betterment projects, 37.5 percent to the U.S. Treasury, and 12.5 percent is returned to the State the allotment is located within (43 U.S.C. Chapter 8A 1934). In 2002, livestock and poultry represented \$7.8 million of economic input in Washoe County (University of Nevada, Reno, 2005). In addition, the U.S. Government contributes payments-in-lieu-of-taxes, which totaled \$3.3 million for Washoe County in 2013.

Permittees also add money to the local economy. Supplies, materials and services are often purchased for the following activities on BLM lands: fence/corral construction and maintenance,

salt and supplements, shoeing, wages for hired herder/rider(s), veterinary expenses, vehicle purchase, repair and fuel.

Since the mid-1800s livestock grazing has occurred across much of the west. Over many decades its lifestyle has been incorporated into modern life and events. The Reno Rodeo Cattle Drive traverses through the Planning Area each June. In 2012 more than 150,000 people visited the 10-day event. More than \$42 million is added to the Reno/Sparks economy each year through its hotels, casinos, restaurants and retail.

Non-economic values of livestock grazing include recreational, aesthetic, open space, clean air and water, and wildlife habitat values. Open space promotes activities such as recreation, hunting, and wildlife watching activities.

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 Introduction

This chapter describes and compares the environmental consequences predicted to result from implementing the Proposed Action or Alternatives described in Chapter 2.0. The purpose of this chapter is to present the impact analysis of the alternatives and to disclose the impacts of the actions on affected resources by the Proposed Action or Alternatives.

The potential consequences or impacts of each alternative are addressed in the same order of resource topics in Chapter 3.0. This parallel organization allows readers to compare existing resource conditions (Chapter 3.0) with potential impacts (Chapter 4.0).

4.1.1 Types of Effects

This chapter describes the potential direct, indirect, and residual effects to resources that may result from the Proposed Action or Alternatives, as well as identifies the potential monitoring needs associated with the specific resources. In this document, the word “adverse” is used in characterizing minor (non-significant) detrimental effects to a resource, and “negligible” is used in characterizing minor (non-significant) detrimental effects to a resource that are generally undetectable. “Beneficial” effects would have a positive effect on the resource. In this document, the terms “effect” and “impact” are used synonymously. Assessment of effects can be for short-term (generally considered during Project implementation) or the long-term. Effects fall into two categories, direct (caused by the action, same time and place) and indirect (caused by the action, but later in time or further in distance).

4.2 Cultural Resources

Alternative A: Proposed Action

Under the Proposed Action, the draft PA would be executed prior to issuance of a Decision under the NEPA. The PA defines the methods through which BLM would avoid adverse effects during implementation of the Proposed Action. Some units would be treated by hand (lop and scatter) under the Proposed Action. Treatment that does not involve ground disturbance would not result in adverse effect to historic properties. Treatment units that would be treated by mechanical equipment would first be subject to a Class III cultural resources inventory. Based on that inventory, identified historic properties would be delineated as avoidance areas. A larger buffer area may be delineated to ensure that there are no adverse effects to historic properties caused by indirect effects during Project implementation. In the long-term, reducing the likelihood of large-scale wildland fire would benefit historic properties in the Planning Area.

Potential effects to prehistoric or historic properties from the application of herbicides was analyzed in the IWMP, pages 45-46 and 84-86, which is hereby incorporated by reference. The greatest risk to historic properties is from the direct application of herbicides (BLM 2007). To minimize potential adverse effects to prehistoric or historic properties, the BLM would complete a Class III cultural resources inventory prior to herbicide application. If prehistoric or historic properties are present, the BLM would avoid the sites through establishment of exclusion areas.

Alternative B: No Action

Under the No Action Alternative, no treatments would occur. There would be no effects to cultural resources from the Proposed Action because it would not be implemented. Without implementation of the Proposed Action, the likelihood of large-scale wildland fire in the Virginia Mountains would remain high, and large, severe fires would have an adverse effect to cultural resources.

4.3 Native American Religious Concerns

Alternative A: Proposed Action

The Project implementation has the potential to adversely affect known and unknown traditional resources or traditional religious uses. The BLM would continue to consult with all interested tribes during all phases of the Project. Areas identified by the Tribes as key sensitive areas may be delineated as avoidance areas or mechanized treatments may be changed to hand treatment (i.e. lop and scatter). Impacts to traditional religious uses during Project implementation would be avoided through consultation for each phase of the Project. In the long-term, reducing the likelihood of a large-scale wildland fire would benefit traditional resources in the Planning Area.

Potential effects to traditional resource uses by tribal members from the application of herbicides was analyzed in the IWMP, pages 45-46 and 84-86, which is hereby incorporated by reference. The greatest risk to tribal members is from the consumption of vegetation that has been treated by herbicides (BLM 2007). To minimize potential adverse effects to tribal members, the BLM would coordinate with the tribes when weed treatments were to occur.

Alternative B: No Action

Under the No Action Alternative, no treatments would occur. There would be no effects to access to traditional resources or religious uses from the Proposed Action because it would not be implemented. Without implementation of the Proposed Action, the likelihood of large-scale wildland fire in the Virginia Mountains would remain high, and large, severe fires have the potential to adversely affect traditional resources and traditional religious uses.

4.4 Wetlands/Riparian Zones

Alternative A: Proposed Action

Under the Proposed Action, treatments in riparian areas would occur primarily by hand (lop and scatter) due to the steep terrain and limited accessibility. During Project implementation, riparian plant species may be crushed, an adverse effect. Use of existing roads would minimize potential for riparian plants to be impacted by vehicles. Most of the treatments are anticipated to occur during late summer or fall, the driest time of the year. Treatments would occur outside of the critical growing period in the life cycle of riparian plants. Treatment activities within riparian areas would be focused on the removal of juniper trees. Treatment impacts have the potential to increase soil erosion. Most treatments in riparian areas would be by lop and scatter, a low impact activity.

Encroachment of juniper into riparian areas can shade out non-conifer species, reduce water flow, and reduce soil moisture, all adverse effects to riparian species. Although these treatments would adversely affect juniper, riparian species such as willow, cottonwood or aspen would benefit in the long-term. Wildlife associated with the riparian species would also benefit.

Removing juniper from riparian areas may reduce the effects of large-scale wildland fire that can lead to increased erosion, loss of riparian vegetation, and increase in invasive plants, a beneficial effect.

Potential effects to traditional resource uses by tribal members from the application of herbicides was analyzed in the IWMP, pages 27 and 55-57, which is hereby incorporated by reference. The greatest risk to riparian areas is from application drift onto non-target species (BLM 2007). To minimize potential adverse effects, the BLM would coordinate apply herbicides following best management practices (Appendix A of the IWMP) that reduce or eliminate potential treatment of non-target species (such as application of herbicides during low wind conditions).

Alternative B: No Action

Under the No Action Alternative, no treatments would occur. There would be no effects to riparian areas from the Proposed Action because it would not be implemented. Current vegetative trends would continue; riparian areas where conifer expansion contributes to reduced water flow and a reduction in species such as aspen, cottonwood and willow would likely continue, an adverse effect. A large-scale wildland fire would adversely affect riparian areas due to increased soil erosion and removal of riparian vegetation.

4.5 General Wildlife

Alternative A: Proposed Action

Wildlife habitat in the Project Area is at risk from increased juniper densities and wildfire. As junipers increase in area, they intercept more precipitation and use much of the available soil water and out-compete understory vegetation. Increases in tree canopy cover also affect fire behavior and lead to larger intense wildfires followed by the occurrence of weeds, primarily cheatgrass. High-temperature fires trigger chemical changes in soils that cause them to become water repellent and this can increase erosion. Losses in shrubs and herbaceous plants, increases in weedy vegetation, and soil erosion all reduce the quantity and quality of wildlife habitat. Preventing the transitioning of sagebrush communities to juniper and managing for juniper stands in a heterogeneous mosaic across the landscape are conservation objectives identified in the Nevada Wildlife Action Plan (WAPT 2012). The Proposed Action would help accomplish these objectives. The Proposed Action would help improve habitat conditions for a variety of wildlife species including sagebrush obligates and other species that use sagebrush plant communities, and species that depend on woodland habitat with a healthy native understory.

Under the Proposed Action, juniper would be selectively thinned or removed in treatment units, which is expected to benefit wildlife overall by reducing the potential for high severity wildfires and cheatgrass invasion, and promoting a healthy understory of grasses, forbs, and shrubs for wildlife habitat. Overall, the Proposed Action would help maintain and increase the abundance, diversity, and vigor of vegetation for cover and forage, including food sources for species that eat seeds and insects, as well as an increased prey base for predators. Removal of juniper trees could initially adversely affect species associated with woodland habitat in the short-term, but in the long-term, treatment would help create healthier woodland habitat with a mostly open canopy and robust, diverse understory. Under the Proposed Action, the likelihood of a large-scale high-intensity wildfire would be reduced, a beneficial effect to all wildlife and habitats in the entire Planning Area; the Proposed Action helps protect surrounding untreated vegetation from

potential wildfire and invasion by weedy plants. Sagebrush is killed by fire and it is difficult for it to reestablish. Natural recolonization depends on the presence of adjacent live plants for a seeds source or on the seed bank. Sagebrush seeds typically do not remain viable for more than one growing season and not persist in the soil for more than a year. Reducing the occurrence of large-scale wildland fire would decrease the potential for soil erosion and invasion by non-native plants such as cheatgrass, which adversely affect wildlife and their habitats. Maintaining and creating a mosaic of habitat types across the Project Area is expected to support species diversity and increase habitat resiliency to wildfire. The Proposed Action would not eliminate the potential for historic fire regimes, which is a natural disturbance process, but reduce its impact by increasing ecosystem resilience.

