Upper Tuledad Valley Habitat Restoration and Fuels Reduction Project

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1.0 BACKGROUND INFORMATION

1.1 Introduction

The BLM Surprise Field Office (SFO) is proposing 2,561 acres of habitat restoration and fuels reduction treatments in the Tuledad and Selic-Alaska Allotments which encompasses 148,259 acres of public lands in the southwestern portion of the Surprise Field Office. There are two proposed project areas. These projects would reduce hazardous fuels, treat Western juniper in sage steppe plant communities which are decadent or declining in vigor as a result of competition and improve priority sage-grouse habitat.

Juniper woodlands throughout the Great Basin and other geographic regions are expanding into habitats historically dominated by perennial grasses, sagebrush and other native shrubs (Tausch, 1999; Brockway, et. al, 2002; West, et. al, 1998). In some areas, long-term fire suppression efforts, excessive grazing, and drought-related conditions have led to the conversion of sagebrush/grass communities to areas dominated by homogenous stands of sagebrush, with declining, remnant populations of native perennial forbs and grasses. In some areas the establishment of juniper on sagebrush/grass sites has resulted in the loss of the grass and forb component and led to decadence and low vigor of important shrub species, such as antelope bitterbrush. When valuable grass, forb and shrub species decline, excessive surface runoff and soil erosion, reduced soil moisture and decreased groundwater recharge may occur (Bedell, 1993; Thurow, 2005). Reduced soil moisture and the competition of woody species for light, nutrients and water has resulted in reduced forage for wildlife, livestock and wild horses. Additionally, on many woodland ecological sites, the natural diversity of successional stages has been shifted toward a preponderance of mature even-aged stands, which do not support a natural diversity of grasses, forbs, and shrubs. Proper functioning ecological sites have a diversity of grasses, forbs, shrubs, and trees and are essential to watershed integrity by stabilizing soils, promoting water infiltration and providing sufficient soil cover. A decline in the ecological condition of these plant communities adversely affects rangeland health, wildlife habitat, soil stability and other watershed values over the long-term.

Treatments could be completed using several methods including hand clearing, mechanical thinning and cutting, prescribed burning, or a combination of these treatments. Work would be completed by either federal or contract personnel. The byproducts of these treatments would be made available for firewood collection or biomass harvest, piled and burned on site or scattered and left to decompose naturally.

1.2 Proposed Action Location

The Upper Tuledad Habitat Restoration and Fuels Reduction project lies south and southwest of Eagleville, CA in Lassen County, California in the Tuledad and Selic-Alaska allotments.
1.3 Individual Project Name, Purpose and Legal Descriptions

Upper Tuledad Valley restoration hand treatment, mechanical treatment, pile burning (no burning on south slopes except within 100 feet of existing Tuledad road) and biomass removal – (2,315 acres) Located in Tuledad Canyon. The proposed project area can be found on Little Hat Mountain 7½ topographic map with the following legal description: Township 37 North, Range 17 East, Sections 31, 32, 33 and 34, Township 36 North, Range 16 East, Section 1 and Township 36 North Range 17 East Sections 4, 5, 6, and 7.

Tuledad aspen restoration hand treatment, mechanical treatment, pile burning, broadcast burning (limited to 123 acres) and biomass removal – (247 acres) The proposed project area can be found on Boot Lake 7½ topographic map with the following legal description: Township 37 North, Range 16 East Sections 8 and 17.

1.4 Purpose and Need

The purpose of the action is to contribute to healthy and resilient sage-steppe landscapes by enhancing and restoring sage-grouse habitat, restoring vegetation conditions that resemble historic plant community mosaics, and reducing risks of catastrophic wildfire associated with high fuel loading from juniper encroachment. The primary purpose of using an Integrated Vegetation Management (IVM) approach is to implement treatments consistent with and to meet the restoration objectives identified by the SSER FEIS.

The need for the action is to address juniper encroachment within Preliminary Priority sage-grouse habitat to ensure large blocks of habitat remain intact and connected and ensure these sites do not transition to plant communities where ecological processes are dominated by juniper.

1.4a Goals of the Tuledad Fuels Reduction and Habitat Restoration Project

Juniper encroachment contributes to habitat fragmentation and decline by decreasing native shrub, perennial grass cover and forb composition. For this reason, the goals of the project bulleted below include maintaining and improving existing sagebrush habitat and restoring sagebrush plant communities.

- Improve sage-grouse habitat by implementing habitat improvement projects that are consistent with the Buffalo-Skedaddle PMU Conservation Strategy.
- Reduce vertical fuel loading within juniper stands to increase the herbaceous understory within sagebrush sites.
- Improve the ecological health (i.e. resilience and resistance) of sites currently dominated by juniper to provide for improved wildlife habitat.
- Increase ecological health of aspen communities for wildlife habitat and forage.
- Reduce fuel loading to reduce the risk of an uncharacteristic large fire.
- Increase shrub and herbaceous cover and decrease bare ground to prevent long term soil concerns and soil erosion.
Objectives of the Tuledad Fuels Reduction and Habitat Restoration Project

- Increase heterogeneity of fuels across the landscape by reducing the canopy cover of juniper by at least 75 percent on sagebrush ecological sites within the project area.
- Maintain sagebrush cover greater than 10 percent on low sage and Wyoming big sagebrush ecological sites.
- Maintain herbaceous vegetative composition on dominant ecological sites consistent with achieving land health standards and the SSER FEIS monitoring protocol.
- Maintain old growth juniper stands on the portions of the project where they occur.
- Improve aspen stand density by a minimum of 10% from current levels by reducing competition with Western juniper.
- Maintain three age classes of aspen within the proposed treatment area.

1.5 Relationship to Planning

Land Use Plan (LUP) Conformance

Relevant Laws, Regulations, EISs, and Other Documents
The projects proposed in this EA would facilitate the restoration of ecological site conditions in order to improve a wide array of watershed values as outlined in the following plans and acts:

Sage Steppe Ecosystem Restoration Strategy Record of Decision (ROD) and Final Environmental Impact Statement, Modoc, Lassen, Shasta and Siskiyou counties, California and Washoe County, Nevada. Record of Decision signed December 2008. The Sage Steppe Ecosystem Restoration Strategy focuses on the restoration of sage steppe ecosystems that have come to be dominated by juniper, as the density of Western juniper has increased over the landscape. The management strategy would broadly identify appropriate restoration methodologies by ecological conditions; provide guidelines for design and implementation of effective restoration treatments for restoration areas to be analyzed site specifically over a 50-year horizon.

The Healthy Forest Restoration Act (HFRA) was signed into law on December 3, 2003 by United States President, George W. Bush. It is designed to improve the capacity of the Departments of Interior and Agriculture to implement the National Fire Plan, and conduct hazardous fuels reduction projects to protect communities, watersheds, and other at-risk lands from catastrophic wildfire. The projects analyzed in this EA meet the criteria of an
Authorized Hazardous Fuels Reduction Project.

A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment, 10-Year Comprehensive Strategy was a policy developed in 2001 that placed emphasis on reducing risk to communities and the environment by managing wildland fire, hazardous fuels, and ecosystem restoration and rehabilitation on forest and rangelands. Three of the four goals of this policy are to: 1) Improve prevention and suppression, 2) Reduce hazardous fuels, and 3) Restore fire adapted ecosystems. The projects proposed in this EA would facilitate the goals listed above.

National Fire Plan of August 2000, establishes goals for federal land agencies to combat the buildup of forest and rangeland fuels. “In response to the risks posed by heavy fuels loads -- the result of decades of fire suppression activities, sustained drought, and increasing insect, disease, and invasive plant infestations the National Fire Plan established an intensive, long-term hazardous fuels reduction program. Hazardous fuels reduction treatments are designed to reduce the risks of catastrophic wildland fire to people, communities, and natural resources while restoring forest and rangeland ecosystems to closely match their historical structure, function, diversity, and dynamics”.

Buffalo Skedaddle Sage Grouse Conservation Plan, 2006. The Northeast California Sage-Grouse Working Group is an organization comprised of local government and non-government agencies and private entities who developed a Conservation Strategy for Sage-Grouse and Sagebrush Ecosystems within the Buffalo-Skedaddle Population Management Unit. This document is a product related to sage-grouse conservation and sagebrush restoration, and states that among its top priorities are retention of leks in public ownership and acquisition of leks occurring on private lands. Pursuing this project demonstrates to partners and the public that BLM is continuing to move forward with actions to conserve sage-grouse, sage-grouse habitat and the health of watersheds within the Sierra Nevada region.

IM 2012-043, Greater Sage-Grouse Interim Management Policies and Procedures. This Washington Office Instruction Memorandum (IM) outlines interim conservation policies and procedures for the BLM to be applied to ongoing and proposed authorizations and activities that affect sage-grouse and its habitat.

Tuledad Allotment Grazing Strategy and Related Projects Decision Record and EA CA-370-99-03, Implemented grazing strategies and related projects designed to move the allotment towards landscape goals and resource objectives.

2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

2.1 Proposed Action
The proposed action is to utilize a combination of mechanical, prescribed fire and hand treatments to reduce hazardous fuels, increase the ability of fire managers to control unplanned wildfire and restore fire adapted ecosystems on 2,562 acres of sagebrush steppe ecosystem within the Tuledad Fuels Reduction and Habitat Restoration project area. Within the project area, there were 1905 acres that were identified as suitable for
mechanical treatment and 308 acres that were only suitable for hand treatment. Pile and slash burning is proposed in both units however broadcast burning is only proposed in the Tulead aspen project (See Appendix 1 for a map of treatment types). No pile burning is proposed on the south slopes of the Upper Tulead Valley project due to the presence of cheatgrass in many areas. The proposed action consists of two separate units on public lands located in the Tulead Allotment and Selic-Alaska allotment. Management objectives would be achieved using a combination of treatments including mechanical, prescribed fire and/or hand treatments. Treatment units and project design elements are the result of recommendations made by an IDT and approved by the authorized officer.

No new permanent roads would be constructed to complete this project work. Temporary roads would be used where appropriate and would be decommissioned following use. These roads would involve minimal ground disturbance and would be reclaimed following use (one to three years). Temporary roads not to exceed 1.5 miles per year and landings would be constructed with in the project area to facilitate mechanical treatment. See Appendix 3, Tulead Standard Operating Procedures, for specific temporary road and landing requirements. Areas identified within the project boundaries as having important cultural, botanical, hydrological, recreation, and wildlife resources that require protection would be excluded from treatment. These areas of concern would have specific operating procedures to maintain the integrity of the resource, see Appendix 3: Tulead Standard Operating Procedures.

Treatments would take place on public lands within Tulead and Selic-Alaska Allotments between 2014 and 2024. Juniper removed from the units could be used as biomass as either firewood for local wood cutters or chipped and utilized in co-generation facilities. Historic woodlands within the project areas would be preserved and mature/old growth stands of Western juniper would be identified and protected.

Restoration methods are described in the Sage Steppe Ecosystem Restoration Strategy FEIS and are outlined below.

**Mechanical** restoration involves the use of heavy machinery to physically remove Western juniper. There are several different kinds of mechanical restoration approaches and all can achieve similar results on the landscape. Mechanical restoration techniques that have previously been employed in the area, and are expected to be used in implementing the alternatives, include the following:

- **Tracked feller-buncher machines.** These machines would snip off the juniper trees and put them into a chipper that is pulled behind the feller-buncher. After the chip bin is full, the chips are augured into a tractor-trailer for transportation off site.

- **Rubber-tired feller-buncher machines.** These machines would cut the juniper trees and transport them to a landing area or pile them for skidding to the landing. Rubber tired skidders can then be used to transport the juniper to the landing areas, as needed. Cut junipers may also be transported by in rubber tired trailers to landings. At the landings, the juniper trees are processed into chips and hauled
away or limbed and just the boles hauled away, depending on the intended use for the material.

- Trees may be cut by the above methods but left on ground instead of transported off-site.
- The above methods can be combined and tailored specifically for site conditions, availability of machinery, economic conditions, and other factors.

The mechanical methods of restoration could generate slash in quantities that would require treatment. In all mechanical treatments, biomass would be considered along with woodcutting. In these cases, the remaining material would be piled and burned to minimize impacts to sagebrush. Mechanical methods have the benefit of minimal impacts to sagebrush because they would not kill them as prescribed fire would.

**Prescribed fire** would be used where enough fuel exists to carry a fire, where a fire can be managed successfully, and where conditions are favorable for achieving restoration objectives of removing juniper from the site. Following a fire, it is expected that most of the juniper would be dead but snags would remain standing for several decades. Fire use would also kill sagebrush because, like juniper, it is not fire tolerant. Burned areas also have a greater potential for invasion by non-native plant species than areas restored using mechanical or hand treatment methods. Burned areas would require monitoring and control to prevent the establishment and spread of noxious weeds and invasive annual grasses.

Proposed treatment areas with broadcast prescribed fire would follow the Rangeland Health Standards & Guidelines for Northeastern California and Northwestern Nevada FEIS, for post treatment livestock grazing rest.

After burning is complete, and when safely practicable, any hand or dozer constructed lines would be rehabilitated. Line rehabilitation actions would vary depending on their location. Line rehabilitation would be conducted to stabilize the soil and create physical barriers to discourage off-highway vehicle use, and to conceal the line to reduce visible impacts. Water bars would be built on control lines where slopes are steeper than fifteen percent or in areas where there is evidence of major water flow. Maximum rehabilitation effort would be undertaken to improve visual characteristics in areas directly visible from the roads and trails. In areas less visible from roads and trails, line rehabilitation would concentrate on soil stabilization.

During the year in which prescribed burning treatments are to be conducted, livestock would not be allowed to graze within the proposed treatment units. Livestock grazing would be excluded from the treated units for a minimum of two growing seasons following treatment implementation. Livestock trailing would be allowed along existing roads during the grazing closure period. An interdisciplinary team (IDT) would conduct a review of the project objectives and monitoring data to determine when livestock grazing would be allowed to resume in the project area. If after the two growing seasons of rest, environmental factors prevent attainment of the objectives, the interdisciplinary team would review the project monitoring data and determine an appropriate grazing regime.
with permittees. Any terms and conditions specific to livestock grazing within the project area would also be discussed and included in any grazing authorization.

**Hand Treatment** is the most labor intensive method of restoration and would generally be accomplished by crews with chainsaws cutting down juniper. This treatment method would be the most widely used in the proposed project boundaries. The trees would then be piled for burning or yarded to areas where trucks or skidders can reach them. This method would be used in the most environmentally sensitive areas or in areas where it is not feasible to use fire or mechanical means. The benefit of hand restoration is that sensitive areas, such as those that include riparian/wetland areas, aspen trees, etc. or areas inaccessible with mechanical equipment can be treated with beneficial results. The disposal of the juniper trees and associated slash is a challenge for hand restoration because, once cut down, they cannot be moved easily by hand. In all hand treatments areas woodcutting and pile burning would be considered. This material would generally be piled and burned within 100 feet of the primary access road; otherwise the material would be left on site or burned in place.

### 2.2 No Action Alternative

The No Action Alternative is the current management situation. Under this alternative, there would be no treatments applied within the project area. The fuel conditions would continue to accumulate beyond levels representative of the natural (historic) fire regime. Habitat values would continue to decline as perennial, herbaceous and shrub understory was further reduced in the long term.

### 2.3 Alternatives Considered but Dismissed from Detailed Analysis

One alternative considered was prescribed burning all units to thin or remove Western juniper which has established on sagebrush sites. This alternative was eliminated from detailed analysis because of the difficulty in keeping fire within the targeted vegetation types and the inability to prevent the burning of the existing shrub and grass understory. The goal is to maintain the existing shrub and grass component and remove enough trees in order to allow the shrub and grass component to reach ecological site potential. Additionally, under this alternative, there is high potential for invasion by cheatgrass and other non-natives.

### 3.0 Description of the Affected Environment, Environmental Consequences and Cumulative Impacts

The direct, indirect and cumulative effects contained in the following chapter include considerations brought forward in both internal and external scoping. Past and present actions considered in the cumulative effects analysis include, vegetation treatments, range improvements and livestock grazing. Reasonably foreseeable future actions identified by the interdisciplinarian team include, wind energy development, vegetation treatments on neighboring public and private lands and post treatment grazing management.
3.1 General Description
The proposed project area occurs in northeastern Lassen County, California. The Upper Tulead Project Area occurs within the Tuledad allotment. The Tulead Aspen Project Area occurs within the Selic-Alaska allotment. The project boundaries occur in Townships 36, 37 and 38 North, and Ranges 16, and 17 East. The project areas are located along the lower and mid slopes in the southern part of the Warner Mountain Range. Elevations range from approximately 5,000 to 6,000 feet on the Upper Tulead project site and 7,000-7,500 on the Tulead Aspen site. Slopes mostly range from 2 to 14 percent with a few areas ranging from 30-50 percent. Annual precipitation levels average 8 to 18 inches annually but can be as much as 30 inches at high elevations within the Aspen Tulead site. The primary vegetation within the project area consists of sagebrush/perennial grass associations with juniper as an overstory species. Aspen communities exist within the Aspen Tulead Project Area.

The affected environment is described in the table below followed by the environmental consequences for each resource.

Table 1: Resources Potentially Affected by Implementation of the Proposed Action and Supplemental Authorities to be Considered

<table>
<thead>
<tr>
<th>Resource Issue Area</th>
<th>Supplemental Authority</th>
<th>Not Present</th>
<th>Present Not Affected</th>
<th>Present and Affected</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Quality</td>
<td>The Clean Air Act as amended (42 USC 7401 et seq.)</td>
<td>✔️</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Areas of Critical Environmental Concern (ACECs)</td>
<td>✔️</td>
<td></td>
<td></td>
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<tr>
<td>Cultural Resources</td>
<td>National Historic Preservation Act, as amended (16 USC 470)</td>
<td>✔️</td>
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</table>

Analysis of the potential for the Proposed Action to result in environmental effects related to Air Quality is presented in Section 3.2.

There are no ACECs located within the Action Area.

