BLM

Environmental Assessment (DOI-BLM-ID-B030-2016-0003-EA)

Soda Fire Fuel Breaks Project

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Bureau of Land Management

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1.0 Introduction

1.1 Background

The Soda Fire (2015) is the largest wildfire recorded in southwestern Idaho, continuing recent trends in increasing frequency and size of very large wildfires in southwestern Idaho and southeastern Oregon. The amount of upper elevation sagebrush steppe (4,500-6,500 feet) consumed by the Soda Fire is unprecedented in northern Owyhee County, Idaho. The Soda Fire destroyed private and public infrastructure, threatened multiple communities, and consumed valuable wildlife habitat (sagebrush and bitterbrush communities). The impact to vegetative communities has left the system vulnerable to the spread and proliferation of invasive annual grasses and an increase in fire frequency. The fire burned a total of 279,144 acres; 228,077 acres in Owyhee County, Idaho and 51,067 acres in Malheur County, Oregon (Figure 1-1). The project area discussed in this EA has a perimeter that includes the entire Soda Fire burned area and all activities proposed under the action alternatives. The project area encompasses 647,266 acres and is depicted in Figure 1-1.

After the fire, a BLM Interdisciplinary Team (IDT), which included local resource specialists from the Owyhee Field Office (BLM Idaho) and Malheur Field Office (BLM Oregon), assessed values affected by the fire. The team consisted of individuals representing hydrology, soils, geology, cultural resources, wildlife, vegetation, fisheries, recreation, rangeland management, engineering, hazardous materials, noxious weeds, hazardous fuels, and geographic information systems (GIS). Data from the field assessments were compiled, and added to existing, pre-burn information to identify values threatened by potential post-fire effects. The timelines associated with emergency response planning required a rapid assessment of post-fire changes to values at risk at a landscape level. Information was generated from field reconnaissance, review of relevant literature, management plans, GIS databases, and discussions with stakeholders. Based on report assessments from each specialist group, threats and primary objectives were identified and detailed in the BLM Post-Fire Recovery Plan Emergency Stabilization and Burned Area Rehabilitation Plan (Soda Fire ESR Plan, 2015).

In addition to the stabilization and rehabilitation actions identified in the Soda Fire ESR Plan, the plan also identified the need for a system of fuel breaks within and surrounding the burned area in order to prevent and minimize the potential for future wildfires. The following values at risk and threats to values at risk were identified in the Soda Fire ESR Plan:

Values at Risk

- Wildland Urban Interface (WUI) areas
- Public and private infrastructure (e.g., outbuildings, fences, comm. towers, power poles)
- Vegetation/habitat rehabilitation investments (e.g., seedings, seedling plantings within burn perimeter)
- Habitat for greater sage-grouse (*Centrocercus urophasianus*) and other sagebrush obligate species within and outside of the burned area

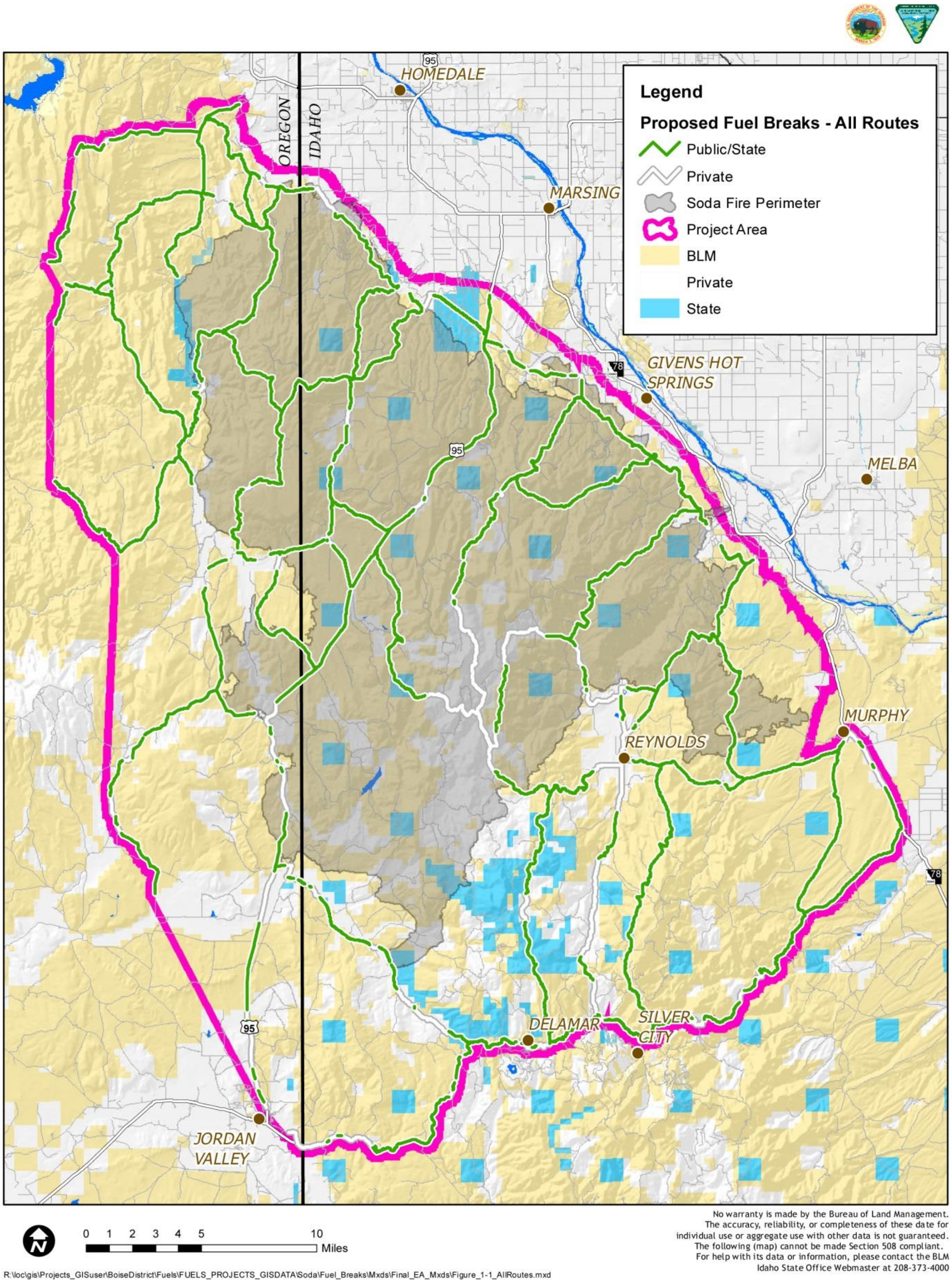
Threats to Values at Risk

- Wildfire (short- and long-term)

- Altered fire regime (i.e., increase in fire frequency and rates of spread) promoting/exacerbating spread of disturbance related species (e.g., cheatgrass, medusahead) (long-term)

Additionally, per the Greater Sage-Grouse Approved Resource Management Plan Amendments for Idaho and Oregon, the Soda Fire tripped a hard habitat threshold (trigger) in Idaho's West Owyhee Biological Significant Unit (BSU) and two soft thresholds (habitat and population, which equal a hard threshold) in Oregon's Cow Lakes Priority Area of Conservation (PAC), respectively. The Idaho and Southwestern Montana ARMPA's Management Decision (MD SSS 17 adaptive management strategy) requires Important Habitat Management Areas (IHMA) within the West Owyhee BSU and the Cow Lakes PAC, which share a boundary between states, to be managed as Priority Habitat Management Areas (PHMA) (see Figure 3.5-2, Section 3.5 Wildlife).

Figure 1-1: Project Area.



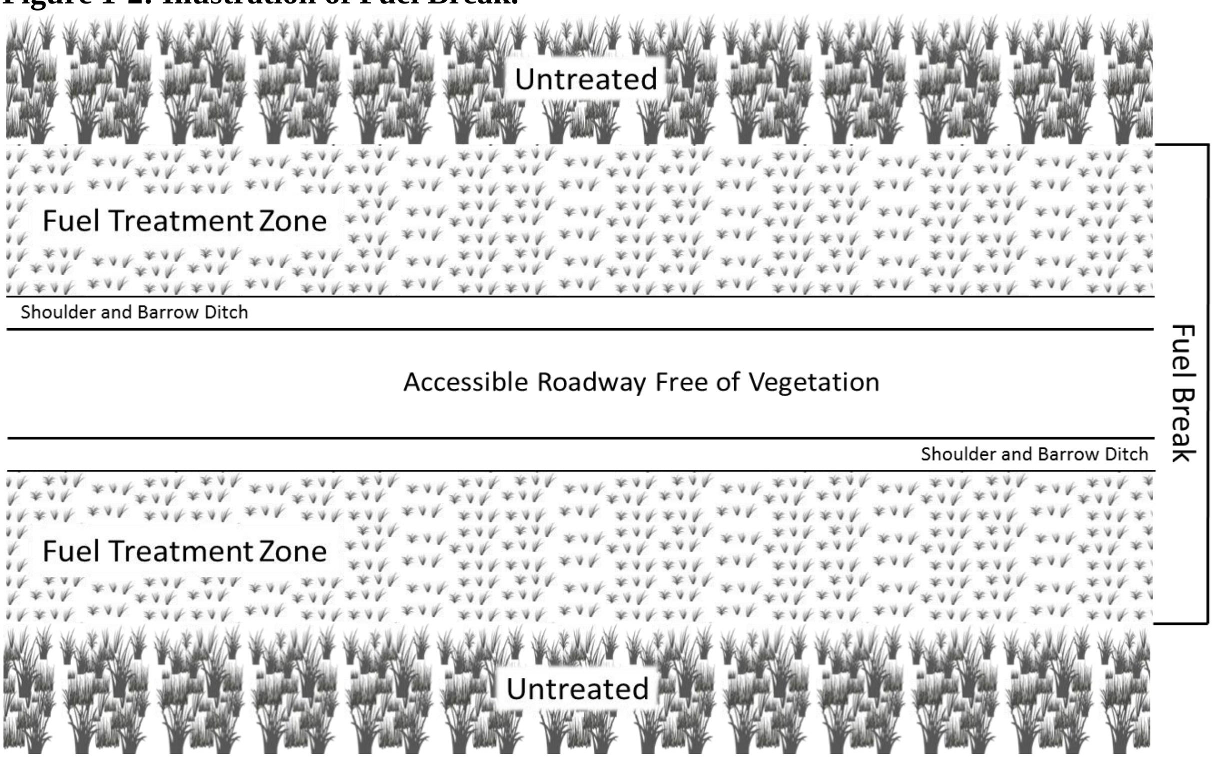
1.1.1 Fire Behavior and Fuel Breaks

The priorities established for fire suppression considerations are life, property, and natural resources, respectively. During multiple wildland fire outbreaks, fires outside of the wildland urban interface (WUI) cannot always receive sufficient suppression resources to extinguish the fire. Proactive, pre-suppression measures like fuel breaks provide opportunities for fire suppression resources to more safely and rapidly engage wildfires, and to be more effective across a larger area with potentially fewer resources.

The National Wildfire Coordination Group (NWCG) defines a fuel break as "a natural or manmade change in fuel characteristics which affects fire behavior so that fires burning into them can be more readily controlled" (NWCG 2015). An integrated fuel break system provides the fire community with predetermined fire breaks that they are aware of before a fire starts and can rely upon without the need to create or augment them during suppression. This proactive approach allows fire managers the potential to commit fewer firefighting resources to those fires where fuel breaks are already established. The result would be an increase in suppression resources available to respond to other priority fires based on threats to life, property, and natural resources.

By altering fuels (i.e., vegetation) and disrupting fuel continuity, fuel breaks are designed to reduce flame lengths, slow the spread of fast moving wildfire, reduce spotting distance and potential, providing greater opportunities for firefighters to gain control of or contain a fire. For the purpose of this document, the term "fuel break" is considered a roadway free of vegetation (the hard break in fuel continuity) and the adjacent fuel treatment zone (vegetation along roadway treated to reduce fuel accumulations and disrupt fuel continuity in order to modify fire behavior) as illustrated in Figure 1-2.

Figure 1-2: Illustration of Fuel Break.



Research and decades of fire suppression experiences indicate that fuel breaks have the potential to slow a fire enough for suppression crews to control the incident, or alter fuel sufficiently to limit fire spread (Monsen and Memmott 1999). The effect that established fuel breaks have on the spread of wildfire can be demonstrated by first-hand observations from firefighters in the field, and is discussed in Appendix A (e.g., 2011 Southsim, 2012 Cox's Well, and 2012 MM86 fires).

Fuel breaks must be designed to address the specific fuel conditions on the ground taking into account weather parameters (wind, temp, and relative humidity [RH]) and fire behavior anticipated for a given area. Once the fuels, weather conditions, and expected fire behavior are identified, fuel break specifications can be determined. Appendix B provides a detailed description of the fire behavior, weather conditions, and fuel conditions experienced on the Soda Fire and compares these to the desired (post treatment) fuel conditions and resulting fire behavior characteristics for the fuel breaks BLM is proposing for this project. Several important fire behavior characteristics are addressed including flame length, rate of spread, and fire line intensity.

Appendix B also provides a detailed analysis of fire behavior expected under existing conditions and fire behavior expected with implementation of the proposed action using predictive models. Predictive models allow fire managers to anticipate and forecast fire behavior. Wildland fuels which occur naturally across the landscape as well as fuels that have been manipulated (e.g., by mowing brush) have been grouped into standard sets of fuel models. These fuel models are used as inputs to the predictive models to help predict flame length, rate of spread, and fire line intensity and are the industry standard for wildland fire (Scott and Burgan 2005).

The fuel types BLM is targeting for treatment are best represented by Grass-Shrub Fuel Type Model 2 (GS2) and Grass Fuel Type Model 4 (GR4), where the primary carriers of fire are grasses and shrubs, and the spread rates and flame lengths are high. Desired fuel conditions within fuel breaks are best represented by Grass Fuel Type Model 1 (GR1) and Shrub Fuel Type Model 1 (SH1), where the primary carriers of fire are sparse grasses or shrub litter, and spread rates and flame lengths are low (Figure 1-3 and Appendix B). Appendix B describes these fuel model comparisons and desired treatment outcomes in greater detail, and includes charts, tables, and photographs illustrating these concepts.

Currently, the Department of the Interior catches and extinguishes 97% of wildfires during initial attack (USDI 2016, Havlina et al., 2014, Murphy et al., 2013). Fuel breaks proposed for this project have been designed to address the three percent that escape initial attack, and which exhibit fire behavior similar to Soda Fire and other recent large fires including the 2014 Buzzard, 2012 Long Draw, 2012 Holloway, and 2007 Murphy fires (see Figures 1-3 and 1-4). This particular fire behavior is described as having extreme rates of spread and extreme flame lengths caused by excessive fuel accumulations and continuity.

Fires like those mentioned above that the proposed project is designed to address have the following in common:

- occur at a specific time of year when fuels are dry or stressed by drought (i.e., mid- to late-fire season – generally July, August, and early September in the Northern Great Basin);

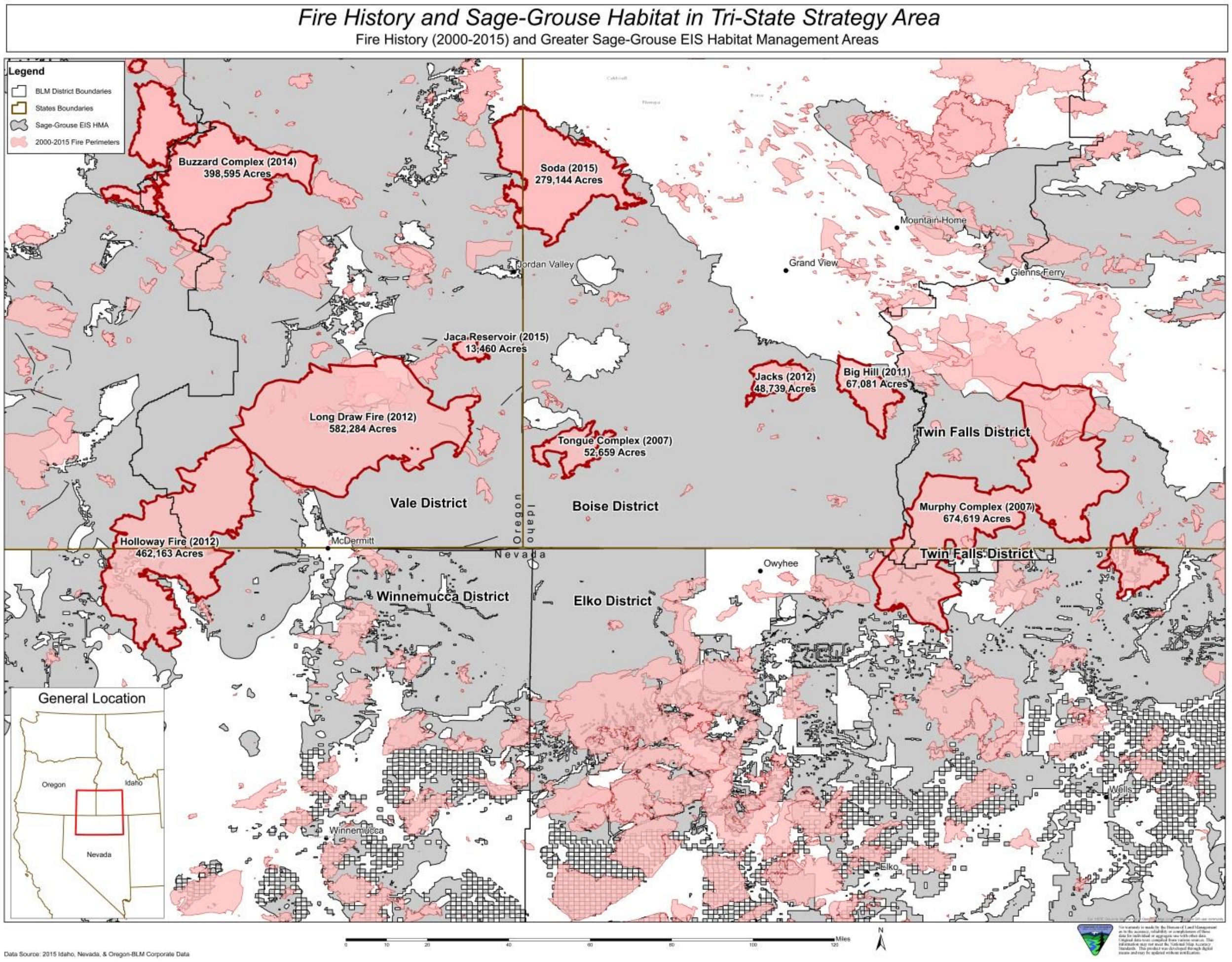
- result from a specific event (e.g., lighting events that spread across a broad geographical region resulting in multiple, simultaneous wind driven fires and depletion of fire suppression resources on a local and national scale); and
- occur in vast areas of high, continuous fuel loading.