Under the Proposed Action, vegetation treatments would occur by hand with hand tools or with machinery. Operations involving the cutting and/or removal of vegetation by any of the proposed treatment methods could cause direct, localized, short-term impacts to individual animals primarily through physical disturbance and displacement. Any disturbance and/or displacement would likely be temporary and would only occur in small portions of the Project Area in any given year because implementation would occur over a 10-year period. Displaced individuals could likely move into similar untreated habitat in adjacent areas during Project implementation. The amount of trees that would be treated in the Project Area represents a small amount of the total trees available in the Planning Area, and the proposed tree removal would protect surrounding habitat from severe wildfire. Ground-dwelling wildlife species, such as rodents and reptiles, could be trampled or their burrows could be destroyed by equipment. Most of the treatments are anticipated to occur during late summer or fall, outside of the breeding period for most wildlife species. As stated in Section 2.1.1.4 Resource Commitments, old-growth trees and trees with obvious signs of wildlife use, such as nest cavities or raptor nests, would be retained. All live aspen, cottonwood, and mountain mahogany would be retained. Downed trees and left over slash would contribute organic matter to the soil, and may enhance cover and nesting opportunities for wildlife species.

The potential effects to wildlife species from the application of herbicides was analyzed in the IWMP (pages 61-66), which is hereby incorporated by reference. The Proposed Action would involve the use of the herbicide imazapic, which is relatively non-toxic to terrestrial and aquatic animals; it does not bioaccumulate in animals, as it is rapidly excreted in urine and feces. Harm at the population or species level is unlikely for most wildlife species because of the size and distribution of treatment areas relative to the dispersal of wildlife populations, and the foraging area and behavior of individual animals. Proposed chemical application would largely occur adjacent to existing roads in areas of low quality habitat likely affected by weeds and road disturbances. The area that would be treated represents a small proportion of the total Planning Area. Overall, herbicide application that reduces the spread and occurrence of noxious and invasive weeds, and restores native vegetation in degraded areas would benefit wildlife and their habitat. The spread of weeds has caused habitat fragmentation and the loss of connectivity between habitats. Fragmentation can isolate animals and reduce their ability to disperse. Treatments that restore native vegetation would help reduce fragmentation and restore connectivity between habitats.

Alternative B: No Action

Under the No Action Alternative, no treatments would occur. While there would be no effects to wildlife or their habitats from treatments, this alternative represents a lost opportunity to protect and enhance habitat in the Project and Planning areas. This alternative would continue to result in declining habitat conditions in the Project Area; juniper trees would continue to spread and increase in density compromising the health of understory vegetation. Current vegetative trends that affect habitat would continue; left untreated, sagebrush communities would continue to be degraded by conifer expansion and the quality of woodland habitat would continue to be diminished by increasing tree density. Overall, conifer expansion in sagebrush, and woodland densification and conversion to closed-canopy stands would likely reduce the diversity and abundance of wildlife species in the Project Area over time. Increases in juniper density would continue to increase the risk of severe fire from high fuel loads across the entire Planning Area. The occurrence of a large-scale fire would adversely affect all sensitive species and their habitats in the Planning Area. Wildfire would alter and/or eliminate habitat in the Planning Area for the long-term and facilitate the spread of cheatgrass, further impacting and eliminating habitat.

4.6 BLM Sensitive Species (Animals)

Alternative A: Proposed Action

Effects to sensitive species from the Proposed Action would be similar to those described in Section 4.5 General Wildlife. Under the Proposed Action, juniper would be selectively thinned or removed in treatment units, which is expected to benefit sensitive species overall by reducing the potential for severe wildfires and cheatgrass invasion, and promoting a healthy understory of grasses, forbs, and shrubs in both sagebrush and woodland habitats. This would help maintain and increase the abundance, diversity, and vigor of vegetation for cover and forage for sensitive species, including the prey base for sensitive raptors. While proposed tree removal could adversely impact individuals that use woodland habitat in the short-term, it is expected to benefit populations of sensitive species in the long-term because it would help create healthier woodland habitat by promoting the growth of a robust, diverse understory. Under the Proposed Action, the likelihood of a large-scale high-intensity wildfire would likely be reduced, a beneficial effect to all sensitive species in the entire Planning Area. The Proposed Action would benefit sensitive species by helping protect treated and surrounding untreated habitat from future potential wildfire and invasion by weedy plants. Treatments would increase habitat health, diversity, and resiliency across the landscape over the long-term.

Operations involving the cutting and/or removal of vegetation by any of the proposed methods could cause direct, localized, short-term impacts to individual animals primarily through physical disturbance and displacement. Any disturbance and/or displacement would likely be temporary and would only occur in portions of the Project Area in any given year because implementation would occur over a 10-year period. Displaced individuals could likely move into similar untreated habitat that surrounds the Project Area during Project implementation. The amount of trees that would be treated in the Project Area represents a small amount of the total trees available in the Planning Area. Most of the treatments are anticipated to occur during late summer or fall, outside of the breeding period for sensitive species. As stated in Section 2.1.1.4 Resource Commitments, disturbance to nesting sensitive birds would be avoided either because implementation would occur outside the nesting season or because nest surveys would be conducted prior to any treatment. Old-growth trees and trees with obvious signs of wildlife use,

such as nest cavities or raptor nests, would be retained. All live aspen, cottonwood, and mountain mahogany would be retained.

Greater Sage-Grouse

Removal of juniper trees in sage-grouse habitat management areas would enhance habitat and improve habitat connectivity. Juniper removal would promote healthy shrubs, grasses, and forbs, for cover and forage, as well as increasing insect prey. There would be no direct adverse effects to known leks because they do not occur in any of the treatment units; they range from over 0.5 mile to more than 4 miles away from treatment units. Leks would benefit from tree removal designed to reduce the risk of severe wildfire in the Planning Area and could benefit from nearby tree removal that reduces avian predator perches. Removing trees would reduce available perches for ravens and other avian predators, which may decrease predation impacts on sage-grouse, particularly in nesting and early brood-rearing habitat. Reducing tree expansion and densities in summer habitat would likely protect wet areas by decreasing tree uptake of water and thus increasing water availability. This would enhance wet areas through ground water recharge. Sage-grouse habitat across the Planning Area would benefit from wildfire protection as a result of proposed vegetation treatments in the Project Area. Tree and shrub removal would reduce fuel loads and fuel continuity, and minimize the risk of losing habitat to severe wildfire. The Proposed Action would enhance and protect sage-grouse habitat in the Planning Area over time and this would likely help maintain or increase abundance of sage-grouse.

The Proposed Action includes shrub treatment in strategic fuel break units designed to modify fire behavior along the existing road system. Shrubs would be treated within 75 feet to either side of roads in fuel break units to reduce fuel continuity and aid in fire suppression tactics. Proposed shrub treatment would occur in generally low quality habitat due to proximity to existing roads. Shrubs would be treated in areas of habitat likely affected by weeds and road disturbances. The units are strategically located to reduce the potential for large-scale high severity wildfire that could burn large areas of priority sage-grouse habitat, including leks. Overall, treatment that helps reduce the spread and intensity of fire and subsequent occurrence of noxious and invasive weeds would benefit sage-grouse.

As stated in Section 2.1.1.4 Resource Commitments, disturbance to sage-grouse would be minimized by implementing seasonal restrictions, noise limitations, and required design features (RDFs) to minimize effects of treatments on sage-grouse.

The potential effects to sensitive species from the application of herbicides was analyzed in the IWMP (pages 69-72), which is hereby incorporated by reference. The Proposed Action would involve the use of the herbicide imazapic, which is relatively non-toxic to terrestrial and aquatic animals; it does not bioaccumulate in animals, as it is rapidly excreted in urine and feces. Harm at the population or species level is unlikely for most sensitive species because of the size and distribution of treatment areas relative to the dispersal of sensitive wildlife populations, and the foraging area and behavior of individual animals. Proposed chemical application would primarily occur adjacent to existing roads in areas of low quality habitat likely affected by weeds and road disturbances. The area that would be treated represents a small proportion of the total Planning Area. Overall, herbicide application that reduces the spread and occurrence of noxious and invasive weeds, and aids in restoration of native vegetation in degraded areas would benefit

wildlife and their habitat. The spread of weeds has caused habitat fragmentation and the loss of connectivity between habitats. Fragmentation can isolate animals and reduce their ability to disperse. Treatments that restore native vegetation would help reduce fragmentation and restore connectivity between habitats.

Alternative B: No Action

Under the No Action Alternative, no treatments would occur. While there would be no effects to sensitive species or their habitats from treatments, this alternative represents a lost opportunity to protect and enhance habitat in the Project and Planning areas. This alternative would continue to result in declining habitat conditions in the Project Area; juniper trees would continue to spread and increase in density compromising the health of understory vegetation. Current vegetative trends that affect habitat would continue; left untreated, sagebrush communities would continue to be degraded by conifer expansion and the quality of woodland habitat would continue to be diminished by increasing tree density. Overall, conifer expansion in sagebrush, and woodland densification and conversion to closed-canopy stands would likely reduce the diversity and abundance of sensitive species in the Project Area over time. Increases in juniper density would continue to increase the risk of severe fire from high fuel loads across the entire Planning Area. The occurrence of a large-scale fire would adversely affect all sensitive species and their habitats in the Planning Area. Wildfire would alter and/or eliminate habitat in the Planning Area for the long-term and facilitate the spread of cheatgrass, further impacting and eliminating habitat.

4.7 Migratory Birds

Alternative A: Proposed Action

Effects to migratory bird species from the Proposed Action would be similar to those described in Section 4.5 General Wildlife. Under the Proposed Action, juniper would be selectively thinned or removed in treatment units, which is expected to benefit migratory birds overall by reducing the potential for severe wildfires and cheatgrass invasion, and promoting a healthy understory of grasses, forbs, and shrubs in both sagebrush and woodland habitats. This would help maintain and increase the abundance, diversity, and vigor of vegetation for cover and forage, including providing food sources for species that eat seeds and insects. While proposed tree removal could adversely impact individuals that use woodland habitat in the short-term, it is expected to benefit migratory bird populations in the long-term because it would help create healthier woodland habitat by promoting the growth of a robust, diverse understory. Under the Proposed Action, the likelihood of a large-scale high-intensity wildfire would likely be reduced, a beneficial effect to all migratory birds in the entire Planning Area. The Proposed Action would benefit migratory birds by helping protect both treated and surrounding untreated habitat from future potential wildfire and invasion by weedy plants. Treatments would increase habitat health, diversity, and resiliency across the landscape over the long-term.