Analyses of the potential for the Proposed Action to result in environmental effects related to Cultural Resources are presented in Section Error! Reference source not found.
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<th>Present and Affected</th>
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<td>Environmental Justice</td>
<td>E.O. 12898, &quot;Environmental Justice&quot; February 11, 1994</td>
<td>✓</td>
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<td></td>
<td>Implementation of the Proposed Action would not disproportionately affect low income or minority populations.</td>
</tr>
<tr>
<td>Essential Fish Habitat</td>
<td>Essential Fish Habitat Magnuson-Stevens Act Provision: Essential Fish Habitat (EFH): Final Rule (50 CFR Part 600; 67 FR 2376, January 17, 2002)</td>
<td>✓</td>
<td></td>
<td></td>
<td>There is no Essential Fish Habitat located within the Action Area.</td>
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<tr>
<td>Farmlands, Prime and Unique</td>
<td>E.O. 11988, as amended, Floodplain Management, 5/24/77</td>
<td>✓</td>
<td></td>
<td></td>
<td>There are no Prime or Unique farmlands located within the Action Area.</td>
</tr>
<tr>
<td>Floodplains</td>
<td>E.O. 11988, as amended, Floodplain Management, 5/24/77</td>
<td>✓</td>
<td></td>
<td></td>
<td>There are no FEMA-mapped 100- or 500-year floodplains within the Action Area.</td>
</tr>
<tr>
<td>Invasive, Non-native Species</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>Analyses of the potential for the Proposed Action to result in environmental effects related to Invasive Species are presented in Section 3.9.</td>
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<td>Global Climate Change</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>Analyses of the potential for the Proposed Action to result in environmental effects related to Greenhouse Gas Emissions and Global Climate Change are presented in Section 3.6.</td>
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Notes:
- ✓ indicates present and affected.
- Not Present indicates the issue is not present.
- Present Not Affected indicates the issue is present but not affected.
- Present and Affected indicates the issue is present and affected.
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<th>Present and Affected</th>
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<tr>
<td>Livestock Management</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>Analyses of the potential for the Proposed Action to result in environmental effects related to Grazing Lands are presented in Section 3.7.</td>
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<tr>
<td>Native American Religious Concerns</td>
<td>American Indian Religious Freedom Act of 1978 (42 USC 1996)</td>
<td>✓</td>
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<td></td>
<td>Based on formal consultations with the Fort Bidwell Tribe, Summit Lake tribe, and Cedarville Rancheria, Native American Religious Concerns are not present in the Action Area.</td>
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<tr>
<td>Recreation</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>Analyses of the potential for the Proposed Action to result in environmental effects related to Recreation are presented in Section 3.10.</td>
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<tr>
<td>Social and Economic Values</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>Analyses of the potential for the Proposed Action to result in environmental effects related to Social and/or Economic Values are presented in Section 3.8.</td>
</tr>
<tr>
<td>Soils</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>Analyses of the potential for the Proposed Action to result in environmental effects related to Soils are presented in Section 3.12.</td>
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<td>Resource Issue Area</td>
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<td>Comments</td>
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</tr>
<tr>
<td>Wastes, Hazardous or Solid</td>
<td>Resource Conservation and Recovery Act of 1976 (43 USC 6901 et seq.) Comprehensive Environmental Repose Compensation, and Liability Act of 1980, as amended (43 USC 9615)</td>
<td>✔</td>
<td></td>
<td></td>
<td>Implementation of the Proposed Action would not result in hazards materials/waste exposure to people or the environment, nor would implementation result in effects related to solid waste.</td>
</tr>
<tr>
<td>Water Quality</td>
<td>Safe Drinking Water Act, as amended (43 USC 300f et seq.) Clean Water Act of 1977 (33 USC 1251 et seq.)</td>
<td></td>
<td></td>
<td>✔</td>
<td>Implementation of the Proposed Action would not affect ground water. Analyses of the potential for the Proposed Action to result in environmental effects related to Water Quality are presented in Section 3.11.</td>
</tr>
<tr>
<td>Wetlands /Riparian Zones</td>
<td>E.O. 11990 Protection of Wetlands 5/24/77</td>
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<td></td>
<td>✔</td>
<td>Analyses of the potential for the Proposed Action to result in environmental effects related to Wetlands are presented in Section 3.11.</td>
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<td>Wild and Scenic Rivers</td>
<td>Wild and Scenic Rivers Act, as amended (16 USC 1271)</td>
<td>✔</td>
<td></td>
<td></td>
<td>There are no designated Wild and Scenic rivers within the Action Area.</td>
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<tr>
<td>Wilderness (lands with wilderness characteristics)</td>
<td>Federal Land Policy and Management Act of 1976 (43 USC 1701 et seq.); Wilderness Act of 1964 (16 USC 1131 et seq.)</td>
<td>✔</td>
<td></td>
<td></td>
<td>There are no lands with wilderness characteristics within the project area.</td>
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<td>Resource Issue Area</td>
<td>Supplemental Authority</td>
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<td>Present Not Affected</td>
<td>Present and Affected</td>
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<tr>
<td>Wild Horse and Burros</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>The Tuledad Allotment is part of the Tuledad Herd Area, which is divided into Buckhorn and Coppersmith Wild Horse Herd Management Areas (HMA).</td>
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<td></td>
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<td>✓</td>
<td>Analyses of the potential for the Proposed Action to result in environmental effects related to Wild Horse and Burros are presented in Section 3.16.</td>
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<td>Vegetation and Threatened/Endangered Vegetation Species</td>
<td>Endangered Species Act of 1983, as amended (16 USC 1531)</td>
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<td>✓</td>
<td>Analyses of the potential for the Proposed Action to result in environmental effects related to Vegetation are presented in Section 3.13.</td>
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</table>

3.2 Air Quality

Affected Environment

The Tuledad Fuels Reduction and Habitat Restoration project area is located in the
Northeastern corner of Lassen County, California. Lassen County is part of the Northeast Plateau Air Basin (NPAB), which encompasses Siskiyou, Modoc and Lassen Counties. The Modoc County Air Pollution Control District (MCAPCD) has jurisdiction over air quality issues throughout Modoc County and administers air quality regulations developed at the federal, state, and local levels. The Washoe County District Health Department, Air Quality Management Division, Washoe County, has jurisdiction over air quality issues throughout Washoe County and administers air quality regulations developed at the federal, state and local levels.

Weather in northern California is dominated by the position of the Eastern Pacific high pressure cell normally located off the coast of North America. Due to the cell’s positioning, an almost unbroken chain of winter storms occurs in the study area, and a bulk of the precipitation in the study area occurs during this winter storm period. Weather systems in the region usually result in strong winds and unstable air masses, providing for good dispersion conditions. During fair weather periods, stable air conditions prevail throughout the region.

Air quality for the project area is generally good due to the remoteness and the limited amount of development/activity taking place within the project area. Air pollution in the project area can come from a variety of sources including OHV, windblown dust, and smoke from prescribed burns and wildfires. Pollution from these sources would result in localized increases in fugitive dust that would be temporary and would not exceed air quality standards. The area has not been classified as a federal non-attainment/maintenance area by the EPA therefore Federal actions is not subject to conformity determinations under 40 CFR 93.

**Direct and Indirect Impacts of the Proposed Action**

The proposed action would produce smoke from prescribed fires and to a lesser degree dust from mechanical treatments and fuel wood cutting. Impacts to air quality from prescribed fire and pile burning could range from reduced visibility, to pneumonic irritation, and smoke odor affecting people in proximity to the project area when such treatments are underway. These impacts are expected to be minor due to the remoteness of the project area and short-lived, with the greatest impact occurring during the actual ignition or active burning phase, lasting from one to a few days depending on the size or number of actual burn units or number of piles to be ignited. Residual smoke produced from the burnout of large fuels, or slower burning fuel concentrations could occur, lasting for one to three days following the ignition phase. Impacts to air quality from mechanical treatments and wood cutting would be airborne dust generated during the operation of mechanical equipment and transport vehicles that would reduce visibility in the immediate project area, ceasing quickly when such operations stop.

The areas of greatest impact from prescribed fire would be those areas downwind and down drainage from the project area. A review of dominant wind vectors and topographic features indicates that these areas are typically east, northeast and southeast, respectively of the project area. The amount of impact would be dependent on atmospheric conditions at the time of ignition although there are only four known residences within 10 air miles that
are east, northeast and southeast of the project area. Prescribed fires are planned and implemented when atmospheric stability and wind conditions promote smoke dispersion into the atmosphere and/or transport out of the area.

The areas of greatest impact from mechanical treatments would be the immediate project area and unimproved, dirt/gravel roads used in association with the projects. Overall impacts are expected to be minor and no impact to residences adjacent to the project area is expected to occur as a result of mechanical treatments.

**Cumulative Impacts of the Proposed Action**

The Cumulative Assessment Area for Air Quality for purposes of analysis is the Northeast Plateau Air Basin and Northern Washoe from Gerlach to the Nevada/California State Line. Other prescribed fire and mechanical fuel reduction projects are planned for the Sage Steppe Ecosystem Restoration Strategy area and ongoing projects are expected throughout the area. While the cumulative effect of the projects may impact air quality, the impacts would be short-lived, focusing on the time during project implementation to a few days post treatment.

**Direct and Indirect Impacts of the No Action Alternative**

Under the no action alternative no fuel treatments/habitat restoration treatments would occur within the project area. The potential for wildfires to occur would be greater where fuel treatments do not occur. The impact to air quality would be greater from a wildfire occurring in the area as wildfires typically have a longer ignition phase, or burn longer, consume more biomass and produce more smoke and particulate matter than prescribed fires or slash pile burning. The Tuledad Project Area would continue to amass woody debris in the absence of treatment, increasing the risk of catastrophic wildfires.

**Cumulative Impacts of the No Action Alternative**

Other prescribed fire and mechanical fuel reduction projects are planned for the Sage Steppe Ecosystem Restoration Strategy area. While the cumulative effect of the projects may impact air quality, the impacts would be short-lived, focusing on the time during project implementation to a few days post treatment. Overall not implementing this project would not result in measureable cumulative effects.

### 3.3 Cultural Resources

**Affected Environment**

Cultural resource inventories in the vicinity of the project area indicate that the area was used by prehistoric Native American people for resource procurement activities for at least 7,000 years. In addition, seasonal, temporary campsites were established for the purposes of procuring tool stone material, game, and plant resources. Prehistoric rock art sites also suggest that the area was used for religious or ceremonial purposes.

Ethnographically, this area is part of the traditional Northern Paiute territory, more specifically within the *Kamōtikado* (Rabbit-Eaters) traditional territory. The project area is also located near the territorial boundary between the Northern Paiute and the Pit River.
(Hammawi band). The Kamötikado most likely passed through Tuledad Canyon during their seasonal round (Rucks & Tiley 2011) and the valley could potentially have been a trade route used by different Native American groups.

Historically, this area has been used for sheep and cattle grazing by Euro-Americans and the most common historic archaeological sites are related to early homesteading and livestock grazing. The 1877 General Land Office (GLO) survey map is the earliest known historical document for the area. A portion of the project area is located north and south of Tuledad Road. This road is mapped on the 1877 GLO Survey map as the “Susanville and Surprise Valley Road.” Subsequent GLO survey maps (Alturas Sheets) mapped the road as the “Tuledad Cañon” (1886) and “Tuledad Canyon” (1882). No other roads or homesteads are marked on the maps. Before the road through Cedar Pass was built in 1865, the Tuledad Road was one of the primary historic routes used to reach Surprise Valley from the south. After the Nevada-California-Oregon Railroad was constructed through the Madeline Plains in the early 1900s, the road also served as a main route to move livestock to the railroad.

The GLO records indicate that lands near or on the project area were patented to several people as early as 1890. Land within the project area was patented to the Heirs of Joseph T. Greer in 1898. This ranch is known on the USGS topographic 7.5 minute maps as the “Marr Ranch.” After their father passed away in 1923, the four Marr brothers (James, Harry, Bruce, and Thomas) continued the family horse ranch. The Marr brothers were based in Ravendale, California and had many holdings located on the Madeline Plains (west of the project area). They raised saddle stock and light draft horses which they sold to dude ranches, riding academies, farms, rodeos, and the US military. By 1940 they were one of the largest horse ranches left in the country (Nevada State Journal 1940).

A cultural resource inventory of the project area was conducted during the summer of 2014. Fifteen archaeological sites were identified during the survey including prehistoric (Native American) lithic scatters (the remnants of stone tool production), three rock art sites, one possible prehistoric habitation site, prehistoric rock stacks, an historic homestead/ranch, an historic rock stack, arbolglyphs (carvings in aspen trees), and two historic roads. The oldest sites had diagnostic artifacts dating to the Post Mazama period (7000-5000 Before Present). However the majority of the prehistoric sites dated to the Archaic period (5000-600 BP). A portion of the “Old Marr Ranch” was recorded as well as an historic road that leads to the Marr Ranch. Portions of the original Tuledad Road were also identified during the survey. The historic rock stack is probably related to sheep herding that began in the area during the late 1800s.

Although none of the cultural resource sites have been formally evaluated for their eligibility to the National Register of Historic Places (NRHP), seven of the 15 sites appear to have elements which qualify them as eligible to the NRHP under criterion A (sites associated with significant events in American history or broad pattern in American history), criterion B (sites associated with the lives of persons significant in the past), and/or criterion D (the site contains information that would contribute to the understanding of human history or prehistory). Three sites have not been evaluated for the NRHP due to
insufficient information.

**Direct and Indirect Impacts of the Proposed Action**

Under the Proposed Action the types of cultural resource sites found within the project area have the potential to be impacted, both beneficially and non-beneficially, by all treatment methods. The majority of the treatment methods, such as mechanical harvesting and prescribed burning, have been analyzed through the Surprise Field Office Proposed Resource Management Plan and Final Environmental Impact Statement (SFO PRMP EIS) and the Sage Steppe Ecosystem Restoration Strategy, Final Environmental Impact Statement (SSERS FEIS). The SSERS FEIS (Sec. 4.8.3.1, p. 335) concluded that it was highly likely that cultural resource sites would be protected for all of the alternatives in the EIS, with the implementation of specific guidelines for protection, which would be in compliance with the National Historic Preservation Act (NHPA). In addition, Programmatic Agreements with the California and Nevada State Historic Preservation Officer (CA SHPO and NV SHPO, respectively) and Native Americans groups within the Analysis Area were reviewed for their potential for modification and use for the SSERS FEIS. As a result of this review, the BLM California State Office, the Northeastern California Field Offices, and both the CA SHPO and NV SHPO identified a need to develop guidance which would establish a system of evaluation and approval allowing for restoration of the sage steppe ecosystem while preserving cultural values. Consequently, Supplemental Procedures for Sage Steppe Ecosystem Restoration, a Cultural Resources Amendment to the State Protocol Agreement among California BLM and the CA SHPO and the NV SHPO was developed. The management of cultural resources for the Tuleledad project would be guided by the Supplemental Procedures (SP). The Analysis of the Proposed Action follows.

As discussed in the SSERS FEIS (Sec. 4.8.3.3.2, p. 336-337) cultural resources are particularly vulnerable to damage or destruction if heavy equipment disturbs the surface soil layers within which cultural resources are found. The most direct effect of mechanical treatments would be crushing and breaking of surface artifacts, however similar effects could also occur to subsurface deposits as a result of surface compaction. Dispersion and mixing of cultural soils, in addition to the destruction of features, could occur as a result of skidding operations and maneuvering of equipment. Areas directly trafficked by machinery would likely sustain the most damage.

Mechanical harvesting is being proposed in one treatment area, Upper Tuleledad. A number of cultural resource sites are located within these units, six of which appear to be eligible for the NRHP. As per the Supplemental Procedures, site specific prescriptions including, but not limited to, avoidance and requiring certain ground conditions, would be developed for treatment units containing cultural resources in which mechanical harvesting would be allowed. The harvesting in these units would be actively monitored by the cultural resource staff to identify the success of the prescriptions. Application of the mitigation measures would protect cultural resources from impacts associated with mechanical harvesting.
The creation of temporary roads to facilitate the removal of juniper could also damage the integrity of cultural resource sites by displacing and breaking surface artifacts, and destroying sub-surface archaeological information. Temporary roads would avoid cultural resource sites, as set forth in the Standard Resource Protection Measures (SRMP) contained within this document.

Prescribed fire presents a number of risks to cultural resources found within the project area. These risks include direct damage to cultural resources from the fire, fires that get out of control and increase in intensity, and damage from starting, managing, and suppressing fires. Artifacts associated with the historic sites, such as wooden structures, and glass and metal artifacts may be damaged or completely destroyed by fire (SSERS FEIS, Sec. 4.8.3.3.1, p. 336). In addition, extreme heat can damage stone tools and lithic debris on or near the site’s surface. Rock art can be damaged both indirectly and directly from fire. Certain rock types are subject to spalling from heat; smoke and soot can deteriorate rock art. Fires also expose sites to increased visibility and illegal collection of artifacts (SFO PRMP FEIS, Sec. 4.2.4, pp. 4-9). The prehistoric sites located in areas of heavy fuel would be at most risk. Sites located in areas of fine flashy fuels would be at less risk of exposure to intensive heat over a long duration of time. The piling and burning of slash material from juniper harvesting has the potential to damage fragile artifacts and features due to heavy fuel loading if the piles are placed within sensitive resource areas. Regarding prescribed fire in aspen stands, the transfer of heat through conduction (i.e. direct contact with the fire) or radiation (i.e. being near the fire) can damage or kill the main stem of the aspen tree and could negatively impacts aspen trees with arbolglyphs.

Under the proper prescriptions, prescribed fire could benefit cultural resource sites by reducing fuel densities within cultural resources sites that are located in areas dominated by homogenous stands of sagebrush and/or dense juniper. Returning these sagebrush and/or juniper dominated areas to their historic native perennial forbs and grass composition could reduce the potential for catastrophic wildfire.

Prescribed fire is being proposed in one treatment area, Upper Tuledad Aspen. This unit contains cultural resources sites, one of which appears to be eligible for the NRHP. Use of prescribed fire in this unit has the potential to affect cultural resources in a positive or negative manner as described above. As per the SRMP close coordination with the SFO resource staff would be needed when establishing Resource Objectives for the Burn Plan. Prescriptions would be designed to mitigate potential impacts to cultural resources.

The use of hand treatment to reduce juniper is least disturbing to cultural resource sites. However, in cultural resource sites containing features, felled juniper could displace or damage site features, compromising spatial integrity. Leaving cut juniper on-site, changes the fuel arrangement from vertical to horizontal, potentially providing more surface fuels during a wildfire or a human caused fire. Higher temperatures with longer durations are associated with downed juniper through the first five years while the needles still remain on the downed trees. After the needles have fallen, the heat intensity and duration are considerably reduced. Cultural resource sites in which cut and run techniques have been used are at higher risk from heat damage from one to five years after the junipers have been dropped.
Removal of juniper from historic features or cultural sites containing rock art can protect them from fire damage in the event of fire. Lop and scatter methods used in areas where there is little or no understory vegetation could benefit cultural resource sites by protecting soil from further trampling and erosion from cattle. In addition, the soil protection could provide a suitable environment for the re-establishment of perennial forbs and grasses reducing erosion problems within cultural resource sites.

Hand treatments are being proposed in both project units. These types of treatments are usually the preferred method of treatment in sensitive cultural resource areas. However, hand treatments could also affect cultural resource sites as described above. Cultural resources subject to impacts from hand treatments would be flagged for avoidance.

Types of indirect impacts that could occur to cultural resources from the Proposed Actions are as follows: Juniper trees are often used by cattle for shade. Overall reduction or complete removal of juniper in cultural sites reduces or eliminates the ability of cattle to use the area for shade; thereby reducing or eliminating cattle impacts within the cultural sites.

The SFO PRMP FEIS (Sec. 4.2.4, p.4-11) provides specific guidance for woodcutting in juniper treatment areas. Woodcutting that would target locations with invasive Western juniper to aid in fuel reduction would be subject to mitigation. Woodcutting would avoid cultural resource sites or mitigate impacts as required. For this project cultural resource sites would be excluded from public wood cutting; the procedures are provided in the SRMP.

A residual impact may occur from flagging sites for mitigation and signing cultural resource sites to exclude from wood cutting. These two measures may draw attention to cultural resource sites and make them vulnerable to looting or illegal surface collection. These areas would receive priority monitoring as presented in the SRMP.