By altering the fuel type, fire behavior can be drastically changed by reducing flame lengths, rate of spread, and fire line intensity while increasing safety for fire suppression resources, as well as increasing potential for suppression success within the proposed fuel break system.

Figure 1-3: Soda Fire Behavior, August 2015.

Fire resources attempt to hold fire on Highway 95 north of Jordan Valley, Oregon. Note individual in picture is attempting to burn out grass fuels immediately adjacent to roadway. Picture demonstrates the difference between fire line intensity and flame lengths between brush/grass fuel model (background) and primarily grass fuel model adjacent to roadway. Image also demonstrates the fire behavior that the Soda Fuel Breaks project is designed to address.

Figure 1-4: Fire Perimeters in the Northern Great Basin Area (known as the Tri-state area) from 2000-2015 (grey background depicts sage-grouse habitat).



1.2 Purpose and Need for Action

The purpose or goal of the action is to protect the WUI area, the surrounding intact sage-grouse habitat, and the ESR investments from the threat of wildfire, and thereby stem the subsequent threat of invasive plant expansion within and adjacent to the Soda Fire boundary, while providing optimal safe areas and anchor points for firefighters to more rapidly and effectively suppress fires.

The Soda Fire destroyed private and public infrastructure, threatened multiple communities, and consumed valuable wildlife habitat (sagebrush and bitterbrush communities). The Soda Fire also tripped a habitat hard trigger as identified in the Idaho & Southwestern Montana Greater Sage-Grouse ARMPA. As a result of the tripped habitat trigger, the ARMPA requires Important Habitat Management Areas (IHMA) the Idaho West Owyhee Conservation Area BSU and the Oregon Cow Lakes PAC to be managed as Priority Habitat Management Areas (PHMA).

Overall, the impact to vegetative communities has left the ecosystem vulnerable to the spread/increase in invasive annual grasses, the creation of continuous fuel loads that will be more likely to catch and carry fire, and in turn, create a high potential for an increase in fire frequency and fire size in the area. As a result, the BLM undertook massive Emergency Stabilization and Rehabilitation (ESR) efforts including seeding and seedling planting as the initial steps toward restoring and improving the sagebrush-steppe habitat impacted in the Soda Fire.

Newly planted perennial grasses, forbs, and shrubs could become vulnerable to repeated wildfire if non-native invasive annual grasses become established in the affected area. The increased fire risks for the Soda Fire area heighten the threat of fire burning into remaining intact sage-grouse habitat adjacent to the Soda Fire, and to rehabilitation and restoration efforts in the Soda Fire burn area. There is a need to prevent fire from undermining native vegetation restoration efforts and to protect sagebrush habitat within Idaho's West Owyhee BSU and Oregon's Cow Lakes PAC. Limiting the potential for future wildland fires to burn into the Soda Fire rehabilitation areas from the outside or from starting inside the fire perimeter to burn into intact native vegetation would provide more opportunity to protect these habitats.

A system of integrated fuel breaks within and outside the Soda Fire perimeter (see Figure 1-1) would provide the most efficient and cost effective means to meet this need. Fuel breaks enhance fire suppression efforts by (1) providing tactical and logistical opportunities to fire personnel, including easy and efficient access to fire prone areas, (2) compartmentalizing areas between fuel breaks to contain wildfires into more manageable units, and (3) minimizing fire spread after ignition. Fuel breaks, if implemented and maintained, provide fire suppression personnel with an opportunity to safely engage wildfires and to more effectively attack wildfires across a larger area with fewer resources. A system of fuel breaks would protect human life and property, remaining habitat, and ESR investments by reducing the spread of future fires, including human-caused fires ignited near the highway and agricultural lands in and around the burned area.

The Department of the Interior maintains interagency standards for firefighting and fire aviation operations which are composed of orders. Standard firefighting Order # 3 states, "Base all actions on current and expected behavior of the fire" and Order #10 states, "Fight fire aggressively, having provided for safety first." These orders, along with others, are the basis of any fuel break strategy. Fuel breaks placed strategically across the landscape serve to modify fire behavior (i.e., reduce flame length and/or rate of spread) while increasing firefighting safety by providing areas of reduced fuel concentrations and reduced fuel continuity. Fuel breaks also provide quicker ingress and egress for firefighting personnel and equipment necessary for suppression (e.g., dozers and fire engines).

1.3 Conformance with Applicable Land Use Plans and Other Related Documents

Fuel breaks methods identified in the Proposed Action are consistent with the following applicable land use plans, as amended:

Land Use Plans

- Owyhee Resource Management Plan (RMP), 1999
- Southeastern Oregon RMP, 2002
- Snake River Birds of Prey National Conservation Area (NCA) RMP, 2008
- Approved Resource Management Plan Amendments (ARMPA) for the Great Basin Region Sage-Grouse Sub-regions (Idaho & Southwestern Montana, Nevada and Northeastern California, Oregon, and Utah), 2015

Conformance of the Proposed Action and alternatives with management direction contained in the Owyhee RMP, Southeastern Oregon RMP, Snake River Birds of Prey NCA RMP, and ARMPA for the Great Basin Region Sage-Grouse Sub-regions (hereafter referred to as Sage-Grouse ARMPA) is presented below.

Owyhee RMP

Although the Owyhee RMP does not specifically discuss fuel breaks, fuel breaks are exclusively constructed for the purpose of suppressing wildfire which is discussed and allowed in the Owyhee RMP. The Proposed Action is in conformance with the following Owyhee RMP objectives:

- Improve unsatisfactory and maintain satisfactory vegetation health/condition on all areas (p. 9).
- Maintain or enhance the condition, abundance, structural stage and distribution of plant communities and special habitat features required to support a high diversity and desired populations of wildlife (p. 15).
- Improve and maintain perennial stream/riparian areas to attain satisfactory conditions to support native fish (p. 18).
- Manage special status species and habitats to increase or maintain populations at levels where their existence is no longer threatened and there is no need for listing under the Endangered Species Act (ESA) of 1973, as amended (p. 20).
- Suppress wildfires by taking appropriate management response utilizing the range of acceptable acreage limits listed for each fire management zone within the resource area. The current Fire Management Plan is reviewed periodically and may be revised in conformance with the RMP (p. 25).
- Ensure that BLM controlled management actions do not exceed the National Ambient Air Quality Standards by airshed as established in the Clean Air Act and administered by guidelines in the State Implementation Plan, when in place, and the Environmental Protection Agency's (EPA) "Prescribed Burning Background Document and Technical Information Document for Prescribed Burning Best Available Control Measures" or EPA's Smoke Management Best Management Practices (p. 27).
- Modify standard suppression techniques to protect sensitive resource values (p. 28).

Southeastern Oregon RMP

The Proposed Action is in conformance with the following Southeastern Oregon RMP objectives:

- Provide an appropriate management response on all wildfires, with emphasis on minimizing suppression costs, considering fire fighter and public safety, benefits, and values to be protected consistent with resource objectives (p.37).
- Restore, protect, and enhance the diversity and distribution of desirable vegetation communities, including perennial native and desirable introduced plant species. Provide for their continued existence and normal function in nutrient, water, and energy cycles (p.38).
- Manage big sagebrush cover in seedings and on native rangelands to meet the life history requirements of sagebrush-dependent wildlife (p.40).

- Control the introduction and proliferation of noxious weed species and reduce the extent and density of established weed species to within acceptable limits (p.41).
- Manage public land to maintain, restore, or enhance populations and habitats of special status plant species. Priority for the application of management actions would be: (1) Federal endangered species, (2) Federal threatened species, (3) Federal proposed species, (4) Federal candidate species, (5) State listed species, (6) BLM sensitive species, (7) BLM assessment species, and (8) BLM tracking species. Manage in order to conserve or lead to the recovery of threatened or endangered species (p.43).
- Restore, maintain, or improve habitat to provide for diverse and self-sustaining communities of fishes and other aquatic organisms (p.49).
- Maintain, restore, or enhance riparian areas and wetlands so they provide diverse and healthy habitat conditions for wildlife (p.50).
- Manage upland habitats in forest, woodland, and rangeland vegetation types so that the forage, water, cover, structure, and security necessary for wildlife are available on the public land (p.51).
- Manage public land to maintain, restore, or enhance populations and habitats of special status animal species. Priority for the application of management actions would be: (1) Federal endangered species, (2) Federal threatened species, (3) Federal proposed species, (4) Federal candidate species, (5) State listed species, (6) BLM sensitive species, (7) BLM assessment species, and (8) BLM tracking species. Manage in order to conserve or lead to the recovery of threatened or endangered species (p.51).

Snake River Birds of Prey NCA RMP

The Proposed Action is in conformance with the following NCA RMP objectives and Management Actions:

- Emphasize maintenance, protection, and enhancement of raptors and other sensitive wildlife populations and habitats (pp. 2-7).
- The distribution, abundance, and vigor of special status plants (SSP) will be maintained or improved (p. 27).
- Protection of native plant communities is one of the highest priorities for fire suppression.
- Use a combination of prescribed fire, herbicides and mechanical treatments where appropriate, on all vegetation treatment projects, including ESR.

The Proposed Action is compatible with the protection of the objects and values for which these areas were designated because fuel breaks and the treatments proposed are analyzed in the Snake River Birds of Prey National Conservation Area RMP Final EIS (Section 4.2). The RMP also covers and allows for noxious and invasive weed control.

Sage-Grouse ARMPAs

Idaho & Southwestern Montana Greater Sage-Grouse Approved Resource Management Plan Amendments (ARMPA)/Final EIS and Oregon Greater Sage-Grouse ARMPA/Final EIS.

Management decisions (MDs) and required design features (RDF) contained in the ARMPAs were incorporated into the action alternatives. The action alternatives have been reviewed for conformance with the ARMPAs. Applicable management decisions are captured in the design features included in Chapter 2. Following final review of the proposed anthropogenic disturbance, the BLM determined that the project disturbance is well below the three percent cap in both Idaho and Oregon.

Other Applicable BLM Plans

Fuel breaks methods identified in the Proposed Action are consistent with the recommendations, guidance, and methods identified in the following BLM plans and decisions:

- 2007 Vegetation Treatments Using Herbicides on BLM Lands in the 17 Western States Programmatic EIS (PEIS) and Herbicides Approved for Use on BLM Lands in Accordance with the 17 PEIS Record of Decision (ROD) – May 14, 2014 update
- 2016 Final PEIS for Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on BLM Lands in 17 Western States (DOI-BLM-WO-WO2100-2012-0002-EIS)
- 2010 Vegetation Treatments Using Herbicides on BLM Lands in Oregon Final Environmental Impact Statement and Record of Decision
- 2005 Boise District Normal Fire Emergency Stabilization and Rehabilitation Plan EA
- 2005 Vale District Normal Fire Emergency Stabilization and Rehabilitation Plan EA
- 2007 Boise District Noxious and Invasive Weed Treatment EA
- 2009 Vale District Fire Management Plan, updated annually
- 2011 Boise District Fire Management Plan
- 1994 Boise District Road and Trail Maintenance EA (ID-100-1994-EA-0117)
- 1975 Vale District Road Maintenance Environmental Analysis Record

Other Related Documents

- National Greater Sage-Grouse Conservation Measures/Planning Strategy.
- Sage-grouse Management Plan Owyhee County, Idaho (2000, amended 2013)
- Oregon Executive Order No. 15-18 which sets forth the Oregon Sage-Grouse Action Plan (Sage-Grouse Conservation Partnership 2015)
- Idaho Executive Order No. 2015-04 which sets forth the Idaho Sage-Grouse Conservation Plan as the Governor's Alternative (E) from the Idaho and Southwestern Montana Greater Sage-Grouse Proposed Land Use Plan Amendment and FEIS (June 2015)
- Idaho State Board of Land Commissioners Greater Sage-Grouse Conservation Plan (April 2015).
- Secretarial Order 3336 (January 2015), Rangeland Fire Prevention, Management and Restoration
- Greater Sage-Grouse Wildfire, Invasive Annual Grasses & Conifer Expansion Assessment (Fire and Invasive Assessment Tool (FIAT)) (June 2014).
- Natural Resources Conservation Service (NRCS) Sage-grouse Initiative, Conservation Practice Standard for Firebreaks (September 2010)
- Inland Native Fish Strategy (INFISH) for the Intermountain, Northern, and Pacific Northwest Regions (USDA FS, 1995)
- The Migratory Bird Treaty Act of 1918, as Amended, and Executive Order 13186
- Interim Golden Eagle Technical Guidance: Inventory and Monitoring Protocols; and Other Recommendations in Support of Golden Eagle Management and Permit Issuance (Pagel et al 2010)

- Idaho Information Bulletins No. ID-2010-039, Seasonal Wildlife Restrictions and Procedures for Processing Request for Exceptions On Public Lands in Idaho.
- Idaho's Standards for Rangeland Health and Guidelines for Livestock Grazing Management
- Herbicide Formulations Approved for Use on BLM Lands in Accordance with the 17 Western States PEIS ROD – May 14, 2014 update.
- National Seed Strategy (August 2015).
- Oregon/Washington State Protocol Agreement between Oregon/Washington State Historic Preservation Office (SHPO) and the BLM in Oregon/Washington (2015); and Idaho State Protocol Agreement between Idaho SHPO and the BLM in Idaho (2014).

1.4 Relationship to Statutes, Regulations, and Other Requirements

During the preparation of this EA, the following documents were consulted because they help to reduce redundant analysis. These documents are incorporated by reference throughout the document because they cover similar issues, effects, and/or resources. The documents analyzed similar issues at a broader scale, which allows a more narrow focus for the analysis of the proposed Soda Fuel Breaks project.

- Fuel break development and maintenance would comply with the 2010 settlement agreement between the Oregon Natural Desert Association (ONDA) and BLM (ONDA v. BLM, 2010). The 2010 settlement agreement prohibits implementation of a project that would diminish the size of a wilderness inventory unit (WIU) that was determined by BLM to possess wilderness characteristics or cause an entire BLM inventory unit to no longer meet wilderness characteristics criteria. The Vale District office completed the Wilderness Characteristics inventory update process for all areas within the Oregon portion of the project area, including all lands identified by citizen proposals received by 2012 or earlier. Final wilderness characteristic determinations have been made available to the public on the BLM Vale District website at: http://www.blm.gov/or/districts/vale/plans/wce/malheur-index.php
- Proposed chemical treatments would comply with the 2007 Vegetation Treatments Using Herbicides on BLM Lands in the 17 Western States Programmatic EIS (PEIS) and Herbicides Approved for Use on BLM Lands in Accordance with the 17 PEIS ROD – May 14, 2014 update. The ROD for the PEIS and the 2014 updated list of herbicides identified herbicide active ingredients that were approved for use on BLM lands and standard operating procedures to use when applying herbicides. Only herbicide active ingredients approved for use in the ROD and updated 2014 list would be utilized. Herbicide treatment activities in the Proposed Action would follow the applicable Standard Operating Procedures identified in the ROD.
- The Vale District has finalized its Integrated Invasive Plant Management Environmental Assessment (DOI-BLM-ORWA-V000-2011-0047-EA), and a Decision was prepared and signed December 22, 2016. The Vale District reviewed, responded to, and incorporated as appropriate comments received regarding this EA during scoping and review. The Soda ESR Plan and the Integrated Invasive Plant Management EA were considered to ensure consistency, appropriate design features, best management practices, etc.
- The Fire Management Plans (FMP) for the Boise District and the Vale District were reviewed for fire ecology, values at risk, and priorities relative to fire suppression and

fuels treatments. The Proposed Action covers a portion of the Vale District's Owyhee East Fire Management Unit (FMU), and the Northern/Silver City, Owyhee Front, and Birds of Prey FMUs on the Boise District. Fire is not desired in the Owyhee East FMU due to private and agricultural land and high cover of annual grasslands, and full suppression is employed for all non-prescribed fire starts. Prescribed fire may be used in the FMU to meet resource objectives such as wildlife forage or habitat enhancement. The Owyhee Front FMU is considered a high priority for suppression due to WUI and resource concerns such as sage grouse habitat and cultural and historic sites. The Owyhee Front has a relatively low fire occurrence, and a high percentage of fires that do occur there are human-caused. However, fuel loading is high and recent events suggest fuel breaks are needed to ensure fires similar the Soda Fire do not become a reoccurring situation. The Northern/Silver City FMU is ranked as a moderate priority for suppression due to low concentration of WUI. It does contain a number of cultural and historic sites. The Northern/Silver city FMU has a historically relatively low fire occurrence. The Birds of Prey FMU represents a small portion of the project area on the eastern edge. It is ranked as a high priority for suppression largely due to the presence of slickspot peppergrass (*Lepidium papilliferum*) habitat. Fire history here is influenced by a relatively large number of human ignitions and high cover of annual grasses.

- The Paradigm Fuel Break Project EA (DOI-BLM-ID-2011-0060-EA) provides an in-depth review and discussion of the pertinent literature regarding the spread potential for prostrate kochia; therefore, it has been incorporated by reference.
- **Cultural Resource Laws and Executive Orders:** The BLM is required to consult with Native American tribes to "help assure (1) that federally recognized tribal governments and Native American individuals, whose traditional uses of public land might be affected by a proposed action, will have sufficient opportunity to contribute to the decision, and (2) that the decision maker will give tribal concerns proper consideration" (U.S. Department of the Interior, BLM Manual Handbook H-8120-1). Tribal coordination and consultation responsibilities are implemented under laws and executive orders that are specific to cultural resources which are referred to as "cultural resource authorities," and under regulations that are not specific which are termed "general authorities."

  Cultural resource authorities include: the National Historic Preservation Act (NHPA) of 1966, as amended; the Archaeological Resources Protection Act of 1979; and the Native American Graves Protection and Repatriation Act of 1990, as amended. General authorities include: the American Indian Religious Freedom Act of 1979; the National Environmental Policy Act of 1969; the Federal Land Policy and Management Act of 1976; and Executive Order 13007-Indian Sacred Sites. The Proposed Action is in compliance with the aforementioned authorities.

1.5 Scoping and Development of Issues

A scoping package was sent to all interested parties on March 8, 2016. The package provided a general description of the Proposed Action, design criteria, and map showing the project area's outline. Comment letters were received from five individuals and 11 organizations. Each comment was reviewed and identified as either substantive or non-substantive. Substantive comments included those that challenged the accuracy of the information present in the scoping package; challenged the methods that would be implemented as part of the Proposed Action or alternatives; presented new information considered relevant to the NEPA analysis; or suggested reasonable alternatives (including mitigation) beyond those that were presented in the scoping package. Substantive comments were used in the development of the alternatives and analysis found in this EA. Non-substantive comments include, but were not limited to, comments such as open ended questions, opinions without supporting rationale, requests for analysis to be included that were not related to the Proposed Action under consideration (e.g., requests for the EA to assess various predator control methods or to alter the current BLM grazing permit policies), as well as comments about other projects or activities that are not relevant to the currently proposed project. These non-substantive comments were not used in development of the alternatives and analysis.