Operations involving the cutting and/or removal of vegetation by any of the proposed methods could cause direct, localized, short-term impacts to individuals primarily through physical disturbance and displacement. Any disturbance and/or displacement would likely be temporary and would only occur in portions of the Project Area in any given year because implementation would occur over a 10-year period. Displaced individuals could likely move into similar untreated habitat that surrounds the Project Area during Project implementation. The amount of trees that would be treated in the Project Area represents a small amount of the total trees

available in the Planning Area. Most of the treatments are anticipated to occur during late summer or fall, outside of the nesting season. As stated in Section 2.1.1.4 Resource Commitments, disturbance to nesting birds would be avoided either because implementation would occur outside the nesting season or because nest surveys would be conducted prior to any treatment. Old-growth trees and trees with obvious signs of wildlife use, such as nest cavities or raptor nests, would be retained. All live aspen, cottonwood, and mountain mahogany would be retained.

The potential effects from the application of herbicides was analyzed in the IWMP (pages 69-72), which is hereby incorporated by reference. The Proposed Action would involve the use of the herbicide imazapic, which is relatively non-toxic to terrestrial and aquatic animals; it does not bioaccumulate in animals, as it is rapidly excreted in urine and feces. Harm at the population or species level is unlikely for most species because of the size and distribution of treatment areas relative to the dispersal of migratory bird populations, and the foraging area and behavior of individuals. Proposed chemical application would primarily occur adjacent to existing roads in areas of low quality habitat likely affected by weeds and road disturbances. The area that would be treated represents a small proportion of the total Planning Area. Overall, herbicide application that reduces the spread and occurrence of noxious and invasive weeds, and aids in restoration of native vegetation in degraded areas would benefit birds and their habitat.

Alternative B: No Action

Under the No Action Alternative, no treatments would occur. While there would be no effects to migratory birds or their habitats from treatments, this alternative represents a lost opportunity to protect and enhance habitat in the Project and Planning areas. This alternative would continue to result in declining habitat conditions in the Project Area; juniper trees would continue to spread and increase in density compromising the health of understory vegetation. Current vegetative trends that affect habitat would continue; left untreated, sagebrush communities would continue to be degraded by conifer expansion and the quality of woodland habitat would continue to be diminished by increasing tree density. Overall, conifer expansion in sagebrush, and woodland densification and conversion to closed-canopy stands would likely reduce the diversity and abundance of bird species in the Project Area over time. Increases in juniper density would continue to increase the risk of severe fire from high fuel loads across the entire Planning Area. The occurrence of a large-scale fire would adversely affect all sensitive species and their habitats in the Planning Area. Wildfire would alter and/or eliminate habitat in the Planning Area for the long-term and facilitate the spread of cheatgrass, further impacting and eliminating habitat.

4.8 Vegetation

Alternative A: Proposed Action

During Project implementation, plants may be crushed by foot traffic or use of machinery, an adverse effect. Use of existing roads would minimize potential for vegetation to be crushed by vehicles. Most of the treatments are anticipated to occur during late summer or fall, outside of the critical growing period in the life cycle of a plant. Treatments would be focused on removal of juniper from riparian areas and from sagebrush communities. Effects to juniper would be adverse, however, removal of juniper from these two habitat types would benefit riparian species such as willow, and sagebrush associated vegetative species. In the long-term, removal of juniper

from sagebrush communities may reduce the occurrence of large-scale wildland fire, a beneficial effect to all vegetative communities.

The potential effects to desirable vegetation from the application of herbicides was analyzed in the IWMP (pages 24-26 and 52-54), which is hereby incorporated by reference. Under the Proposed Action herbicide treatments are proposed within treatment units. The use of chemical treatments, either pre-emergent or post-emergent, on invasive or noxious weeds would be designed to achieve the desired level of control with the least amount of impacts to desired resources. (BLM 2007). Herbicides have the potential to harm non-target plants with the degree of damage dependent upon (but not limited to) the herbicide used, herbicide selectivity, application method, application rate, concentration, relative toxicity to plants, likelihood of exposure, timing, environmental conditions during application and plant phenology. Herbicides treatments affect non-target plants through direct application, overspray, off-site movement and unintended accidental spills. Potential impacts include mortality, reduced productivity, and abnormal growth. Certain plants or groups of plants are more susceptible to specific herbicides, and collateral damage to non-target plants would depend upon their susceptibility to a particular herbicide. For example, 2,4-D, dicamba and picloram are selective and target broadleaf plants, so damage to perennial grasses would not be expected during normal use as directed by the herbicide label (BLM 2015b).

Measures taken to limit exposure such as selective application methods (e.g., spot applications, wiping and hand directed spraying), maximum and typical application rates (that are often less than the maximum allowed on the label, droplet size and drift reduction agents, and application restrictions based on environmental conditions (wind speed, precipitation, temperature, etc.), all reduce the off-target movement of herbicides. Best management practices (Appendix A of the IWMP) are designed to minimize risk to non-target plants including crops. Herbicide treatments to control invasive plants would not affect plant communities to the extent that one community changes into another. Treatment effects to plant communities would typically relate to improvements in condition (BLM 2015b).

Alternative B: No Action

Under the No Action Alternative, no treatments would occur. There would be no effects to vegetation from the Proposed Action because it would not be implemented. Current vegetative trends are likely to continue. Sagebrush and riparian communities would continue to be converted to juniper woodlands. As the woodlands become the dominate vegetative species, most understory species would become absent, an adverse effect. Without the treatments, a large-scale wildland fire would be more likely to occur. In the event of a wildland fire, vegetation would be eliminated in the short-term and opportunities for exploitation by non-native plants such as cheatgrass would likely increase, an adverse effect.

4.9 BLM Sensitive Species (Plants)

Alternative A: Proposed Action

Under the Proposed Action, some of the units would be treated by lop and scatter. Foot traffic has the potential to crush sensitive plant species, a negligible effect. Treatments that would occur by machinery have a higher potential to crush sensitive plant species, an adverse effect. Most of the treatments are anticipated to occur during late summer or fall, outside of the critical growth

period for most sensitive plant species. As described in Section 2.1.1.4, surveys for sensitive plant species would be conducted in mechanical treatment units that have high potential for their occurrence; where sensitive plant species are located, during the critical growing season, implementation would be delayed or hand thinning of trees may replace mechanized equipment. With implementation of pre-work surveys, and work primarily during the non-critical growing period, overall effects to sensitive plant species would be negligible.

The potential effects to sensitive plant species from the application of herbicides was analyzed in the IWMP (pages 33-34 and 66-69), which is hereby incorporated by reference. Under the Proposed Action herbicide treatments are proposed within treatment units. The use of chemical treatments, either pre-emergent or post-emergent, on invasive or noxious weeds would be designed to achieve the desired level of control with the least amount of impacts to desired resources. Surveys would also be conducted for sensitive plant species and if any plants are found, special considerations would be made according to the level of sensitivity for any sensitive plant species found in the treatment area. Considerations could include avoidance, utilizing spot herbicide applications or seasonal restrictions on herbicide application depending on sensitive plant species phenology (BLM 2007).

Alternative B: No Action

Under the No Action Alternative, no treatments would occur. There would be no effects to BLM sensitive plant species from the Proposed Action because it would not be implemented. Without implementation of the Proposed Action, the likelihood of large-scale wildland fire in the Virginia Mountains may be increased. The Fire Condition Class would likely trend toward Class 2, a situation when fire intervals are interrupted and vegetation becomes increasingly denser, especially from conifer expansion.

4.10 Fire Management

Alternative A: Proposed Action

The overall effect of the Proposed Action would result in the intended consequences of reducing the risks of catastrophic wildfire and its potential adverse impacts to life, property, and natural resources, a beneficial effect. The structure, amount, and continuity of flammable vegetation within the Planning Area would be altered resulting in reduced fire intensity. The treated area would be moved from high intensity wildfire fuel conditions to mixed intensity wildfire fuels conditions. Concentrations of trees would be thinned reducing the connection from the younger trees to the older trees. The openings between tree crowns would reduce the tree torching and crowning potential. The trees which are left would be better protected from the adverse effects of wildfire, because fuel loads would be reduced and more natural breaks in fuels would enable better fire control and management. The shrub component would be thinned reducing the surface fuel quantity and continuity and reducing ladder fuels that can carry fire from the surface into tree crowns.

The Proposed Action is designed to either reduce or maintain the Condition Class for each treatment unit, meaning the Planning Area would be more in line with historical fire regimes and the risk of losing infrastructure or key ecosystem components would be reduced.

There is a slight risk of the equipment conducting the treatments starting a wildland fire by hitting rocks and causing sparks. This risk can be minimized by scheduling the treatment outside periods of very high to extreme fire danger or by having water available on site during treatment operations if the treatment is conducted at a high fire danger.

Alternative B: No Action

Under the No Action Alternative, no treatments would occur. There would be no effects to fire management from the Proposed Action because it would not be implemented. Without implementation of the Proposed Action, the likelihood of large-scale wildland fire in the Planning Area may be increased. Condition Class in the Planning Area would likely trend toward Class 2 or 3, a situation when fire intervals are interrupted and vegetation becomes increasingly denser, especially from conifer expansion. As a result severity and scope of wildland fire would be increased, an adverse effect.