**Cumulative Impacts of the Proposed Action**

The scale of analysis of cumulative effects is limited to the Tuledad grazing allotment. Cumulative effects under current management from actions or activities by agencies or entities other than BLM could affect cultural resources. Not all of the Tuledad Allotment has been inventoried for cultural resources. It is difficult to determine whether more significant cultural resources exist and whether similar resources exist on lands next to BLM-administered land. Ground-disturbing activities and activities and actions that alter settings on adjacent government or private lands might affect the significance of potentially eligible cultural resources. Cumulative loss of significant resources might affect the eligibility of resources for listing on the NRHP.

Grazing by livestock and wild horses has probably affected a larger number of sites than is documented. Looting sometimes occurs but inadvertent actions from recreation, rock hounding, wood cutting, and other off-road activities affect cultural resources as well. Juniper removal projects on adjacent private property and conversion of sagebrush habitats to agricultural use on adjacent private lands also affect cultural resources resulting in similar cumulative effects.
Type II Wind Energy Applications have been processed for lands within the Tuleadad Fuels project area and the surrounding area. The area of disturbance for Type II Wind Energy applications is small and cultural sites may be avoided. Recreational use is expected to increase and these activities sometimes coincide with sensitive cultural resources causing displacement and mixed deposits of prehistoric/historic and modern debris.

The Proposed Action could contribute to cumulative impacts to cultural resources. However, implementation of the proposed mitigation measures would reduce or eliminate these effects. Therefore, the proposed action and mitigation measures, when combined with impacts from other sources, would not contribute to any measurable effects to cultural resources.

**Direct and Indirect Impacts of the No Action Alternative**

Under the No Action Alternative vegetation treatments would not occur in the treatment areas. This would result in both positive and negative impacts to cultural resources. Treatment methods which could damage cultural resources as described under the Proposed Action would not occur, which would benefit the resource. However, removal of heavy fuel from cultural resource sites through juniper harvesting and prescribed burning would also not occur under this alternative, which could affect cultural resources in the event of a natural or human caused fire. BLM fire history information indicates that there have been seven naturally caused wildfires within the project area in the past 50 years. Therefore, it is expected that the area would be subjected to wildfire in the future. High intensity fires have the ability to damage and/or destroy both historic and prehistoric archaeological sites. The use of heavy equipment for fire suppression activities have the potential to impact cultural sites by displacing surface artifacts and destroying site integrity. Hand lines can also impact cultural resources sites by disturbing surface artifacts and damaging archaeological features.

Also under this alternative, indirect impacts to cultural resource could continue to occur in areas where cattle continue to use juniper for shade, within cultural sites. Prescribed burning which removes vegetation from cultural sites and make them more vulnerable to relic collectors would not occur under this alternative. In addition, flag and avoid procedures which can attract attention to cultural resources would not occur under this alternative, which would benefit the resource.

**Cumulative Impacts of the No Action Alternative**

Cumulative effects under current management from actions or activities by agencies or entities other than BLM could affect cultural resources. Not all of the Tuleadad Allotment has been inventoried for cultural resources. It is difficult to determine whether more significant cultural resources exist and whether similar resources exist on lands next to BLM-administered land. Ground-disturbing activities and activities and actions that alter settings on adjacent government or private lands might affect the significance of potentially eligible cultural resources. Cumulative loss of significant resources might affect the eligibility of resources for listing on the NRHP.
Grazing by livestock and wild horses has probably affected a larger number of sites than is documented. Looting sometimes occurs but inadvertent actions from recreation, rock hounding, wood cutting, and other off-road activities affect cultural resources as well. Juniper removal projects on adjacent private property and conversion of sagebrush habitats to agricultural use on adjacent private lands also affect cultural resources resulting in similar cumulative effects.

Type II Wind Energy Applications have been processed for lands within the Tuleadad Fuels project area and the surrounding area. The area of disturbance for Type II Wind Energy applications is small and cultural sites may be avoided. Recreational use is expected to increase and these activities sometimes coincide with sensitive cultural resources causing displacement and mixed deposits of prehistoric/historic and modern debris.

The No Action alternative could result in impacts to cultural resources due to the threat of increased fuels and catastrophic wildfire. However, cumulative effects to cultural resources are not expected to be significant under this alternative.

3.4 Fire and Hazardous Fuels

Affected Environment

The project lies within the Surprise Field Office Fire Management area currently designated as “Full Suppression”, meaning all fires would be actively suppressed until controlled. This repeated action over the last century has allowed vegetation to grow unchecked to levels where conventional means of firefighting may not be adequate to suppress future wildfires. This could result in larger, more damaging fires which are more costly and require more resources to suppress and rehabilitate. During high to extreme burning conditions, catastrophic wildfire may result. The potential exists for wildfire to encroach on private landholdings within the project area.

Fire Suppression activities continue within the project boundary using Appropriate Management Response (AMR) which includes full suppression strategies. This action is supported and explained in The FEIS, RMP (2007), Chapter 2, Section 2.4, Page 2-16 through 2-23.

Fire Regime Condition Class (FRCC) is a standardized tool that was developed for determining the degree of departure from reference condition vegetation, fuels and disturbance regimes (Hann et al, 2004). A natural fire regime is a general classification of the role fire would play across a landscape in the absence of modern human intervention, but including the influence of aboriginal burning (Hann et al., 2004). Assessing FRCC can help guide management objectives and set priorities for treatments. Coarse scale definitions for natural (historical) fire regimes have been developed, mapped and interpreted for fire and fuels management. Five natural (historical) fire regimes have been classified based on average number of years between fires combined with the severity of the fire on the dominant overstory vegetation. They are:

• I- 0 to 35 year frequency and low severity fires
• II- 0 to 35 year frequency and high severity fires
A fire regime condition classification is the amount of departure from the natural regime. Coarse scale FRCCs have been developed and defined. They include three condition classes for each fire regime group. The classification is based on a relative measure describing the degree of departure from the historical natural fire regime. This departure results in changes to one or more of the following ecological components: vegetation characteristics (species composition, structural stages, stand age, canopy closure, and mosaic pattern); fuel composition; fire frequency, severity, and pattern; and other associated disturbances (e.g. insects and disease mortality, grazing, and drought). The three classes are based on low (0-33% departure; FRCC1), moderate (34-66% departure; FRCC2), and high (67-100% departure; FRCC3) departure from central tendency of the natural (historical) regime. Low departure is considered to be within the natural (historical) range of variability, while moderate and high departures are outside the range of variability. The FRCC rating is accompanied by a series of indicators of the potential risks that may result from the changes to the associated ecological components when disturbance is applied. Reference descriptions for a typical FRCC1 community have been developed for most major vegetation types. Reference conditions are compared to actual conditions for purposes of determining current FRCC classes.

The Healthy Forest Restoration Act, (HFRA), directs public land management agencies to prioritize hazardous fuels reduction treatments near wildland urban interface areas that are within FRCC3 or within Fire Regime Groups I, II, and III and within FRCC2. Vegetation data has been collected and analyzed, and an FRCC analysis has been completed for the proposed project area (See Appendix 1). Treatment areas would be prioritized to address first, those areas where condition class has not declined below a rating of three.

**Direct and Indirect Impacts of the Proposed Action**

The Proposed Action would increase the opportunities for direct attack methods during wildland fire suppression at a cost commensurate with resource value. Direct attack methods would help keep fires smaller and reduce fire intensity. Smaller less intense fires would be easier to control resulting in shorter duration incidents. The reduction in fuel loading would increase firefighter safety during suppression actions. Lower intensity fires would allow fire suppression resources increased ability to protect private lands and would allow for increased time to evacuate and provide for public safety.

The Proposed Action would decrease the fuel loads and reduce fireline intensities in the proposed treatment blocks. This could increase the ability for fire suppression resources to suppress wildfire in and around private property that exist within the project area.

**Cumulative Impacts of the Proposed Action**

Future wildfires in the treatment area would be less intense with low severity increasing firefighter and public safety. The Proposed Action would decrease the fuel loads in the area, reducing fireline intensities and increase the ability to suppress wildfire in and around
private property that exist within the project area.

**Direct and Indirect Impacts of the No Action Alternative**

Under the No Action alternative fuel loading would continue to increase into the future. Given the current fuel loading, wildfire has the potential to start on BLM land and encroach onto private landholdings within the project area. Given historic wind and burning patterns around the project area the potential exists for wildfire to spread to the East impacting the town of Eagleville and private lands dispersed throughout the project area.

Under this alternative, during an active wildfire, conventional direct attack methods would not be sufficient to suppress wildfires due to increased fireline intensities and difficulty accessing the fire as a result of Juniper density. Under extreme burning conditions, there is an increased risk of injury to firefighters and public. Local ranches and improvements are also at risk during wildland fires occurring within the project area.

**Cumulative Impacts of the No Action Alternative**

The Cumulative Assessment Area is the Tuledad and Selic-Alaska Allotments. Reduction of some biomass through grazing and fuel wood cutting has and would continue however, overall fuel loading would continue to increase. It is expected that wildfires occurring in the future would become more difficult to suppress and would pose more of a threat to private property due to an increase in biomass (fuel).

3.5 **Fuel Wood Utilization**

**Affected Environment**

The project lies within an active fuelwood cutting area managed by Surprise Field Office. The majority of the fuel wood that is harvested is Western juniper within existing project boundaries. Fuelwood cutting would continue within the proposed action boundaries except in areas where sensitive biological and cultural resources exist. Areas where wood cutting is not allowed would be signed and posted.

**Direct and Indirect Impacts of the Proposed Action**

Under the Proposed Action, impacts are expected to be minimal to the harvest of commercial products within the project area. By reducing the overall fuel loading within the area, there is a reduced chance of a large, uncontrolled wildfire occurring and destroying large tracts of land within and adjacent to the project area which could remove large acreages of trees and other vegetation. Areas immediately adjacent to and within the general project area would remain available for the harvest of commercial products. Under the Proposed Action tree availability would be reduced within the immediate project area.

**Cumulative Impacts of the Proposed Action**

The Cumulative Assessment Area for Fuel Wood Utilization is the Tueldad and Selic-Alaska Allotments. A reduction in the overall fuel loading within the proposed project area
would reduce the possibility of a large, uncontrolled wildfire occurring and destroying large tracts of land within and adjacent to the project area which could remove large acreages of trees and other vegetation. Implementation of the Proposed Action, combined with any past, present or future treatments is not expected to result in any cumulative impacts to the harvest of commercial products.

**Direct, Indirect and Cumulative Impacts of the No Action Alternative**

Under the No Action Alternative, the potential for a large, uncontrolled wildfire would increase which could result in large acreages of trees and other vegetation being removed within the project area, areas immediately adjacent to the project area and other areas within the South Warner Mountain Range.

### 3.6 Global Climate Change

**Affected Environment**

Climate change may result from: natural processes, such as changes in the sun's intensity; natural processes within the climate system (e.g. changes in ocean circulation); human activities that change the atmosphere's composition (e.g. burning fossil fuels) and the land surface (e.g. urbanization) (IPCC, 2007). Rising greenhouse gas (GHG) levels are likely contributing to global climate change. In the project area, climate change is typically expected to result in warmer, drier conditions and potentially more extreme weather events. Natural processes such as volcanic eruptions contribute to the increasing levels of GHGs in the atmosphere. Human activities related to the proposed action, livestock grazing, and wildfires also contribute GHGs in the form of methane and Carbon dioxide.

The assessment of GHG emissions and climate change remains in a formative phase. The lack of scientific models designed to predict and quantify climate change on regional or local scales limits the ability to assess potential future effects of projects.

**Direct, Indirect and Cumulative Effects of the Proposed Action**

Implementation of the Proposed Action may have the potential to result in an increase in GHGs. Neither MCAPCD nor Washoe County has set specific quantitative criteria for determining the significance of effects resulting from individual project GHG emissions. Due to the global nature of GHG emissions, California has undertaken statewide efforts to reduce these emissions. Many state actions are transportation related, specifically efforts to reduce vehicle miles traveled, improve vehicle gas mileage, and improve gasoline formulations. State and local initiatives are also addressing vehicle miles traveled by encouraging “smart growth” development, specifically encouraging mixed-use development that places goods, services, and facilities such as schools and recreational facilities closer to residential uses. Additional State and local actions focus on reducing energy use by improving building codes.

The Proposed Action consists of Phase I, II and III juniper treatments where vegetation would be manipulated and treated using hand treatment, mechanical and pile burning. GHG’s would be emitted from crews using chainsaws, large equipment to cut and skid trees, and from vehicles commuting to and from the work site over the ten year life of the EA. In comparison to the extent and amount of gas emission at a global scale that is
resulting in increased global temperatures, emissions that would contribute to GHG and global warming is considered negligible. More GHG’s would be released as a result of prescribed burning in the short term however the resulting decreased fuel loading following prescribed burning would reduce overall emissions in the event of a future wildfire; therefore overall emissions over decades would be similar to hand and mechanical treatments. The scale of prescribed fire treatments in relation to the global scale that is resulting in increased global temperatures that would contribute to GHG and global warming is considered negligible.

**Cumulative Effects of the Proposed Action**
The Cumulative Assessment Area for Global Climate is Modoc and Washoe counties. Past, present and future foreseeable effects include hand and mechanical vegetative treatments, prescribed fire, continued livestock grazing, wild horse grazing, recreational use, off-highway vehicle use, range management throughout the CAA, as well as construction of the Ruby Pipeline Project. It is not anticipated that hand vegetative treatments, ongoing livestock grazing, wild horse grazing, recreational uses, or range management activities would result in or contribute to cumulative effects related to greenhouse gas emissions. Construction of the Ruby Pipeline Project was completed summer 2011. The operation of heavy equipment associated with pipeline excavation and construction activities may have resulted in negligible contributions to greenhouse gas emission within the CAA. Implementation of mechanical vegetative treatments and off-highway vehicle use would result in negligible contributions to greenhouse gas emissions.

While the Proposed Action may involve future contribution of GHGs, emissions related to prescribed fire treatments as analyzed above, these contributions would not substantially affect, independently or cumulatively, a phenomenon occurring at a global scale believed to be related to more than a century of human activities. Potential effects related to implementation of the Proposed Action are therefore considered negligible.

**Direct, Indirect and Cumulative Effects of the No Action Alternative**
The No Action Alternative would result in no GHG emissions as a result of hand, mechanical or prescribed fire treatments of juniper in the short term due to no juniper projects occurring. This would have a slight positive impact related to GHG emissions. In the long term, under the No Action Alternative, during an active wildfire, conventional direct attack methods may not be sufficient to suppress wildfires due to fuel loading and increased fireline intensities. Large-scale, high intensity wildfires would have the potential to result in increased and concentrated carbon dioxide emissions. These emissions would not be planned to occur within the constraints of existing regulatory requirements pertaining to air quality emissions and may coincide with other land use and management activities within the CAA also resulting in emission releases, and would therefore contribute to direct effects related to GHG emissions. In the long term, overall emissions would be expected to be higher than the proposed action due to long term increases in fuel loading that would result in increased emissions when wildfires occur.

**Cumulative Effects of the No Action Alternative**
Past, present and future foreseeable effects include hand and mechanical vegetative treatments, prescribed fire, continued livestock grazing, wild horse grazing, recreational
use, off-highway vehicle use, range management throughout the CAA, as well as construction of the Ruby Pipeline Project. It is not anticipated that these actions would result in major contributions of GHG emissions. Cumulative effects related to the No Action Alternative are considered negligible.

### 3.7 Livestock Grazing

**Affected Environment**
The Upper Tuledad V project area lies within the Tuledad grazing allotment. This 138,648 acre allotment is divided into two large pastures – the North Pasture, which generally is north of Tuledad Canyon, and the South Pasture. Each pasture has several use areas for livestock management purposes. There are seven grazing permittees who are authorized to utilize up to 9,591 Animal Unit Months (AUMs) during a six-month season of use (April 1 to September 30). Approximately 3/4 of the AUMs are permitted to cattle, and remainder is permitted to sheep grazing. Sheep use the allotment primarily for lambing, spring grazing and for fall trailing use. Cattle are rotated through nine use areas within the two pastures. The period of grazing for each use area varies annually, and is dependent on the resource objectives.

The Tuledad Aspen project lies within the Selic-Alaska grazing allotment. This 9,641 acre allotment is a sheep only grazing allotment with two permits which are currently under one operator. There are two pastures in this allotment however, sheep are herded across the allotment with aid of a sheepherder.

Rest requirements will be achieved by livestock placement and pasture rotations for the Upper Tuledad Allotment with the cutting being implemented when the North Pasture is scheduled to be rested. Rest will be achieved in the Selic-Alaska allotment by use of a sheepherder to keep sheep out of the project area until aspen are above hedge height.

**Direct and Indirect Impacts of the Proposed Action**
Mechanical and hand cutting treatments would affect the permittee grazing operations by changing pasture and use area management schedules that are necessary to meet livestock grazing closures requirements on treatment areas. Grazing closures would be accomplished by pasture rotations, increased riding and herding by the permittees. Cattle would not be turned out near a treatment area; and sheep are under control of a herder. This provision requires greater compliance and coordination from the BLM and permittees.

Prescribed burns in general would have greater impacts to permittee grazing operations than other treatment methods. For the purposes of rest requirements, prescribed burning is considered broadcast burning and not pile burning. Prescribed burning is proposed on the Tuledad Aspen project. Prescribed fire would require a year of rest prior to the burn and a minimum of two growing seasons of rest from grazing following burning. Changes to the pasture and use area schedules and management would not be adequate to meet livestock grazing closures requirements on treatment areas. In addition, cattle (and wild horses) are normally attracted to the new vegetation in burned areas. Therefore, riding and herding by the permittees would need to occur several times a week. This would result in increased time and effort on the part of the permittees to comply with the rest requirements.
Cumulative Impacts of the Proposed Action
The Cumulative Assessment Area is the Tuledad and Selic-Alaska Allotments. Past actions within the proposed project area have impacted livestock grazing by reducing livestock numbers. Livestock grazing in the region has evolved and changed considerably since it began in the 1870's and is one factor that has created the current environment. At the turn of the century, large herds of livestock grazed on unreserved public domain in uncontrolled open range. Eventually, the range was stocked beyond its capacity, causing changes in plant, soil and water relationships. Some speculate that that vegetation changes were permanent and irreversible; turning plant communities from grasses and other herbaceous species to shrubs and trees. Protective vegetative cover was reduced, and more runoff brought erosion, rills and gullies. In response to these problems, livestock grazing reform began in 1934 with the passage of the Taylor Grazing Act. Subsequent laws, regulations and policy changes have resulted in adjustments in livestock numbers, season of use and other management actions.

The proper management of livestock grazing is one of many important factors in ensuring the protection of Public Land resources. Present actions combined with reasonably foreseeable future treatments could mitigate impacts to vegetation, soils and water relationships by improving the health, vigor and recruitment of perennial grasses, forbs and shrubs; increasing ground cover to improve soil stability, reduce erosion potential and improving water quality; and increasing the quantity and quality of forage for livestock use which would promote herd health and economic stability. In the short term, impacts to permittee grazing operations is based on management changes to the pasture and use area schedules to meet livestock grazing closures requirements on treatment areas. Grazing closures would be accomplished by increased riding and herding by the permittee. Cattle would not be turned out near a treatment area; and sheep are under control of a herder. This provision requires due diligence on the part of BLM and the permittees.

The immediate impacts of increased forage availability as result of the proposed action could be substantial on the treatment area however, on an allotment basis the forage increase would be inconsequential, given the relatively small acreages of the treatments (less than 2% of the allotment’s acreage). In the long term, improvements in the forage base for the allotment under the no action alternative are expected.