Based on the comments received and internal scoping, the following issues have been identified and addressed in this EA:

- Effects on cultural resources and other sensitive resources, such as riparian areas and special status species
- Methodology, location, width and timing for biological thinning (targeted grazing) treatments
- Effects of road improvement on public access and recreation
- Effects on migratory birds
- Effects to lands found to possess wilderness characteristics (Oregon only)
- Natural resource concerns related to the use of prostrate kochia

2.0 Description of the Alternatives

2.1 Fuel Break Criteria and Treatment Objectives

Fuel breaks must meet the following criteria to be effective and provide a benefit to fire suppression resources:

- *Landscape level*: Fuel breaks must be at a scale commensurate with the wildfire issue; developed to compartmentalize wildfires and tied into existing features such as roadways.

- *Strategic for fire resources*: Fuel breaks must be located in areas where they are readily accessible providing firefighters a tactical and safe area to establish anchor points for suppression actions; firefighters must have confidence in the location and design or the fuel breaks will not be used.

- *Timely*: Fuel breaks need to be already established and functional when needed (i.e., fire season during June through mid-September in the Boise and Vale Districts).

- *Logistically feasible and affordable*: If fuel breaks are difficult to implement and too expensive to maintain, they will not be carried into the future.

The following section lists the specific, attainable resource management objectives for the action alternatives. Monitoring will measure progress toward meeting the objectives. The primary objectives of the action alternatives include:

- *Objective 1:* Develop effective fuel breaks as defined above.

  Rationale: To protect ESR investments and remaining habitat from future fires by reducing hazardous fuels adjacent to roadways, and increasing success of proposed seeding treatments.

- *Objective 2:* Promote plant communities within the proposed fuel break areas composed of fire-resistant and resilient perennial plant materials that are low in stature and biomass and are discrete (i.e., have adequate spaces between individual plants) to reduce fuel accumulations, volatility, and continuity. Plant materials must be competitive and able to resist cheatgrass or medusahead invasion while providing a patchy, broken fuel bed that is resistant to fire spread.

  Rationale: Fire-resistant fuel breaks reduce fire behavior at the point where a wildfire intersects the fuel break. Self-sustaining/resilient plant communities are competitive with non-native invasive annual plants and noxious weeds. An effective fuel break enhances fire suppression efforts and public and firefighter safety.

- *Objective 3:* Reduce or eliminate noxious weeds and non-native invasive annual grasses by utilizing herbicide application in the proposed fuel breaks.

  Rationale: Control of noxious weed and invasive annual species enhances establishment and success of desired perennial plants by reducing competition.

2.2 Description of the Proposed Action and Alternatives

The Proposed Action was developed based on the fuels reduction treatments recommended in the Soda Fire ESR Plan. The Modified Proposed Action was developed based on concern over indirect effects from increased road maintenance and vegetation manipulations within the fuel breaks. The No Action alternative is a continuation (i.e., no change) of the current situation within the proposed project area and provides a baseline for comparison of the action alternatives.

2.3 Alternative 1 – No Action

Under this alternative, a fuel breaks network would not be created. Roadways would not be maintained for the purpose of a fuel break (i.e. free of vegetation, accessible for fire suppression equipment) and fuels adjacent to roadways would not be treated to reduce fuel accumulations and disrupt fuel continuity in order to modify fire behavior. Fire suppression personnel would utilize existing paved and other improved BLM and county roads and natural topographic features to hold and control wildfire.

2.4 Features Common to All Action Alternatives (Alternatives 2 and 3)

This section addresses the treatment methods, design features, and monitoring proposed for the action alternatives. For the purpose of this document, the term biological thinning is hereafter referred to as targeted grazing. The proposed fuel breaks are expected to be permanent and maintained in perpetuity. Surveys for cultural resources, sensitive and other wildlife, and special status plants are being completed for all proposed fuel breaks on BLM, Bureau of Reclamation

(BOR), and state lands where gaps exist in previous surveys or previous surveys are dated. Survey boundaries generally span 300 feet from center line of routes to accommodate all aspects of fuel break implementation (see Methods below) as well as capturing potential sensitive resources adjacent to the fuel break. This is intended as fail-safe to ensure that all resources are captured and appropriate design features are applied (Section 2.4.3). Survey buffers associated with targeted grazing vary depending upon the resource.

2.4.1 Methods

A fuel break consists of a roadway free of vegetation and the adjacent fuel treatment zone (see Background, Section 1.1). This section presents methods proposed in the fuel treatment zone. The methods for fuel break creation and maintenance analyzed in this EA include targeted grazing, mowing, hand cutting, chemical treatment (herbicide), seeding (including seed bed preparation techniques), and prescribed fire (e.g., fenceline and pile burning). These methods may be implemented in combination or as stand-alone treatments as necessary to meet fuel break criteria and objectives (Section 2.1). Refer to Appendix B, Graphs 7-9 for a description of pre- and post-treatment fire behavior.

All methods would be implemented under the constraints of design features and stipulations outlined below in Section 2.4.3. All methods for creating fuel breaks would be implemented alongside existing roads and extend no farther than 200 feet to either side of roadways. Maintenance of fuel breaks is discussed below in Section 2.4.2.

Targeted Grazing

Targeted grazing is included in both action alternatives because the BLM wishes to attempt this method as a result of Sec. Order 3336 and public interest. Therefore, BLM plans to assess its viability (in the short and long term) utilizing a 3-year trial/start-up period accompanied by extensive monitoring and adaptive management thresholds applied to evaluate its efficacy as a treatment and simultaneously protect sensitive resources. Refer to design features in Section 2.4.3 and monitoring and control in Section 2.4.5 for details regarding implementation, adaptive management, resource protection, and treatment objectives.

Targeted grazing is the purposeful application of a specific species of livestock at a determined season, duration, and intensity to accomplish defined vegetation or landscape objectives (ASI 2006). Targeted grazing requires the use of livestock at a high intensity over a short duration to remove fine fuels. Many stakeholders have expressed the need to use this method at a landscape scale/across the landscape. However, application of this method in such a manner is not within the scope of this project as BLM's purpose here is to develop a system of linear fuel breaks.

Schachtschneider (2016) found targeted grazing to be an effective tool at reducing flame lengths and rate of spread when shrub canopy cover was low; shrub cover appears to be the main driver of flame length and growth spread, particularly above 30 percent canopy cover. Targeted grazing would: be focused in areas dominated by annual grass with no or low shrub cover; be implemented directly adjacent to a roadway; be focused within the fuel treatment zone (i.e., 200 feet to both sides of the road); be restricted to cattle to protect bighorn sheep from potential disease transmission; and result in a residual annual grass height (or "stubble height") of two inches or less (≤2 inches). The residual grass height objective of two inches or less is designed to address the annual variability in grass height and to significantly reduce fuel continuity in these dense, fine, flashy fuels.

Targeted grazing would utilize active herding and features for implementation such as temporary water haul sites and temporary salt or mineral supplementation. Multiple watering and supplement sites may be used concurrently to ensure the treatment is effective and completed in a timely manner.

Because livestock are mobile, the BLM anticipates that some incidental grazing may occur beyond the fuel treatment zone in the graduated use area – a ½-mile buffer zone along the fuel break. Utilization caps for perennial grasses have been assigned in the graduated use area to ensure that targeted grazing does not impact regularly scheduled grazing, and to limit or eliminate the need for fencing to accomplish the treatment. These and other design features, including adaptive management, are described in detail in Section 2.4.3.

Finally, temporary electric avoidance fencing may be utilized to protect sensitive resources (namely riparian areas) during the targeted grazing treatment; however, the intent is to utilize the techniques mentioned above (i.e., active herding, water haul and salt/mineral supplement placement) to keep livestock in the fuel treatment zone. Temporary electric avoidance fencing would only be in place while targeted grazing is occurring, and would be removed immediately following the treatment. There are five (5) perennial streams where BLM anticipates the need for temporary electric fencing because they intersect the treatment zone.

Mowing

Where mowing is deemed necessary (i.e., vegetation, namely shrubs, is greater than 12 inches) and the condition of the road, terrain, and vegetation would allow, a deck mower (or any mechanical equipment designed to mow brush) attached to a rubber-tired tractor would be used to reduce vegetation height to between six (6) and ten (10) inches, which is as low as current technology will allow. Shrubs mowed to this height would resemble the desired GR1 fuel model (Appendix B). Shrub mowing would occur during cooler seasons (outside of sage-grouse nesting period) when fire risk is low and seasonal design features are followed. Mowing of grass dominated sites would be employed during late spring/early summer to reduce grass heights prior to the fire season.

Hand Cutting

Rugged and/or steep terrain or resource concerns can restrict the use of mechanized equipment such as a tractor with a mower, so hand cutting of shrubs or trees within the fuel break is necessary. In these situations hand cutting vegetation may be utilized in concert with other methods. Trees or shrubs would be cut with chainsaws or loppers, and branches would be scattered on the ground or put into piles and burned. In areas with large amounts of residual debris following treatment, pile burning may be applied or materials may be removed from site by hauling away or chipping to reduce ground fuel loadings.

Chemical Treatment

Chemical treatment would involve applying herbicides at appropriate plant growth stages to suppress or kill unwanted plants. Herbicides could be used to prepare the seedbed for a seeding, for maintenance by reducing the amount of fuel available for wildfire, and for reducing the prevalence of annual grasses in stands of perennial grass to give desirable species a competitive advantage. Herbicide application would utilize truck, tractor, or utility terrain vehicle/ all-terrain vehicle (UTV/ATV) mounted sprayer as well as aerial application methods. Spot treatments may be completed using a backpack sprayer. Herbicide may be applied before or after mowing or seeding, depending on the target species and type of herbicide and target desirable vegetation. Chemical application to establish or maintain fuel breaks may also require re-vegetation to prevent the loss of soil.

Only herbicides on the List of Approved Herbicide Formulations and Adjuvants (BLM 2014 IB 2014-69) or the newest updated list are proposed for use. Analysis of proposed herbicide treatments to control targeted species is tiered to the *Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement* (PEIS) (USDI BLM 2007a) and the 2016 Final PEIS for *Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on BLM Lands in 17 Western States* (USDI BLM 2016a).

Seeding

Seeded fuel breaks may contain a mixture of native and non-native species above 4,000 feet elevation, if necessary, to promote plant composition to meet fuel break objectives, including competition against annual invasive species. Native species would be a priority for use in seed mixes above 4,000 feet where conditions allow (e.g., adequate precipitation and ecological condition) and below 4,000 where special status plants or other priority resources are a concern. Prostrate kochia would be prioritized in fuel breaks below 4,000 feet across the base of the Owyhee Front and associated with the WUI.

Seeded fuel breaks may require protection from regularly permitted livestock grazing to promote establishment of seeded species to meet fuel break objectives. Primary methods for protection of seeded fuel breaks would involve herding, avoidance during trailing, shutting off water sources, and removal of salt or mineral sources. Temporary protective fencing may be used to protect newly seeded fuel breaks from livestock grazing when primary protection methods (active herding, etc.) or complete closure of a pasture are not feasible. In this case, temporary fencing ranging from double-stranded electric fence to standard barbed wire fence with a wildlife friendly smooth bottom wire may be employed. Depending on the extent of fencing, additional NEPA may be required; however, the intent is to use fencing only as a last resort and to the minimum extent possible. Temporary/short-term protective fencing would remain in place until seeded species are adequately established to tolerate grazing (e.g., two growing seasons or seeding objectives are met, etc.). See Livestock Grazing Management for more information (Section 2.4.4).

Seeded Fuel Break Criteria and Species Information

The most effective characteristics for fuel break vegetation include (St John and Ogle 2009):

- adapted or adaptable to the site
- competitive with annual grasses and forbs
- easy to establish
- low stature with an open canopy
- resilience and regrowth capabilities after fire and grazing
- reduce fuel accumulation and volatility
- retain moisture and remain green through the fire season

To enhance establishment potential, cultivars specifically developed for use within the area would be selected. Establishment of fuel break-specific vegetation requires reduction or elimination of existing vegetation to decrease competition. Methods that may be used for seedbed preparation include disking, mowing, and herbicide application. Equipment selection would be dependent on soil type and seed requirements to ensure seeds are deposited at the required soil depth. Cultivars specifically developed for use in the treatment area may consist of, but are not limited to, one or more of the following species in a given seed mix:

Prostrate kochia is a non-native, semi-evergreen sub-shrub originating from central Eurasia. It is well adapted to arid regions and has been effectively used across southern Idaho (Pellant 1992; Harrison et al. 2002). Prostrate kochia re-sprouts from the base following fire, has four times and 10 times the moisture content of crested wheatgrass and cheatgrass (respectively) during the late summer (McArthur et al. 1990, Harrison et al. 2002), and is competitive against invasive annual grasses and forbs (Tilley et al. 2012). Prostrate kochia, when established in pure stands within the fuel breaks will also create bare spaces between plants which further enhances the effectiveness of the fuel break by breaking the fuel continuity between individual plants. This results in the flame front being broken apart and slowed down as it travels from plant to plant.

Sandberg bluegrass is a short-statured, native perennial bunchgrass that perpetuates itself through prolific seed set and shatter. Sandberg bluegrass initiates growth early in the spring, around the same time as cheatgrass. It increases in density under heavy grazing and is an early colonizing species on disturbed sites; it occupies interspatial areas in plant communities, which can deter encroachment of cheatgrass (Monsen et. al., 2004, Davies and Svejcar, 2008). Sandberg bluegrass is a common grass in the project area and across southern Idaho and eastern Oregon.

Bottlebrush squirreltail is a mid-statured native perennial bunchgrass. Its persistence in a plant community is dependent on its ability to reseed itself. Bottlebrush squirreltail occurs naturally throughout the project area and cultivars are available that are adapted to the project area. This species germinates in fall or spring, initiates annual growth in early spring and does not enter complete dormancy in summer, remaining partially green throughout summer and into the fall.

Crested wheatgrass is a non-native perennial bunchgrass adapted to the project area. It has been used across southwest Idaho and eastern Oregon for many years. Crested wheatgrass remains green into the summer and tends to exclude competition from other plants in established stands, developing wide spacing between the plants once established, making it a beneficial species in fuel breaks.

Seeded Fuel Break Seedbed Preparation

Though seeding may not always be necessary, in many cases seeding an appropriate or desirable species is necessary and may require seedbed preparation to begin the project. Seedbed preparation, such as disking (prostrate kochia seedings only) or herbicide application (all seedings eligible), is effective because it reduces competition prior to planting the desirable species, and where necessary, they can be used in conjunction.

Disking for seedbed preparation in proposed prostrate kochia seedings would be done using a bulldozer or rubber tired tractor for pulling disks to remove vegetation and expose bare mineral soil. Disking for seedbed preparation would be followed by seed application (and possibly herbicide treatment, then seeding). Seedbed preparation may occur over multiple seasons to ensure proper site conditions and will act as temporary fuel breaks in the un-vegetated state.

Herbicides such as imazapic, or other approved and applicable herbicides, may be used for seedbed preparation to control invasive plants and/or noxious weeds to remove/reduce competition and promote germination and establishment of seeded species. Herbicides may also be applied following a seeding to promote establishment of seeded species (i.e., fuel break maintenance).

Seeded Fuel Break Seeding Techniques

Drill or broadcast seeding during the fall, winter, or spring (depending on the species) would be utilized to establish a fuel break consisting of desirable perennial vegetation where natural recovery is unlikely.

Drill seeding using rangeland drills, minimum-till or no-till drills may be employed to seed proposed grasses after seedbed preparation (e.g., herbicide, disking). The rangeland drill was developed to seed rough rangeland sites. The rangeland drill is typically used in open, relatively flat topography that is fairly absent of larger rocks (8-10" in diameter). This method works well in most soil types and is the primary seeding method that would be used. Minimum-till or no-till drills may be utilized where less rocky conditions allow, or where resource constraints require their use.

The advantage to using the no-till drill is less soil disturbance; however, no-till drills may not be readily available and are most effective in non-rocky soils. The drill seeding method has the greatest probability of seeding success among various seeding tools and methods.

Broadcast seeding would be mainly utilized for prostrate kochia seeding and where the terrain is not conducive for drill seeding grasses. Broadcast seeding would be followed with a cover treatment using a harrow, culti-packer or roller packer implement wherever possible. All broadcast seeding would be ground-based using mechanized means (UTV/ATV) and/or hand spreaders.

Prescribed Fire

Occasionally prescribed fire would be necessary to burn accumulations of weeds or brush along fence lines or accumulated in topographical features such as draws or ditches within the proposed fuel breaks. These weed/fuel concentrations must be burned to maintain the effectiveness of the fuel break and ensure that large concentrations of weeds or hazardous fuels are not allowed to accumulate in the proposed fuel breaks. Burning is done in spring when surrounding green up vegetation reduces fire spread from burning fuel concentrations or in fall when surrounding live fuel moistures are high enough to reduce fire spread outside of the weed concentrations.

A project-level prescribed burn plan would be developed to describe burning parameters and address safety and smoke management. Burning prescriptions would strategically reduce undesirable effects on vegetation or soils (e.g., minimize mortality of desirable perennial plant species including sagebrush and reduce risk of annual grass invasion). All prescribed burning would be coordinated with state and local air quality agencies to ensure that local air quality is not significantly impacted by BLM activities. The NEPA analysis of actions that propose prescribed fire in sage-grouse habitat included in Chapter 3 addresses the following:

- why alternative techniques were not selected as a viable options;
- how greater sage-grouse goals and objectives would be met by its use;

- how the Conservation Objectives Team Report objectives would be addressed and met; and
- a risk assessment to address how potential threats to greater sage-grouse habitat would be minimized.

2.4.2 Maintenance

The fuel breaks would be periodically maintained over the life of the project to ensure that they remain effective. Non-native invasive annual plants and noxious weeds would also be managed to prevent them from invading and dominating the fuel breaks. Maintenance would be accomplished by the methods described above in Section 2.4.1. All design features and stipulations developed for fuel break development would also apply to maintenance of fuel breaks (see Design Features, Section 2.4.3). For example, mowing would occur during cooler seasons when fire risk is low and outside of lambing and nesting periods for sensitive species. Herbicides would be utilized to manage the incidence of non-native invasive annual plants and noxious weeds within the fuel break, if necessary. Herbicides may also be used on shrubs in mowing areas for maintenance purposes. Maintenance schedules will be dictated by results of fuel break monitoring as described in Monitoring and Control (Section 2.4.5).