4.11 Forest Resources

Alternative A: Proposed Action

The majority of the proposed vegetation treatments would consist of the complete removal of juniper trees within Phase I woodlands and in areas dominated by sagebrush that have a scattered tree component (Table 9). This would occur on approximately 13,547 acres in the Planning Area. This work would be done by hand felling of trees using chainsaws and utilization may occur on only the trees closest to an access road that can be hand carried. Increased yarding distances adds cost to the harvest activity and produces negative effects to understory vegetation by equipment which would drive over this vegetation.

The Dogskin unit (1,703 acres) and the Winnemucca Valley North unit (4,834 acres) are two higher density units that are located near a main access point, which are most suitable to woodland product collection. In these units variable density thinning would retain 30 to 50 percent canopy closure with large trees as the preferred leave tree. Trees impacted by disease and/or insects would be the preferred trees for removal. The thinning and sanitation of insects and diseases would result in a healthier stand and less mortality to the remaining trees. Treatment of slash by either removal, lop and scatter, hand pile/burn, and/or chipping would create stands that are less susceptible to stand replacing fire. Project design features would limit understory disturbance by directing equipment to only a portion of the treatment unit, and would largely retain existing understory grasses, forbs, and shrubs. The understory component would recover and colonize areas that were dominated by trees prior to the thinning.

The proposed treatments would provide a source of forest products to the communities of Reno, Sparks, and Doyle. There would be designated firewood areas closer to these communities resulting in less trespass and more compliance with permit stipulations. The Proposed Action would also provide products to commercial entities that may be able to develop long-term markets for wood products such as small biomass facilities, firewood cooperatives, fencing manufacturers, etc. The presence of viable markets adds value to the material which can then be used to offset the cost of the treatments.

The remaining acres of treatments are the fuel breaks in the Dry Valley North and South units and the Winnemucca Ranch unit. These fuel breaks and the associated thinning would help

protect these woodlands from stand replacing fire. The surrounding woodlands would also be protected because the fuel break would serve to stop fire from impacting more contiguous blocks of woodland.

The potential effects to the public from the application of herbicides was analyzed in the IWMP (pages 37-48 and 88-92), which is hereby incorporated by reference. The potential for the public to be exposed to chemical use is low because the BLM would not be treating potential firewood (junipers) with herbicides.

Alternative B: No Action

Under the No Action Alternative, no treatments would occur. There would be no effects to forest resources from the Proposed Action because it would not be implemented. Not implementing the Proposed Action would miss an opportunity to make available forest resources such as firewood for personal use. The trends of increasing stand densities, higher tree mortality, decreasing understory diversity, and increased fuel loads would continue. Willful trespass on BLM lands would likely continue unless the BLM provides new areas for firewood harvesting.

4.12 Visual Resources

Alternative A: Proposed Action

Under the Proposed Action, treatment actions would occur in VRM Class II, III and IV areas. Class III and IV allow for moderate to high level of modification to the visual landscape. Treatment within these units would not be inconsistent with the VRM classification, no further analysis is necessary. The Hardscrabble and Winnemucca South units are VRM class II, which allows for low modification to the visual character of these units. Treatment within these units would be by hand cutting only. There would be no mechanical mastication or thinning/removal. Hand cutting has the lowest impact to the visual character of the landscape as it is generally used in areas of low juniper/acre ratio. This treatment method is not inconsistent with VRM II.

To minimize the visual contrast, treatment boundaries would mimic the natural patterns of the landscape. When treatments abut private lands, the BLM would seek opportunities for partnering with adjacent landowners to conform to the pattern of the landscape, regardless of ownership.

The potential effects to visual resources from the application of herbicides was analyzed in the IWMP (pages 92-94), which is hereby incorporated by reference. The application of chemicals would affect the visual quality of large treatment areas. Short-term color changes of vegetation would be most apparent in forested areas which are dominated by green vegetation. Treated annual grasses would not be as apparent because the landscape is dominated by low-growing shrubs with brown, gray or other earth tone colors (BLM 2007).

Alternative B: No Action

Under the No Action Alternative, no treatments would occur. There would be no effects to visual resources from the Proposed Action because it would not be implemented. In the event of a large-scale wildland fire, the visual character of the treatment units would be changed severely, an adverse effect.

4.13 Air Quality

Alternative A: Proposed Action

The potential adverse effects on air quality of the Proposed Action are expected to be minor and would be minimized by conformity to established Nevada Bureau of Air Quality protocols. The Proposed Action would result in a localized short-term effect on air quality in the Project vicinity as a result of smoke generated from pile burning and exhaust and fugitive dust emissions generated by equipment and power tools. The Proposed Action is expected to result in long-term benefits to air quality because of decreased smoke emissions generated during uncontrolled wildfire events.

Smoke - The Proposed Action would have minor adverse effects on air quality as a result of pile burning. The expected smoke emissions generated by the proposed pile burning are expected to be dramatically less than those generated by an uncontrolled wildfire event if no fuel reduction actions are taken.

Exhaust - The Proposed Action would have minor adverse effects on air quality through the generation of exhaust emissions from equipment and power tools, such as mastication equipment and chainsaws. Emissions generated during implementation are a negligible and short-term, effect on air quality.

Dust - The Proposed Action would have minor adverse effects on air quality through the generation of dust from equipment, such as vehicles and mastication equipment. Equipment would be working infrequently on exposed soil and any dust generated would not remain airborne for any length of time.

The potential effects to air quality from the application of herbicides was analyzed in the IWMP (pages 86-88), which is hereby incorporated by reference. The primary effects are from the use of vehicles and machinery that cause localized increased in exhaust as well as fugitive dust, and from herbicide application drift. Herbicide particulates in the air could be inhaled or deposited on skin or plant surfaces, with potential effects to the public, wildlife and non-target plants. Herbicide particles could be transported long distances from the treatment location (BLM 2007).

Alternative B: No Action

Under the No Action Alternative, no treatments would occur. There would be no effects to air quality from the Proposed Action because it would not be implemented. In the event of a large-scale wildland fire, during the event air quality in the area would likely be adversely affected.

4.14 Wild Horses and Burros

Alternative A: Proposed Action

Under the Proposed Action, vegetative treatments would occur over a 10-year period. Implementation of the Proposed Action would not alter the management of wild horses in the Flanigan or Dogskin Mountains HMAs, nor would the allocation of forage be changed for wild horses. As stated in Section 2.1.1.4, no treatments would occur within the Flanigan or Dogskin Mountains HMAs during the foaling season, generally considered March 1 to July 1. Treatments may occur over several weeks or several months depending on the unit size, complexity of terrain and access, and method of treatment. Wild horses are not confined to fenced allotments or

pastures. If present, wild horses could be temporarily displaced from treatment units or their access to forage or water may be altered, a negligible effect. In the long-term, thinning in areas of high-density juniper may marginally increase forage available for wild horses, a beneficial effect.

The potential effects to wild horses from the application of herbicides was analyzed in the IWMP (pages 79-81), which is hereby incorporated by reference. Because wild horses range over large areas, their amount of exposure to herbicides would be low. The greatest risk to wild horses is from the consumption of vegetation that has been treated by herbicides. Because herbicide residue is higher on grasses than it is on other plants, wild horses that consume large quantities of grasses are at a higher risk of exposure to herbicides (BLM 2007).

Alternative B: No Action

Under the No Action Alternative, no treatments would occur. There would be no effects to wild horses because no vegetative treatments would occur. Without treatments current vegetative trends would continue. Increased juniper density would marginally decrease forage available for wild horses, a negligible effect.

4.15 Livestock Grazing

Alternative A: Proposed Action

Under the Proposed Action, vegetative treatments would occur over a 10-year period. If treatments occur while an allotment is in use, livestock may be temporarily displaced. The BLM would provide notification to permittee of treatment activities in order to minimize disruption of permitted use of the allotment. If present, livestock could be temporarily displaced from treatment units or their access to forage or water may be altered. In the long-term, thinning in areas of high density juniper may marginally increase forage available for livestock, a beneficial effect.

Under the Proposed Action, the BLM may determine that in order to meet resource objectives of the ARMPA (Section 1.5), it may be necessary to rest all or portions of grazing allotments or pastures where vegetation treatments would occur. Any change in livestock grazing would be in accordance with 43 CFR Part 4110.3-2a (Decreasing Active Use). Depending on the duration and scale of any reduction in grazing, the effect may be negligible or adverse.

The potential effects to livestock from the application of herbicides was analyzed in the IWMP (pages 77-79), which is hereby incorporated by reference. The greatest risk to livestock is from the consumption of vegetation that has been treated by herbicides. Because herbicide residue is higher on grasses than it is on other plants, livestock that consume large quantities of grasses are at a higher risk of exposure to herbicides (BLM 2007). To minimize potential adverse effects to livestock, the BLM would coordinate with the permittee when weed treatments were to occur.

Alternative B: No Action

Under the No Action Alternative, no treatments would occur. There would be no effects to livestock grazing because no vegetative treatments would occur. Increased juniper density would marginally decrease forage available for livestock.

4.16 Noxious and Invasive Weeds

Alternative A: Proposed Action

Under the Proposed Action, vegetative treatments would occur by machinery and hand. Vehicles, equipment and people have the potential to transport vegetative parts or seeds to new locations, a negligible effect. Vegetative treatments can create conditions that favor early successional species, which can lead to a competitive advantage of invasive plant species. Hand thinning would be anticipated to have less potential for increasing these species as there is a minimal amount of surface disturbance. During Project implementation, grazing animals may be temporarily displaced. Areas that livestock would be displaced into are already available for livestock grazing. Wild horses are not confined to fenced allotments or pastures and have the potential to transfer seed or vegetative material throughout the planning area. Transfer of seed or vegetative material would be a negligible effect in the short term, but could result in the establishment of invasive species which could increase in extent over time. As stated in Section 2.1.1.6, areas treated would be monitored and invasive plant species would be identified for treatment.