Direct and Indirect Impacts of the No Action Alternative
Under the No Action Alternative, overall livestock performance and economic stability of the permittees is expected to decline due to a reduction in the quantity and quality of grasses and other herbaceous forage which are important to sheep and other grazing animals. With a reduction in the production and vigor of herbaceous plant communities, it is likely that the forage base would not adequately support the existing herd sizes and would adversely affect livestock performance (e.g. decreased cattle weights, decreased calving crops, decreased weaning weights, etc.). In the short term, there would be no rest requirements thus additional herding and moving of livestock would not be required under the No Action Alternative.
Cumulative Impacts of the No Action Alternative
Impacts to permittee grazing schedules would remain the same as the current situation. Livestock use would not occur due to the difficulty in grazing and herding in the dense tree canopy. In the long term, forage availability would continue to decrease for livestock, wildlife and wild horses as Western juniper replaces herbaceous vegetation. The Tuleidad and Selic-Alaska allotments support a traditional and historical lifestyle for the permittees that live within the Surprise Valley area. Federal grazing permits are an essential part of their overall ranch operation, and consequently the local economy. Some permittees in Surprise Valley could not maintain a successful livestock operation without the availability of forage from federal grazing permits because they lack access to forage on private lands and the cost of leasing private land is not feasible. Overall, the cumulative effects are expected to be slight.

3.8 Native American Religious Concerns

Affected Environment
The BLM Surprise Field Office formally consulted with the Fort Bidwell Tribe, Summit Lake Tribe, and Cedarville Rancheria regarding this project beginning in 2013 and continued through 2014. Consultation was conducted with the Cedarville Rancheria on February 14, 2014 and June 17, 2014. Consultation was conducted with the Fort Bidwell Tribal Council on December 14, 2013, March 8, 2014 and on August 9, 2014. Consultation was conducted with the Summit Lake Tribe on January 18, 2014, April 12, 2014, and on July 19, 2014. At no time were concerns, including religious concerns, regarding the project expressed to the BLM; however a tribal elder from the Fort Bidwell tribe commented that juniper had been used in ceremonies.

Direct and Indirect Impacts of the Proposed Action
There would be no direct or indirect impacts from the Proposed Action as no Native American Religious Concerns have been identified.

Cumulative Impacts of the Proposed Action
No cumulative impacts from the Proposed Action are expected to occur as no Native American Religious Concerns have been identified. While juniper is being removed across the Surprise Field Office, there are currently large, easily accessible stands of juniper near towns in the Surprise Valley, including Cedarville, CA and Fort Bidwell, CA.

Direct and Indirect Impacts of the No Action Alternative
There would be no direct or indirect impacts from the No Action as no Native American Religious Concerns have been identified.

Cumulative Impacts of the No Action Alternative
No cumulative impacts from the No Action are expected to occur as no Native American Religious Concerns have been identified.
3.9 Noxious Weed Species

Affected Environment
The BLM defines a weed as a non-native plant that disrupts or has the potential to disrupt or alter the natural ecosystem function, composition and diversity of the site it occupies. A weeds presence deteriorates the health of the site, it makes efficient use of natural resources difficult, and it may interfere with management objectives for that site. It is an invasive species that requires a concerted effort (manpower and resources) to remove from its current location, if it can be removed at all. “Noxious” weeds refer to those plant species which have been legally designated as unwanted or undesirable. This includes national, state and county or local designations.

The Tuledad Project Area was surveyed for weeds in April, 2014. Known noxious weeds within the project area include:

- *Cirsium vulgare* Bull Thistle
- *Lepidium draba* Hoary cress
- *Bromus tectorum* Cheatgrass
- *Taeniatherum caput-medusae* Medusahead
- *Salsola kali* Russian thistle

Extensive noxious weed populations are mostly not apparent within the proposed treatment areas, with only minor infestations that are generally associated with access roads through the project site. There were two observed populations of Bull Thistle in the Upper Tuledad Project Area, and none in the Tuledad Aspen Project Area, as of April, 2014.

Direct and Indirect Impacts of the Proposed Action
Under the Proposed Action, noxious and non-native invasive weeds could become established within the project area due to mechanized machinery associated with mechanical treatments and prescribed burning. In areas where perennial grasses and forbs are absent, cheatgrass could be expected to increase prior to desirable, perennial grasses, forbs and shrubs becoming established. Also, many thistle species are progressive during wet spring seasons and could become established before desirable vegetation becomes established.

New species could be introduced to the area as a result of vehicles, heavy equipment and activities associated with the use of the vehicles and equipment. However, compliance with the Surprise Field Office Noxious Weed Prevention Schedule and the project SOP’s would reduce this risk. In most areas of the project sufficient, desirable, perennial understory vegetation exists and these desirable species should become established and out-compete any potential noxious weeds or invasive species. Overall, impacts as a result of noxious weed invasion and spread are expected to be slight.

Cumulative Impacts of the Proposed Action
The Cumulative Assessment Area for noxious weeds is the Tuledad and Selic-Alaska
Allotments. The possibility of future wildfire in the area is expected, as is additional fuels management activities. Following past wildfires, unforeseen situations have been discovered. Pre-existing, yet undetected stands of noxious weeds have been discovered and eradication or control actions have been initiated. This effect could be expected in the Tuledad area following proposed or future unplanned disturbances due to nearby detected infestations outside the proposed project area. With planned disturbances such as mechanical treatments or other treatment methods, opportunities for detecting additional noxious weed infestations prior to disturbance could occur. Implementing the proposed action would improve the ability of the vegetation community to compete with and prevent noxious weed and invasive species establishment through the development of a more vigorous, diverse and productive community. Completing additional treatments in patches over time would reduce the potential of invasions from noxious weeds or invasive species over a large area. The overall cumulative impacts from all past, present and future actions are expected to be minimal.

**Direct, Indirect and Cumulative Impacts of the No Action Alternative**

Under the No Action Alternative, noxious weeds may eventually increase into the targeted treatment area, particularly along traveled roads. Declining understory species in sagebrush and woodland sites would increase the risk of noxious weeds and invasive species establishment following a natural disturbance (e.g., wildfire) due to the lack of competition from desirable, perennial grasses and forbs. Increasing the density of woodlands would also increase the size and effect of a potential wildfire, which indirectly would provide large areas for noxious weeds and undesirable species to establish following a wildfire event. The overall cumulative impacts from all past, present and future actions related to the No Action Alternative are expected to be moderate.

### 3.10 Recreation

**Affected Environment**

The project area has a number of recreation opportunities including hunting, camping, hiking, horseback riding, scenic touring and mountain biking. Portions of the project area are visible from the Bare Creek Road, Tuledad Valley Road, and County Road 42.

**Direct and Indirect Impacts of Proposed Action**

The project would inflict short-term adverse effects and bring long-term benefits to recreation. Activities associated with the proposed action would result in temporary disturbance to the landscape during treatment, which may reduce the amount of hunting use in the treated areas the year following treatment. However, when the area becomes repopulated with stands of grasses, forbs and shrubs, more typical of the sagebrush steppe ecosystem, the treated area would support more upland game birds and deer; providing for more recreational hunting opportunities and improved wildlife viewing opportunities.

Visual quality, especially along Bare Creek and Tuledad Valley Roads would be degraded in the short term with the project being noticeable to the casual observer for approximately 15 years. However, in the long term the Proposed Action would improve visual quality of the area as juniper skeletons shrink to the ground and shrub densities and cover increase.
Cumulative Impacts of the Proposed Action
The Cumulative Assessment Area for recreation is the Tulead and Selic-Alaska Allotments. Recreation opportunities are affected by range management projects, prescribed fires, wildland and human caused fires, and juniper harvests. These types of projects can limit recreational opportunities temporarily. The long-term outcome of fires, juniper harvests, and some range management projects can be of benefit to recreation opportunities by improving wildlife habitat and visual resources. Under the Proposed Action, cumulative impacts to recreation would be moderate.

Direct and Indirect Impacts of the No Action Alternative
Under the No Action alternative the amount of wildlife habitat supporting upland game birds and deer would continue to be reduced by the increasing density of Western juniper. Therefore, quality recreational hunting opportunities would decline. Remaining recreational opportunities not associated with wildlife viewing or hunting would remain largely unaffected.

Cumulative Impacts of the No Action Alternative
Recreation opportunities are affected by range management projects, prescribed fires, wildland and human caused fires, and juniper harvests. These types of projects can limit recreational opportunities temporarily. Increasing Western juniper can also impact the quality of recreational hunting opportunities. Under the No Action alternative, cumulative impacts to recreational hunting would be moderate if Western juniper continues to increase. However, the cumulative impacts of this alternative would still be minor.

3.11 Riparian

Affected Environment
The Upper Tulead Valley project area is part of the Tulead Creek Watershed and contains two principle drainages, both of which are intermittent. Tulead Valley Creek runs directly through the project area from the west, and has seven tributaries within the project boundaries. The creek typically flows until July. Juniper encroachment is apparent at the edges of the drainages. Because the drainage does not carry water year-round, vegetation is limited to facultative riparian species (ex. Juncus) instead of obligate riparian species (ex. Carex). Post Canyon Creek is also present in the project area, running through the center of the site from the north for about one half-mile before joining Tulead Valley Creek.

Intermittent drainages have discernible channels that show evidence of annual deposition or scour, but do not carry flow year round. Sources of hydrology include both storm water runoff and groundwater discharges. Within intermittent drainages, topographic depressions within the channel may influence vegetation patterns. Intermittent drainages are often lightly vegetated due to seasonal rapid flow events and the resulting scouring of the channel, bed, and bank. Larger drainages, which are fed by springs and the resulting wet meadows upstream, also support hydrophytic vegetation community fringe, transitioning to the surrounding habitat community (ex. big sagebrush, low sagebrush, etc.).
There are two improved springs and three unimproved springs located within the Upper Tuledad Project Area. Plant communities at springs are often diverse and a number of different plant species can be present depending on factors including water quality, topography, gradient, and water flows. Plant communities surrounding springs within the project area are dominated by herbaceous species including *Carex, Juncus*, and *Agrostis*. In systems with higher gradients where a discernible channel develops, riparian shrubs and woody vegetation including *Ribes spp.* and *Salix spp.* make up a minor component of the plant community. The springs within the project area are currently being affected by livestock grazing and juniper encroachment which have combined to limit the extent of the wetted edge of the riparian area resulting in mechanical shearing and hummocking of hydric riparian soils from livestock.

The Tuledad Aspen Project Area is part of the Upper Red Rock Creek Watershed. No principle drainages or springs are located within the project boundaries.

**Direct and Indirect Impacts of Proposed Action**

Due to implementation of the SOPs for the project, impacts from harvesting equipment are not expected to negatively affect riparian areas. Juniper would be the only species removed along riparian areas. While some trees would be removed adjacent to riparian habitat, no mechanized equipment would be used within 250 feet of the wetted riparian edge thus soil impacts would be minimal. Impacts would be limited to slight soil compaction outside of the riparian zone and a slight increase in erosion due to cutting and removal of juniper which may result in increased sediment into the riparian areas. Increased sediment is expected to be beneficial to riparian zones as plants capture sediment and provide additional areas for plants to colonize. Benefits to riparian systems would include increases in available water and vegetation volume and density as a result of decreased competition with juniper. Riparian areas that have juniper removed may show increased amounts of soil moisture and therefore may produce more riparian vegetation. The water previously used by juniper will likely increase the water storage of the spring. In addition, the intermittent stream may experience a longer period of water flow during summer months.

Under the Proposed Action, water quality is expected to remain satisfactory or improve due to regeneration of aspen stands in the Aspen Tuledad Project Area. Healthy and robust aspen stands provide excellent protection to watersheds and excellent quality water. The nutrient-rich litter produced by aspen, the multilayered understory of shrubs and herbaceous species and the trees themselves provide nearly 100% soil cover while the network of roots effectively stabilizes the soil. Aspen stands develop humus-rich, porous soils with outstanding infiltration capacities. These factors combined virtually eliminate the chance of overland flows that produce erosion in turn, protecting the watershed and enhancing water quality (DeByle, and Winokur et al., 1985).

**Cumulative Impacts of the Proposed Action**

Past projects have been completed around riparian habitats. For the purposes of this project, the cumulative impacts will be assessed using the watersheds present in the project area. The Upper Tuledad Project Area lies within the Tuledad Creek watershed. The Tuledad...
Aspen Project Area is in the Red Rock Creek watershed. Activities that have been ongoing in recent years in these two watersheds are expected to have negligible cumulative effects on the proposed project. Cumulative effects to riparian areas are expected to impact wild horse populations, cattle grazing, spring development, fencing, invasive species (invasive thistles in particular), and riparian juniper encroachment. Impacts of the proposed action on riparian areas are expected to be positive, increasing obligate riparian species by thinning juniper stands and maintaining or slightly increasing the wetted edge of the riparian area.

**Direct and Indirect Impacts of the No Action Alternative**

Under the No Action Alternative, juniper would continue its encroachment on the intermittent drainage and springs, crowding out native species, reducing available water and reducing overall vegetation vigor and volume. In the long term, riparian wetted edge would continue to decline and riparian plant communities would transition from riparian obligate dominated systems to riparian facultative plant dominated systems.

Riparian vegetation such as sedges, rushes, grasses, and woody species are important for maintaining stream channel and floodplain integrity. The root systems of these plant species stabilize and protect streambanks from eroding during high flow events and help maintain and restore floodplain development and function. When riparian areas are dominated by juniper, high flow events have greater potential for erosion due to less complex vegetative communities and more bare ground soil. High erosion potential leads to bank instability and subsequent channel and floodplain degradation (Reid et. al., 1999).

Healthy aspen stands contribute to high water quality by reducing erosion and sediment deposition in steam flow. Under the No Action Alternative water quality of the Upper Red Rock Creek Watershed could decline due to reduced vigor of aspen stands.

**Cumulative Impacts of the No Action Alternative**

Disturbance of riparian areas and floodplains from livestock and wildhorse grazing would continue to occur throughout the project area. Grazing by livestock and wildhorses reduces grass biomass annually with direct impacts to floodplains from ungulate use. The risk of riparian and floodplain damage following a large-scale wildfire would increase as heavy fuel loading accumulates over time. Riparian vegetation that traps sediments and protects floodplains would be impacted by the encroachment of juniper. If left untreated, juniper woodland canopies would increase over time and risk of a catastrophic wildfire would increase. At a watershed scale, these effects would have moderate cumulative effects especially in the areas covered by the Sage Steppe Ecosystem Restoration Strategy FEIS.

### 3.12 Soils

**Affected Environment**

The soil classification for the Upper Tuledad and Tuledad Aspen Fuels Reduction and Habitat Restoration project area are contained within the Surprise Valley/Home Camp Soil Survey, CA #685/NV#617. The soil survey was updated in 2006 by the Natural Resources Conservation Service (NRCS) Reno State Office to meet current standards. The Surprise Field Office has a copy for review or is available on the NRCS web site (Soil Survey Staff, Natural Resources Conservation Service, and United States Department of Agriculture.)
The majority of the soils in the project area are found in the eight soil mapping units listed below. Landform positions located within the project area include north-south oriented mountains ranges and plateaus. Soils in the project area are volcanic in origin with parent material commonly derived from colluvium derived from volcanic rock and/or residuum weathered from volcanic rock. In general, the soils vary in depth from shallow to deep with deeper profiled soils being commonly found within mountain ranges. These soils tend to be very productive with typical ecological sites associated with these soils being ashy slope 30+ p.z., loamy 30+ p.z., south slope, loamy 8-10 p.z., and loamy 12-14 p.z. These ecological sites are comprised of big sagebrush overstory (Wyoming and or mountain) with a perennial grass understory comprised of Idaho fescue, needlegrass, bluebunch wheatgrass, poa, squirreltail, and Indian ricegrass. Shallow soils are commonly found on plateaus and tend to have heavier textured soils. Common ecological sites associated with these heavier textured soils are typically claypan 14-16 p.z. or gravelly claypan 10-12 p.z. These sites tend to be less productive with an overstory of low sagebrush (black, early, or lahontan) and antelope bitterbrush with an understory primarily composed of bluebunch wheatgrass, needlegrass, and poa. In addition, these sites support a variety of forbs. Soils in the project area are becoming increasingly vulnerable to surface erosion as understory vegetation beneath the canopies of Western juniper stands declines and more bare ground soil is exposed.

Biological soil crusts are complex communities of cyanobacteria, green algae, fungi, lichens and/or mosses which form synergistic relationships vital to dry semi-arid ecosystems such as the great basin region. Depending on composition, biological crusts influence ecosystem function by providing soil stability, fixing carbon and nitrogen, trapping moisture and providing protection for seeds of vascular plants (LeQuire, 2009). In the Snake River Plain, fire resulted in highly reduced diversity and richness of crust species therefore, reducing the chance of uncharacteristic wildfires would also reduce the probability of destroying critical soil crust communities. (Hilty, 2004) Invasive exotic plants generally decrease structural diversity of native vascular plant communities and often fill previously biologically crusted interspaces. This has resulted in less cover and lower species richness of soil crusts where annuals dominate (Rosentreter 1994; Kaltenecker 1997). There is strong evidence that biological soil crust species richness and cover are inversely related to Cheatgrass and positively related to perennial bunchgrasses (Ponzetti et. al., 2007). Managing juniper encroachment would restore diversity and abundance to perennial grass communities in turn, maintaining and establishing biological soil crusts communities.