2.4.3 Design Features

The BLM developed design features to minimize or eliminate potential adverse impacts to resources identified and analyzed in the EA. Design features ensure mitigation of important resources and are defined below by resource. Design features are a combination of plan-level (e.g., ARMPAs), state-level (e.g., IDFG recommendations), and other BLM-derived protection measures. Because of site-specific circumstances (site conditions, geography, etc.), some design features may not apply (e.g., a resource is not present on a given site) and/or may require slight variations (e.g., a larger or smaller protective/avoidance area). Design features may be varied if new science or technologies become available; a specific design feature is documented to not be applicable to the site-specific conditions of the project/activity (e.g., due to site limitations or engineering considerations); and/or a specific design feature will provide no additional protection to resource. Specialists will determine precise locations of avoidance areas and/or where to apply other design features to protect resources.

Vegetation including Noxious and Invasive Weeds

- Disturbed areas would be monitored for noxious weeds, and appropriate treatments would be applied in conformance with the standard operating procedures identified in the Boise District Noxious Weed EA (EA#ID100-2005-EA-265) or the most current Boise District noxious and invasive weed document, the current Integrated Vegetation Management guidance (Vale District), the ROD for the Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States PEIS (USDI BLM 2007a), and Vegetation Treatments Using Herbicides on BLM Lands in Oregon Final Environmental Impact Statement (2010a) and Record of Decision (2010b), and the Vale District's Integrated Invasive Plant Management Environmental Assessment (DOI-BLM-ORWA-V000-2011-0047-EA) ROD.
- Existing noxious weed populations may be treated prior to fuel break development or avoided to reduce the chance of spread.

- Debris piles created during thinning operations would be limited to 15 feet in diameter and 10 feet in height, and would be ignited when prescription burn conditions are appropriate (i.e. soils are either wet or frozen).
- Power-wash all vehicles and equipment involved in fuels management activities, prior to entering the area, to minimize the introduction of undesirable and/or invasive plant species.

Special Status Plants

- A minimum avoidance buffer of 200 feet has been established around SSP occurrences (except where otherwise indicated). However, buffer distance may be increased (up to one half mile) or decreased depending on site conditions and/or treatment type and its potential to impact a given population (to be determined by botanist following field examinations and prior to treatment implementation).
- All documented SSP occurrence "avoidance areas/buffers" would be mapped (hard copy and/or on GPS devices) and/or marked with flagging prior to and during treatment operations where impacts to SSP species may occur (see section 3.4 for a description SSP occurrences).

Road Work

- Equipment necessary for road work would not be staged in SSP avoidance buffer.

Disking

- Disking would not occur within the SSP avoidance buffer.

Mowing

- Mowing may be permitted in avoidance buffers when soils are firm to minimize ground disturbance; mower height would be adjusted to avoid damaging SSPs in these areas.
- Machinery used to chip and haul off woody debris would avoid SSPs when traveling to and from treatment areas, and would not stage operations within the SSP avoidance buffer.

Prescribed Fire and Pile Burning

- Burning would not occur within SSP avoidance buffer.

Herbicides

- Off-site movement of herbicides either through the air, soil, or over the soil surface would be avoided. Terrain, soil type, and vegetation would be taken into consideration when selecting herbicide type, application method, and application timing.
- Ground-based herbicide application (e.g. with UTV/pickup) would not occur within SSP avoidance buffers.
- Herbicide applications would be limited to wind conditions less than 7 miles per hour to prevent drift.
- If necessary and practical, hand sprayers may be used to apply herbicide within avoidance buffer up to 10 feet around SSP occurrences in Idaho in Oregon following the guidance in the Vegetation Treatments Using Herbicides on BLM Lands in Idaho and Oregon FEIS, respectively.

Seeding

- If seeding is planned within 200 feet of SSP occurrences, minimum- or no-till drills would be used (to the extent possible - dictated by terrain, rockiness, etc.) to minimize disturbance.
- Prostrate kochia would not be seeded within 0.5 mile of smooth stickleaf (*Mentzelia mollis*) or Leslie Gulch monardella (*Monardella angustifolia*) occurrences depending on site conditions; if seeding is necessary, the most suitable native species for the location would be used (e.g., Sandberg bluegrass).

Targeted Grazing

- Water and mineral supplement sites used to attract livestock would not be placed within100 meters of SSP locations.
- Temporary electric avoidance fencing may be utilized to protect SSP occurrences within 200 feet of targeted grazing locations where they are determined to be threatened by livestock.

Wildlife Habitat

- No repeated or sustained behavioral disturbance (e.g., visual, noise over 10 dbA at lek, etc.) to lekking sage-grouse from 6:00 pm to 9:00 am (until at least 2 hours after dawn) within 4 miles of leks during the lekking season (March 1-May 15).
- Avoid mechanized disturbance in nesting habitat during the sage-grouse nesting season (May 1 – June 30) when implementing fuels management projects and infrastructure maintenance.
- Oregon: Avoid mechanized disturbance in late brood rearing habitat during the sage-grouse late brood rearing season (July 1 – October 31) when implementing fuels management projects and infrastructure maintenance unless the project plan and NEPA document demonstrate the project will not impair the life-cycle or behavioral needs of sage-grouse populations. The seasonal dates may be modified due to documented local variations (e.g., higher/lower elevations) or annual climatic fluctuations (e.g., early/late spring, long and/or heavy winter) in coordination with ODFW, in order to better protect sage-grouse.
- Avoid mechanized disturbance in winter habitat (November 1 – February 28) when implementing fuels management projects and infrastructure maintenance. This design feature may be adjusted based on a biologist’s recommendation and the severity of winter conditions. For instance, if weather conditions are mild, a winter restriction may not be needed until later in the season, whereas snow or extreme temperatures may warrant full compliance from November 1st.
- Temporary electric avoidance fences (e.g., to protect riparian areas during targeted grazing) or other temporary protective fencing (e.g., to protect fuel break seedings during seedling establishment) will not be installed within 1.2 miles of occupied leks. High risk segments will be marked with collision diverter devices according ARMPA requirements and as latest science dictates.
- Use wildlife friendly fencing that employs a smooth bottom wire to reduce injuries to wildlife if temporary protective fencing other than electric fencing is used.
- Treatments which have the potential to disturb sage-grouse habitat will not occur within 4 miles of an occupied and active lek from March 1 through June 30 to reduce the

likelihood of impacts to sage-grouse reproduction including lek attendance, nesting, and early brood rearing.

- Install ramps in in all water haul troughs to facilitate the use of and escape from troughs by sage-grouse and other wildlife.
- Mowing of sagebrush and disking will not occur from February 1 through July 31 to protect nesting migratory birds.
- Surveys for pygmy rabbits will occur in potential habitat prior to mowing sagebrush. If occupied burrows are detected, mowing will not occur within 300 meters.
- No broadcast spraying of 2,4-D within 300 meters of occupied pygmy rabbit burrows. Only spot application will be used within 100 meters of occupied burrows.
- If pygmy rabbits are present, no application of herbicides within 300 meters of occupied burrows will occur from one hour before sunset to one hour after sunrise, to minimize the potential for direct contamination.
- Seasonal restrictions for potentially disruptive construction or other activities within big game winter ranges in Idaho typically will apply from November 15 through April 30 unless a temporary, short-term exception is granted by the BLM field office manager. General time-frames for calving/fawning are May 1-June 30 for elk and deer and May 15 through June 30 for pronghorn. Seasonal restrictions within bighorn sheep lambing areas will apply from approximately April 15 to June 15.
- Surveys for raptor nesting activity, including known sites, will be completed 2 miles out from any site with proposed mechanized equipment operation (tractors, chainsaws) or anthropogenic disturbance between January 1 and April 30.
- Occupied golden eagle, ferruginous hawk, and peregrine falcon nests will be protected by establishing a 1.0-mile buffer around the nest. Other raptor nest sites identified as occupied during that period will be protected by establishing a 0.5-mile buffer around the nest. Established buffers will remain in effect from determination of an occupied nest through July 31, unless the nest is abandoned, destroyed (wind, lightning, wildfire), or the young fledge before July 31. In addition, BLM can consider topographic or other factors that are biologically reasonable to modify the spatial and/or temporal buffers. Seasonal restrictions will generally apply for raptors from February 1 through July 31 unless an exception is granted by the BLM field office manager.
- No treatments incorporating soil disturbance, herbicide application, or vegetation removal will occur within the identified riparian/aquatic buffer to protect riparian habitat and aquatic life.

Water Resources and Quality, Wetlands, and Riparian Areas

- Maintenance of existing roads must comply with BLM road and safety standards found in the BLM Roads Manual (9113). Standard templates for roads and drainage dips will be utilized for all construction (armored crossings, water bars, culvert installation, etc.).
- Drainage control will be ensured over the entire road through the use of drainage dips, in-sloping, natural rolling topography, ditch turnouts, ditches, or culverts. If culverts or drainage crossings are required, they will be at least 18 inch diameter or designed for a 50-year or greater storm frequency (whichever is larger in diameter), without development of a static head at the pipe inlet. Pipe outlets will disperse flows across a wide area to prevent scour and erosion. Culverts within drainage channels should be in

line with the natural gradient of the stream channel. Relief culverts should discharge away from natural channels into areas not susceptible to erosion.

- Installation of sediment and storm-water controls will occur before initiating surface-disturbing activities. Use suitable measures to avoid or minimize scour and erosion of the channel, crossing structure, and foundation to maintain the stability of the channel and banks. Consultation with a hydrologist or fishery biologist will occur regarding sediment and erosion control structures prior to implementation.
- Within perennial and fish bearing intermittent stream channel crossings, road maintenance or improvements will not occur during spawning, incubation, and emergence periods for redband trout (March 1 – June 15). Consultation with a fishery biologist will occur prior to implementation to ensure improvements promote fish passage and maintain habitat stability.
- Targeted grazing will not be permitted within riparian areas. Riparian areas within the graduated use or targeted grazing treatment footprint may require temporary electric avoidance fencing to ensure livestock do not use these areas during targeted grazing treatments. There are 5 perennial streams that intersect the proposed targeted grazing treatment area that may require temporary electric avoidance fencing.
- Livestock watering locations for targeted grazing treatments will be limited to water haul sites located along or adjacent to roads.
- Water haul sites and mineral supplement locations (livestock attractants) will be located at least ¼ mile away from any riparian area.
- Use Best Management Practices and soil conservation practices during project design and implementation to minimize sediment discharge from treatments (i.e. mowing activities, disking, seeding, etc.) into streams, lands and wetlands to protect designated beneficial uses.
- Outside of the road prism, avoid using heavy equipment within 300 feet of the margins for all springs/seeps/riparian habitats (including wet meadows) to prevent soil compaction.

The Boise and Vale Districts use the Inland Native Fish Strategy (INFISH) for the Intermountain, Northern, and Pacific Northwest Regions (USDA FS, 1995) to identify areas where management actions may affect aquatic resources, including water quality. The INFISH provides for recommended buffer distances around Riparian Conservation Area (RCA) to reduce the overall affects management actions may have on these sensitive areas. The following is the general guidance for buffers:

- Fish-bearing streams (perennial or intermittent) consist of the stream and the area on either side of the stream extending from the edge of the active stream channel to the top of the inner gorge, or to the outer edges of the 100 year floodplain, or to the outer edges of riparian vegetation, or 300 feet slope distance, whichever is greatest.
- Perennial, non-fish bearing streams consist of the stream and the area on either side of the stream extending from the edges of the active stream channel to the top of the top of the inner gorge, or to the outer edges of the 100 year floodplain, or to the outer edges of riparian vegetation [as identified by the presence of facultative species], or 150 feet slope distance, whichever is greatest.

- Ponds, lakes, reservoirs over 1 acre consist of the body of water or wetland and the area to the outer edges of the riparian vegetation [as identified by the presence of facultative species] or to the extent of the seasonally saturated soil, or unstable area, or 150 feet slope distance; whichever is greatest.
- Seasonally flowing or intermittent streams, wetlands less than 1 acre, landslides and landslide prone areas should include: the extent of the landslide/landslide prone area, intermittent stream channel and the area to the top of the inner gorge or; intermittent stream channel or wetted area and the area to the outer edges of the riparian vegetation (as identified by the presence of facultative species) or; 100 feet slope distance if in priority watershed or; to the edge of the stream channel and riparian area or 50 feet in non-priority watersheds, whichever is greatest.

These buffers were considered in determining whether vegetation treatments have the potential to have direct or indirect impacts to water quality. Appropriate herbicide-specific buffer zones applied to downstream water bodies, habitats, and species/population areas of interest are established utilizing the INFISH RCA buffers, U.S. Fish and Wildlife Service (USFWS) past ESA consultation efforts, and Appendix C, Table C-16, of the Final PEIS.

Cultural and Paleontological Resources

The term “historic property” refers to any Native American, historic or cultural district, site, building, structure, or object included on the National Register of Historic Places (NRHP), eligible for inclusion on the NRHP, or unevaluated regarding NRHP listing.

- Fuel break treatments occurring within an archeological site or sites of traditional cultural or spiritual significance will be determined after consultation with the appropriate Native American Tribe(s).
- Fuel break treatments occurring within a historic property will be determined after consultation with the Idaho and/or Oregon State Historic Preservation Office (SHPO), respectively.
- All cultural resource inventories will be conducted in accordance with the Idaho and Oregon/Washington State Protocol Agreements with their respective SHPOs.
- Any areas identified for cultural resource inventories by an archaeologist, will also include consultation with the appropriate Native American Tribe(s) to determine sites of spiritual or cultural importance in those areas.
- No disking will occur in any known historic property site.
- Herbicide application shall not occur where it will be likely to affect rock art images or traditional Native American plant gathering areas as determined in consultation with affected Tribes. Additionally herbicides may only be applied in an historic property by hand/backpack sprayer or with UTV/ATV mounted sprayer when soils are not wet or saturated.
- Seeding in historic properties will be accomplished through hand seeders, or UTV/ATV mounted seeders. Seeding may be done within a site, on a case by case basis with a minimum till drill or a standard rangeland drill, pulled by rubber-tired tractor, with depth bands when the soils are not wet or saturated. The use of a till drill and/or standard rangeland drill and a culti-packer in any cultural resource site shall have prior consultation with the appropriate Tribe(s) and SHPO. Soils should be firm and the vehicle will not turn within a site. Hydromulching on a site may be acceptable provided

the vehicle stays on the main road. The use of a track-driven bulldozer to pull a rangeland drill will not be allowed in any cultural resource site.

- Avoidance of cultural and paleontological resource sites may be accomplished by flagging the site, through temporary electric avoidance fencing, or using GPS buffers. The flagging or fencing will be removed within a reasonable time post-treatment to avoid indicating the presence of a cultural resource and potentially drawing unauthorized collection and/or vandalism.
- Mowing with a rubber tired vehicle may be allowed across a cultural resource site (will be determined on a site by site basis), but in no instance will the mower turn around in a site. Mowing blades will be set at 10 inches or higher when passing through a cultural resource site where mowing is determined acceptable. Sites containing features above 10 inches will not be mowed.
- No use of prescribed fire will occur in any unevaluated, NRHP listed, or eligible sites.
- If a historic property is within the area of potential effect from targeted grazing installations or placements of troughs or salt blocks, then movement of cattle across the site will occur on the road and not through the site. An archaeological site monitoring plan will be developed to monitor historic properties in the targeted grazing area and will be included in the project record.
- Cultural surveys will be conducted for all fuel breaks and road maintenance above current levels (e.g., ditches, culverts, widening, etc.).
- Locations of temporary water troughs and/or salt blocks to assist with targeted grazing treatments will be inventoried for cultural resources by an archaeologist prior to installation; temporary protective fence locations may be surveyed, but are exempt from cultural resource inventories in Idaho per the State Protocol Agreement between Idaho BLM and the Idaho SHPO. If historic properties are found, any improvements or installations will be relocated and a protection buffer of no less than 150 meters from the site’s outer boundary, unless there are physical barriers such as fences, canyon rims or rock cliffs, will be put around the cultural resource, based on the type of improvement.
- Installation of culverts, cattle guards or any other road maintenance treatment that goes beyond the current road prism or previously disturbed area will be inventoried for cultural resources by an archaeologist prior to construction activities.
- Historic properties will be avoided by road maintenance activities or if cultural resources cannot be avoided they will be mitigated prior to any ground disturbing work in coordination with the appropriate Tribe(s) and SHPOs.
- Treatments in areas with paleontological resources will be addressed on a site-by-site basis. Where significant resources exposed on the surface, ground disturbing activities will be minimized to avoid adversely impacting those resources. Design features mentioned for cultural resources may also apply to paleontological resources.
- In the targeted grazing and graduated use area, a monitoring plan will be developed and executed to determine whether the grazing treatment is impacting known historic properties. If an unacceptable level of impacts is observed, adaptive management for resource protection will be triggered (see Targeted Grazing – Adaptive Management below).

Soils

- Mowing, disk plowing, and drill seeding would not occur when soils are saturated and easily rutted or compressed.
- A minimum till drill or rangeland drill with depth bands would be used to seed fuel breaks in soils with wind erodibility index values (WEI) of 134 or greater (i.e. sandy sites) to minimize soil disturbance. Alternatively, seed may also be broadcast and lightly chained or harrowed, or buried using culti-packer or roller packer implement, particularly where little disturbance is necessary or desirable for germination (e.g., prostrate kochia).
- Herbicides to control annual grasses and forbs would not be used on soils with WEI values of 134 or greater unless adequate vegetative cover is present to reduce the potential of erosion (e.g., release of perennial plants).

Livestock Grazing

Targeted Grazing – Adaptive Management

- The BLM will formally evaluate the efficacy of targeted grazing to create fuel breaks along the Owyhee Front in Idaho and Oregon following the first three (3) years of implementation. The BLM will annually monitor for and expect attainment of treatment objectives to be accomplished within the operational guidelines, terms, and conditions contained in this document and its Decision Record, as well as any subsequent permits or authorizations.
    - A start-up period of three (3) years will give the operator time to test and adjust operations and to work out the logistics of implementation to achieve desired results. The three-year timeframe is expected to provide for annual fluctuations in weather and variable vegetation conditions that will require adjustments to annual targeted grazing approaches and strategies. After three years, the feasibility of the targeted grazing treatment as a whole will be evaluated. Targeted grazing treatments may be discontinued if treatments are not meeting objectives. In this case, targeted grazing will be replaced by other treatments analyzed in this document to create fuel breaks (primarily prostrate kochia seeding).
- Utilization respective to targeted grazing use will be limited to the following to ensure resource damage does not occur and permitted AUMs are not negatively impacted:
    1) No more than 30%[1] utilization (light use) of perennial grasses allowed within the ¼-mile graduated use area - the buffer from the edge of the 200-foot treatment area (i.e., fuel break) out to ¼ mile.
    2) No more than 16%[1] utilization (slight use) of perennial grasses between ¼ mile and ½ mile graduated use areas (Figure 2-1).

[1] Utilization class interval midpoint for Key Species and Landscape Appearance Methods per Technical Reference #4400-3 “Utilization Studies and Residual measurements”.

Figure 2-1: Diagram of Targeted Grazing Treatment Expectations.