The potential effects to invasive and noxious weeds from the application of herbicide was analyzed in the IWMP (pages 21-23 and 50-52), which is hereby incorporated by reference. Under the Proposed Action herbicide applications are proposed within the Planning Area. The use of chemical treatments, either pre-emergent or post-emergent, on invasive or noxious weeds would be designed to achieve the desired level of control with the least amount of impacts to desired resources. Seeding of areas treated with chemicals is designed to establish perennial vegetation that would enhance the native vegetation community's ability to compete against possible future invasions of undesirable vegetation (BLM 2007).

Alternative B: No Action

Under the No Action Alternative, no treatments would occur. There would be no effects to invasive, non-native plants species because no vegetation treatments would occur. On-going vectors such as grazing animals and recreational uses would continue to have a potential to transfer plant materials and/or seed to new locations, a negligible effect in the short term, but could result in the establishment of invasive species which could increase in density and extent over time.

4.17 Lands with Wilderness Characteristics

Alternative A: Proposed Action

The BLM has not completed a land use plan revision that would determine how the inventoried Tule Peak LWC unit (NV-030-605) would be managed or its final boundary. A LWC inventoried unit may designated to be managed to protect wilderness characteristics, commensurate with other resource uses, or afforded no protection of wilderness characteristics. A final decision on whether the unit would or would not be managed for wilderness characteristics is not anticipated until the spring of 2017.

Under Alternatives C (Preservation) and E (Proposed) in the on-going land use plan revision, the BLM analyzed the following actions for the Tule Peak LWC unit:

- Designate the unit as VRM Class I or Class II;

- Close the unit to mineral material disposal, non-energy mineral and fluid leasing;
- Prohibit new range improvements;
- Limit the types of special recreation permits than can be issued;
- Allow for vegetation treatment projects;
- Manage as ROW avoidance; and
- Manage as exclusion for wind and solar (BLM 2014a).

Vegetation treatments would be expected to have short-term effects that could vary in magnitude, depending on the size of treated area, and whether or not mechanized equipment was used. The proposed vegetation treatments would be consistent with the actions proposed in the on-going land use plan revision.

The potential effects to a LWC unit from the application of herbicides was analyzed in the IWMP (pages 83-84), which is hereby incorporated by reference. The application of chemicals has the potential to affect an areas “naturalness” by killing non-target vegetation. Short-term color changes of vegetation would be most apparent in forested areas which are dominated by green vegetation. Treated annual grasses would not be as apparent because the landscape is dominated by low-growing shrubs with brown, gray or other earth tone colors (BLM 2007).

Alternative B: No Action

Under the No Action Alternative, no vegetation treatments would occur. Ongoing trends in vegetation would continue and the potential for large-scale wildland fire would not be addressed. Large-scale wildland fire has the potential to adversely impact the naturalness of an LWC unit over the long-term.

4.18 Socioeconomics

Alternative A: Proposed Action

Under the Proposed Action, the BLM may determine that in order to meet resource objectives of the ARMPA (Section 1.5), it may be necessary to rest all or portions of grazing allotments or pastures where vegetation treatments would occur. Any change in livestock grazing would be in accordance with 43 CFR Part 4110.3-2a (Decreasing Active Use). The social and economic benefits associated with grazing operations would be decreased. A reduction in AUMs would likely have a multiplier effect on aspects of the local economy that are associated with the ranching community. Because it is not possible to quantify the specific monetary impacts to the individual permittee, it is also not possible to accurately estimate the resulting effects on the local economy. A reduction in AUMs would result in a corresponding reduction in regional economic activity from a likely reduction in the permittee’s spending in the local economy. Reduced grazing would adversely impact the permittee, any employees, the businesses where the permittee purchases supplies from, and the communities that are supported by livestock operations. These results could decrease tax revenues for the local economy.

Potential effects to the public from the application of herbicides was analyzed in the IWMP, pages 45-46 and 84-86, which is hereby incorporated by reference. The greatest risk to the public is from the consumption of vegetation that has been treated by herbicides (BLM 2007).

Alternative B: No Action

Under the No Action Alternative, no vegetation treatments would occur. The social and economic benefits associated with grazing operations would continue. The continuation of existing AUMs would likely have a multiplier effect on aspects of the local economy that are associated with the ranching community. Because it is not possible to quantify the specific monetary impacts to the individual permittee, it is also not possible to accurately estimate the resulting effects on the local economy. A continuation of authorized AUMs would result in a corresponding benefits to the regional economic activity from the permittee's spending in the local economy. Continuing to graze would benefit the permittee, any employees, the businesses where the permittee purchases supplies from, and the communities that are supported by livestock operations. Ongoing grazing would benefit tax revenues for the local economy.

4.19 Residual Effects

“Residual effects” are those adverse effects that remain after implementation of mitigation measures. No major adverse effects (“significant” per 43 CFR 1508.27) have been identified in this draft EA that warrant mitigation. Measures have been incorporated into the elements of the Proposed Action to avoid and minimize adverse effects (see Section 2.1.1.4). No mitigation is necessary; there would be no residual effects.

5.0 CUMULATIVE EFFECTS

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

Cumulative Effects Geographic Area.

There are four cumulative effects study areas (CESA) for the Project. The CESA boundary for individual resources may be artificial (administrative) or natural (Table 12). The LWC CESA includes one inventoried unit plus a two-mile buffer, and is an area approximately 94,418 acres of public and private lands. The HMAs CESA includes two HMAs plus a one-mile buffer, and is an area approximately 53,424 acres of public and private lands. The Treatment Units CESA includes each treatment unit plus a one-mile buffer, and is an area approximately 102,905 acres of public and private lands. The Planning Area CESA, is an area approximately 200,119 acres of public and private lands (Figure 14). The CESA for Socioeconomics is Washoe County (not shown). Only those resources directly or indirectly affected by the Proposed Action and/or Alternatives are analyzed for cumulative effects.

Table 12. CESA by Resource and Summary of Effects.

Resource	Type of Effect	Acres
Cultural Resources	Indirect effects after implementation, potential long-term decrease in large-scale wildland fire that could threaten historic properties.	200,119
Native American Religious Concerns	Indirect effects after implementation through enhancement of woodlands, and potential decrease in large-scale wildland fire.	102,905
Wetlands/Riparian Zones	Direct effects during implementation by removal of non-riparian vegetative resources; indirect effects by long-term changes to riparian vegetative communities.	102,905
General Wildlife, BLM Sensitive Species (Animals), Migratory Birds	Direct effects during implementation by removal of vegetative resources; indirect effects by long-term changes to sagebrush and woodland communities.	102,905
Vegetation	Direct effects during implementation by removal of vegetative resources; indirect effects by long-term changes to sagebrush and woodland communities.	102,905
BLM Sensitive Species (Plants)	Direct effects during implementation by removal of vegetative resources; indirect effects by long-term changes to sagebrush and woodland communities.	102,905
Fire Management	Indirect effects after implementation, potential long-term decrease in large-scale wildland fire.	200,119
Forest Resources	Direct effects during implementation by providing by-products such as firewood; indirect effects through enhancement of older woodlands.	102,905
Visual Resources	Indirect effects after implementation, minor changes in visual qualities of treatment units.	102,905
Air Quality	Direct effects during implementation as a result of increased vehicle emissions and pile burning.	200,119

Resource	Type of Effect	Acres
Wild Horses and Burros	Direct effects during implementation from displacement. Long-term marginal increase in forage.	53,424
Livestock Grazing	Direct effects during implementation from displacement. Long-term marginal increase in forage.	102,905
Noxious and Invasive Weeds	Direct effects from machinery, people and grazing animals that can transport seed and/or vegetation to other locations.	102,905
Lands with Wilderness Characteristics	Indirect effects after implementation, minor changes in visual qualities of treatment units. In the long-term potential decrease in large-scale wildfire which could maintain unit naturalness.	94,418
Socioeconomics	Direct effects if the BLM determines it necessary to partially or fully close grazing pastures or allotments in order to meet ARMPA objectives.	4,033,280

Timeframe for Effects Analysis.

The lifespan of the Project is anticipated to be 10-years. Short-term cumulative effects would occur during implementation. Treatments may occur over several weeks or several months depending on the unit size, complexity of terrain and access, and method of treatment. Long-term cumulative effects would be expected to occur for several years or up to a decade after implementation of treatments in specific units.

Past, Present, and Reasonably Foreseeable Actions.

Past and Present Actions.

The Planning Area CESA was subject to a historic regime of wildfire caused by lightning strikes. Natural-caused fire can burn several acres to several thousand acres during one event. In more modern times, the area is also subject to man-caused wildfire in addition to natural (lightning-caused) fire. The wildfire history for the Planning Area CESA was included in Table 8. The BLM has completed or approved three vegetation treatments in the Planning Area CESA to reduce catastrophic wildfire risks and to influence plant community composition and diversity. Table 8 lists the treatments, which total approximately 4,548 acres.

Historically, livestock grazing is known to have occurred in the Planning Area CESA since the 1930's under BLM permitting, although sheep and/or cattle grazing are likely to have been occurring in the area since the late 1800's. The Planning Area CESA overlaps with eight BLM-administered grazing allotments (Figure 14). There are approximately 156 miles of allotment pasture and boundary fences within the Planning Area CESA.

There are two HMAs in the Planning Area CESA. The Flanigan HMA consists of approximately 17,362 acres and has an AML of 80-124 animals. The Dogskin Mountains HMA consists of approximately 6,605 acres and has an AML of 10-15 animals. Gather and removal of wild horses has occurred since 1971. The most recent operation occurred in January 2012; the effort was a gather and remove/treat effort. Three hundred eight animals were gathered and 58 mares were gathered, treated with PZP-22 (Porcine Zona Pellucida, a fertility control), then returned to the HMAs.