Limited research exists on biological soil crust communities and identification of soil crusts is very difficult for landscape scale assessment making management difficult. While the BLM recognizes the importance of biological soil crust, we have focused our efforts on the stabilization of native perennial plant communities on a larger scale. As the native plant communities improve and stabilize there is opportunity for reestablishment and or maintenance of existing biological soil crust organisms.
Based on the Surprise Valley/Home Camp Soil Survey, the major soil mapping units in the Upper Tulead Project Area included in the following:

<table>
<thead>
<tr>
<th>Soil Mapping Unit #</th>
<th>Association</th>
<th>Soil Name</th>
<th>Slope %</th>
<th>% of Mapping Unit</th>
<th>Ecological Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>388</td>
<td>Dosie-Rubbleland</td>
<td>Dosie very gravelly loam</td>
<td>15 to 50</td>
<td>60</td>
<td>South Slope 12-16 P.Z.</td>
</tr>
<tr>
<td>442</td>
<td>Indian Creek – Buffaran</td>
<td>Indian creek very cobbly loam</td>
<td>4 to 15</td>
<td>50</td>
<td>Gravelly Claypan 10-12 P.Z.</td>
</tr>
<tr>
<td>476</td>
<td>Ninemile-Karlo-Crocan</td>
<td>Ninemile very cobbly loam</td>
<td>4 to 15</td>
<td>50</td>
<td>Claypan 14-16 P.Z.</td>
</tr>
<tr>
<td>480</td>
<td>Ninemile-Softscrabble-Crocan</td>
<td>Ninemile very cobbly loam</td>
<td>4 to 15</td>
<td>50</td>
<td>Claypan 14-16 P.Z.</td>
</tr>
<tr>
<td>505</td>
<td>Saraph-Chalco</td>
<td>Saraph very cobbly ashy sandy loam</td>
<td>4 to 15</td>
<td>50</td>
<td>Loamy 8-10 P.Z.</td>
</tr>
<tr>
<td>508</td>
<td>Softscrabble</td>
<td>Softscrabble very cobbly loam</td>
<td>4 to 15</td>
<td>85</td>
<td>Loamy 12-14 P.Z.</td>
</tr>
</tbody>
</table>

Based on the Surprise Valley/Home Camp Soil Survey, the major soil mapping units in the Tulead Aspen Project Area included in the following:

<table>
<thead>
<tr>
<th>Soil Mapping Unit #</th>
<th>Association</th>
<th>Soil Name</th>
<th>Slope %</th>
<th>% of Mapping Unit</th>
<th>Ecological Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>505</td>
<td>Paynepeak-Fendersflat</td>
<td>Paynepeak gravelly ashy loam</td>
<td>4 to 30</td>
<td>55</td>
<td>Loamy Slope 30+ P.Z.</td>
</tr>
<tr>
<td>505</td>
<td>Paynepeak-Fendersflat</td>
<td>Fendersflat gravelly ashy loam</td>
<td>15 to 50</td>
<td>30</td>
<td>Ashy Slope 30+ P.Z.</td>
</tr>
<tr>
<td>508</td>
<td>Paynepeak-Fendersflat-Pyropatti</td>
<td>Paynepeak gravelly ashy loam</td>
<td>4 to 30</td>
<td>60</td>
<td>Loamy Slope 30+ P.Z.</td>
</tr>
<tr>
<td>508</td>
<td>Paynepeak-Fendersflat-Pyropatti</td>
<td>Fendersflat gravelly ashy loam</td>
<td>15 to 50</td>
<td>15</td>
<td>Ashy Slope 30+ P.Z.</td>
</tr>
<tr>
<td>508</td>
<td>Paynepeak-Fendersflat-Pyropatti</td>
<td>Pyropatti gravelly ashy</td>
<td>4 to 30</td>
<td>10</td>
<td>Aspen Thicket</td>
</tr>
</tbody>
</table>
Direct and Indirect Impacts of Proposed Action
Hand cutting of juniper would have the least impacts to soil and trees being lopped and scattered would increase litter on the soil surface protecting soil crusts and reducing the potential for erosion.

Ground-based mechanized thinning treatments can result in localized compaction or displacement of soil along skidding routes and at the site of large piles. Despite the soil disturbance caused by the mechanized equipment, it is expected that there would not be any loss of soil productivity in the long-term due to the limited entries into the site and implementation of SOP’s to reduce impacts to soils.

Soil productivity impacted by prescribed fire would consist of broadcast burning and pile burning within the project boundaries. Burning would eliminate the above ground biomass and affect the organic layer of the soil profile. It is expected that there would be a temporary loss of soil productivity in these areas immediately following the burns. These burns would be managed for low intensity, allowing the majority of perennial grasses to survive the fire. It is expected that there would be sufficient re-growth within the burn areas to stabilize the soil and replenish the organic material within a few years of the burns. The scope, timing and effects of prescribed burning are further discussed in detail in Appendix 3: (Tuledad Standard Operating Procedures).

The proposed action would construct the minimal amount of landings needed to complete the project, taking that amount of land out of soil productivity for the life of the project. Landings and temporary skid trails would be rehabilitated bringing the soil in those areas back into productivity at the completion of the projects.

It is expected that long term soil productivity would increase in response to the removal of juniper and improvement of sage-steppe vegetative communities.

Cumulative Impacts of the Proposed Action
The Cumulative Assessment Area is the Tuledad and Selic-Alaska Allotments. There would be a short term loss of soil productivity within the project area due to project activities. After the project is completed, it is expected that there would be an increase in soil productivity due to a reduction in juniper and an increase in litter supplied by rejuvenated native sagebrush perennial grass communities. Overall, no negative cumulative impacts to soils are expected.

Direct and Indirect Impacts of the No Action Alternative
Under the no action alternative, there would be no additional compaction or displacement that would impact soil resources from the mechanical removal of juniper. The risk of soil damage and accelerated erosion following a large-scale wildfire would increase as fuel accumulates over time. Bare ground beneath juniper woodland canopies would increase over time and risk of surface erosion would increase.
Future soil productivity within the project area would decline with the increase of Western juniper densities and the associated loss of the native shrub/perennial grass production and litter. Soil surface layers (top soil) may degrade as nutrients, shrub and perennial grass cover is depleted. Light erosion from runoff may increase due to the long term reduction in shrub and grass cover.

**Cumulative Impacts of the No Action Alternative**

The risk of soil damage and accelerated erosion following a large-scale wildfire would increase as fuel accumulates over time. Bare ground beneath juniper woodland canopies would increase over time and risk of surface erosion would increase. At a watershed scale, these effects would have moderate cumulative impacts especially in the areas covered by the Sage Steppe Ecosystem Restoration Strategy FEIS.

### 3.13 Vegetation, including T&E Plant Species

**Affected Environment**

Vegetation inhabiting the project area is composed of sagebrush-grass associations distributed among ecologically distinct zones. Potential plant community compositions have been determined based on ecological factors that define a given area. Current vegetation monitoring data collected from the project area indicates that plant community dynamics are changing and diversity has declined. This can largely be attributed to the high density of juniper existing throughout the project area. The following sections describe the various plant associations that exist within the project area. Wildlife use of these plant communities are discussed in greater detail in Section 3.15.

**Big Sagebrush**

Big sagebrush (*Artemisia tridentata*) is the dominant shrub species. The primary big sagebrush varieties found in the project area are Mountain big sagebrush (*Artemisia tridentata ssp. vaseyana*) and Wyoming big sagebrush (*Artemisia tridentata ssp. wyomingensis*). Because big sagebrush species cannot resprout after wildfire and restoration efforts have been largely unsuccessful, reducing the likelihood of a catastrophic wildfire is critical to protect big sagebrush communities (Miller et al., 2013).

Mountain big sagebrush communities are found on moister sites at higher elevations where juniper encroachment is more prevalent. The largest portion of the Upper Tulead Project Area is comprised of a Mountain big sagebrush-Antelope bitterbrush (*Purtia tridentata*) association with bluebunch wheatgrass (*Pseudoroegnaria spicata*) being the dominant grass species. Where soil is less rocky and has a higher water holding capacity, basin wildrye (*Leymus cinereus*) is present. In the Upper Tulead Aspen Project Area where elevation ranges from 7000-7500 feet, and annual precipitation exceeds 15 inches annually, mountain big sagebrush cohabits with mountain brome and bottlebrush squirrel tail. Needlegrass species make up a minor component.

Wyoming big sagebrush occurs on drier sites with moderately deep soils occurring at
elevations up to 6,000 feet within the project area. These sites are less resilient than mountain big sagebrush sites and more susceptible to invasion by cheatgrass (*Bromus tectorum*) and other non-native species (Miller et al., 2013). Our data shows that cheatgrass is the dominant grass species on Wyoming big sagebrush sites which creates a greater potential for fast moving, high intensity fires. Wyoming big sagebrush forms associations with bluebunch wheatgrass in slightly higher precipitation zones and Thruber’s needlegrass (*Achnatherum thurberianum*) on drier sites. Bottlebrush squirreltail is a minor component. Sandberg’s bluegrass (*Poa secunda*) has replaced bluebunch wheatgrass and Thruber’s needlegrass in areas where heavy grazing has occurred.

**Low Sagebrush**

Low sagebrush grows on shallow soils, typically in the mountains on moister sites where juniper encroachment is more common. Communities can occur as inclusions or “islands” within big sagebrush communities, a habitat arrangement favored by sage grouse (Shultz, 2012). Low sagebrush is associated with Idaho fescue (*Festuca idahoensis*) and bluebunch wheatgrass. It occurs as inclusions within Wyoming big sagebrush sites throughout the project area.

**Other Shrubs**

Squawapple (*Periphyllum ramosissimum*) and Snowberry (*Symphoricarpos spp.*) are important minor components on sites supporting antelope bitterbrush and mountain big sagebrush associations. Curl-leaf mountain mahogany (*Cercocarpus ledifolius*) can be found inhabiting rocky slopes. Spiny hopsage (*Grayia spinosa*) is commonly associated with green rabbitbrush (*Chrysothamnus viscidiflorus*) and most commonly found on Wyoming big sagebrush sites. These shrubs will increase where heavy grazing has occurred. Mountain mahogany and spiny hopsage are intolerant of fire while rabbitbrush, snowberry and squawapple are more tolerant.

**Forbs**

At maximum potential, forbs make up approximately 10% of vegetative communities however, our data shows that forbs make up as little as 1% of vegetative composition in some areas. The most common forbs found within the Upper Tulead Project Area include arrowleaf balsamroot (*Balsamorhiza sagittata*), tapertip hawksbeard (*Crepis acuminata*), and several species of Lomatium, Phlox, Eriogonum and Lupine. Most Eriogonum and Phlox species have their growing crowns slightly below the soil surface making them intolerant to fire. The Tulead Aspen Project Area supports mules ear and wild onion.

**Invasive annual grass**

Although east and south facing slopes are most affected, Cheatgrass (*Bromus tectorum*) is widespread throughout the project area. Our data has shown that in some areas cheatgrass makes up the majority of foliar canopy cover. The combination of cheatgrass abundance with high fuel loading escalates the risk of a fast burning catastrophic fire event. A section of the Upper Tulead Project Area located in the south west corner near the Tulead Valley road is dominated by medusahead rye grass (*Taeniatherum caput-medusae*).

**Juniper Woodland**
Historically, Juniper woodlands were restricted to landforms such as rimrock, scree slopes and boulder fields that are protected from fire by soil types that limit the production of fine fuels to carry fire (Barret, 2007). Over time, increased fire suppression has allowed juniper to extend beyond its traditional boundaries. Although juniper woodlands in the historical context do exist within the project area, the vast majority of juniper populating the area is new growth. Juniper occurred on three out of four plots monitored within the Upper Tuledad Project Area and accounted for the majority of foliar cover on two of these plots, while second to cheatgrass on the third plot.

Juniper encroachment follows a basic three phases of woodland succession. Phase I is described as an actively-expanding, open canopy of trees 40 years or younger. No major changes among plant community dynamics or soil structure exist. Phase II involves actively expanding trees that are now co-dominate with the plant community. Towards the end of phase II shrubs begin to die-off while grasses may persist. Treatment becomes more difficult during the transition from phase II to phase III. Phase III marks the full occupation of juniper on a site. Understory vegetation eventually dies off and overall conditions of the site are degraded. By the end of Phase III, treatment options shift from prevention to restoration and repair. Within the project area, phase I and II juniper encroachment is widespread. It is important to prevent these sites from entering phase III as fully established Juniper woodlands because treatment options become much more difficult and costly. (Miller et al., 2005)

Aspen
Aspen is a major component inhabiting the Tuledad Aspen Project Area. Aspen stands serve many purposes in an ecosystem including habitat and forage for wildlife, watershed protection, aesthetics and recreation. In contrast to juniper stands, aspen stands allow sufficient light and moisture to penetrate the canopy allowing for multilayered communities to flourish (DeByle and Winokur, 1985). Healthy aspen stands are characterized by multi-aged stands, absence of other competing conifers such as juniper, and a healthy, diverse vegetative understory comprised of native grasses, herbs and shrubs (Bates et al., 2006). Maintaining aspen stands requires periodic events that destroy the stand allowing for rejuvenation. Without such an event, conifers, shrubs or grasses can displace the aspen. Aspen within the project area are currently threatened by competition from juniper and to some extent, mountain big sagebrush due to the lack of a disturbance event.

Special-Status Plant Species
Special-status plant species are those that have been afforded special recognition by federal, State or local resource agencies or organizations. Listed and special-status species are of relatively limited distribution and may require specialized habitat conditions. Special-status species are defined as meeting one or more of the following criteria:

- Listed or proposed for listing under the federal endangered species act (FESA);
- Protected under other regulations (e.g. BLM Sensitive Species);
- Listed under the California Native Plant Society (CNPS) Rare Plant Ranks, formally known as the CNPS Lists
- Listed as species of concern by United States Fish and Wildlife Service (USFWS); or
Receive consideration during environmental review under NEPA.

The USFWS Listed, Proposed and Candidate Species, BLM Sensitive, and CNPS ranked species that may occur in Modoc County, California were compiled from respective agency websites, CNDDDB records, and BLM Surprise Field Office literature review and staff interviews.

The following set of criteria has been used to determine each species’ potential for occurrence on the project area:

**High**: Species is known to occur on or near the site (based on known records within a five-mile radius of the site, and/or based on professional expertise specific to the site or species) and there is suitable habitat onsite.

**Low**: Species is known to occur in the vicinity of the site, and there is marginal habitat onsite. *OR* Species is not known to occur in the vicinity of the site, however there is suitable habitat onsite.

### Table

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<thead>
<tr>
<th>Regulatory Status</th>
<th>High Potential</th>
<th>Low Potential</th>
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<tr>
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<td>CNPS</td>
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Species Determined to Have a High Potential for Occurrence

Based on records search of the FESA list, BLM Sensitive species list, and CNPS ranking list, the following special-status plant species have the potential to occur onsite or in the vicinity of the project area: Baker’s globe mallow and Schoolcraft’s cryptantha.

Baker’s globe mallow (*Iliamna bakeri*) prefers dry rocky slopes where fire has occurred in the past 5-10 years (Wooley, 2000). In unburned areas it can exist on barren south-facing slopes, lava flows or dried creek beds (Arenson et al., 2003).

Schoolcraft’s cryptantha (*Cryptantha schoolcraftii*) is known to occur in the vicinity of the project area and suitable habitat exists within the project area. Suitable habitat is characterized by ashy, mostly barren soils (Nevada Heritage).

On July 2, 2014 a survey was conducted of the Upper Tulead Juniper Reduction Project. The survey included walking the extent of the project area in search of plant species of concern and suitable habitat. Ecological site descriptions and soils data was used as a reference. No threatened, endangered or special status plants were found. Small areas of
suitable habitat exist within the project area however, these sites are mostly barren and do not support juniper. They would not be affected by the Proposed Action.

**Direct and Indirect Impacts of the Proposed Action**

Directly, the Proposed Action would reduce the composition of juniper within the project area. This would reduce high fuel loading and support re-establishment of native perennial grasses, shrubs and forbs. Overall, the Proposed Action would help maintain and improve sage-steppe ecological conditions. By reducing high fuel loading, the risk of large catastrophic wildfires would decrease in turn, decreasing the potential for invasion by exotic plants. By utilizing mechanical and hand treatments within the Upper Tuledad Project Area, vegetative communities would have minimal negative impacts. Invasive plants may become established within the perimeter of small burn piles however biomass removal for use of fuel wood and other purposes will be implemented to reduce the number of burn piles. Some vegetation may be damaged due to the use of heavy machinery but this would be kept to a minimum by implementation of SOP’s. Alternatively, prescribed burning would impact vegetation on a much greater scale and open large areas of land for weed invasion. Most native plant species are not tolerant to fire and would take long periods of time to regenerate. Although prescribed burning would have negative impacts on the Upper Tuledad Project Area, this method would have positive impacts on the Tuledad Aspen Project Area. In order to maintain healthy aspen stands and avoid displacement by grass, forbs, shrubs or conifers the stand must be regenerated. One approach is to use seed or seedlings to revegetate the stand however, root suckering is the most practical method. Promoting root suckering outweighs revegetation attempts because it far less reliant on climatic conditions, more economical and can produce well-stocked robust stands in a short period of time. Prescribed burning effectively promotes vigorous root suckering and also removes competing vegetation. An alternative method would be to use mechanical or hand treatments to remove overstory which will also promote root suckering however, competition from vegetation would not be removed using this method. Due to ecological factors including elevation and aspect, the Tuledad Aspen Project Area is more resistant to invasives reducing the risk of cheatgrass invasion after the burn.

**Cumulative Impacts of the Proposed Action**

The proposed action would restore the area from its current Condition Class of 2 and 3, and bring it toward Condition Class 1, where fire regimes are near or at the historical range. The risk of losing key ecosystems components including species composition and structure would decrease within the project area.

**Direct and Indirect Impacts of the No Action Alternative**

Under the No Action alternative two direct impacts could take effect. The first involves the event of a catastrophic fire due to the high fuel loading created by juniper. In this scenario, the indirect impact would be long term loss of sagebrush habitat with the possibility of permanent loss due to invasion of exotic grasses or weeds. The second direct impact involves the increase of juniper density leading to a shift from phase I or II to a phase III fully established juniper woodland site. In this case, it would be difficult or impossible to restore the site back to its full potential as a healthy, resilient sagebrush ecosystem. The
overall vegetative type would become homogeneous as understory vegetation declines. This in turn, creates more bare ground exposure, causing soil instability, more overland flows and erosion problems. Fully established juniper woodland stands would not support plant species suitable for wildlife or livestock or provide habitat for sagebrush-obligate species. Overall, the no action alternative would contribute to the degradation and fragmentation of the sagebrush-steppe ecosystem.

**Cumulative Impacts of the No Action Alternative**

Under the No Action alternative it is likely that wildfires would occur more frequently, and cover larger areas due to invasion by cheatgrass. It is known that land covered by Cheatgrass has a fire return interval of approximately 78 years compared to vegetation such as sagebrush with a fire return interval of approximately 198 years (Balch et. Al., 2013). With each wildfire, cheatgrass becomes more abundant and expands its range perpetuating the cycle of grass invasion and wildfire. Future wildfires within the project area would be more costly to suppress and rehabilitation efforts would become more difficult and expensive. There exists a moderate to high probability of losing key ecosystem components of the sage-steppe ecosystem due to recurring wildfires and competition from juniper encroachment.

3.14 **Visual Resource Management**

3.14.1 **Affected Environment**

The Surprise Field Office Resource Management Plan establishes Visual Resource Management (VRM) objectives for all land administered by BLM within the proposed project area. The entire project area falls within the standards of VRM class II.

3.14.2 **Visual Resource Management Classes**

BLM’s Visual Resource Management (VRM) system provides a way to identify and evaluate scenic values to determine the appropriate levels of management. It also provides a way to analyze potential visual impacts and apply visual design techniques to ensure that surface-disturbing activities are in harmony with their surroundings. The VRM system is categorized as follows:

- **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 can 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.

3.14.3 **Scenic Quality**
Scenic quality varies between the two project areas. The Upper Tuledad Project Area lies within the Cottonwood Mountains and includes rolling terrain with gradual to steep inclines. Tuledad Canyon carves through the center of the project area. With the exception of a few rock outcroppings and small barren ashy inclusions, the landscape appears uniform due to vast spans of sagebrush/grass communities with juniper scattered throughout. The majority of the Tuledad Aspen Project Area lies upon a gradually declining backslope. Visual appearance is slightly more dynamic with the addition of aspen stands and mountain mahogany. The Tuledad Valley Road and one fence contribute human-induced changes to the landscape.

**Public Visibility**

The majority of the Upper Tuledad treatment area is visible from public roads traveling through and around the vicinity of the area. Tuledad Road follows Tuledad Canyon East to West through the middle of the project area. The entire area north of the road is visible and large portions south of the road are visible. Bare Creek road runs North to South, following the Western perimeter of the project area. The Southeastern portion of the project area can be seen best from this road. Bare Creek road makes a cut back at a high elevation just north of the project area, creating a vantage point for viewing a large portion of it. A two track road running North to North East provides the only access to the Aspen Tuledad site. The nearest maintained road is approximately 3.5 miles away. The project area is visible from the road but a very minimal degree of contrast can be distinguished.