¼ to ½-mile graduated use area: ≤16% utilization
¼-mile graduated use area: ≤30% utilization
200-foot targeted grazing treatment area
Road
200-foot targeted grazing treatment area
¼-mile graduated use area: ≤30% utilization
¼ to-½ mile graduated area: ≤16% utilization

- If utilization standards are exceeded in graduated use areas, within 48 hours livestock must be removed or moved to another portion of treatment area that has not exceeded utilization levels/has not yet met fuel break treatment objectives (i.e., 2-inch stubble height in treatment area).
- If at any point during targeted grazing implementation the BLM determines that the treatment or a particular treatment activity is causing an unacceptable level of resource impacts, within 48 hours the operator must move livestock to another location within the treatment area or suspend the activity that is causing those impacts per BLM direction.

Targeted Grazing – Regularly Permitted Use Considerations

- Targeted grazing will not interfere with existing regularly scheduled or term-permitted livestock operations. In order to reduce conflicts and avoid infringement on permitted AUMs, the BLM will not authorize targeted grazing in pastures at the same time regular preference or term-permitted use is taking place. However, targeted grazing may be authorized within regularly scheduled/permitted or term-permitted use periods, providing it does not overlap with or occur simultaneously in the same pasture while regular- or term-permitted grazing is occurring.
- In instances where targeted grazing occurs in a pasture where authorized grazing (identified on a grazing permit) has already occurred per the current year's grazing schedule, utilization levels on perennial grasses within the graduated use area may exceed the 30% and16% utilization levels, respectively, but will not exceed the utilization level identified in the existing grazing permit or land use plan.

Targeted Grazing – Treatment Activities

- Treatment activities will not commence until BLM has completed pre-treatment monitoring.
- Control of livestock would be accomplished through the placement of temporary water troughs (water haul sites) and supplements along road associated with fuel break to control and concentrate animals within the treatment area.

  - Siphoning of water from streams, ponds, or other sources on BLM-managed land is not allowed.
  - Bird ladders are required in all temporary water troughs.
- Participating operators will be required to actively herd livestock to ensure animals do not exceed utilization thresholds outside of treatment area using non-mechanized means.
  - Motorized herding is prohibited; vehicles must remain on designated routes (no vehicle travel is allowed off of designated routes).
- Temporary electric avoidance fencing may be utilized to protect sensitive resources (e.g., riparian areas) within the treatment area or graduated use area during targeted grazing, and will be removed once treatment is complete.
- Targeted grazing will be focused in areas dominated by annual and/or non-native perennial grasses.
- Targeted grazing will occur between March 1-June 30 ensuring that fuel breaks are prepared and the treatment objective is met by June 30 of each year (to ensure effectiveness during the fire season).
- Targeted grazing will be restricted to cattle to prevent disease transmission to bighorn sheep.
- All temporary water troughs and supplements will be removed within 48 hours of cessation of grazing treatment (e.g., once the targeted grazing treatment objective is met or concurrently with livestock removal).

Lands with Wilderness Characteristics

- Modification of vegetation, particularly mowing and seeding, in fuel breaks adjacent to Lands with Wilderness Characteristics would be done in a manner that treatments are not noticeable by the casual observer/average visitor.
  - Mowing may be executed in a serpentine pattern to soften edges of treatment; hand cutting may be interspersed with or replace mowing (depending on the nature of the vegetation in a given location) to mimic a more natural appearance.
  - Similarly, drill seeding of vegetation may be done in a serpentine pattern and/or using drill modifications (e.g., minimum- or no-till drills, slick discs, drag chains, etc.) so that drill rows are not apparent.

2.4.4 Livestock Grazing Management

Seeded fuel breaks may be rested from livestock grazing as needed to promote establishment of seeded species. Seedling and young plants are vulnerable to uprooting following the first full growing season and have limited ability to recover from grazing. The following actions are oriented toward protecting these young plants and allowing the seeding to become established and capable of maintaining itself prior to resumption of livestock grazing within the treated fuel breaks. Required rest from grazing would be determined on a case by case basis and focused on the treatment area affected. Rest of whole pastures where fuel break seedings are implemented may or may not be required due to the fuel breaks occurring in a small area of a pasture or allotment and impacts to seedlings can be mitigated through other means such as herding, timing of grazing, water and supplement locations, temporary protective fencing, etc.

Livestock may be excluded from seeded areas as needed on a case by case basis:

- until the end of the second growing season;
- until objectives for long-term viability of fuel breaks are met; or
- the seeding has been determined to be unsuccessful through monitoring.

The period of time seeded areas would be rested from livestock grazing would be based on environmental conditions and the accomplishment of site-specific fuel break treatment objectives. The vegetation monitoring criteria are considered the minimum required to determine success of treatments and the resumption of grazing. Grazing use supervision of the treatment area would be done to ensure the seeding treatments are rested or avoided for the minimum rest period agreed upon and until fuel break treatment can withstand grazing pressure, or the seeding has been determined a failure through monitoring.

Primary methods for protection of treatment areas would include herding, avoidance during trailing, shutting off water sources, and removing salt or mineral sources. Temporary protection fencing could also be used as a tool to protect the seeded areas within newly created fuel breaks from livestock grazing impacts when use of the area is expected and active herding or complete closure of a pasture is not feasible. The type of fencing used could vary from a BLM standard wildlife friendly wire fence to a double-strand electric fence, and would be determined by the need, including type of livestock authorized and duration of use. All temporary fences would be constructed to BLM standards for wildlife; additionally, all design features described in the previous section would apply. Temporary fences in the proximity of sage-grouse leks would be marked according to current policy to reduce collision potential and would comply with all stipulations and resource design features found in the ARMPAs.

2.4.5 Monitoring and Control

The collection of implementation and effectiveness monitoring data and information would be used to inform management whether the fuel breaks are achieving the desired goals and whether changes are necessary. Developed, effective fuel breaks would accomplish the following goals:

- Provide protection to existing and future habitat rehabilitation and restoration treatments
- Provide additional and improved anchor points and safe areas for fire suppression tactics
- Enhance firefighter and public safety
- Facilitate protection of remaining intact sagebrush communities, particularly those areas associated with greater sage-grouse habitat
- Protect recovering vegetation and rehabilitation investments in the Soda Fire

Should a wildfire start in or burn into or through the treated area, fuel break effectiveness would be evaluated per BLM Fire and Aviation Instruction Memorandum No. FA IM-2013-027, dated August 14, 2013, or future policy. This would provide evaluation and documentation of whether the fuel breaks were effective in stopping or slowing the fire.

Implementation Monitoring

Treatment implementation monitoring is the inspection of operations during treatment implementation to document adherence to applicable design features. Implementation monitoring documents resource conditions, equipment issues, and/or resolutions, and any necessary adjustments to the prescribed designs during implementation. Information derived through implementation monitoring would be used to improve future fuel break project design.

Effectiveness Monitoring

Treatment effectiveness monitoring would be conducted to evaluate success of the treatments. The methods used to monitor the treated areas would include qualitative field observations, quantitative measurements, and photo points adjacent to SSP avoidance buffers in tandem with prostrate kochia treatment effectiveness monitoring and/or weed inventory/monitoring. Monitoring would also be used to determine when and where maintenance is required) or whether a repeated treatment is necessary to meet objectives.

Vegetation characteristics to be measured include, but are not limited to:

- average shrub height and percent canopy cover
- height, density, and presence of all species, including cheatgrass and other non-native annual plant species of concern in the treatment area
- percent ground cover

Treatment Mapping

The actual treatment footprint would be mapped immediately post-implementation using global positioning system (GPS) technology and incorporated into BLM Vegetation Treatment Geodatabases (VTG). The resulting Geographic Information System (GIS) shape-file would define the physical extent of the treatments, and aid in determining movement of plant species outside of the treatment boundaries. Plot locations along treatment boundaries would be marked with witness posts (see Monitoring Methodology below) and would be recorded using GPS technology therefore providing reference points to verify GPS accuracy.

Targeted Grazing Monitoring

Targeted grazing fuel breaks would be monitored for effects of grazing on vegetation including treatment application and response. Treatment application would be monitored using residual fuel height (stubble) transects following the Stubble Height methodology and Key Species methodologies involving quick assessment, pace transects as described in the Interagency Technical Reference 1734-3 (USDI BLM 1999b) and photo points. Treatment response would be monitored through review of photo points and line point intercept studies. Treatment application monitoring would take place weekly (or more frequently if necessary) to determine if/when objectives are met and whether adaptive management thresholds are tripped. This proactive approach is designed to ensure that cattle are moved or removed as soon as objectives are met or resource adaptive management triggers are tripped.

- Targeted grazing treatment objective:
  - ≤2-inch stubble height in treatment area (200-foot corridors adjacent to roadway)
- Targeted grazing resource adaptive management triggers:
  - >30% utilization of perennial grasses in ¼-mile graduated use area (buffer from edge of treatment area out to ¼ mile);

  - >16% utilization of perennial grasses in ½-mile graduated use area (buffer from ¼ mile out to ½ mile from treatment); and/or
  - Utilization of perennial grasses in the buffer (adjacent to treatment area) exceeding use level(s) identified in the existing grazing permit or land use plan for a given pasture due to targeted grazing treatments occurring following authorized grazing (identified on a grazing permit) in the same calendar year.

<u>Mowing and Hand Cutting Monitoring</u>

Mowed or thinned fuel breaks would be monitored for regrowth (height of mowed species and density of thinned species) and will be retreated as needed to maintain fuel break effectiveness.

- Fuel break objective is:
  - Vegetation height in fuel break objective is between 6-10 inches.

<u>Prostrate Kochia Fuel Break Monitoring</u>

Prostrate kochia fuel breaks would be monitored for establishment of prostrate kochia and presence of non-native invasive annual grasses and forbs. Prostrate kochia treatments would also be monitored annually for five years following implementation to assess spread from treatment areas. If prostrate kochia is spreading outside of the treatment area an interdisciplinary team would review the data and recommend if control treatments are necessary and the type of treatments to employ. If no spread is detected within five years, monitoring would continue but at greater intervals (e.g., 3-5 years).

- Fuel break objectives are:
  - ✓ Four (4) prostrate kochia plants per square meter;
  - ✓ <10% cover of invasive annual grass in kochia interspaces; and
  - ✓ >50% of prostrate kochia plants are producing seed.
- Reseeding would occur when the average density of desired perennial plants is less than what is effective at controlling non-native invasive annual plant invasions.

<u>Seeded Fuel Break (other than kochia) Monitoring</u>

Seeded fuel breaks would be monitored annually for establishment of seeded species and presence of non-native invasive annual grasses and forbs.

- Fuel break objectives are:
  - ✓ Four (4) seeded plants per square meter;
  - ✓ <10% cover of invasive annual grass in interspaces; and
  - ✓ >50% of plants are producing seed.
- Reseeding would occur when the average density of desired perennial plants is less than what is effective at controlling non-native invasive annual plant invasions
- If the functionality of seeded fuel breaks is compromised by the presence of undesirable vegetation, one of the treatment methods analyzed in the alternative(s) would be used to restore fuel break effectiveness.

<u>Unseeded Fuel Break Monitoring</u>

Unseeded fuel breaks (areas where naturally occurring vegetation meets fuel break requirements and objectives) would be inspected annually to evaluate condition and to assess presence of non-native invasive annual grasses and forbs.

- Fuel break objectives are:
  - ✓ Four (4) seeded plants per square meter;
  - ✓ <10% cover of invasive annual grass in interspaces; and
  - ✓ >50% of plants are producing seed.

- If the functionality of unseeded fuel breaks is compromised by the presence of undesirable vegetation, one of the analyzed treatment methods would be used to restore fuel break effectiveness.

Noxious Weed Monitoring

- Treatment areas would be monitored annually for noxious weeds or invasive species for at least 3 years after treatment unless control is achieved earlier.
- Noxious weeds encountered within or adjacent to the project area would be recorded and provided to the District Weeds Specialist. An appropriate treatment plan would be implemented based upon species, morphology, location, and infestation size.

Road Access Monitoring

- Monitor roads annually for fire suppression access capability and maintain to established standards.

2.5 Alternative 2 – Proposed Action

The BLM is proposing to construct and maintain 200-foot-wide fuel breaks (400 feet total) along 442 miles of existing roads totaling 21,260 acres to create a network of fuel breaks encompassing approximately 647,300 acres of rehabilitated, recovering, and intact habitats (Figure 2-2). Under Alternative 2, the BLM proposes to develop fuel breaks by targeted grazing, seeding prostrate kochia, seeding native and/or non-native perennial grass, and/or promoting naturally occurring native perennial grass recovery (no seeding), using these methods along with those described in Section 2.4.1 in combination or as stand-alone treatments (e.g., mowing, hand cutting, and herbicide application, seed bed preparation, and maintenance) (Figure 2-2).

Maximum treatment width would be 200 feet on both sides of roads (400 feet total). However, environmental constraints such as adjacent vegetation, terrain, soil type, and/or resource concerns would dictate width and/or treatment type in a given area. For example, a fuel break segment may be narrowed or shifted to avoid important resources (see Design Features, Section 2.4.3). The roads identified in Figure 1-1 and Table 2-1 were selected by BLM because they are currently accessible and/or strategically important to wildland fire engines and other suppression equipment and because development of fuel breaks along these roads would produce the greatest benefit for protecting ESR treatments and habitat.

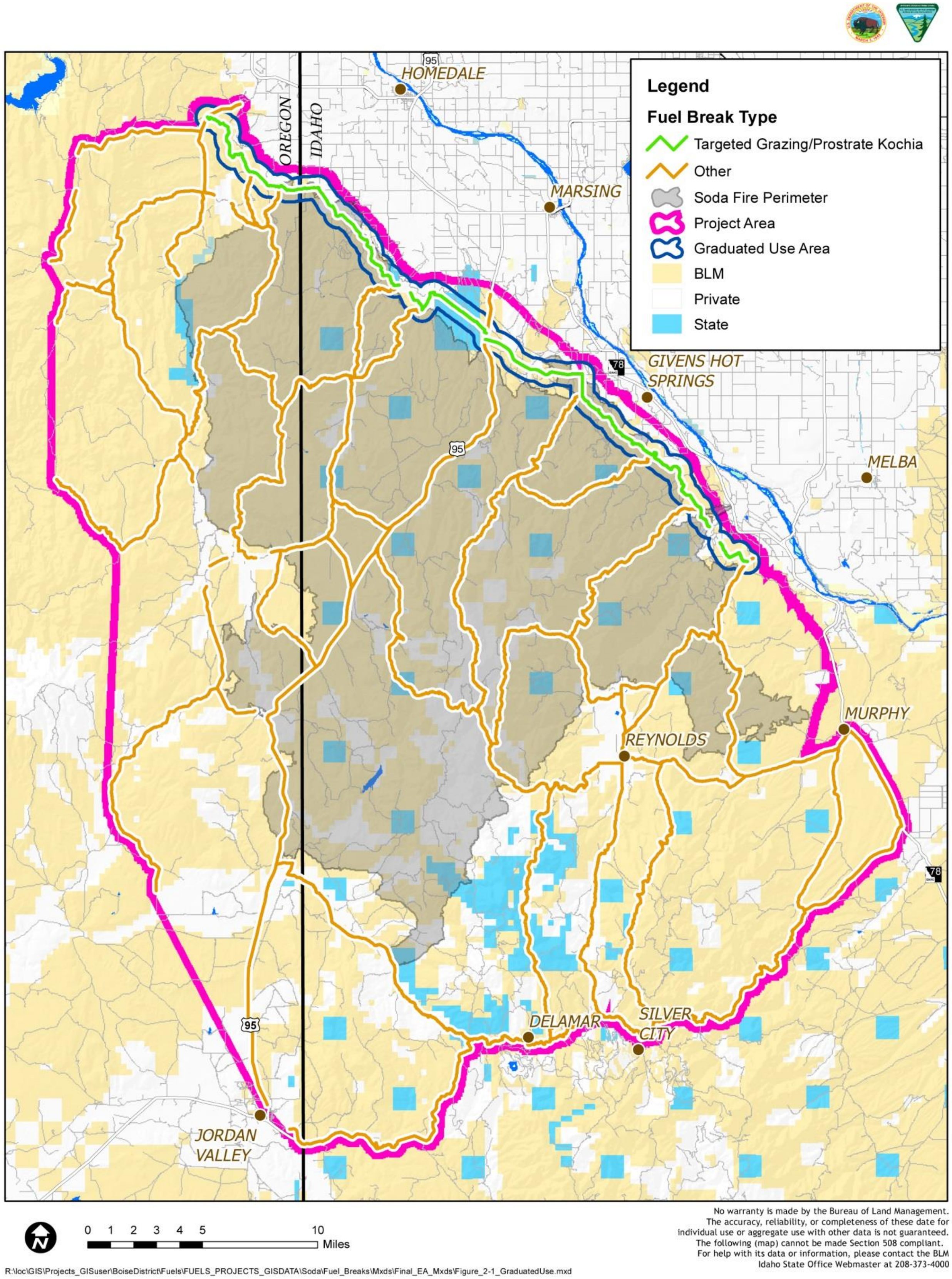
Treatments have been placed into three categories: Targeted Grazing, Prostrate Kochia, and Other (seeding other than kochia and unseeded areas). Targeted Grazing and Prostrate Kochia treatments are combined in Table 2-1 because they are proposed in the same location (i.e., same treatment foot print miles and acres); though they would not necessarily be used concurrently (see treatment descriptions below). For analysis purposes, a total maximum fuel treatment zone of 400 feet is assumed. Road maintenance to the full extent (i.e., the maximum road prism which encompasses the road bed, ditches, culverts, armored dips, etc.) is also included here as it is a necessary part of successful and effective fuel break creation (i.e., firefighter access and the hard break in fuel continuity).

Table 2-1. Proposed Action Treatment/Activity Summary

Treatment/Activity	Miles[1] (inside/outside burn)	Acres[1] (inside/outside burn)	%Public[2] & State (inside/outside burn)
Targeted Grazing & Prostrate Kochia[3]	36 (14/22)	1,757 (712/1,045)	85% (619/882 acres)
Other	406 (155/251)	19,503 (7,440/12,063)	81% (6,179/9,680 acres)
Total	442 (169/273)	21,260 (8,152/13,108)	82% (6,798/10,562 acres)
Road Maintenance	442 (169/273)	---	82% (141/221 miles)

[1]These figures reflect all ownership (BLM, BOR, state, and private) miles and acres within the proposed fuel break footprint; however, construction and maintenance of fuel breaks on private lands may or may not occur, and depend upon private landowner interest and involvement. Additionally, road work would not occur on private land without the express written consent of the landowner (see Road Maintenance below).
[2]Public indicates BLM- and BOR-managed lands.
[3]Targeted Grazing and Prostrate Kochia treatment miles and acres are identical; prostrate kochia would be seeded in the same fuel break footprint in the event that the targeted grazing treatment is not successful (see livestock grazing Design Features, Section 2.4.3).

Figure 2-2: Proposed Action Fuel Breaks.