Dispersed recreation has occurred throughout the Planning Area CESA. General activities include: rock hounding, hunting, sightseeing, OHV use, and wildlife viewing. Annually in certain areas, the BLM permits woodcutting/firewood gathering and cutting/removal of younger

evergreen trees for the holiday season. The BLM permits non-commercial and commercial recreation events through its Special Recreation Permit (SRP) program. Events include motorcycle enduro races usually lasting one to three days, all-terrain vehicle tours, and horse endurance riding. The Rides of March is a horse endurance ride in the Sand Hills, Bedell Flat and Dogskin area. The two-day event occurs in the spring and involves approximately eight miles of existing dirt roads and trails in the Planning Area CESA. The event typically draws 75 participants plus 30 crew and support personnel. Rimbenders is a competitive motorcycle race held in the fall and involves approximately 15 miles of existing dirt roads and trails in the Planning Area CESA. The event typically draws 300 participants and 500 spectators. Red Rock Rumble is a horse endurance ride in the Sand Hills, Bedell Flat and Dogskin area. The two-day event occurs in the fall and involves approximately 14 miles of existing dirt roads and trails in the Planning Area CESA. The event typically draws 75 participants. The Reno Rodeo Cattle Drive is a cattle drive the week before the Reno Rodeo held in June. The event involves approximately 100 riders on horseback that drive approximately 200 cattle on approximately 40 miles of existing roads in the Planning Area CESA to the Washoe County Fairgrounds for the event.

Most of the Planning Area CESA is an “open and unlimited use” area for travel management. Although most of the vehicle use occurs on existing two-track trails and dirt roads, OHV use is also permitted. Actual numbers of users per day or per year are not available, but generally speaking the intensity of use is low and dispersed. Most use occurs during from spring to fall. Unverified route inventories indicate there are approximately 446 miles of routes in the Planning Area CESA including the paved Pyramid Highway (State Route 445). The BLM maintains approximately 26 miles of routes within Planning Area CESA under the Carson City District Office Transportation Plan.

Within the CESA there have been a wide range of realty actions. Rights-of-way (ROW) have been issued for overhead transmission lines, roads, and communication towers. In the northern portion there are two Union Pacific Railroad lines, and in the western portion there is an overhead transmission line for Sierra Pacific Power Company. The Alturas Transmission Line crosses approximately 14 miles of the Planning Area CESA and the UPRR lines cross approximately eight miles of the Planning Area CESA. There is no active mining on public lands in the Planning Area CESA, although mineral exploration may be occurring. In 2014 the BLM authorized the closure of 14 abandon mines in the Planning Area CESA. There are three material sites (two 40 acres, and one 80 acres) for the Nevada Department of Transportation along State Route 445.

Outside of BLM’s decision-making on non-federal lands in the Planning Area CESA are activities such as recreation, including OHV use and hunting, residential and energy development.

Reasonably Foreseeable Actions.

Natural and human-caused wildland fires are likely to occur in the future. Other activities that may be implemented in the future include the removal of wild horses within the Flanigan and Dogskin Mountains HMAs to allow for soil stabilization and re-growth of perennial plant species

and application of herbicides to control or eradicate noxious weeds. These activities would be authorized under a separate action.

Other on-going activities in the Planning Area CESA include administration of the grazing program, issuance of SRPs for non-commercial and commercial activities, wild horse management, issuance of ROWs as requests are submitted to the BLM, and mining exploration. A district-wide planning effort is underway to revise the Resource Management Plan (RMP). Prepared originally in the early 1980's, the new RMP may change allocation of resources and how they are used. A Record of Decision on the RMP is not anticipated until spring 2017. After completion of the RMP, a Travel Management Plan would be prepared, however the dates for this are unknown.

Effects Analysis.

The BLM did not analyze cumulative effects for the following resources because the BLM determined there would not be direct or indirect effects caused by the Proposed Action and Alternatives, or the because the resource is not present. Resources not analyzed for cumulative effects include: environmental justice, farm lands (prime or unique), floodplains, threatened or endangered species, wastes, hazardous or solid, wild and scenic rivers, wilderness/wilderness study area, global climate change, greenhouse gas emissions, land use authorizations, minerals, paleontological, recreation, soils, and travel management.

Cultural Resources

Under the Proposed Action, historic properties would be avoided during implementation. There would be no cumulative effects to historic properties. Under the No Action Alternative, no treatments would occur, there would be no short-term cumulative effects to historic properties. In the event of a large-scale wildland fire, historic properties would be impacted, a long-term adverse cumulative effect.

Native American Religious Concerns

Under the Proposed Action and in compliance with the provisions of the approved PA, tribes would be involved in the identification of traditional resource values. When traditional resources are identified, treatments may be modified or moved, resulting negligible or no long-term cumulative effects. Under the No Action Alternative, no treatments would occur, there would be no short-term cumulative effects to Native American religious concerns or access to traditional resources. In the event of a large-scale wildland fire, traditional resource values would be impacted, a long-term adverse cumulative effect.

Wetlands/Riparian Zones

Under the Proposed Action removal of juniper trees from riparian areas would likely improve willow, cottonwood and aspen stands, a long-term beneficial cumulative effect. Under the No Action Alternative, no treatments would occur, there would be no short-term cumulative effects to riparian areas. In the event of a large-scale wildland fire, vegetative resources in riparian areas would be impacted, a long-term adverse cumulative effect.

General Wildlife

Under the Proposed Action, wildlife associated with juniper woodlands would be negligibly cumulatively impacted in the short-term. Those wildlife species associated with sagebrush and riparian communities would benefit cumulatively in the long-term by the removal of juniper trees. Under the No Action Alternative, no treatments would occur, there would be no short-term cumulative effects to wildlife or their habitats. In the event of a large-scale wildland fire, wildlife would be adversely impacted in the short-term during the event, and their habitats would be adversely affected over the long-term. Overall cumulative effects to wildlife from the No Action Alternative would be adverse.

BLM Sensitive Species (Animals)

Under the Proposed Action, sensitive animal species associated with juniper woodlands would be negligibly cumulatively impacted in the short-term. Those sensitive animal species associated with sagebrush and riparian communities would benefit cumulatively in the long-term by the removal of juniper trees. Under the No Action Alternative, no treatments would occur, there would be no short-term cumulative effects to sensitive animals or their habitats. In the event of a large-scale wildland fire, sensitive animals would be adversely impacted in the short-term during the event, and their habitats would be adversely affected in the long-term. Overall cumulative effects to sensitive animals from the No Action Alternative would be adverse.

Migratory Birds

Under the Proposed Action, migratory birds associated with juniper woodlands would be negligibly cumulatively impacted in the short-term. Those migratory birds associated with sagebrush and riparian communities would benefit cumulatively in the long-term by the removal of juniper trees. Under the No Action Alternative, no treatments would occur, there would be no short-term cumulative effects to migratory birds or their habitats. In the event of a large-scale wildland fire, migratory birds would be adversely impacted in the short-term during the event, and their habitats would be adversely affected in the long-term. Overall cumulative effects to migratory birds from the No Action Alternative would be adverse.

Vegetation

Under the Proposed Action, short-term adverse cumulative effects would occur by the removal of juniper trees that are encroaching into sagebrush and riparian communities. At the same time, those communities would benefit in the long-term cumulatively by the removal of those trees. Under the Proposed Action, the thinning of juniper woodlands would cumulatively benefit those retained trees by reducing the scope and intensity of large-scale wildland fires. Under the No Action Alternative, no treatments would occur, there would be no short-term cumulative effects to vegetation. In the event of a large-scale wildland fire, vegetative communities would be adversely impacted in the short and long-term. These types of fire have the capability of replacing native species with non-native species or weeds across the broad landscape, an adverse cumulative effect. Current vegetative trends would continue under the No Action Alternative, juniper would dominate and replace existing sagebrush communities, and would crowd out willow, cottonwood and aspen stands in riparian areas, a cumulatively adverse effect.

BLM Sensitive Species (Plants)

Under the Proposed Action, short-term negligible cumulative effects would occur during Project implementation. In the long-term, sensitive plant species would benefit cumulatively by the

removal of juniper trees. Under the Proposed Action, the thinning of juniper woodlands would cumulatively benefit sensitive plant species by reducing the scope and intensity of large-scale wildland fires. Under the No Action Alternative, no treatments would occur, there would be no short-term cumulative effects to sensitive plant species. In the event of a large-scale wildland fire, sensitive plant species would be adversely impacted in the short and long-term. These types of fire have the capability of replacing native species with non-native species or weeds across the broad landscape, an adverse cumulative effect. Current vegetative trends would continue under the No Action Alternative, juniper would dominate and replace existing sagebrush communities and associated sensitive plant species, a cumulatively adverse effect.

Fire Management

Under the Proposed Action, through a combination of thinning and juniper removal from sagebrush and riparian communities, the occurrence of wildland fire would likely be smaller in scale, and native vegetative communities would be more resilient and capable of successful post-fire response. The potential of the replacement of native species with non-natives and weeds would be reduced. Overall cumulative effects for fire management are beneficial. Under the No Action Alternative, no treatments would occur, there would be no change in the current fire conditions in the Planning Area. The occurrence of large-scale wildland fire scale and scope would likely increase, an adverse cumulative effect. Large landscape fires provide the opportunity for the replacement of native species with non-natives or weeds, a long-term adverse cumulative effect.

Forest Resources

Under the Proposed Action, forest resources such as firewood and other products would be made available, a short-term beneficial cumulative effect. Under the No Action Alternative, no treatments would occur, there would be no change in the current availability of forest resources through regular BLM permitting processes. In the event of large-scale wildland fire, forest resources would likely be lost for many years, an adverse cumulative effect. Fire events kill trees and those trees could be made available for harvest or firewood cutting, a short-term beneficial cumulative effect.