Management strategies for VRM Class II are as follows:

**Class II** – The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

**Direct and Indirect Impacts of the Proposed Action**

Under the Proposed Action, harvesting of juniper would affect the landscape but would not dominate the scene. In areas with high densities of juniper, the visual variety would increase across the landscape, resulting in neutral or positive long-term effects (SSERS, Sec. 4.9.4, p. 346). New openings in the juniper would be created with hand and mechanical treatments and over the short term, while needles are red or brown, the felled trees would be noticeable to the casual observer. These treatments do not remove 100% of trees therefore post treatment effects to visual resources would be reduced. Experience with this impact in other treatment areas suggests the visual contract of the dead down trees would be substantially less noticeable within 3 to 6 years and very difficult to notice within 15 years. After this, the dead trees would blend in to the scene and be substantially unnoticeable. Prescribed burning would initially produce a more stark contrast between treated and untreated areas, however vegetation response within a few years of treatment
would soften the contrast. Furthermore, given that fire is a component of the landscape, the impact of this treatment to the visual resource component would be expected to go largely unnoticed within a few years. The effects of burning within shrub areas would produce similar effects as those described for prescribed burning in woodland sites. Treatment boundaries could create or enhance linear contrasts between woodlands and shrublands if they are straight, do not follow topography and are not feathered in to the untreated sites. Temporary roads and cross country travel activities could include scalping or crushing of vegetation and smoothing of the ground surface. This activity would also introduce linear contrasts which could either be short term or long term in nature depending on the timing and effectiveness of rehabilitation treatments. If rehabilitation treatments are successful and the routes do not develop into unauthorized roads, this effect would be expected to be moderated over the short term and nearly eliminated over the long term.

Mitigation Measures
The following mitigation measures would reduce visual impacts to the VRM Class II and Class III project areas:

- Rehabilitation of roads, prescribed fire control lines, and staging areas within one year of treatment would reduce the likelihood of the tracks being used by the public. Placement of rocks and brush or trees within the tracks and trails would discourage public use and blend the disturbance into the background. Reseeding of scalped and smoothed areas would speed up the rate of vegetation cover in these sites and reduce the chance of invasive or noxious species gaining a foothold in these denuded sites.
- Specific monitoring of road rehabilitation areas would insure that erosion is not occurring and that re-vegetation is effective.
- To reduce the contrast of the boundaries of all treatment units, treatments activities involving juniper removal would feather in the major tree removal with the adjacent untreated edges by leaving a selection of larger and smaller trees.
- To reduce the short term impact of yellowing and browning needles of felled trees in areas proposed for manual thinning/lop and scatter treatment, branches of the larger felled trees which project above the profile of the shrubs would be cut down to a height of three feet or less.

Cumulative Impacts of the Proposed Action
Visual Resources are most observable along improved roads that are easily accessed. Ground disturbing activities and landscape scale projects affect visual quality by creating changes to the landscapes form, color, line, line and texture. Previous range improvement projects, road construction/maintenance, vegetation treatments, gravel pits, and juniper harvesting have caused these types of impacts to visual resources.

Type II Wind Energy Applications are being processed for lands within the Tuledad Fuels project area and the surrounding area. The area of disturbance for Type II Wind Energy applications is small and visual resources would be minimally affected by the installation of Met Towers. Juniper harvesting projects on private lands are also expected to continue which can also affect visual resources.
Mitigation measures for the proposed action would reduce the impacts to visual resources. Therefore, it is expected that there would be no significant long-term cumulative impacts to visual resources from the proposed action.

**Direct and Indirect Impacts of the No Action Alternative**

Under the No Action Alternative there would be no direct or indirect impacts to visual resources from harvesting of juniper. However, woodland juniper may continue to increase which could potentially lead to catastrophic wildfires. Vegetation recovery from wildfires can be of long duration, which can impact visual resources long-term. BLM fire history information indicates that there have been seven naturally caused wildfires within the project area in the past 50 years. Therefore, it is expected that the area would be subjected to wildfire in the future. The use of heavy equipment for fire suppression activities have the potential to impact visual resources by creating contrasts in color, line, texture, and form.

**Cumulative Impacts of the No Action Alternative**

Visual Resources are most observable along improved roads that are easily accessed. Ground disturbing activities and landscape scale projects affect visual quality by creating changes to the landscapes form, color, line, line and texture. Previous range improvement projects, road construction/maintenance, vegetation treatment, wildfire, gravel pits, and juniper harvesting have caused these types of impacts to visual resources.

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The No Action Alternative would not contribute significantly to cumulative effects to visual resources, as no ground disturbing activities are proposed under this alternative.

**3.15 Wildlife; Migratory Birds; Special Status Species (Federally Listed, Proposed or Candidate Threatened and Endangered Species); State Protected Species; BLM Sensitive Species**

**Affected Environment**

The Action Area is inhabited by a variety of terrestrial species including BLM sensitive species and several important game species. The following sections describe habitats and wildlife species present within the Action Area. Vegetative communities are discussed in greater detail in Section 3.13.

**General Wildlife**

**Primary Habitats**

Major habitat types are largely synonymous with the vegetation communities described in Section 3.13 and include: big sagebrush, low sagebrush, juniper, and antelope bitterbrush,
with important habitat inclusions including curleaf mountain mahogany, and intermittent and ephemeral drainages. Plant composition of habitat types and inclusions are described in detail in Section 3.13. Species or their sign observed during field trips to the project areas include:

**Species list for Upper Tuledad and Tuledad Aspen Project Areas**

- Black-billed magpie
- Black Tailed jackrabbit
- Mourning dove
- Least chipmunk
- American robin
- Mountain cottontail
- Red tailed hawk
- Turkey vulture
- Mountain bluebird
- Common blackbird
- Mule deer
- Pronghorn antelope
- Greater sage-grouse

**BLM Sensitive Species**

Several BLM sensitive species have the potential to occur within the project boundaries, in addition to those described in the previous subsections. The potential presence of these species within proposed treatment areas is further discussed in the following subsections.

**Greater Sage-Grouse**

The treatment area is located within the Buafflo-Skaddle Population Management Unit for Greater sage-grouse. The Upper Tuledad Project Area lies within Greater sage-grouse (*Centrocercus urophasianus*) Preliminary Priority Habitat that was designates as part of the ongoing Sage-Grouse RMP Amendment. Sage-grouse potentially uses portions of the Action Area all year long as a result of the presence of suitable habitats onsite (low sagebrush and big sagebrush habitats with riparian habitat). 2,315 acres of the treatment area is suitable habitat for sage-grouse, and is designated as “R0” which is defined as being intact sage-grouse habitat. There are two active sage-grouse leks within 1.5 miles of the Upper Tuledad Project. Juniper invasion is the primary threat to sage-grouse habitat within the project area. Juniper can reduce the sagebrush and herbaceous understory, reduce the quality of nesting habitat and serve as perches for raptors.

The majority of the Tuledad Aspen Project is designated as Preliminary General Habitat for sage-grouse with a small portion of the project area delineated as Preliminary Priority Habitat for sage-grouse. The entire project area for Tuledad Aspen is designated as “R0”. There are no known leks within the Tuledad Aspen Project Area; however, there are two active leks within ten miles of the project area. See Appendix 1 for a map of sage-grouse habitat.
Big Game Species and Ungulates

Mule Deer
Mule deer (Odocoileus hemionus) are present within the Upper Tuledad and Tuledad Aspen treatment areas from spring to fall with mule deer migrating to lower elevations as snow levels build and covers forage species. Important forage species such as antelope bitterbrush, mountain big sagebrush and curl-leaf mountain mahogany are present within the project area.

Rocky Mountain Elk
Rocky Mountain Elk (Cervus elaphus nelsoni) have been observed within the Tuledad Aspen Project Area. This project area is denoted as being at high elevation (> 7,000 MSL) with a vegetative component of aspen, mountain big sagebrush, and a heavy perennial grass understory comprised of Thurber’s needlegrass, mountain brome, squirreltail, and needle and thread. This area could provide potential summer and fall habitat for elk.

Pronghorn Antelope
Pronghorn antelope exist within the project area as evident from sighting from BLM biologists although a large portion of the project area is either too steep or too heavily encroached by juniper for pronghorn antelope to use on a regular basis. Low sagebrush habitats are the most frequented habitats throughout the year by pronghorn antelope. Low sagebrush habitat for pronghorn antelope is concentrated within the project boundaries of the Upper Tuledad Project north of Tuledad Valley road and south of Tuledad Valley road on the plateaus below the Cottonwood Mountains.

Nesting Raptors
Nesting, roosting and foraging habitat for raptors was identified within the treatment area, especially in aspen habitats located within the Tuledad Aspen Project. While the sensitive raptor species are discussed above, all raptor species’ nesting habitats are protected by the Migratory Bird Treaty Act and thus are considered for this analysis. Suitable foraging habitat for raptors is present within the proposed treatment area in areas of open grassland, low sagebrush, and big sagebrush habitat that is not overly dense with juniper. While nesting habitat can be limited in some areas within the project area, cliffs and rock rims that run north-south that are associated with mountains and canyons that run in an east-west direction affords raptors adequate nesting habitat. Nesting habitat for raptors is primarily concentrated on the northern end of the Upper Tuledad Project. This area is denoted as having rock rims running east-west paralleling Tuledad Valley. Aspen stands that have not been encroached by juniper also offer nesting habitat for raptors with a number of nest sites located north of Red Rock Valley road within the Tuledad Aspen Project Area.

Other Native Wildlife Species
Other species known to occupy within the project area include black-tailed jackrabbit, ground squirrel, least chipmunk, American badger, lizards, coyote, turkey vulture, common raven, mountain bluebirds, American robins, and various other songbirds. Other sage-steppe obligate bird species other than Greater sage-grouse that may be present within the project boundaries include; Brewers sparrow, sage thrasher, and sage sparrow. These birds
require a mix of open, patchy sagebrush, tall sagebrush, and grass cover for nesting and foraging. Active rodent burrows and ant hills were found during field tours, indicating a diversity of non-game species. Sage sparrows (*Amphispiza belli*) are often associated with big sagebrush, but other shrublands are also regularly used with bare ground preferred over grass cover between shrubs. Their nest is a cup of dry twigs and herbaceous stems located on the ground beneath a shrub; or in a shrub usually 0.15 to 0.45 m (6-18 in) above ground, but up to 1 m (39 in). Their known breeding in Nevada is from early April to early August, with a few remaining to winter in the Great Basin each year. Sage sparrows tend to abandon sites that lose sagebrush cover or sites with a substantial cheatgrass component. This species feeds mostly on insects, spiders, and seeds while breeding, and mostly on seeds in winter; they also consume green foliage. Although sage sparrows drink regularly, a portion of their water needs are supplied by consumption of invertebrates. Sage thrashers occupy similar habitats as the sage sparrow and avoid cheatgrass infested areas. Cheatgrass is a present throughout the Upper Tulead Project Area and is a major vegetative component on south facing slopes located in the eastern part of the project area, rendering portions of the project area as marginal habitat for many native wildlife species. The range for many non-game wildlife and bird species overlap due to the heterogeneity of habitats that are found within the area.

**Direct and Indirect Effects of Proposed Action**

Implementation of the proposed action would facilitate improved sage steppe habitat, while resulting in a decline in juniper woodland habitats. Project activities associated with the Proposed Action would result in both temporary and long-term effects to wildlife habitat and individuals, and would include both beneficial (habitat changes) and adverse (primarily related to disturbance) effects.

Within the Tulead Aspen project, prescribed burning would result in the loss of some raptor nesting habitat for at least a decade depending on the severity of burning and amount and species of aspen in each project unit that were completely consumed. A variety of non-game animals such as cavity nesting birds could be impacted if aspen trees and snags were completely consumed by prescribed fire. Following prescribed fire, newly emerging aspen saplings would increase the forage base for wildlife such as mule deer and increase screening cover for terrestrial species as aspen densities increased.

**BLM Sensitive Species**

**Greater Sage-Grouse**

The Proposed Action would improve sage-grouse habitat over approximately 2,600 acres by reducing juniper encroachment and facilitating plant community succession, increasing vigor of sage-steppe habitats and increasing sagebrush cover. Benefits to sage-grouse would be most pronounced in areas immediately adjacent to active sage-grouse leks and in mountain shrub nesting habitats where sage-grouse use is highest. Low sagebrush habitats adjacent to leks would benefit from reductions in juniper cover that would reduce predation risk and improve perennial grass cover and forb composition. In the long term, reductions in juniper around sage-grouse leks would reduce the possibility of lek abandonment and
local extirpation of smaller lek sites that are currently encroached by juniper. In mountain sagebrush sites, juniper reduction treatments would increase shrub and perennial grass cover, benefiting sage-grouse by increasing the amount of mountain sagebrush communities available for nesting, increasing nesting cover, reducing predator effectiveness at detecting and predating nest sites and increasing nest success in the long term.

Juniper treatments would increase connectivity of habitat and reduce the impacts of habitat fragmentation that juniper encroachment has caused by connecting sagebrush communities across the landscape. In the long term, sage-grouse habitats would become more resilient to disturbances such as fire and would maintain sagebrush communities across the PMU with increased perennial grass, forb and shrub composition for forage and hiding cover for sage-grouse. Riparian sites would also benefit from the proposed action by reducing juniper encroachment adjacent and within riparian sites. Benefits would include reduced vertical vegetation structure and reduced predation risk.

Some short term displacement of sage-grouse would occur as a result of the proposed action due to noise and human traffic associated with juniper treatments. This impact is expected to be slight due to implementation of SOP’s and Limited Operating Periods (LOP’s) during sage-grouse breeding season and the short time period it generally takes to implement treatments. Sage-grouse are expected to move back into treatment areas shortly after completion of treatments.

Broadcast burning would result in the short term removal of shrub cover that is important nesting and summer habitat for sage-grouse. In most mountain sagebrush communities that are proposed for burning it would take 20+ years for shrub composition to reach levels that were similar to pre-burning levels and to reestablish shrubs at desired levels for nesting sage-grouse. Habitat within burned sites in the long term however would be vigorous compared to pre-burning conditions due to juniper loss from fire. Since no prescribed fire treatments would take place within two miles of an active sage-grouse lek (high use areas) or in habitats where nesting conditions are ideal for sage-grouse (lack of juniper), impacts to sage-grouse population trends within the project area would be slight since no broadcast burning is proposed in the Upper Tuledad Project. Prescribed fire could increase the presence of noxious weed species, especially cheatgrass in disturbed areas. This impact is expected to be slight due to prescribed fire areas being focused on higher elevation mountain sagebrush and aspen sites with a diverse vegetation understory. Juniper treatments could increase the risk of noxious weed invasion in sage-grouse habitat due to weed seeds or plant materials being transported on equipment used for treatments and soil disturbance associated with treatments. This risk is expected to be slight due to implementation of SOP’s and the current low weed population in the project area. Overall, the proposed action is expected to have positive impacts to sage-grouse habitat in the project area.

**Big Game Species and Ungulates**

**Mule Deer**
Under the Proposed Action, mule deer would benefit from rapid increases in shrub and
browse species as juniper treatments were completed and understory vegetation began to dominate ecological processes. Improvements in browse communities would be most pronounced in mountain big sagebrush communities but improvements in lower elevation communities would increase browse species in important mule deer winter ranges. As habitat quality increased, body condition and fecundity of mule deer populations within the X3b and X5a Hunting Units would be expected to slightly increase. Some loss of thermal cover and screening cover would occur under the proposed action due to loss of juniper cover. This impact is expected to be slight due to some juniper trees being retained within treatment units to provide thermal cover for a myriad of species, including mule deer. Prescribed burning would have the greatest impact on mule deer, with prescribed fire removing important browse species including aspen, sagebrush and bitterbrush.

Immediately following fire, mule deer use is expected to increase as mule deer forage on newly emerging vegetation that is high in Total Digestible Nutrients (TDN). After a few years however mule deer use in burned areas is expected to decline until shrub and aspen species reestablish and resemble pre-burned levels. The impact of fire on mule deer is expected to be slight due to implementation of Mitigation Measures and SOP’s. Some disturbance to mule deer would also occur under the proposed action as a result of noise and human traffic associated with implementation of treatments. This effect is expected to be slight due to implementation of SOP’s and the short time period it generally takes to complete treatments. Impacts as a result of noise and human traffic would largely include habitat shifts out of the treatment area. Overall, the proposed action is expected to have positive effects to mule deer in the project area.

**Rocky Mountain Elk**

Under the proposed action, elk would benefit from rapid increases in shrub and browse species as juniper treatments were completed and understory vegetation began to dominate ecological processes. Improvements in browse communities would be most pronounced in mountain big sagebrush communities but improvements in lower elevation communities would increase browse species. Since elk generally winter in high elevation areas than mule deer, positive effects for elk will be more evident in mountain brush communities. Elk readily adapt and thrive in juniper woodland areas where a mosaic of shrub communities and juniper exist for foraging and hiding cover. Some loss of thermal cover and screening cover would occur under the proposed action due to loss of juniper cover. This impact is expected to result in elk not using some areas that are currently suitable habitat due to loss of hiding cover. This impact would be most pronounced in areas where topography is relatively flat and juniper provides the only cover that can conceal elk (low sagebrush flats).

Prescribed burning would have a positive impact on elk, with prescribed fire resulting in increased grass composition that is preferred by elk. A loss of shrub cover could affect elk when they switch to foraging on shrub species in the fall however this impact is expected to be slight due to the small amount of prescribed burning in comparison to the project area. Some disturbance to elk would also occur under the proposed action as a result of noise and human traffic associated with implementation of treatments. This effect is expected to be slight due to implementation of SOP’s and the short time period it generally takes to complete treatments and the low elk densities that currently exist in the SFO. Impacts as a
result of noise and human traffic would largely include habitat shifts out of the treatment area. Overall, the proposed action is expected to have positive effects to elk in the project area.

**Pronghorn Antelope**

Under the Proposed Action, direct effects to pronghorn would likely be minimal, as open bitterbrush and sagebrush is the preferred habitat for this species and treatment will primarily occur in habitats where juniper has encroached and pronghorn use is not high. Prescribed burning would increase local foraging opportunities for this species and reductions in juniper would promote preferred habitat conditions across the project area. In the long term, as treatment were implemented across the landscape, large blocks of habitat would become connected across the project area, resulting in less habitat fragmentation across the landscape and an increase in available habitat for pronghorn. Some loss of thermal cover and screening cover would occur under the proposed action due to loss of juniper cover. Antelope generally avoid areas of dense juniper but will locally use juniper for thermal cover if juniper densities are relatively low (phase 1 and early phase 2 areas). Impacts due to loss of juniper cover is expected to be slight due to some juniper trees being retained within treatment units to provide thermal cover for a myriad of species, including antelope. Overall, the proposed action is expected to have positive effects to pronghorn antelope in the project area.