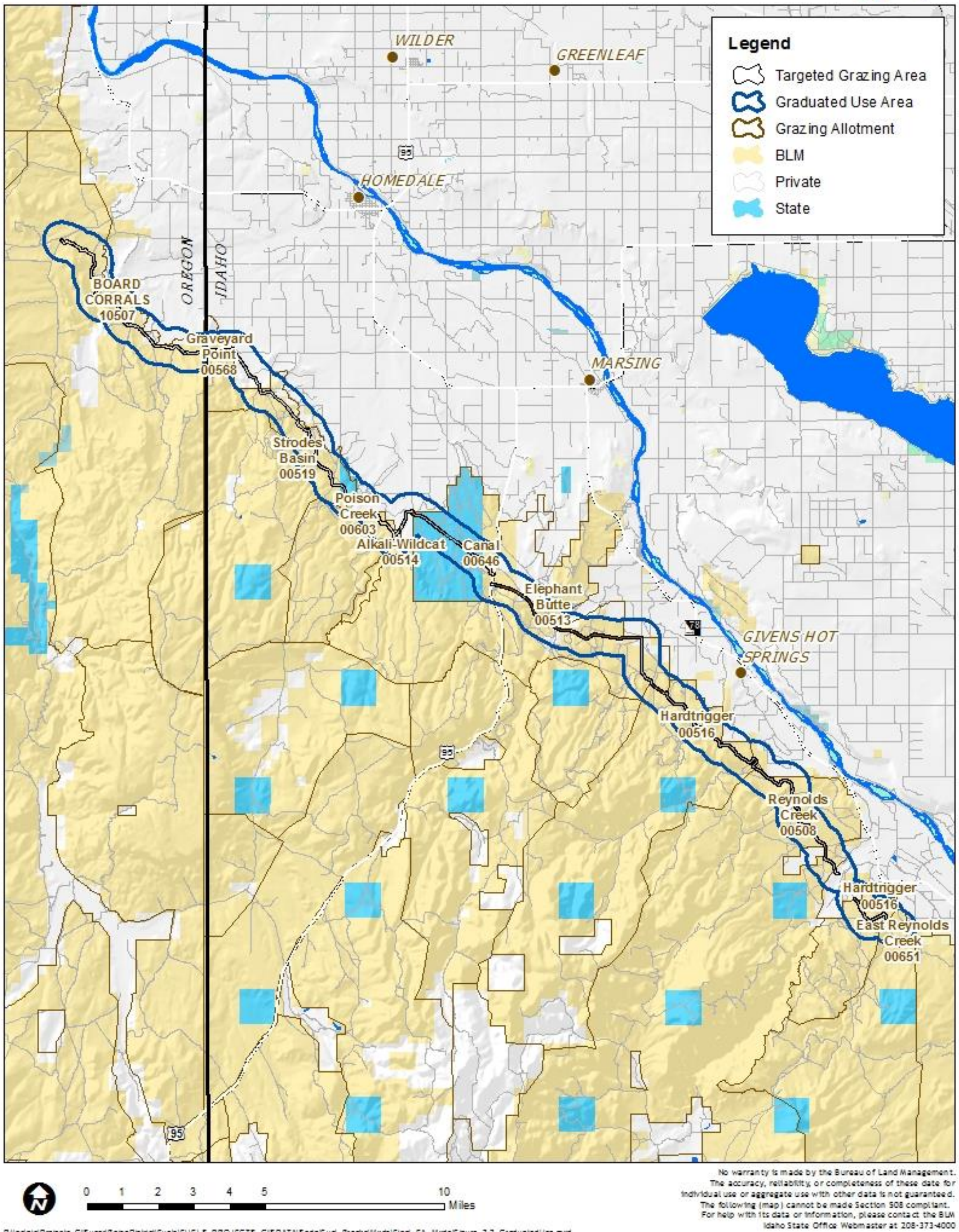
Targeted Grazing

Targeted grazing would occur along the Owyhee Front in areas chiefly composed of non-native invasive annual grass (primarily cheatgrass). This location was identified along the northern portion of the project area where the majority of the WUI is located and associated with livestock grazing allotments. The allotments include Board Corrals in Oregon, and Graveyard Point, Poison Creek, Canal, Elephant Butte, Hardtrigger, Reynolds Creek, East Reynolds Creek in Idaho (Figure 2-3).

Concentrated use (i.e., the treatment area) would be focused within 200 feet to both sides of the 36 miles of road and total approximately 1,757 acres. Incidental use by livestock outside the treatment focal area (i.e., the graduated use area) could occur and is addressed through livestock grazing design features (Section 2.4.3) and illustrated in Figures 2-2 and 2-3. Mowing may also be utilized in areas where there are remnant shrubs.

If targeted grazing is discontinued per adaptive management outlined in the livestock grazing design features, the BLM would seed prostrate kochia (except where resource or other constraints preclude it) within the treatment +area (200 feet to each side of the road) to create functioning fuel breaks. Neither targeted grazing (including the graduated use area) nor prostrate kochia seeding is proposed within four miles of sage-grouse leks or within lands with wilderness characteristics. Refer to Methods (Section 2.4.1), Design Features (Section 2.4.3), and Monitoring and Control (Section 2.4.5) above for details regarding targeted grazing implementation and management.

Figure 2-3: Targeted Grazing Treatment Area, Graduated Use Area, and Associated Allotments.



Prostrate Kochia

Up to 1,757 acres along 36 miles of road is proposed for prostrate kochia seeding if targeted grazing is not successful (see targeted grazing description above and Design Features, Section 2.4.3). This location, the Owyhee Front, is largely characterized by low elevation sites dominated by non-native invasive annual grass (cheatgrass). Prior to seeding, seedbed preparation – primarily disking and herbicide application – would be necessary due the pervasiveness of the invasive, weedy species in the area. Following seedbed preparation, prostrate kochia would be broadcast seeded or drill seeded depending on site conditions. It is the BLM's professional experience that prostrate kochia is the most effective species for use in low elevation, degraded sites dominated by non-native, invasive annuals. Refer to the Methods section (2.4.1) for more detail.

Other

Native seeding, non-native seeding other than kochia, and natural/unseeded fuel breaks would be developed along 406 miles totaling 19,503 acres using the methods described in Section 2.4.1. Methods may be implemented as stand-alone treatments or in combination to meet fuel break objectives. Site conditions would dictate which methods would be used. Sites comprised of shrubs with a perennial understory would be mowed. Sites comprised of shrubs where invasive annuals are abundant in the understory would likely be mowed, treated with herbicide, and seeded.

For example, in areas proposed for fuel breaks that were not burned by the Soda Fire, mowing would be the most likely method employed and may or may not require chemical treatment and/or seeding to create and maintain the fuel break and manage possible weed spread. Therefore, in the short-term (0-3 years) mowing treatments may be implemented along 155 miles of roads (up to 7,440 acres). Mowing of shrubs would be employed in the burned area in the future (10-30 years) as shrubs re-establish along the 251 miles of roads (up to 12,063 acres). Treatment areas where non-native invasive annual plants are abundant or dominant, typically below 4,000 feet, would likely require a chemical and seeding component.

Road Maintenance

The roads included for analysis in the proposed action (442 miles) are a mix of existing road types from main use roads including highways (e.g., Highway 95) to light duty roads including two-tracks with varying degrees of maintenance currently taking place. In general, roads that are currently being maintained with heavy equipment such as graders or dozers would have little or no change in maintenance specifications; they are already being maintained to a level that allows fire resource access and the road surface is free of vegetation. Roads that currently undergo little or no periodic maintenance would be maintained to a level that provides access for fire equipment and personnel, and to keep the road surface free of vegetation. Road work would not occur on private land without the express written consent of the landowner specifying the limits of the work, the purpose of the work, the frequency of potential maintenance work, and advanced notice to and consent of the land owner as to the date and time of any work to be done on such roads.

Proposed road maintenance would include using heavy equipment (graders, bulldozers, scrapers, and backhoes) to blade or grade existing roadways to remove vegetation and improve firefighter access. Maintenance of roads may also include repairing, replacing or installing culverts, constructing rolling dip gravel stream crossings, replacing or installing cattle guards and sediment barriers, surfacing areas with gravel, and maintaining ditches and shoulders.

Application of pre-emergent herbicides after grading is also proposed to reduce the spread and establishment of noxious weeds where necessary. Road shoulders may be seeded with fire resistant/resilient plants in areas where seeding is deemed appropriate and additional shoulder and bar ditch maintenance is completed. Occasionally prescribed fire may be necessary to burn accumulations of weeds and brush on fence lines accumulated in topographical features such as draws or ditches. Once maintained, roads would offer better access for fire suppression equipment. All necessary permits (e.g., in-stream permit) would be secured prior to road work.

2.6 Alternative 3 – Modified Proposed Action

Alternative 3 differs from the Proposed Action (Alternative 2) in that there would be no road maintenance above current levels and fuel break width would be narrowed to 100 feet to both sides of roads, with the exception of targeted grazing and prostrate kochia treatments. Under Alternative 3, the BLM is proposing to construct and maintain fuel breaks along the same 442 miles of existing road totaling 11,550 acres using the same treatments and methods as described for Alternative 2 (Figures 1-1, 2-2, and 2-3). Treatments would occur in the same areas identified under Alternative 2; however, maximum fuel break width would be 100 feet to both sides of roads (200 feet total) for all treatments except for targeted grazing and prostrate kochia seeding which would be implemented and maintained up to 200 feet to both sides of the road (400 feet total).

As before, environmental constraints such as adjacent vegetation, terrain, soil type, and/or resource concerns would dictate width and position in a given area. Treatments have been placed into three categories: Targeted Grazing (36 miles, 1,757 acres), Prostrate Kochia (same as targeted grazing), and Other (seeding other than kochia and unseeded areas) (406 miles, 9,793 acres). For analysis purposes, the maximum total width (200 feet for Other and 400 feet for Targeted Grazing Prostrate Kochia) is assumed (Table 2-2). Road maintenance is also included here as it is a necessary part of successful and effective fuel break creation (i.e., firefighter access and the hard break in fuel continuity).

Table 2-2. Modified Proposed Action Treatment/Activity Summary

Treatment/Activity	Miles[1] (inside/outside burn)	Acres[1] (inside/outside burn)	%Public[2] & State (inside/outside burn)
Targeted Grazing/ Prostrate Kochia[3]	36 (14/22)	1,757 (712/1,045)	85% (619/882 acres)
Other	406 (155/251)	9,793 (3,736/6,057)	90% (3,100/5,736 acres)
Total	442 (169/273)	11,550 (4,448/7,102)	89% (3,719/6,618 acres)

[1]These figures reflect all ownership (BLM, BOR, state, and private) miles and acres within the proposed fuel break footprint; however, construction and maintenance of fuel breaks on private lands may or may not occur, and depend upon private landowner interest and involvement.
[2]Public indicates BLM- and BOR-managed lands.
[3]Targeted Grazing and Prostrate Kochia treatment miles and acres are identical; prostrate kochia would be seeded in the same fuel break footprint in the event that the targeted grazing treatment is not successful (see livestock grazing Design Features, Section 2.4.3).

2.7 Alternatives Considered But Not Analyzed in Detail

The following alternatives were considered but not analyzed in detail because they did not meet the purpose and need as described below.

An alternative with no prostrate kochia fuel breaks

An alternative that would not utilize prostrate kochia was considered but not analyzed because it would limit BLM's ability to effectively establish fuel breaks, especially in the WUI areas along the Owyhee Front. These sites, below 4,000 feet and composed primarily of invasive annual grasses, are especially difficult to establish with any other seeded species suitable for fuel breaks. St John and Ogle (2009) listed the most effective characteristics for fuel break vegetation as:

- adapted or adaptable to the site
- competitive with annual grasses and forbs
- easy to establish
- low stature with an open canopy
- resilience and regrowth capabilities after fire and grazing
- reduce fuel accumulation and volatility
- retain moisture and remain green through the fire season

Prostrate kochia effectively competes with invasive annual grasses and forbs (Tilley et al. 2012). It has been shown to effectively reduce flame lengths and slow the spread of fires even in windy conditions (Harrison et al. 2002, Monsen and Memmott, 1999, Monsen 1994), which improves the opportunity for firefighters to more safely engage in effective suppression actions. Reducing flame lengths and the spread of wildfire also enhances public safety. Prostrate kochia is the plant species that best meets the desired criteria for suitable and effective fuel break vegetation (Monsen 1994; Kettle and Davison 1998; Monsen and Memmott 1999; Harrison 2002; St John and Ogle 2009; Waldron 2011). Additionally, the Proposed Action and Modified Proposed Action alternatives prioritize the use of native species to the appropriate extent (i.e., where conditions are conducive to establishing natives and where resource constraints require the use of natives). Refer to the Methods described for the action alternative (Section 2.4.1) for more detail.

An alternative that would not use any non-native species (a natives only alternative)

An alternative that would use only native plants for fuel break development (i.e., no kochia or other non-native species) was considered but was not analyzed in detail. While there are circumstances where natives are preferable, meet the requirements of an effective fuel break (St. John and Ogle 2009), and are possible to establish (e.g., in areas of adequate/higher precipitation and/or low disturbance regime), natives are difficult to establish in lower elevation areas that have been degraded and are dominated by invasive annual species (i.e., WUI areas along the Owyhee Front). Therefore, a native only alternative limits BLM's ability to effectively establish fuel breaks, particularly in low elevation, degraded sites that are key to a strategic contiguous system of fuel breaks. Further, the Proposed Action and Modified Proposed Action alternatives prioritize the use of native species to the appropriate extent (i.e., where conditions are conducive to establishing natives and where resource constraints require the use of natives). Additional details regarding the use of various tools for fuel break development are provided in Section 2.4.1 of this EA.

An alternative using sheep and goats for targeted grazing

An alternative that would use goats and sheep for targeted grazing was considered but not analyzed in detail because of concern for the protection of bighorn sheep from potential disease transmission per direction from BLM Manual 1730 *Management of Domestic Sheep and Goats to Sustain Wild Sheep* (March 2, 2016). BLM's policy is "to (1) achieve effective separation of BLM authorized domestic sheep or goats from wild sheep on BLM lands, and (2) to minimize the risk of contact between the species."

An alternative that would consider no grazing

The removal of livestock grazing across the landscape, or changes to livestock grazing permits, is not within the scope of this project. Such changes may be considered in the process of deciding whether or not to renew a livestock grazing permit according to 43 CFR 4100. Additionally, the purpose of this project is to create (or establish) of a system of linear fuel breaks, rather than a consideration of fuel loading or rangeland health across the landscape. The design features relative to targeted grazing and other fuel break treatments preclude the use of these tools in areas where there are sensitive resources, such as special status species or cultural sites (Section 2.4.3).

An alternative that would remove grazing from sensitive areas and place limitations on any grazing use that may continue

An alternative to remove grazing from sensitive areas and place limitations on any grazing use that may continue was considered but not analyzed in detail because it is outside the scope of the project and does not meet the purpose and need of the project. Like the alternative above (no grazing), changes in grazing management are accomplished through the permit renewal process and according to 43 CFR 4100. Additionally, there are design features in place to protect sensitive areas/resources during targeted grazing events and all other proposed fuel break treatments (Section 2.4.3).

An alternative that would consider habitat restoration with reduced grazing

A habitat restoration with reduced grazing alternative was considered but not analyzed in detail. Habitat restoration efforts have already begun with implementation of the Soda Fire Emergency Stabilization and Restoration Plan, and the burned area is currently being rested from grazing to allow for restoration efforts to be successful. Habitat restoration and changes to authorized grazing are outside the scope of this project and do not meet the Purpose and Need, which is to minimize the threat of large or recurring wildfires by utilizing linear fuel breaks to protect ESR restoration investments and adjacent intact habitats.

An alternative that would increase fire suppression resources

Increasing fire suppression resources as an alternative was considered but not analyzed in detail. The logistics of procuring additional equipment (helicopters, engines, dozers, etc.), building additional fire stations/guard stations, and annually staffing equipment and additional stations would be prohibitive. Further, in an event where numerous wildfires large (1,000+ acres) are burning simultaneously, similar to the events of July 2012 on the Boise District, there is no assurance that extra resources would be available to dispatch to each priority location (i.e. important habitat, in particular).

An alternative that would consider non-vegetated fuel breaks

An alternative proposing non-vegetated fuel breaks (bare mineral soil) was considered but was not analyzed in detail. A large network of non-vegetated fuel breaks would be effective from a firefighting perspective; however, the ecological and monetary costs would be extensive detracting from the feasibility. Non-vegetated fuel breaks would create greater short- and long-term ground disturbance than vegetated fuel breaks, require more periodic, extensive, and expensive maintenance to keep fuel breaks free of vegetation, lead to dust and erosion issues, and create vectors for noxious and invasive species.

3.0 Affected Environment and Environmental Consequences

Direct and Indirect Effects

After reviewing the Proposed Action and alternatives relative to the proposed project area, the Interdisciplinary Team determined that several elements of the human environment could potentially be affected. These elements and the expected direct and indirect impacts to the environment are discussed below. A direct impact is caused by the action and occurs at the same time or place, whereas an indirect impact is caused by the action but occurs later in time or is further removed in distance, but is reasonably foreseeable. The No Action alternative reflects the current situation within the proposed project area and will serve as the baseline for comparing the environmental effects of the Proposed Action and alternatives.

Elements of the human environment have been reviewed and the following are either not present in the project area, or would not be affected by any of the alternatives therefore, they will not be addressed further in this document:

- Wilderness Study Areas
- Economic and Social Values
- Environmental Justice
- Research Natural Areas
- Hazardous materials

For the purposes of the analysis in this EA, the impacts of past activities within the proposed project area were considered to be reflected in existing resource conditions (i.e., the affected environment). The impacts of any specific past action may be difficult or impossible to individually quantify and disclose due to issues like inconsistent data collection methodology in the past, data that have become lost or missing over time, and the lack of data in the case of unplanned events such as wildfire. Therefore, this analysis does not attempt to quantify specific impacts for each past activity within the proposed project area, but rather uses current and scientifically accurate data available to identify the existing condition of each resource. Present and reasonably foreseeable future actions within the analysis area are addressed in the cumulative impacts analysis for each resource. In addition, for purposes of the analysis in this EA, areas within the Soda Fire perimeter were analyzed as being burned by the Soda Fire, including islands of areas that were classified as unburned/very low burn. Areas outside the Soda Fire perimeter are considered unburned by the Soda Fire.

Assumptions

Several assumptions were made during the analysis process. These assumptions were necessary to provide a standard basis for comparison between alternatives. However, it must be stated that all treatments, including implementation and maintenance, are subject to federal budgets. Assumptions include:

- All treatments would be fully implemented as proposed.
- Seeding treatments would be successful.
- Implementation of fuel break segments would occur at a rate of approximately 2,000 acres per year.
- New seedings associated with fuel break establishment will be evaluated on a case by case basis to determine if any rest from normally scheduled livestock grazing may be required.
- Short-term effects occur within five years of implementation; long-term effects occur greater than five years after implementation.