Visual Resources

Under the Proposed Action, in VRM II areas there would be negligible cumulative effects to the visual character in the short-term due to thinning and removal of juniper trees. This contrast would be minimized by mimicking the terrain during treatment. Reducing in scale and/or scope a wildland fire would ensure the existing visual character of the treatment units would remain intact, or minimally impacted. Overall, cumulative effects to visual resources is neutral. Under the No Action Alternative, no treatments would occur, there would be no change to the visual character of the treatment units. A large-scale wildland fire, especially a crown-fire, would adversely affect the visual quality of the burn area, an adverse cumulative effect. Initially soil surfaces and trees would be blackened, a major contrast to the current character of the treatment units, a short-term adverse cumulative effect. Depending largely on precipitation levels and vegetative response, dead standing trees are likely to remain visible for many years. If post-burn areas are successfully seeded, the visual contrast would be somewhat lessened, although evidence of fire may be visible for a decade or more, an adverse cumulative effect.

Air Quality

Under the Proposed Action, treatment actions would lessen the opportunity for large-scale wildland fire. Once treatments have been implemented, the scope and intensity of fire may be reduced, resulting in less smoke and pollutants during subsequent fire events. During implementation of the Proposed Action, pile burning would be conducted to remove residual vegetative materials, and there would be some increase in emissions from vehicles and equipment. This activity would cause short-term negligible cumulative effects to air quality. The opportunity for an inversion to occur, which could severely impact air quality in urban areas, would be avoided by conducting pile burning during non-summer seasons. Overall cumulative effects to air quality would be negligible. Under the No Action Alternative, no treatments would occur. Emissions from recreational vehicles and other activities in the Planning Area would continue. During a wildland fire event, there would be a sharp increase in smoke and its associated pollutants depending on a fire's scope and intensity, an adverse cumulative effect. After full fire suppression, air quality would likely return to pre-fire conditions.

Wild Horses and Burros

Under the Proposed Action, treatment actions would temporarily disturb and displace wild horses that may be present, a short-term negligible cumulative effect. In the long-term, in areas of high density juniper trees, thinning may increase available forage, a beneficial cumulative effect. Under the No Action Alternative, current vegetative trends would likely continue, shifting sagebrush communities to juniper woodlands. Over the long-term this trend may decrease forage availability for wild horses, a negligible cumulative effect.

Livestock Grazing

Under the Proposed Action, treatment actions would temporarily disturb and displace livestock that may be present, a short-term negligible cumulative effect. In the long-term, in areas of high density juniper trees, thinning may increase available forage, a beneficial cumulative effect. Under the Proposed Action, the BLM may determine in order to meet the objectives of the ARMA, it may be necessary to alter grazing operations. Depending on the duration and scale of the changes, the effects may be negligible or adverse in the short-term. Multi-year closures of an entire grazing allotment would be an adverse cumulative effect. Under the No Action Alternative, current vegetative trends would likely continue, shifting sagebrush communities to juniper woodlands. Over the long-term this trend may decrease forage availability for livestock, a negligible cumulative effect.

Noxious and Invasive Weeds

Under the Proposed Action, seed or vegetative material may be transferred to new locations by machinery or people, a negligible cumulative effect. Under the No Action Alternative, on-going activities such as OHV use and grazing animals would continue to serve as potential vectors to transfer seeds or vegetative material to new locations, a negligible cumulative effect.

Lands with Wilderness Characteristics

Under the Proposed Action, there would be negligible cumulative effects to the character of a inventoried LWC unit in the short-term due to thinning and removal of juniper trees. Reducing in scale and/or scope a wildland fire would ensure the existing character of the LWC unit would remain intact, or minimally impacted. Overall, cumulative effects to the inventoried LWC unit is

negligible. Under the No Action Alternative, no treatments would occur, there would be no change to the character of the inventoried LWC unit. A large-scale wildland fire, especially a crown-fire, would adversely affect the quality of the burn area, an adverse cumulative effect.

Socioeconomics

Under the Proposed Action, the BLM may determine in order to meet the objectives of the ARMA, it may be necessary to alter grazing operations. Depending on the duration and scale of the changes, the effects may be negligible or adverse in the short-term. Multi-year closures of an entire grazing allotment would be an adverse cumulative effect. Under the No Action Alternatives, there would be no vegetation treatments. There would be no cumulative effect to socioeconomics.

6.0 CONSULTATION AND COORDINATION

6.1 Public Review and Comment

This draft EA has been made available to the public for review and comment for 30-days. Comments must be received by the close of business on July 7, 2016. All comments would be reviewed and categorized by the BLM. Although not required for an EA by regulation, an agency may respond to substantive and timely comments received in the Final EA (BLM 2008).

Substantive comments:

1. Question, with reasonable basis, the accuracy of the information in the EA;
2. Question, with reasonable basis, the adequacy of, methodology for, or assumptions used for the environmental analysis;
3. Present new information relevant to the analysis;
4. Present reasonable alternatives other than those analyzed in the EA; and/or
5. Cause changes or revisions in one or more of the alternatives.

No response is necessary for non-substantive comments (BLM 2008).

6.2 Individuals, Tribes, Organizations and Agencies Contacted

6.2.1 *Individuals*

The following individuals were notified during public scoping or during the review of the draft EA:

Campbell Family Trust
Clapp, Heather
Coelho, Steve or Gina
Cupurro, Steve
Damonte, Louis
Fuller, Robert
Gavce, Jerry or Carol Trust
Gonzalez, Jose or Macrina
Harden, Bruce or Michele
Hiller, Lynette
Kelly Family 1997 Survivors Trust
LaRue, Juanita
Lepard, Frank
Lenz, John or Paula Trust
Mendes, Alan or Lillian
Murphy, Mark Living Trust
Parks, Randy or Suzanne
Qualls, Charlene M Trust
Raskulinecz, John
Reaney, Robert or Susan
Rigdon, Erica or Rosemaria

Roberts, Arthur III or Janet
Rollins, Robert or Ida
Roth, John
Sharpe, Kathee
Stocks, Roy
Swickland, Todd
Traux, Gary
Whitefield, Timothy or Susan
Woods, Cynthia

6.2.2 Tribes

Washoe Tribe of Nevada and California
Susanville Indian Rancheria
Pyramid Lake Paiute Tribe
Reno-Sparks Indian Colony

6.2.3 Organizations

Air Sailing Inc.
Altgas Renewable PAC Energy
American Estate & Trust
Buckhorn Land and Livestock, LCC
Bulletproof Tactical, LLC
Corporation Incorporation Inc.
D.S. Ranches, LLC
Espil John Sheep Co. Inc.
Fish Springs Ranch, LLC
Golden Crescent Corporation
Intermountain Water Supply LTD
JHC Land & Cattle, LLC
Nevada Bell
Nevada Bighorns Foundation
Nevada Cement Company
Nevada Land Trust
Palomino Valley Corral
Plumas-Sierra Rural Electric Cooperative
Rancho Haven Property Owners Association
Reese Investment Properties Inc.
Rural Telephone Co.
Schroeder Law Offices P.C.
Sierra Nevada Teen Ranch
Sierra Pacific Industries
Sierra Pacific Power Company
UNAVCO
Union Pacific Railroad Company
University of Nevada Board of Regents
University of Nevada, Reno

Washoe County
 Western Pacific Railroad
 Western Watersheds Project
 Wildlands Defense and Deep Green Resistance
 Willey Brothers Ent LLC
 WSR Land LLC
 ZZ-30 LLC et al

6.2.4 Agencies

Federal Highway Administration
 Nevada Department of Transportation
 Nevada Department of Wildlife
 USGS Western Ecological Research Center

6.3 List of Preparers

BLM staff that contributed to this document.

Name	Resource
Alicia Alfaro	Cultural Resources, Native American Religious Concerns
John Axtell	Wild Horses and Burros
Keith Barker	Fire Management, Vegetation
Brian Buttazoni	NEPA Compliance, Visual Resources, Socioeconomics, Lands with Wilderness Characteristics, Cumulative Effects
Niki Cutler	Wetlands/Riparian Zones, Air Quality
Coreen Francis	Forestry
Katrina Leavitt	Livestock Grazing
Dean Tonenna	BLM Sensitive Species (Plants), Noxious and Invasive Weeds
Pilar Ziegler	General Wildlife, BLM Sensitive Species (Animals), Migratory Birds

7.0 REFERENCES

- Agee, J.K. 1993. *Fire Ecology of Pacific Northwest Forests*. Island Press, Washington D.C.
- Brown, J.K. 1995. *Fire Regimes and their Relevance to Ecosystem Management*. Pp. 171-178 in Proceedings of Society of American Foresters National Convention, September 18-22, 1994, Anchorage, Alaska. Society of American Foresters, Washington. D.C.
- Bureau of Land Management (BLM). 1991. *Vegetation Treatment on BLM Lands in Thirteen Western States*. Final Environmental Impact Statement. Wyoming State Office. Cheyenne, Wyoming.
- _____. 2001. *Carson City Field Office Consolidated Resource Management Plan*. Carson City, Nevada. May.
- _____. 2002. *Carson City Field Office Normal Year Fire Rehabilitation Plan and Environmental Assessment*. Carson City Field Office. Carson City, Nevada. April.
- _____. 2003. *Visual Resource Contrast Rating (H-8431-1)*. U.S. Department of the Interior. Washington, D.C. January.
- _____. 2007. *Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement, Record of Decision*. Washington, D.C. September.
- _____. 2008. *National Environmental Policy Act Handbook (H1790-1)*. U.S. Department of the Interior. Washington, D.C. January.
- _____. 2014a. *Draft Resource Management Plan and Environmental Impact Statement, Carson City District*. Carson City, Nevada. November.
- _____. 2014b. *Report on Lands with Wilderness Characteristics*. Carson City, Nevada. November.
- _____. 2015a. *Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment*. Nevada State Office. Reno, Nevada. September.
- _____. 2015b. *Carson City District Integrated Weed Management Plan*. Carson City, Nevada. July.
- Census. 2014. *Washoe County, Nevada Quickfacts*. Website accessed on March 2, 2016. <http://www.census.gov/quickfacts/table/PST045215/32031>.
- Chambers, Jeanne F. 2008. *Climate Change and the Great Basin*. Pages 29-32 in Collaborative Management and Research in the Great Basin - Examining the Issues and Developing a Framework for Action. General Technical Report RMRS-GTR-204. Fort Collins,