**Nesting Raptors**

Under the proposed action, juniper reduction treatments would improve habitat quality for prey species that raptors commonly predate on, benefiting raptors within the project area. In the long term, an increased prey population could result in increased recruitment into the local populations. Improvements in prey population densities could result in increased survival and fledging of young and improved body condition going into nesting. Removal of juniper would reduce raptors perches, therefore raptors would likely have to spend more time and energy searching for prey using dynamic soaring rather than searching for prey from perches. This would slightly increase energy expended for raptors compared to current conditions. This effect would likely be negligible in the long term due to increased prey population densities offsetting increased energy expenditures searching for prey. Some disturbance to raptors would occur under the proposed action as a result of noise and human traffic associated with implementation of treatments. This effect is expected to be short and limited to the period of time when treatments would occur. Implementation of SOP’s would reduce or eliminate impacts to nesting raptors in the areas where nests occur. Overall, the proposed action would have positive effects to raptors in the project area.

**Other Native Wildlife Species**

Implementation of the proposed action would facilitate improved sage steppe habitat, while resulting in a decline in juniper woodland habitats. Project activities associated with the Proposed Action would result in both temporary and long-term effects to wildlife habitat and individuals, and would include both beneficial (habitat changes) and adverse (primarily related to disturbance) effects.
Long-term effects related to prescribed burning are expected to be positive. Positive restoration effects resulting in the initial restoration of diverse assemblages of forbs and grasses would likely result from proposed prescribed burning, although species composition and trends would likely change as the ecosystem transitions to later serial stages. These shifts in serial stages and vegetative community composition are anticipated to result in overall increased habitat quality. Short-term effects may include a reduction in fall forage opportunities, as well as direct deaths of individuals. Prescribed burning would also cause some direct deaths to smaller animals unable to move sufficient distances away from burn areas.

Both hand treatment and mechanical treatments would cause some short-term disturbances to wildlife but would have less long-term negative effects to small mammals by retaining understory vegetation. Long-term negative effects would be minimal and primarily limited to local tree nesting/roosting species which rely partially on juniper. Mechanical treatment is expected to have reduced direct effects due to its speed of operation compared to hand treatments. Like fire, long-term beneficial effects are expected to understory plant species however understory changes would be more gradual with this treatment.

Short-term disturbance would probably last no more than three years after which all wood is removed from a site. Mechanical operations would take place over a much shorter period of time and would kill some additional small animals in the vicinity of these operations. Both mechanical and hand treatments would remove habitat for tree nesting species and reduce thermal cover for larger animals, although these effects are not anticipated to result in widespread or major adverse effects, as these resource are not lacking within the project area. An undetermined amount of shrubs would likely be crushed or removed during mechanical operations however shrubs, including valuable forage species such as bitterbrush, may respond positively to proposed treatments, resulting in increased foraging opportunities, as well as cover for smaller animals.

Implementation of the Proposed Action would result in short-term effects to habitat for some sage steppe obligate species. However, long-term habitat productivity for sage steppe obligate species would improve following restoration. Juniper-dependent species would experience short-term and long-term effects resulting from proposed treatments and resulting restoration activities. It is anticipated that implementation of the Standard Operating Procedures identified in Appendix 3 would minimize potential adverse effects. Effects associated with implementation of the Proposed Action are therefore considered minor.

**Cumulative Impacts of the Proposed Action**

The Cumulative Assessment Area for Wildlife, T&E species, and migratory birds is the Tuledad and Selic-Alaska grazing allotments.

An unknown amount of juniper reduction has occurred on private lands within the project area and would continue to occur in the foreseeable future, resulting in continued positive effects on sage steppe obligate species as well as potential negative effects on juniper woodland species.
Livestock grazing by cattle would continue throughout the planning area and would cause direct (competition for food and water, potential for increased erosion and sediment along drainages, etc) and indirect (loss of cover) effects to wildlife. Similarly, continued use by wild horse herds will provide additional competition for food and water and loss of cover for wildlife species.

Continued practices of implementing juniper reduction project, fencing riparian and wetland sites and marking fences would most likely have positive effects on the habitat and the wildlife in the area. These practices would also decrease the potential for erosion and sediment input into aquatic habitats.

Continuing Integrated Weed Management will result in additional native habitat and thus improved wildlife habitat conditions. Wildlife in the treatment areas would benefit from these practices and few adverse effects would occur as a result.

Continued recreation in the form of hunting, camping, and hiking, and to a lesser extent wildlife observation, nature study and archaeological sightseeing would result in potential impacts to wildlife populations, as human presence is usually a nuisance to wildlife, especially during the breeding/rearing seasons. The project is not expected to result in increased recreation over the long-term. Unauthorized off-highway vehicle use may increase due to more open habitat conditions, but restricting all vehicles to designated trails would reduce long-term cumulative effects from these activities to a negligible level.

Continued juniper woodland thinning and removal would result in impacts similar to those outlined in the direct and indirect effects section above. Short-term impacts to wildlife would transition to long-term benefits for most sensitive and non-sensitive species that inhabit the treatment areas. Continued treatment would result in long-term cumulative benefits resulting from increased acreage of productive ecosystems characterized by diverse vegetative communities optimizing habitat values for wildlife within the project area. Cumulative effects resulting from implementation of the Proposed Action are considered minor.

Direct and Indirect Effects of the No Action Alternative

Greater Sage-Grouse

The No Action Alternative would result in a continued decline in sage-grouse habitat over the entire project area and juniper encroachment into sage-grouse habitats within the Upper Tuledad and Tuledad Aspen projects would continue unabated. Negative impacts to sage-grouse from continue juniper encroachment would be most pronounced in areas immediately adjacent to active sage-grouse leks and in mountain shrub nesting habitats where sage-grouse use is the highest. Low sagebrush habitats adjacent to leks would continue to increase in juniper cover and predation risk would increase in the long term with sage-grouse potentially abandoning lek sites. In encroached sagebrush sites, juniper would continue to increase in extent with continued declines in shrub and perennial grass cover, negatively impacting sage-grouse by decreasing nesting cover and decreasing nest success in the long term. Juniper expansion would continue to decrease connectivity of habitat across the project area and the impacts of habitat fragmentation that juniper
encroachment has caused would continue across the landscape. In the long term, sage-grouse habitats would become less resilient to disturbances such as fire and maintaining sagebrush communities across the project area with perennial grass and shrub composition for forage and hiding cover for sage-grouse would become increasingly difficult.

Riparian sites would continue to decline as juniper encroachment adjacent and within riparian sites continued unabated. Negative impacts include increased vertical vegetation structure and increased predation risk, decreased riparian brood rearing habitat, decreased water within the riparian zone and decreases in riparian obligate plant species. Under the No Action Alternative, no juniper treatments would be implemented and therefore no impacts relating to noise and human traffic to sage-grouse would occur. Overall, the No Action Alternative is expected to have moderate negative impacts to sage-grouse habitat in the project area.

Big Game Species and Ungulates

Mule Deer

Under the No Action Alternative, mule deer would not benefit from rapid increases in shrub and browse species as juniper treatments would not be completed and the juniper canopy would continue to dominate ecological processes. Declines in browse communities would be most pronounced in mountain big sagebrush communities as juniper continued to expand unabated however lower elevation browse communities would continue to decline in vigor and production. In the long term, if treatments were not implemented across the landscape, large blocks of intact habitat would become invaded by juniper and disconnected across the project area, resulting in more habitat fragmentation across the landscape. As habitat quality continued to decline, body condition and fecundity of mule deer populations within the X3B and X5B Hunt Units would be expected to slightly decrease within the project area with populations eventually stabilizing at a lower carrying capacity than current levels. No loss of thermal cover and screening cover would occur under the No Action Alternative due to no juniper treatments occurring. Prescribed burning would not occur and important browse species including sagebrush and bitterbrush would not be removed within the project area from prescribed fire operations. Disturbance to mule deer as a result of noise and human traffic associated with implementation of treatments would not occur under the No Action Alternative. Overall, the No Action Alternative is expected to have negative effects to mule deer in the project area primarily related to browse plant conditions and habitat conditions.

Rocky Mountain Elk

Under the No Action Alternative, elk would not benefit from rapid increases in shrub and browse species due to juniper treatments not being completed and the juniper canopy continuing to dominate ecological processes. Declines in browse communities would be most pronounced in mountain big sagebrush communities. Under the No Action Alternative, no loss of thermal cover and screening cover would occur due to no loss of juniper cover. This is expected to be result in elk using some areas that are currently suitable habitat but are relatively flat and juniper provides the only hiding cover for
concealment. These areas, if treated as described in the proposed action, would likely no longer be suitable elk habitat due to lack of hiding cover.

Prescribed burning would not occur under this alternative and increased in grass composition would not occur under the No Action Alternative, slightly negatively affecting elk foraging habitat. No disturbance to elk would occur under the No Action Alternative as a result of noise and human traffic associated with implementation of treatments due to no treatment occurring. Overall, the No Action Alternative is expected to have neutral effects to elk in the project area.

**Pronghorn Antelope**

Under the No Action Alternative, prescribed burning would not occur and localized increased foraging opportunities for this species and reductions in juniper that would promote preferred habitat conditions across the project area would not occur. In the long term, if treatments were not implemented across the landscape, large blocks of habitat would become disconnected across the project area, resulting in more habitat fragmentation across the landscape and a decrease in available habitat for pronghorn. No loss of thermal cover and screening cover would occur under the No Action Alternative due to no loss of juniper cover. This impact is expected to be slight since antelope generally avoid areas of dense juniper. Overall, the No Action Alternative is expected to have moderately negative effects to pronghorn antelope in the project area.

**Nesting Raptors**

Under the No Action Alternative, juniper reduction treatments would not occur and improvements in habitat quality for prey species that raptors commonly predate on would not occur. In the long term, as habitat quality continued to decline, a decreased prey population could result in decrease in the overall local population of raptors within the project area. More juniper would be available for nesting under the No Action Alternative but other nesting habitats such as aspen would continue to decline as juniper encroachment continued unabated. No disturbance to raptors would occur under the No Action Alternative as a result of noise and human traffic associated with implementation of treatments due to treatments not occurring. Overall, the No Action would have slightly negative effects to raptors in the project area.

**Other Native Wildlife Species**

Under the No Action Alternative, distribution, viability, and diversity of wildlife species and wildlife habitats would reflect increased juniper densities. Overall range health and ecological potential in the area would continue to decline, and native sage steppe vegetation would continue to be reduced in extent, as well as vigor. Juniper encroachment would continue to negatively affect suitable habitat for sagebrush obligate species. Woodland and/or juniper-associated species would likely experience benefits from the increased number of trees available for shelter and cover. However, according to USFS (2008), “The more tree dominated piñyon and juniper woodlands become, the less likely they are to burn under moderate conditions, resulting in infrequent high intensity fires.” Over time more extreme fire behavior could result from the No Action Alternative,
resulting in potentially widespread and unpredictable modifications to habitats within the project area. Potential effects are considered moderate.

**Cumulative Effects of the No Active Alternative**

Past, present and future foreseeable effects include hand and mechanical vegetative treatments, prescribed fire, continued livestock grazing, wild horse grazing, recreational use, off-highway vehicle use, range management throughout the CAA. As described in detail above, these activities may have the potential to result in adverse effects to wildlife.

The distribution, viability, and diversity of wildlife species and wildlife habitats within the project area would reflect increased juniper densities. Overall rangeland health and ecological potential in the project area would continue to decline, and native sage-steppe vegetation would continue to be reduced in extent, as well as vigor. Juniper encroachment would continue to negatively affect suitable habitat for sagebrush obligate species. Woodland and/or juniper-associated species would likely experience benefits from the increased number of trees available for shelter and cover. However, over time more extreme fire behavior could result from the No Action Alternative, resulting in potentially widespread and unpredictable modifications to habitats throughout the CAA. Cumulative effects under the No Action Alternative are considered moderate.

**Mitigation Measures**

The following mitigation measures are to reduce impacts to sage-grouse, other sage-steppe species, as well as other wildlife.

- Pretreat fuels around bitterbrush and mountain mahogany to prevent loss during prescribed burning. This would prevent large patches of important deer fall forages from being burned.

- Keep prescribed burned acres less than 123 acres. This recommendation is found in both the Buffalo-Skedaddle sage-grouse conservation plan and a recommendation in the Partners in Flight publication, *Birds in a sagebrush sea*. This mitigation would reduce habitat fragmentation of important bird habitats.

- Leave all snags greater than 25 cm (10 inches) standing and create additional snags. This recommendation/mitigation would benefit many species including bats such as long-eared myotis.

- Any active raptor nest found should be reported to the wildlife biologist and project activities ceased in the area (generally ¼ mile buffer) until surveys indicate that project activities would not disturb breeding activities.

**3.16 Wild horse and burro**

**Affected Environment**
The Tuledad Allotment is part of the Tuledad Herd Area, which is divided into Buckhorn
and Coppersmith Wild Horse Herd Management Areas (HMA). The Buckhorn HMA is located south of the Tuledad canyon and Coppersmith HMA is located north of Tuledad canyon within the North Pasture. Respectively, the Buckhorn HMA is located within the south pasture. The Appropriate Management Levels (AML) is a maximum of 85 wild horses in the Buckhorn HMA and 75 wild horses in the Coppersmith HMA. The Selic-Alaska Allotment is not within an HMA. Wild horses are large ungulates with few natural predators; consequently populations have greatly increased since the last gathers. The Coppersmith HMA was last gathered in 2009, and the current population is estimated at 75 horses while the Buckhorn HMA’s current population is estimated at 175 horses. Currently wild horse populations are over AML for the Buckhorn HMA.

<table>
<thead>
<tr>
<th>Herd Number</th>
<th>Acres of BLM-Managed Lands (other Lands)</th>
<th>Appropriate Management Levels (No. of Animals)</th>
<th>Estimated Population (July 2014)</th>
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<tr>
<td>Buckhorn HMA</td>
<td>76,780</td>
<td>75</td>
<td>175</td>
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<tr>
<td>Coppersmith HMA</td>
<td>75,547</td>
<td>85</td>
<td>75</td>
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**Direct and Indirect Impacts of Proposed Action**

The direct and indirect, long-term impacts are related to the wild horse population sizes and growth rates. As wild horse numbers increase, utilization of forage and water increases. There is greater likelihood that horses would be present within the treatment units on year-round basis. Since new fencing is not proposed within the Upper Tuledad project, wild horses would continue to have free access to the treatment units. Wild horse impacts on the rate of recovery of a treatment would be greatest where wild horses tend to congregate; such as around water sources and trails. However, as population increases the impacts become noticeable on the slopes and tables at greater distances from water and trail corridors. When the population is at AML, wild horses are not expected to impact vegetation, and soils recovery in the treatment units as much as when wild horses are considerably over AML.

The SFO BLM completed an EA in 2012 to gather the Coppersmith and Buckhorn HMA’s. That gather was not funded by the Washington Office BLM due to other higher priority gathers, subsequently the SFO BLM has not issued a Decision or implemented a gather. Implementation of the proposed Action is not expected to change the AML and with implementation of the Standard Operating Procedures as described in Appendix 3, there are no anticipated direct impacts to wild horse management resulting from implementation of the proposed Action. There would be slight forage increase for wild horses within the Upper Tuledad Project Area.

**Cumulative Impacts of Proposed Action**

The Cumulative Assessment Area for the wild horses is the entire Buckhorn-Coppersmith HMA. Wild horses and cattle compete directly for available forage and water, therefore the cumulative impacts of the proposed action would be similar to livestock. Ensuring the
protection of treatment units requires that wild horse populations are maintained at AML. This would mitigate impacts to vegetation, soils and water relationships by improving the health, vigor and recruitment of perennial grasses, forbs and shrubs. While increasing ground cover to improve soil stability, reduce erosion potential and improving water quality; and increasing the quantity and quality of forage for wild horse use which would promote herd health and permittee economic stability. With the wild horses not being at AML on the HMA’s, there is an increased potential for wild horses to be within the Upper Tuledad Project Area and damage newly emerging vegetation and existing vegetation in the project area that is trying to capitalize on the released nutrients after juniper is cut. Overall, wild horses would slightly reduce the recovery of the project area after juniper is cut.

In the long term, additional forage and habitat structure should benefit wild horse populations. Currently, wild horses use junipers to some extent for shade during summer and thermal cover during the winter. The impact of the proposed action is expected to be minimal, since the treatment acreage is small in comparison (approximately 1.8% of the allotment) to the total area occupied with juniper. The Proposed Action should result in a subsequent increase of perennial, herbaceous plants which are important for the maintenance of wild horses, rangeland health and multiple watershed values.

Wild horses are also not expected to be harmed during the implementation phase of the treatments, as wild horses would readily avoid these activities; however, horses are expected to resume normal distribution patterns when the treatments are completed.

**Direct and Indirect Impacts of the No Action Alternative**

Under the No Action Alternative, no changes in management would occur. Habitat for wild horses would continue to change as juniper woodlands increase; shrub and grass understory development will continue to diminish causing increased user conflict between livestock, wildlife and wild horses due to competition for the remaining desirable forage. The AML would likely be reduced in the long-term. Rangeland health would continue to decline which would affect multiple watershed values over the long-term.

**Cumulative Impacts of the No Action Alternative**

Horses tend to prefer open landscapes for predator detection and escape. Continued juniper expansion would adversely affect existing wild horse habitat and consequently the population. Cumulative impacts on wild horses within the project area include past vegetation treatments and water developments. Human activities are expected to continue to the same degree in the future and would continue to impact wild horses and wildlife in a similar fashion. However, as the forage base decreases, competition for resources and habitat would increase, resulting in long-term cumulative impacts to wild horses. BLM policy and guidance on wild horses and the implementation of appropriate management levels (AML) changes would help to reduce overall impacts.
4.0 TRIBES, INDIVIDUALS, ORGANIZATIONS, OR AGENCIES CONSULTED

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization/Role</th>
<th>Consultant</th>
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<tbody>
<tr>
<td>Bill Phillips</td>
<td>Nancy Huffman, Chair Northeast California RAC</td>
<td>Kathy Gregg</td>
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<tr>
<td>Delbert E. Craig</td>
<td>Paul Davis</td>
<td>Nevada Department of Wildlife: Mark Freese &amp; Chris Hampson</td>
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<tr>
<td>Modoc County Fish, Game and Recreation Commission</td>
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<tr>
<td>Modoc Cattlemen’s Association</td>
<td>Carolyn Carey Modoc Land Use Committee</td>
<td>Estill Ranches LLC</td>
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<tr>
<td>Cedarville Rancheria</td>
<td>Fort Bidwell Indian Community Bernold Pollard (Chairperson)</td>
<td>Summit Lake Paiute Tribe Randi DeSoto (Chairperson)</td>
</tr>
<tr>
<td>Dr. Michael J. Conner</td>
<td>Christian &amp; Cassie Oyarzun</td>
<td>Ray Page</td>
</tr>
<tr>
<td>Western Watershed Project</td>
<td>Wayy</td>
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<tr>
<td>Sean Curtis</td>
<td>Dale and Anita Goodwin</td>
<td>Scott Gooch</td>
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<tr>
<td>Modoc Land Use Committee</td>
<td>Wayne</td>
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<tr>
<td>Kurt Stodtmeister</td>
<td>Richard Shinn-California DFW</td>
<td>Karl Quigley</td>
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History of the Planning and Scoping Process

- March 2013, areas identified to control juniper encroachment within the Tuledad Allotment by SFO BLM IDT.
- January 2014- Project areas identified by SFO BLM IDT.
- Proposed projects externally scoped with the public on February 20, 2014.
- Project discussed with Modoc Washoe ESP and permittees on April 24, 2014 during ESP meeting. Permittee concerns regarding rest were discussed and addressed.
- Summer 2014- Pre project surveys and monitoring completed for wildlife, T&E flora and fauna, vegetation and archaeology.