Cumulative Effects

Cumulative effects describe impacts of the Proposed Action and alternatives when added with other past, present, and reasonably foreseeable future actions (40 CFR 1508.7). The cumulative effects analysis considers actions on federal, state, and private lands within the analysis area that would affect resources that could also be affected by the Proposed Action and alternatives in this EA. Past, present, and reasonably foreseeable future actions that may contribute to cumulative effects are discussed below for each potentially affected element of the human environment.

Cumulative actions that have occurred in the past and/or are likely to continue into the foreseeable future include:

- Gateway West Transmission Lines – Gateway West Project is a proposal to construct 1,103 miles of electrical transmission lines from Glenrock, Wyoming to Hemmingway Butte in Idaho. Several routes for the transmission line have been proposed but a final decision on which routes would be used has not been made. Routes from both Segment 8 (16.1 miles) and Segment 9 (17 miles) pass through the project area. A final decision on this project is expected in late 2016.
- Boardman to Hemingway Transmission Line – Boardman to Hemingway Project is a proposal to construct approximately 295 miles of electrical transmission line from near Boardman, Oregon to the Hemingway Substation in Owyhee County. The transmission line that would pass through the project area follows a transmission corridor that is already developed and there would be no additional cumulative impacts to what is already occurring. Therefore, this action will not be discussed further.
- Soda Fire ESR Plan (USDI BLM 2015a) – The Soda Fire ESR Plan identified treatments that would occur within the project area.
- Cherry Road ESR Plan (USDI BLM 2016b) – The Cherry Road Fire ESR Plan identified treatments that would occur adjacent to the project area.
- Recreation – Recreational activities include hunting, camping, biking, hiking, off-highway vehicle (OHV) use, and bird and wildlife watching
- Livestock Grazing – Livestock grazing, including wild horse grazing, and trailing on public, private, and state lands has occurred for more than a century, and is expected to

continue into the foreseeable future. BLM grazing allotments in and adjacent to the project area are managed to achieve or make progress towards achieving the Standards for Rangeland Health. Trailing livestock occurs when livestock are moved from one location to another by herding, using horses or motorized vehicles.

- Weed treatment – Weed treatments currently occur in the project area and will continue in the foreseeable future.
- Wildfires - Wildfires have consumed native vegetation and enhanced conditions for annual grasses and forbs to invade the area.
- The Bruneau Owyhee Sage-grouse Habitat (BOSH) project – a proposed project to reduce encroaching western juniper from functioning sage-grouse breeding and brood-rearing habitat.
- Climate change - The region is becoming dryer and hotter.
- Land and Realty actions (rights-of-way, easements, etc.) – Land and realty actions including granting of rights-of-way and easements as well as mineral development have occurred and will continue to occur in the future.

3.1 General Setting

The Soda Fuel Breaks proposed project area is located in Owyhee County, Idaho and Malheur County, Oregon. Elevation within the proposed project area ranges from 2,400 to 6,000 feet above sea level. Summers are warm and dry; winters are cool with the majority of annual precipitation occurring from November through May. The average annual temperature varies between 37°and 48° Fahrenheit.

The average annual precipitation ranges from 7.8 inches at the Homedale 1 SE station[2] to over 20 inches at the Reynolds Creek station[3], increasing from north to south. Precipitation data from the Reynolds station[4] collected within the project area indicates that the average annual total precipitation for the years 1961 to 2014 was 10.5 inches. From 2000 to 2012, yearly precipitation totals for 10 of the last 12 years have been below the 53-year average.

Cool season precipitation occurs in the form of rain or snow. Summer precipitation may occur in the form of periodic thunderstorms. More typically, summer thunderstorms are dry in nature. Lightning resulting from these storms is a common cause of wildfires in southern Idaho and eastern Oregon. Wind is common in the area; winds can exceed up to 40 miles per hour and tend to occur most frequently in the spring and summer with thunderstorm conditions. Prevailing winds blow primarily west to east, although winds blowing from east to west may precede low-pressure systems.

[2] Western Regional Climate Center records accessed in 2016 (http://www.wrcc.dri.edu/). Homedale 1 SE is located at 2,230 feet above sea level, in Homedale, Idaho, approximately 6 miles northeast of the project area. Records were summarized from January 2000 to February 1, 2016.

[3] National Oceanic and Atmospheric Administration's National Centers for Environmental Information accessed in 2016 (https://www.ncei.noaa.gov/). The Reynolds Creek station is located at 5,600 feet above sea level, roughly 17 miles southwest of Melba, Idaho. Records were available from January 2000 to February 2016.

[4] Western Regional Climate Center records accessed in 2016 (http://www.wrcc.dri.edu/). Reynolds, Idaho is located at 3,930 feet above sea level, roughly 16 miles southwest of Melba, Idaho. Records were available from January 1962 to December 2014.

Since the Soda Fire burned the majority of the vegetation within the fire boundary, most of the vegetation that will regrow first is expected to be a mixture of annual and perennial grasses and forbs. As the burned area recovers over the next 5-10 years, it is expected that shrubs, willows and other woody vegetation will become more prevalent within the landscape. Most of the approximately 280,000 acres of burned area is within Important or Priority Habitat Management Areas for sage-grouse.

The unburned vegetation surrounding the Soda Fire perimeter is a mixture of sagebrush steppe habitat with some areas dominated by juniper. Invasive species are also found inside and outside the fire perimeter, particularly in the lower elevations along the Owyhee Front. If this vegetation burns in the near future, it would then become vulnerable to repeated wildfire as non-native invasive annual grasses are expected to become established in these areas.

3.2 Wildfire Management

3.2.1 Affected Environment

The analysis area for wildfire management is the proposed project area because proposed management actions would only occur within this area. A wide range of wildfire behavior may be exhibited in the project area depending on fuels, weather and topography. Sagebrush and annual grassland fires may result in high intensity fires with rapid rates of spread, while fires in perennial grasslands are often less intense. The concentration and values of resources at risk vary throughout the project area. Fire behavior and resources at risk dictate in large part the priorities, objectives and strategies for fire management. One of the preferred tools used by fire managers is fuel breaks. These are natural or manmade changes in fuel that serve to modify fire behavior and make the fire easier to control (NWCG 2015). Fuel breaks would lower flame lengths, slow rates of spread, and provide fire fighters safe places to anchor control lines (see Appendix B). For the purpose of this document a fuel break is always a roadway free of vegetation (the hard break in fuel continuity) with the adjacent fuel treatment zone (i.e., vegetation along roadway treated to reduce fuels resulting in a modification of fire behavior characteristics).

The portion of the project area within the BLM's Vale district falls within the Owyhee East Fire Management Unit (FMU). This area is characterized by large expanses of annual introduced grassland, as well as perennial grassland and sagebrush/bunchgrass or sagebrush/annual grasslands. Fires that ignite can spread quickly in these types of fuels and escaped fires can easily reach 20,000 acres. Many areas in this FMU have burned multiple times in the last 35 years (USDI BLM 2015b).

The portion of the project area within the BLM's Boise District falls within the Owyhee Front, Northern/Silver City, and Birds of Prey FMUs. A very minor portion of the project area is within the Birds of Prey FMU, thus the FMU will not be discussed in great detail. The Owyhee Front FMU is characterized by GR2 (low load dry climate grasses) and GS2 (moderate load dry climate grass-shrub) fuels (USDI BLM 2011a). Wind driven fires in these fuel types can grow rapidly and exhibit high flame lengths (Scott and Burgan 2005). Many areas within this FMU have been modified significantly from their historical fire regime through the introduction of annual grasses which create a continuous and hazardous fuel bed. As more fires occur in these areas the annual grasses may increase, and the departure from the historical fire regime may increase. Grass-shrub fuels that burned with moderate to high severity may have experienced high mortality in the shrub strata. In these cases the fuel type has been converted to one where grass is the main carrier of fire currently. The Owyhee Front is ranked as high priority for fire suppression. Sage-grouse habitat, cultural resources, and WUI are the main drivers for the ranking. Fuels treatment is ranked as a moderate priority here. The reduction of non-native annual grasslands is a main concern for treatment.

The Northern/Silver City FMU is characterized by GS2, SH2 (moderate load, dry climate shrub), and TU1 (low load, dry climate timber-grass-shrub) fuels (USDI BLM 2011a). The fire regime has a moderate to high departure from the historic range, in part due to juniper encroachment. The fire history in the FMU indicates fairly low occurrence and the most common ignition source is lightening. Suppression here is ranked as a moderate priority due to remoteness and lack of WUI. The FMU is ranked as a high priority for fuels treatment, though a main driver for this ranking is concern over hazardous fuel loading near Silver City, which lies outside of the project area.

3.2.2 Environmental Consequences

All fuel breaks must have a road free of vegetation. The road free of vegetation acts as the break in fuel continuity which is the true fuel break. All fire lines regardless of size or fire behavior have to break the continuity or availability of fuel to an advancing fire. The three components of the fire triangle are heat, oxygen and fuel (NWCG 2007). The one component that can be manipulated by man prior to a fire ignition is the fuel component in the form of fuel breaks.

The road associated with the fuel break must be accessible to fire equipment such as dozers, fire engines and command vehicles. The logistics of fighting fire in remote locations is aided by a road network that allows the flow of resources and supplies to the fire within a reasonable timeframe. The quicker the fire resources and supplies can access the fire, the faster it can be contained. All fires must be engaged by ground resources. Aerial resources may or may not be effective at slowing the advancement of fire. To completely extinguish a wildland fire, ground resources will be required. The roadway also improves safety to fire resources by providing quick ingress and egress in case of emergencies associated with changing fire conditions. The road also allows easy maintenance of the fuel break system.

For the fuel break to be effective, vegetation adjacent to the road must be reduced. The reduction in fuels adjacent to the road results in a change in fire behavior as the fire burns into the area of reduced fuels. Reduction in flame length and potential reduction in rates of spread are the two fire behavior characteristics modified by fuels reduction. See Appendix B for a description of the fire behavior, weather conditions, and fuel conditions experienced on the Soda Fire compared to the “desired” fuel conditions and resulting fire behavior characteristics in fuel break segments.

A fuel break width of 200 feet on both sides of the road (a 400-foot corridor, overall) allows fire fighters the time and space to more safely attack a fire coming from any direction. As fire moves into the fuel breaks, the fire behavior is modified by reduced flame length and possibly rate of spread depending on herbaceous fuel continuity as it comes to the road/fuel break as documented in Appendix B. The 200 feet of vegetation manipulation on both sides of the road significantly increases the area and time the advancing fire’s behavior is being reduced or modified; increasing time and space for the firefighters to respond to and anticipate the constantly changing fire environment. A fuel break on both sides of the road would: 1) slow an advancing fire by altering the fuel type and affecting fire behavior; and 2) by providing an area of altered fuel type that will catch spotting embers across the road from the advancing fire and give firefighters more time to extinguish the fire because the area has lower flame lengths and a slower rate of spread.

Two hundred feet on each side of the roadway is a reasonable width when considering the fire behavior and flame lengths that the fuel breaks are designed to alter. To define fuel break width, fire managers looked at standard, defined distances needed for safety zones. A safety zone is an area devoid of vegetation that fire fighters can retreat to in an emergency situation. The safety zone required for Soda-Fire-type fire behavior would be 130 feet. It is important to keep in mind that safety zones are areas devoid of vegetation. Fuel breaks proposed in the EA would contain vegetation so fire managers determined that based on past fire behavior in this fuel type that an extra 70 feet would be necessary to slow an advancing fire and alter fire behavior enough to allow safe firefighting. Therefore, a maximum 200-foot wide fuel break, on both sides of the road, is optimal.

Flame lengths of 8 feet or less are desired as fire approaches a fuel break. Empirical evidence coupled with decades of experience in fire suppression has established general rules used in determining suppression tactics based on flame length as depicted in Table 3.2-1 (USDA USFS 2011a). In general, a flame length of 8 feet or less is what the proposed fuel break design is based on.

Table 3.2-1: Relationship of Surface Fire Flame Length and Fire line Intensity to Suppression Interpretations

Flame length		Fireline intensity		Interpretation
ft	m	Btu/ft/s	kJ/m/s	
< 4	< 1.2	< 100	<350	 • Fires can generally be attacked at the head or flanks by persons using hand tools. • Hand line should hold the fire.
4 – 8	1.2 – 2.4	100 – 500	350 – 1700	 • Fires are too intense for direct attack on the head by persons using hand tools. • Hand line cannot be relied on to hold the fire. • Equipment such as dozers, pumpers, and retardant aircraft can be effective.
8 – 11	2.4 – 3.4	500 – 1000	1700 – 3500	 • Fires may present serious control problems—torching out, crowning, and spotting. • Control efforts at the fire head will probably be ineffective
> 11	> 3.4	> 1000	> 3500	 • Crowning, spotting, and major fire runs are probable. • Control efforts at head of fire are ineffective.

During extreme fire behavior, fuel breaks may be breached by spot fires that cross the roadway. Spotting is when burning embers from the flaming front are picked up by winds and carried across the fuel break or roadway (control line) into a receptive fuel bed. Spotting in fuel models GR1 (short grass) and SH1 (low shrub) is short range and short duration as compared to the existing fuel model GS2 (grass shrub fuel model) prior to mowing.

Alternative 1 – No Action

The No Action alternative would not have a network of fuel breaks constructed throughout the project area. Future fires would burn depending on existing fuels, weather, topography, and be unimpeded by changes in the fuel bed that would alter fire behavior and decrease resistance to control. Firefighters would not have pre-established fuel breaks on the landscape to create safe and effective anchor points from which to initiate suppression tactics. Intact shrub vegetation along roadsides would likely produce high flame lengths that would not be manageable using direct attack methods. Response time required to catch fires before they grow beyond the capabilities of initial attack would remain unchanged and landscapes more distant from improved roads with intact sagebrush steppe would remain most vulnerable to large fires.

Increases in cover of annual grasses which may result from recent large fires including the Soda Fire may increase the occurrence of fires with extreme fire behavior, including high flames lengths, rapid rates of spread and a high probability of escaping initial attack. The risk to resources within the project area, including investments made in the recovery of the area burned by the Soda Fire would not be reduced. The use of targeted grazing would not occur to create areas of low and discontinuous fuel which inhibit extreme fire behavior. The existing maintained road network would provide access for fire suppression resources; however, roads alone would not provide adequate safe areas or serve as effective fuel breaks.

General Effects of Action Alternatives

All action alternatives include the construction of fuel breaks designed to modify fire behavior and make fires easier to control and contain. Reducing fuels within fuel breaks has additional benefits for fire suppression resources during burnout and holding operations as follows:

- Reduced fire line intensity – as fire moves from fuel model GS2 (grass shrub) into GR1 (primary short grass) or SH1 (low shrub), fire intensity is reduced (Appendix B). The fuel break on both sides of the road will increase the area and time fire behavior is being reduced and fire intensity is lowered. This increases the margin of success for suppression crews.
- Increase the safety margin for suppression crews through lower fire line intensity. Including, the ability to move up and down the fire line to address surges and changes in fire behavior and move away from intense fire behavior then re-engage quickly when fire behavior dies down or moderates.
- Increase ability to patrol for spots across the line – it is easier to detect spot fires while small in a areas where fuels have been mowed or reduced and not hidden in tall sagebrush until well established.
- Increase ability to catch spot fires across line because the fire is spotting into an area of reduced fuel loading. Spot fires take longer to establish and build up intensity in reduced fuels.
- Spot fires and line breaches are easier to control with fewer resources. Less equipment, water, and fire retardant would be needed because fire is spotting into an area of reduced fuels and is easily extinguished.
- Fire retardant is much more effective in fuel breaks than untreated fuels. Fire retardant is able to completely coat fuels rather than getting hung-up in the sagebrush canopy where fire can creep through fine fuels underneath the sagebrush.
- Changing the fuel model within the fuel break from a sagebrush model to a grass fuel model will reduce spotting distance. Grasses, owing to their fineness and short consumptive time, produce fewer embers that survive to return to the ground (USDA

USFS 2011b). Wider fuel breaks provide larger areas of reduced fuels for fire brands to be generated from, and larger areas of reduced fuels for spots to land in if carried over a roadway free of vegetation.

- The residence time (the time the plant is flaming and suppression resources need to stay to manage it) of flaming fuels is greatly reduced in the fuel breaks due to reduced fuels. The residence time in GR1 (grass fuel model) is less than the residence time in the GS2 (sagebrush model). This allows suppression resources to have much more mobility to move up and down a fire line (fuel break) holding and burning out line in fine fuels versus heavy sagebrush fuels. This allows the firefighters to hold and secure larger expanses of line with fewer resources.

The effectiveness of fuel breaks would be based on their width. Targeted grazing would create a zone of low and discontinuous fuels that would not support high flame lengths or high rates of spread. Road maintenance would improve response time to fire incidents and improve the fuel breaks.

Implementation of prescribed fire would help to maintain fuel breaks by removing accumulated fuels along fencelines and topographical features (ditches or draws filling with weeds) within proposed fuel breaks.

Implementation of any action alternative is expected to aid firefighters, provide for their safety, and protect resources within the project area including investments into the recovery of the area burned by the Soda Fire.

Over the last five years, the Boise District BLM has worked with the Idaho Transportation Department (ITD) to increase road maintenance along the outside edges of Interstate 84 between Boise and Mountain Home, Idaho. The focus of maintenance has been to re-establish the gravel apron associated with the road shoulder in a vegetation-free state through grading and chemical treatments, as well as to mow all vegetation to six (6) inches or less in the associated right-of-way. This more intensive roadside maintenance has resulted in a dramatic decrease in human-caused fire starts in the maintained section along a major travel corridor. According to post-treatment monitoring data, average roadside ignitions dropped from 7.7/year for years 1983-2012 to 4.6/year for years 2013-2015. Average acres burned dropped from 973 acres/year for years 1983-2012 to 70 acres/year for years 2013-2015. Due to the success of roadside maintenance in reducing fire starts along Interstate 84, ITD has increased roadside maintenance along other major travel routes throughout southwest Idaho.

Comparing fire starts that occur along major high speed travel routes open to every type of vehicle traveling across the country to the proposed increase of road maintenance associated with some of the proposed routes located away from major travel routes that may or may not see an increase of use is not comparable. For this reason the potential for increased public use of the proposed routes is believed to be low and any increase in associated fire starts along these routes is expected to be within the historical average (low) of other roads maintained to the same standards of the proposal.

Alternative 2 – Proposed Action

The Proposed Action would create a network fuel breaks up to 200 feet wide on both sides of 442 miles of existing roads throughout the project area (21,260 acres; 1,757 acres of targeted grazing or prostrate kochia seeding and 19,503 acres of other fuel breaks) (Figures 1-1 and 2-1). Road maintenance would occur on all roads with adjacent fuel breaks. The desired optimal width of up to 200 feet to each side of roads would be modified based on adjacent topography or presence of critical resources (See Design Features Section 2.4.3). The fuel breaks would modify the fire behavior and provide firefighters with fuel conditions conducive to direct attack and more time to contain the fire edge. A 200-foot fuel break on both sides of identified roadways would provide the largest margin of success for suppression crews in battling wildfire.