- Colorado: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.
- Chambers, Jeanne C.; Pyke, David A.; Maestas, Jeremy D.; Pellant, Mike; Boyd, Chad S.; Campbell, Steven B.; Espinosa, Shawn; Havlina, Douglas W.; Mayer, Kenneth E.; Wuenschel, Amarina. 2014. *Using Resistance and Resilience Concepts to Reduce Impacts of Invasive Annual Grasses and Altered Fire Regimes on the Sagebrush Ecosystem and Greater Sage-Grouse: A Strategic Multi-Scale Approach*. Gen. Tech. Rep. RMRS-GTR-326. Fort Collins, Colorado: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 73 pages.
- Coates, P.S., J.W. Connelly, and D.J. Delehanty. 2008. *Predators of Greater Sage-Grouse Nests Identified by Video Monitoring*. *Journal of Field Ornithology* 79(4):421-428.
- Connelly, J. W., E. T. Rinkes, and C. E. Braun. 2011. *Characteristics of Greater Sage-Grouse Habitats: a Landscape Species at Micro- and Macroscales*. Pages 69-83 in *Greater Sage-Grouse: Ecology and Conservation of a Landscape Species and Its Habitats*. *Studies in Avian Biology* No. 38. University of California Press.
- Cox, M., D. W. Lutz, T. Wasley, M. Fleming, B. B. Compton, T. Keegan, D. Stroud, S. Kilpatrick, K. Gray, J. Carlson, L. Carpenter, K. Urquhart, B. Johnson, and C. McLaughlin. 2009. *Habitat Guidelines for Mule Deer: Intermountain West Ecoregion*. Mule Deer Working Group, Western Association of Fish and Wildlife Agencies.
- Daubenmire, R. 1968. *Plant Communities: A Textbook of Plant Synecology*. Harper and Row, New York, New York.
- Dugelby, Barbara. 2011. *Climate Change and the Great Basin Round River Conservation Studies*. Salt Lake City, Utah.
- Gillihan, S. W. 2006. *Sharing the Land with Pinyon-Juniper Birds*. Partners in Flight Western Working Group. Salt Lake City, Utah.
- Great Basin Bird Observatory. 2010. *Nevada Comprehensive Bird Conservation Plan, version 1.0*. Great Basin Bird Observatory, Reno, Nevada. Website accessed on March 10, 2016. http://www.gbbodata.org/pdf/bcp/NV_Bird_Conservation_Plan_ver1.0_Dec2010.pdf
- Hann, W.J. and D. L. Bunnell. 2001. *Fire and Land Management Planning and Implementation Across Multiple Scales*. *International Journal of Wildland Fire* 10(4):389-403.
- Headwaters Economics. 2014. *A Profile of Socioeconomic Measures*. Bozeman, Montana. January.
- Intergovernmental Panel on Climate Change (IPCC). 2007. *Climate Change 2007: The Physical Basis: Contribution of Working Group I to the Fourth Assessment Report of the*

- Intergovernmental Panel on Climate Change*. Website accessed on March 2, 2016. http://www.ipcc.ch/publications_and_data/publications_and_data_reports.shtml.
- Maestas, J. D., B. A. Roundy, and J. D. Bates. 2015. *Conifer Removal in the Sagebrush Steppe: the Why, When, Where and How*. Great Basin Factsheet Series, Number 4, 2015.
- Miller, R. F., T. J. Svejcar, and N. E. West. 1994. *Implications of Livestock Grazing in the Intermountain Sagebrush Region: Plant Composition*. Pages 101-146 in *Ecological Implications of Livestock Herbivory in the West*. Society for Range Management. Denver, Colorado.
- Miller, R. F. and R. J. Tausch. 2001. *The Role of Fire in Pinyon and Juniper Woodlands: A Descriptive Analysis*. Proceedings of the Invasive Species Workshop: The Role in the Control and Spread of Invasive Species. Fire Conference 2000: the First National Congress on Fire Ecology, Prevention, and Management. 15 — 30. Tall Timbers Research Station. Tallahassee, Florida.
- Miller R.F., J. D. Bates, T. J. Svejcar, F. B. Pierson, and L. E. Eddleman. 2005. *Biology, Ecology, and Management of Western Juniper*. Oregon State University, Agricultural Experiment Station, Technical Bulletin 152.
- Nevada Department of Agriculture. 2016. *Noxious Weed Data*. Website accessed on March 2, 2016. http://agri.nv.gov/Plant/Noxious_Weeds/Noxious_Weed_List/.
- Nevada Department of Environmental Protection (NDEP). 2012. *Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990-2030*. Website accessed on March 2, 2016. https://ndep.nv.gov/docs_13/ghg_report_2012.pdf.
- Nevada Department of Wildlife (NDOW). 2016. Personal communication with Shawn Espinosa, Upland Game Staff Biologist. March 8, 2016. Reno, Nevada.
- Oyler-McCance, S. J. and T. W. Quinn. 2011. *Molecular insights into the biology of Greater Sage-Grouse*. Pp. 85-94 in *Greater Sage-Grouse: Ecology and Conservation of a Landscape Species and Its Habitats*. Studies in Avian Biology No. 38. University of California Press.
- Paige C. and S. A. Ritter. 1999. *Birds in a Sagebrush Sea: Managing Sagebrush Habitats for Bird Communities*. Partners in Flight Western Working Group, Boise, Idaho.
- Prevey, J. S., M. J. Germane, N.J., Huntly, and R.S. Inouye. 2010. *Exotic Plants Increase and Native Plants Decrease with Loss of Foundation Species in Sagebrush Steppe*. *Plant Ecology* 207(1):39-51.
- Tsukamoto, G. K. May 2003. *Nevada's Pronghorn Antelope – Ecology, Management and Conservation*. Nevada Department of Wildlife, Biological Bulletin No. 13. Reno, Nevada.

- University of Nevada, Reno. 2005. *Analysis of Socio-Economic Data and Trends for Washoe County: Part V*. Reno, Nevada. January.
- U.S. Department of Agriculture (USDA), Forest Service, Technology and Development Program. 2000. *Understory Biomass Reduction Methods and Equipment Catalog*.
- U.S. Fish and Wildlife Service. 2008. *Birds of Conservation Concern 2008*. Division of Migratory Bird Management. Arlington, Virginia. Website accessed on March 10, 2016. <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- _____. 2010. *12-Month Findings for Petitions to List the Greater Sage-Grouse (Centrocercus urophasianus) as Threatened or Endangered*. Federal Register Vol. 75, No. 55. Tuesday, March 23, 2010.
- _____. 2015. *12-Month Finding on a Petition to List Greater Sage-Grouse (Centrocercus urophasianus) as an Endangered or Threatened Species*. Federal Register Vol. 80, No. 191. Friday, October 2, 2015.
- West, N. E. 1984. *Successional Patterns and Productivity Potentials of Pinyon-Juniper ecosystems*. Pp. 1301-1332 in *Developing Strategies for Rangeland Management: A Report*. Westview Press. Boulder, Colorado.
- Wildlife Action Plan Team (WAPT). 2012. *Nevada Wildlife Action Plan*. Nevada Department of Wildlife, Reno, Nevada.
- Yoakum, J. et al. 1996. *Pronghorn on Western Rangelands*. Pp. 211-226 in P.R. Krausman, ed. *Rangeland Wildlife*. The Society for Range Management, Denver, Colorado.

Appendix A. BLM Sensitive Animals and Migratory Birds That May be Present or Their Habitat May be Present in the Planning Area.

Common Name	Scientific Name	BLM Sensitive Species	BLM Migratory Bird
Big brown bat	<i>Eptesicus fuscus</i>	Y	-
Bighorn sheep	<i>Ovis Canadensis</i>	Y	-
Brazilian free-tailed bat	<i>Tadarida brasiliensis</i>	Y	-
Brewer's sparrow	<i>Spizella breweri</i>	Y	Y
Burrowing owl	<i>Athene cunicularia</i>	Y	N
California myotis	<i>Myotis californicus</i>	Y	-
Dark kangaroo mouse	<i>Microdipodops megacephalus</i>	Y	-
Ferruginous hawk	<i>Buteo regalis</i>	Y	Y
Fringed myotis	<i>Myotis thysanodes</i>	Y	-
Golden eagle	<i>Aquila chrysaetos</i>	Y	Y
Greater Sage-Grouse	<i>Centrocercus urophasianus</i>	Y	N
Green-tailed towhee	<i>Pipilo chlorurus</i>	N	Y
Hoary bat	<i>Lasiurus cinereus</i>	Y	N
Lewis's woodpecker	<i>Melanerpes lewis</i>	N	Y
Little brown bat	<i>Myotis lucifugus</i>	Y	-
Loggerhead shrike	<i>Lanius ludovicianus</i>	Y	Y
Long-eared myotis	<i>Myotis evotis</i>	Y	-
Long-legged myotis	<i>Myotis volans</i>	Y	-
Mourning dove	<i>Zenaida macroura</i>	N	Y
Northern goshawk	<i>Accipiter gentilis</i>	Y	N
Pale kangaroo mouse	<i>Microdipodops pallidus</i>	Y	-
Pallid bat	<i>Antrozous pallidus</i>	Y	-
Sage sparrow	<i>Amphispiza belli</i>	N	Y
Sage thrasher	<i>Oreoscoptes montanus</i>	Y	Y
Silver-haired bat	<i>Lasionycteris noctivagans</i>	Y	N
Spotted bat	<i>Euderma maculatum</i>	Y	N
Swainson's hawk	<i>Buteo swainsoni</i>	Y	N
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	Y	-
Western pipistrelle bat	<i>Pipistrellus hesperus</i>	Y	-
Western red bat	<i>Lasiurus blossevillii</i>	Y	N
Western small-footed myotis	<i>Myotis ciliolabrum</i>	Y	-
Yuma myotis	<i>Myotis yumanensis</i>	Y	-