External Scoping Results

- Letter received from Nevada Department of Wildlife supporting the proposed project.
- Letter received from Modoc Cattlemen’s Association concerned about the potential economic impact on livestock permittees.

**List of preparers**

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Resource/Activities</th>
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<tbody>
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<td>Wildlife, T&amp;E Flora and Fauna, Migratory Birds, Riparian/Water Quality, Noxious Weeds, Global Climate Change, Vegetation</td>
</tr>
<tr>
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<td>Wild Horses, Soils, Livestock Management, Socioeconomics</td>
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<td>Jennifer Rovanpera</td>
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<td>Ecologist</td>
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<td>Vegetation, T&amp;E Flora, VRM</td>
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<tr>
<td>Andrew Mueller</td>
<td>Wildlife Technician</td>
<td>Wildlife, Fauna T&amp;E, Soils</td>
</tr>
</tbody>
</table>

**5.0 REFERENCES**


Rosentreter, R. Displacement of rare plants by exotic grasses. 1994


Thurow, T. L. and J.W. Hester. 2005. How an increase or reduction in juniper cover alters rangeland hydrology. Available: http://texnat.tamu.edu\symposia\juniper\TOM2.htm


6.0 APPENDICES

Appendix 1: Maps
Appendix 2: Standard Resource Protection Measures (SRPM) for the Tuledad Habitat Restoration and Fuels Reduction Project

For all those cultural properties recommended eligible or are unevaluated to the National Register:

1. Cultural Resource Staff will brief crew personnel on avoidance areas within a defined cutting area before project implementation occurs. (See inadvertent discovery procedures).

2. Prior to project initiation, in mechanical treatment areas, all archaeological sites will be flagged with a 10 meter (11 yards) protection buffer. Flagging will be the standard BLM Northeastern California Archaeology shops’ black and red striped flagging.
   a. Flagged sites will be avoided for roads, staging areas, and any other unforeseen use by mechanical or large equipment.
   b. New roads and staging areas for the project area (but located outside the project area) will be surveyed at a Class III level prior to project initiation.

3. All standing juniper within 20 meters (60 feet) of the toe or rim of rimrock outcroppings around rock art panels will be removed to prevent fire damage to rock art sites. Exceptions include when a tree is a significant cultural component of the site. Mitigation measures in these instances will be based on field survey results and will be approved by the Field Office Manager before implementation occurs. These mitigation measures will be generated and approved by a qualified Archaeologist and will be documented in the project file.

4. Areas with high densities of identified archaeological sites will be left untreated.

5. At this time, only hand treatment and/or prescribed fire will be utilized within National Register sites, significant (sites eligible for the National Register) sites, and unevaluated sites (which are afforded the same protection as National Register sites) at the discretion of the Field Office Archaeologist. This action will prevent an oasis effect where livestock can congregate and limit the creation of islands which would increase public/animal congregation. All lop and scatter materials will be removed from archaeological sites. Those sites deemed not eligible or significant may be subjected to mechanical treatment.
   a. If trees are left on the site, then an island of trees will be left off site in a location most likely to deter livestock from shading under the tree(s) on the site. In most cases, this is between the site and the nearest utilized water source. Trees on the island will be limbed up in order to attract livestock to that location. Ideal locations for islands include areas where the livestock are already shading.
   b. In regards to sites with rock features, hand treatment will not be utilized within a 45 feet (15 meters) radius of a rock feature or concentration of rock features. These areas will be flagged with non-“red and black striped flagging”; the color of flagging used will be documented in the DNR and made clear to the tree-cutters. This is to protect rock features from falling trees.
   c. If possible, trees around structures will be directly felled in order to avoid damaging the structure. If directional falling is not possible, then the trees will be avoided.

6. Historic arborglyphs, generally found in aspen stands, will be preserved in place,
will not be cut or damaged, and burnable materials will be removed from a 15 feet diameter area to avoid impacts of prescribed burning. However, the diameter around the arborglyph may increase depending on slope and aspect. Cut juniper 15 feet away will be piled no more than 5 feet high to avoid heat damage to the tree (aspen trees are vulnerable to fire damage as their bark does not offer sufficient protection against heat). Heat resistant wrap and/or colorless foam may also be used in order to protect the tree.

7. All temporary roads will have a Class III survey prior to construction initiation.
8. Mitigation measures for prescribed burns will follow the SRMPs outlined in the California Statewide Protocol Agreement (Appendix 2).
9. If fencing is required in order to rest areas from livestock after juniper have been removed, then all fences will avoid eligible or unevaluated archaeological sites and culturally sensitive areas. Additional survey at a Class III inventory is required before fence building is initiated if proper Class III inventory was not accomplished in the proposed fence line area in the initial survey.
10. Additional mitigation measures will be put in place as needed to avoid adverse impacts to cultural resources. These mitigation measures will be based on field survey results and will be approved by the Field Office Manager before implementation occurs. These mitigation measures will be generated and approved by a qualified Archaeologist and will be documented in the project file.

Cultural Resources- Inadvertent Discovery
In the event of inadvertent discovery of un-flagged and/or undocumented cultural resources during implementation of an undertaking, the following procedure shall be undertaken: Field Office Cultural Staff and the Field Office Manager shall be immediately notified by personnel responsible for project implementation. All work shall cease immediately at the site of discovery and all other work which may damage the cultural resource shall also cease. The Field Office Cultural Staff shall make an assessment of the situation and, in consultation with the Field Office Manager, may prescribe the emergency implementation of appropriate physical and administrative conservation measures as enumerated in BLM Manual Series 8140. The Field Office Cultural Staff shall notify the SHPO, as needed, in order to develop an agreement on the appropriate course of action, and such agreement shall reflect the intent of BLM Manual Series 8140.28B. The agreement shall be memorialized in writing and documented in project files. The Field Office Cultural Staff shall document implementation of the agreed-upon steps and shall report the discovery event and the manner of its resolution in the annual accomplishment reporting required under this Protocol.

For all of the cultural properties recommended as ineligible to the NRHP, no mitigation measures are recommended. Cultural properties that have not been evaluated for the NRHP will be treated as eligible until a NRHP evaluation has been made.

Appendix 3 — Standard Operating Procedures
Avoidance and Minimization — Standard Operating Procedures
The Tuleadad Habitat Restoration and Fuels Reduction Project would require certain precautions during project implementation. Defined Standard Operating Procedures (SOP’s) would ensure that identified resources within the project boundary would be protected and/or preserved. All project activities would be coordinated with the appropriate resource specialist and/or the SFO Interdisciplinary Team. Areas identified within the project boundaries as having important cultural, botanical, hydrological, recreational, and wildlife resources that require protection would be excluded from treatment. Historic woodlands within the project areas would be preserved and mature/old growth stands of juniper would be identified and protected.

Where applicable to the Proposed Action, standards for proposed management activities have been identified based on site-specific conditions. In addition, standards specified by the Sage-Steppe Ecosystem Restoration Strategy FEIS and the Surprise Field Office Resource Management Plan and FEIS have been included as relevant to implementation of the Proposed Action. The following SOPs would be implemented by the Proposed Action to avoid and/or minimize effects to resources within the project area.

**Air Quality**

- All prescribed fire projects would be completed pursuant to the standards specified by the Clean Air Act and would comply with all federal, State and local air pollution requirements.

- An approved Prescribed Fire Plan would be in place prior to ignition of any prescribed fire.

- The prescribed fire burn plan would be adhered to throughout the project. Emissions would be managed by timing and atmospheric dispersal.

- Prescribed burning would be concentrated in spring (mid-April through mid-June) and fall (mid-September through mid-November) to avoid coinciding with peak summer levels of air pollutants from other human-caused activities in the area and the winter inversion potential.

- Computer modeling to assess smoke dispersion, and related smoke management techniques would be implemented where practicable.

**Fire Management**

- The NorCal Fire Management Plan identifies aggressive, full suppression as the strategy for fire suppression in the Vya PMU Habitat Restoration and Fuels Reduction Project Area under conditions of severe fire intensity, especially within
the WUI. However, exceptions may be made where resource objectives could safely be achieved.

- Under conditions of low fire intensity, a less aggressive suppression strategy, such as containment/confine ment, would be implemented in previously identified areas likely to benefit from wildland fire use.

- Engines, aircraft, retardant, hand crews, and heavy equipment may be used for initial attack.

- The use of heavy equipment would be avoided in known NRHP-eligible sites, unless approved by the line office.

- Local resources and contractors would be used as much as possible for suppression efforts.

**Woodcutting**

- The areas excluded from woodcutting would be signed to indicate that woodcutting is not allowed. The Surprise Field Office would make maps available to the public indicating areas open and closed to woodcutting within the project area.

- Wood Cutting would not be allowed in areas where wood gathering would have the potential to have adverse effects on cultural resources as determined by the archaeologist and Field Manager.

**Hydrology**

- Minimize management activities within perennial and intermittent drainages where such activities would compromise normal watershed processes or functions.

- Entry into wet spring areas would be limited to hand treatments with chainsaws and broadcast/pile burning. During the dry summer months some access to spring areas may be allowed only after on-site inspections occur to ensure minimal impacts.

- Crossings over ephemeral stream channels would be identified by the Contracting Officer’s Technical Representative (COTR) and be limited to dry, rocky and stable areas. Crossing channels with mechanized equipment would be at locations that are stable and naturally armored with rock. Stream channels would be crossed at right angles and number and width of crossings would be limited to areas that have cobble and naturally occurring rocky areas to protect the channel. A minimal amount of passes over dry stream channels would be allowed and would be monitored by the project COTR.
**Soils**

- Adverse effects on soil resources would be minimized through management practices and adherence to Standard 1 of the Standards and Guidelines.

- Broad-scale vegetation treatment plans will specify appropriate levels of woody residue required for site protection.

- Damage to high shrink-swell soils will be prevented by limiting compacting activities to periods when soils are sufficiently dry to resist damage from the activity.

In addition, BLM would implement management practices to achieve or maintain significant progress toward achieving the criteria described below to meet Standard 1 of the Rangeland Health Standards and Guidelines for Northeastern California and Northwestern Nevada. The criteria to meet the standard are:

- Groundcover (vegetation, litter, and other types of groundcover such as rock fragments) is sufficient to protect sites from accelerated erosion;

- Evidence of wind and water erosion, such as rills and gullies, pedestaling, scour or sheet erosion, and deposition of dunes, is either absent, or if present, does not exceed what is natural for the site; and

- Vegetation is vigorous, diverse in species composition and age class, and reflects the potential natural vegetation or desired plant community for the site.

Water bars on temporary roads and scattered juniper material would be used to reduce sedimentation during high rainfall and or snow melt. Rehabilitating areas of compacted soil would be accomplished by ripping the soil with mechanized equipment to increase infiltration and reduce runoff, and encourage vegetative growth.

**Livestock Grazing**

- Grazing use authorized by BLM is subject to all provisions of the grazing regulations (43 CFR Parts 4100) and other applicable law and regulation. Grazing use will be in accordance with the Rangeland Health Standards and Guidelines for Northeast California and Northwestern Nevada Final EIS approved by the Secretary of the Interior on July 13, 2000. Grazing use authorization may be modified in accordance with regulation to attain progress towards achieving rangeland health standards (subpart 4180.1 and 4180.2 Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration).
• Treatment units would be rested from livestock grazing for a minimum of one growing season prior to and two growing seasons following broadcast burns through adjustments in the pasture/use area grazing schedule, and herding. All other treatments would be rested for at least one full year the first season of treatment and one growing season the following year. Decisions to resume grazing will be objective based.

• Compliance for resting of treatments will be based on utilization limits, with 20% or more utilization during a required rest period resulting in extending the rest by an additional growing season.

• Grazing can resume in treatments following rest periods after the following objective have been met. 2/3 of key native grass plants within the dominant ecological site in the treatment site have produced full seedheads. This objective will be measured annually at the end of the growing season, using 1 square meter plots at the designated SSER FEIS monitoring point(s) for the treatment.

• BLM would seek all opportunities to minimize the impacts on grazing permittees due to livestock removal to facilitate rest. These efforts would include but not be limited to:
  o design of projects to minimize rest on non-treated acres;
  o use of identified turnout areas, modified salting practices and herding to provide growing season rest in broadcast burn sites;
  o Modified allotment management plans during rest periods.

**Riparian Areas**

• Treatments within perennial or intermittent creeks and springs would be limited to hand treatments within the 250 foot buffer zone. Crews would use chainsaws to fall Western juniper trees, which would then be piled for burning at a later date.

**Vegetation**

• Mechanical juniper shearing and chipping operations will comply with conservation measures.

• Native juniper woodlands would be maintained within the landscape positions where they historically occurred.
• No pile burning or broadcast burning will occur on south facing slopes within the Upper Tulead Valley Project area to reduce the spread of cheatgrass. Pile burning is permitted within 100 feet of each side of the Tulead Valley Road to reduce fuel loads and improve the road as a fire break.

**SSER Treatment Monitoring and Adjustment**

A monitoring and adjustment approach would be implemented within constraints of rules and regulations, Forest Plan/Resource Management Plan, NEPA and the Sage Steppe Ecosystem Restoration Strategy. The approach would include systematic monitoring of site-specific treatments with assessments of the results being achieved to effectively make real time adjustments and corrections, within the scope of the ongoing project, if appropriate. Monitoring and data collection will follow the Sage Steppe Ecosystem Restoration Strategy protocols and will be made available on the database for other agencies and the public.

The project components that would be monitored would vary depending upon the type of restoration activity and site-specific conditions. The monitored components would be evaluated on a frequency that would allow for adjustments in the implementation of specific restoration activities. The monitoring and adjustment program would be focused on achieving the desired landscape conditions, based on site-specific characteristics for each treatment area.

**Old Growth Juniper**

Individual old growth trees in restoration areas would be identified using morphological characteristics (Miller *et al.* 2005) and preserved for their many social and ecological values. These characteristics would include:

• Rounded or unsymmetrical tops that may be sparse and contain dead limbs.

• Deeply furrowed, fibrous bark on the trunk that is reddish in color.

• Branches near the base of the tree that may be very large and covered with fruticose lichens.

• Limited terminal leader growth on branches in the upper 25 percent of the canopy.

In addition to preserving individual old growth trees, efforts would be made to maintain functioning ecosystems in historic juniper woodlands, especially those with a significant old growth component. These sites are typically present in areas with shallow, rocky soils surrounded by limited fine fuels, which historically were relatively protected from stand-replacing fire. Soils data could be used to identify potential historic juniper woodlands, but on-the-ground verification of their presence would be completed before project implementation.
Juniper woodlands would be low priority for treatment because they are generally not considered outside the historic range of variability, and juniper reduction in these sites would not be expected to enhance sage steppe ecosystems. Any treatments proposed in such sites would be designed to mimic natural fire processes given the specific topography, such as the removal of pockets of young trees in drainages. The following categories provide general guidance for treatments:

- In stands where more than 75% of trees exhibit old growth characteristics, no juniper will be cut
- In stands with 50-75% old growth, up to 25% of young trees may be removed
- In stands with 25-50% old growth, up to 50% of young trees may be removed

**Special-Status Plants**

- No Special Status Species are known to occur within the project area, if species were discovered during implementation the species would be identified, flagged, and would not be disturbed with any treatment activities. Buffer zone sizes around sensitive plant sites would be identified at the discretion of the botanist and Field Manager. BLM requirements for special-status plant management are found in BLM Manual Handbook 6840-1, *Special Status Plant Management*, 1996.

**Wildlife**

- Retain vegetation buffers for wildlife cover at water sources, wetlands, and riparian sites.
- Limited Operation Periods (LOPs) and buffer zones would be implemented as necessary to reduce disturbances to wildlife.
- Close and rehabilitate cherry stem and temporary project roads to reduce disturbances to wildlife.
- Actions requiring vegetation/habitat disturbance such as construction of temporary roads and landings, and skidding or other movement of trees and related materials, should be accomplished in a manner resulting in as minimal disturbance as possible.
- Leave all snags greater than 25 cm (10 inches) standing and create additional snags. This recommendation/mitigation would benefit many species including bats such as long-eared myotis.
- All fencelines within 1 mile of an active sage-grouse lek where juniper is cut will be marked with dark brown and white fence markers.
- All fencelines around riparian areas within 2 miles of an active sage-grouse lek where juniper is cut will be marked with dark brown and white fence markers.
• All active bird nests within juniper trees will be avoided and left standing during the breeding season (March 1-June 30).

**Ungulates**

• Implement seasonal protection measures and buffer zones as appropriate for permitted activities.

**Sagebrush-Obligate and Associated Species**

• Locally developed conservation strategies or plans developed for sage-grouse, pygmy rabbit, burrowing owl and other special-status species would be used to identify high-priority treatment and fire suppression areas.

• To the extent possible, utilize local native plants and seeds in seeding, restoration and rehabilitation projects, in accordance with BLM California’s Native Seed Policy.

**Other Native Wildlife Species**

• Protect known raptor nesting trees from removal during project activities.

• Manage migratory birds in accordance with the Migratory Bird Treaty Act and Migratory Bird Executive order 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*.

**Federal State and BLM Listed Terrestrial and Aquatic Species**

• Follow management guidelines within applicable biological opinions and conservation strategies.

• Implement seasonal protection measures and buffer zones as appropriate for permitted activities.

Currently there are no known federally threatened or endangered species known within or adjacent to the project area. If, during the implementation of the Proposed Action, threatened, endangered, BLM Sensitive species, or other species of interest are found, then areas of important or necessary habitat in the project area would be identified, flagged and protected from project activities in coordination with the SFO wildlife biologist. Project activities may be subject to seasonal restriction dates and buffer zones to protect specific wildlife species and their habitats. Project activities would be
implemented consistent with the local Conservation Strategy for Sage-Grouse (*Centrocercus urophasianus*) and the Sagebrush Ecosystems within the Buffalo Skedaddle Population Management Unit.

**Noxious Weed Species**

- All vegetation manipulation areas will be managed following treatment to ensure that noxious and invasive weeds do not become established.

Activities associated with the Proposed Action that are prone to noxious weeds, such as temporary roads, landings and skid trails would be monitored post treatment for new occurrences for three years. Newly discovered populations of noxious weed species would be mapped and treated using management techniques outlined in SFO Integrated Weed Management EA. To minimize the potential spread of noxious weed species the equipment associated with the Proposed Action would be pressure washed prior to engaging in project activities and before transport to new work areas.

Equipment operators and project inspectors would be provided with a noxious weed identification guide for species that are known to occur in northeast California. If a noxious weed site is discovered, project activities should cease and the Noxious Weed Coordinator notified of the occurrence. Project activities should not resume in the area until treatments and prevention procedures are in place.

**Recreation**

To the extent possible, roads that provide access to developed recreation sites for safety concerns would be used minimally. If necessary to use them for treatment activities, these roads would be avoided during weekends.

Areas where undeveloped hunting campsites occur would be excluded from mechanized treatment. Buffer zones would be established around these areas to maintain aesthetic values and would be coordinated with SFO recreation manager. Hand treatment in these areas would include use of chainsaws to thin juniper densities and hand pile construction. Slash piles would be burned during winter months.