The Proposed Action would result in decreased wildfire intensity and rate of spread in the fuel break. A greater number of fires would be contained and controlled more quickly compared to the No Action alternative. Firefighters would have optimally wide, pre-established fuel breaks on the landscape to create safe anchor points from which to engage wildfires. Maintenance of the roads would ensure faster response times and increase the chances of fires being caught by initial attack.

Fire sizes in the project area would likely be lower than the historical average, and the risk to resources including the investments made in the recovery of the area burned by the Soda Fire would be substantially lower compared to Alternative 1 and moderately lower than Alternative 3.

Maintenance of the fuel breaks by mowing, hand cutting, and/or herbicides will be essential to maintaining fuel break effectiveness into the future.

Alternative 3 – Modified Proposed Action

Under this alternative, there would be no road maintenance above current authorized levels and fuel break width would be decreased to up to 100 feet on both sides of 406 miles of roads (200 feet total); targeted grazing and prostrate kochia treatments along the remaining 36 miles would remain at 200 feet (400 feet total). Though not optimal, the narrower fuel breaks would provide some benefit to firefighters compared with the No Action, though less than the Proposed Action.

With less area of modified fuels, there would be fewer opportunities to anchor control lines compared to the wider fuel breaks of the Proposed Action. Firefighters would continue to operate within Bureau safety policies for firefighting tactics given the flame length and fire line intensity conditions. However, under this alternative, in severe conditions such as those encountered during the Soda Fire, firefighters would not be as effective at engaging fires if fuel breaks are not of optimal size. Therefore, firefighters would be expected to catch fewer fires and experience increased safety risks.

Overall, implementation of this alternative would increase the margin of success for fire suppression more than the No Action alternative, but not to the degree of a 200-foot fuel break. The effects of fuel break maintenance would be the same as described in the Proposed Action alternative.

3.2.3 Cumulative Effects

The scope of analysis for cumulative impacts includes the project area and adjacent grazing allotments for the effective life of the network of fuel breaks. This scope is appropriate as fuel breaks within the project may impact wildfires in nearby areas.

Past actions in the area have shaped the management of wildland fire. Present and foreseeable future impacts will continue to shape the way wildfire is managed.

The primary present and foreseeable actions that would have overlap and effect to Wildfire Management are the development of transmission lines, implementation of the Soda Fire ESR Plan, and recreational activity. Development of transmission lines would result in increased ignition sources from construction and maintenance and from the transmission lines themselves. These developments would also result in values (facilities) that would be a high priority for protection by firefighters. Recreational activity would have impacts that occur year after year. These may result in increased ignition sources, and values (facilities) with high priority for protection from firefighters. Both transmission line and recreational development may result in increased road or trail building, which would serve to fragment continuous fuels and act as ad hoc fuel breaks. Any human activity in the area has the potential to increase the proliferation of non-native species, notably annual grasses, and increase the frequency of wildfires. Therefore, the cumulative effects associated with these developments would be both beneficial and adverse. However, it would be speculative to determine to what extent these effects would influence wildfire and fuels management.

The activities outlined in the Soda Fire ESR Plan (USDI BLM 2015a) would impact wildfire management into the future. The establishment of and recovery of perennial vegetation is expected to reduce the prevalence of fire promoting annual invasive grasses thus potentially shortening the fire season and reducing the potential rate of spread by reducing fuel continuity. The network of fuel breaks would enhance firefighter safety, and modify fire behavior such that fires are easier to control and contain. This impact would carry on throughout the life of the fuel breaks.

3.3 General Vegetation including Noxious and Invasive Weeds

3.3.1 Affected Environment

General Vegetation

The analysis area for general vegetation including noxious and invasive weeds consists of the project area (the entire area within the project perimeter) plus a 200-foot buffer beyond the project perimeter (Figure 3-1). The analysis area was selected because although direct effects of the project would be limited to the fuel break footprint (21,260 acres or 11,550 acres along 442 miles, respectively), indirect effects would be realized across the entire area. The analysis area encompasses 432,588 acres in Idaho and 215,658 acres in Oregon, 62 and 58 percent of which have been previously burned, respectively. For a description of the fire regime history within the project area, including burn severity and information on fires other than the Soda Fire, see Section 3.2, Wildfire Management. Elevation within the analysis area ranges from 2,324 to 7,414 feet in Idaho, and 2,413 to 5,993 feet in Oregon.

The vegetation communities within the analysis area described in Table 3.3-1 and shown in Figure 3.3-1 were identified based on USGS LANDFIRE data, which includes vegetation, fire, fuel, and topography datasets that describe existing vegetation composition and structure based on georeferenced field plot data, satellite imagery, and simulation models (Zahn 2015).

Vegetation[5] community types within the analysis area are dominated by shrubland (69 percent of analysis area), primarily big sagebrush (*Artemisia tridentata*) shrubland and steppe, as well as low sagebrush (*A. arbuscula*) shrubland and steppe in Idaho, and grassland and steppe in Oregon. In Idaho, conifer and exotic herbaceous vegetation communities are also prevalent, constituting 11 percent (47,585 acres) and 10 percent (43,258 acres) of the analysis area in Idaho (432,588 acres), respectively. In Oregon, exotic herbaceous vegetation is also prevalent, constituting 24 percent (51,758 acres) of the analysis area in Oregon. The conifer community type in Idaho is dominated by juniper woodland and savanna, while the exotic herbaceous community type in both Idaho and Oregon is dominated by introduced annual grassland (USGS LANDFIRE 2013; Table 3.3-1). Barren areas are present constituting less than 0.01 percent (53 acres) in Idaho and 0.08 percent (174 acres) in Oregon. These barren areas include unique ash communities (ash and clay outcrops) which support plants endemic to Owyhee and Malheur counties (see Special Status Plants section 3.4, Table 3.4-2).

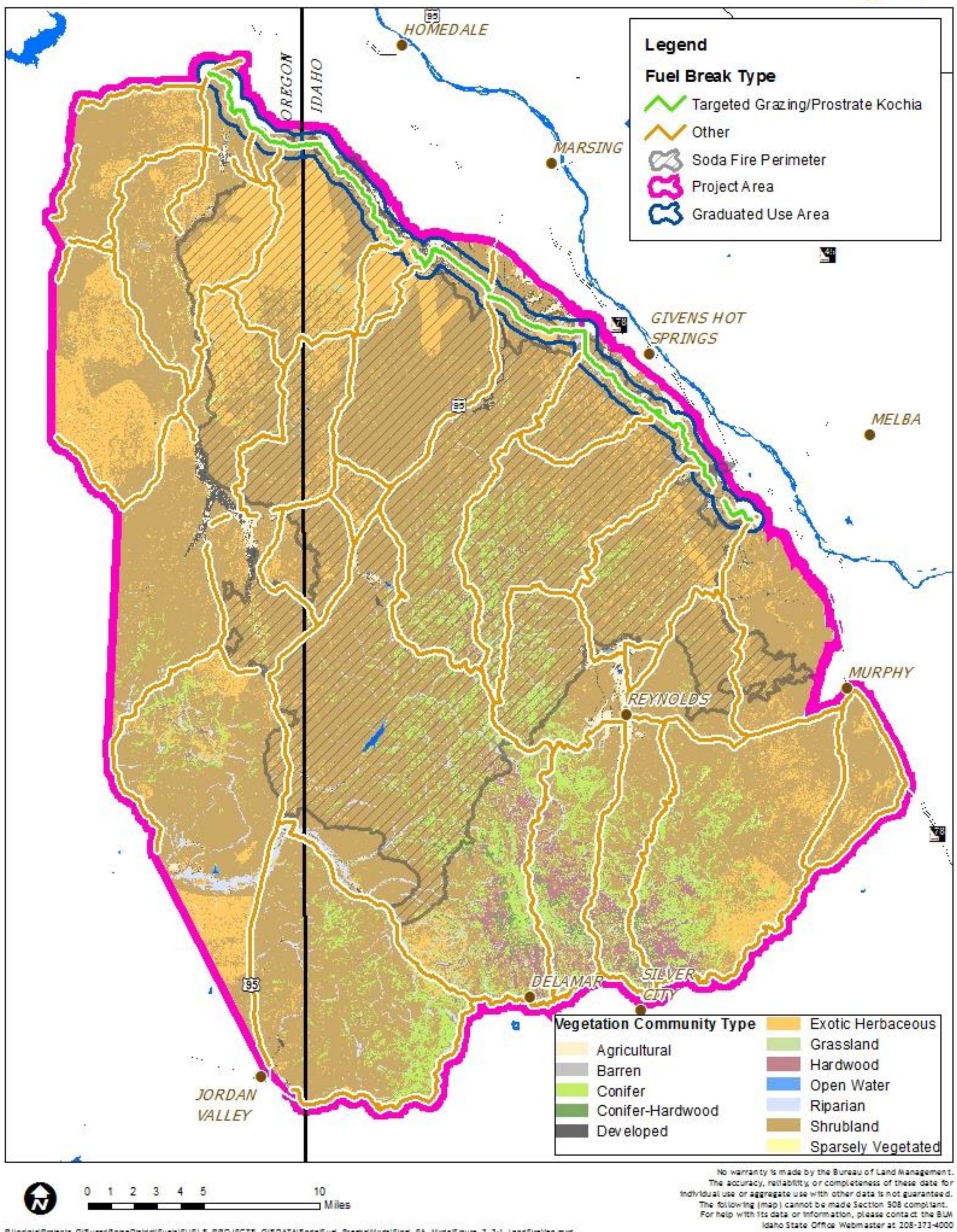
Table 3.3-1. USGS LANDFIRE Vegetation Communities within the Analysis Area by State

State	Vegetation Community Type	Vegetation Community Sub-type	Acres
Idaho	Agricultural	Agricultural	4,800
	Barren	Barren	53
	Conifer	Douglas-fir Forest and Woodland	236
		Douglas-fir-Grand Fir-White Fir Forest and Woodland	501
		Douglas-fir-Ponderosa Pine-Lodgepole Pine Forest and Woodland	3,583
		Juniper Woodland and Savanna	34,527
		Lodgepole Pine Forest and Woodland	1
		Mountain Mahogany Woodland and Shrubland	3,481
		Pinyon-Juniper Woodland	1,636
		Ponderosa Pine Forest, Woodland and Savanna	1,114
		Spruce-Fir Forest and Woodland	788
	Conifer-Hardwood	Aspen-Mixed Conifer Forest and Woodland	2,155
	Developed	Developed	4,474
	Exotic Herbaceous	Introduced Annual and Biennial Forbland	1,146
		Introduced Annual Grassland	39,835
		Introduced Perennial Grassland and Forbland	333
	Grassland	Alpine Dwarf-Shrubland, Fell-field and Meadow	1,976
		Grassland	3,133
	Hardwood	Aspen Forest, Woodland, and Parkland	18,669
	Open Water	Open Water	308
	Riparian	Spruce-Fir Forest and Woodland	6

[5] It is important to note that the shrubs within the Soda Fire perimeter experienced a high level of mortality; therefore, the following tables are representative of the potential or expected vegetation in these areas as these areas are currently in an early seral stage. Further, the area proposed for targeted grazing and prostrate kochia treatments, the Owyhee Front, is largely depicted as shrubland vegetation community type; however, this area has burned in the past and is dominated by invasive annual grasses with some remnant shrubs and perennial grasses throughout.

State	Vegetation Community Type	Vegetation Community Sub-type	Acres
		Western Herbaceous Wetland	372
		Western Riparian Woodland and Shrubland	8,464
	Shrubland	Big Sagebrush Shrubland and Steppe	161,609
		Deciduous Shrubland	655
		Desert Scrub	1,065
		Grassland and Steppe	36,239
		Greasewood Shrubland	1,948
		Low Sagebrush Shrubland and Steppe	80,188
		Salt Desert Scrub	17,780
	Sparsely Vegetated	Sparse Vegetation	1,515
Total Vegetation (Idaho)			**432,588**
Oregon	Agricultural	Agricultural	1,205
	Barren	Barren	174
	Conifer	Douglas-fir Forest and Woodland	27
		Douglas-fir-Ponderosa Pine-Lodgepole Pine Forest and Woodland	45
	Conifer	Juniper Woodland and Savanna	3,528
		Mountain Mahogany Woodland and Shrubland	125
		Pinyon-Juniper Woodland	20
		Ponderosa Pine Forest, Woodland and Savanna	165
	Conifer-Hardwood	Aspen-Mixed Conifer Forest and Woodland	2
	Developed	Developed	3,191
	Exotic Herbaceous	Introduced Annual and Biennial Forbland	885
		Introduced Annual Grassland	49,035
		Introduced Perennial Grassland and Forbland	1,443
	Grassland	Alpine Dwarf-Shrubland, Fell-field and Meadow	381
		Grassland	284
	Hardwood	Aspen Forest, Woodland, and Parkland	641
	Open Water	Open Water	72
	Riparian	Western Herbaceous Wetland	1,542
		Western Riparian Woodland and Shrubland	2,419
	Shrubland	Big Sagebrush Shrubland and Steppe	87,752
		Deciduous Shrubland	41
		Desert Scrub	504
		Grassland and Steppe	42,027
		Greasewood Shrubland	220
		Low Sagebrush Shrubland and Steppe	17,728
		Salt Desert Scrub	1,336
	Sparsely Vegetated	Sparse Vegetation	864
Total Vegetation (Oregon)			**215,658**
Total Vegetation (Analysis Area, Idaho and Oregon)			**648,247**

Figure 3-1: LANDFIRE Vegetation Community Types in the Project Area.



In addition to this digital dataset, field-based vegetation information is available for portions of the analysis area as a result of field data collected following the Soda Fire. Following containment of the Soda Fire in 2015, the Interdisciplinary Team conducted rapid field assessments between August 19 and August 23; local vegetation resource specialists identified vegetation resources within the Soda Fire perimeter, and added to existing, pre-burn information on vegetation resources in Idaho and Oregon. The Soda Fire area constitutes a large portion of the analysis area, and thus, the results of these assessments are described below for each state. Various ESR treatments have been planned and implemented within the Soda Fire perimeter in Idaho and Oregon, as indicated in the Soda Fire ESR Plan (USDI BLM 2015a) and in Chapters 1 and 2 of this EA. These treatments include seeding of perennial grasses, forbs, and shrubs and shrub seedling planting, and are described further in the Soda Fire ESR Plan.

Idaho

In Idaho, several ecological sites comprise the area encompassed by the Soda Fire and are characterized primarily by sagebrush-steppe vegetation. An ecological site is a distinctive kind of land with specific soil and physical characteristics that differs from other kinds of land in its ability to produce distinctive types and amounts of vegetation, and differs in its response to management actions and natural disturbances. Ecological sites in the Soda Fire perimeter are primarily loamy Wyoming big sagebrush (*A. tridentata* var. *wyomingensis*)/bluebunch wheatgrass (*Pseudoroegneria spicata*) or shallow claypan low sagebrush/bluebunch wheatgrass or Idaho fescue sites (*Festuca idahoensis*) (Table 3.3-2). There are smaller amounts of loamy basin big sagebrush (*Artemisia tridentata* ssp. *tridentata*), loamy mountain big sagebrush (*A. tridentata* ssp. *vaseyana*), and sandy loam Wyoming big sagebrush ecological sites. In ecological sites containing low sagebrush (*A. arbuscula* ssp. *arbuscula*), Thurber's needlegrass *(Achnatherum thurberianum)* and Indian ricegrass (*Achnatherum hymenoides)* are also present.

Pre-burn vegetation typically consisted of an overstory of big and low sagebrush, with varying amounts of perennial bunchgrasses (namely Sandberg bluegrass [*Poa secunda*], bluebunch wheatgrass, Idaho fescue [*Festuca idahoensis*], and bottlebrush squirreltail [*Elymus elymoides*]) and non-native invasive annual grasses (namely cheatgrass [*Bromus tectorum*], other annual bromes, medusahead [*Taeniatherum caput-medusae*], and ventenata [*Ventenata dubia*]). Crested wheatgrass (*Agropyron cristatum*), a seeded non-native perennial bunchgrass, is also common in areas where rehabilitation or re-vegetation treatments occurred in the past. Sagebrush species are often sparse or absent in these areas, and rabbitbrush (*Chrysothamnus* spp. and *Ericameria* spp.) are common early seral shrubs.

In general, the lower elevations (2,500 feet to 4,000 feet) are more heavily disturbed and have a lower proportion of perennial bunchgrasses and a higher proportion of cheatgrass than at higher elevations (>4,000-7,000 feet). Cheatgrass is common within the Soda Fire perimeter, while medusahead, other annual bromes, and ventenata are most abundant in the south and southwest part of the fire.

Upland vegetation in the Soda fire perimeter in Idaho included extensive Wyoming sagebrush and low sagebrush stands, and more limited areas of basin big sagebrush, mountain big sagebrush, antelope bitterbrush (*Purshia tridentata*), mountain mahogany (*Cercocarpus* sp.), and salt desert shrub (e.g., four-wing saltbush and shadscale [*Atriplex* spp.], horsebrush [*Tetradymia* spp.], spiny hopsage [*Grayia spinosa*], bud sagebrush [*Picrothamnus desertorum*] and greasewood [*Sarcobatus vermiculatus*]) stands. As a result of the fire, shrub cover was largely removed across the Soda Fire area. Perennial grass mortality was also high (frequently 70-90 percent in areas visited immediately following the fire).

Table 3.3-2. Soda Fire NRCS Ecological Sites in Idaho

Ecosite Group (Temperature/ Moisture Regime)	NRCS Ecological Site[1]	Acres	Percent of Fire
Big sagebrush/ Warm Dry	Loamy 10-13 Wyoming big sagebrush/bluebunch wheatgrass	56,627	24%
	Sandy loam 8-12 Wyoming big sagebrush/Indian ricegrass	13,781	6%
	Loamy 8-12 Wyoming big sagebrush/bluebunch wheatgrass- Indian ricegrass	4,579	2%
	Loamy 11-13 basin big sagebrush/bluebunch wheatgrass	23,785	10%
	Loamy 12-16 basin big sagebrush/bluebunch wheatgrass-Idaho fescue	4,374	2%
	Subtotal	**103,146**	**44%**
Low sagebrush/ Warm Dry	Shallow claypan 12-16 low sagebrush/Idaho fescue	51,139	22%
	Shallow claypan 11-13 low sagebrush/ bluebunch wheatgrass	41,941	18%
	Subtotal	**93,080**	**40%**
Big sagebrush/ Cool Moist	Loamy 13-16 and Loamy 16+ mountain big sagebrush/Idaho fescue	13,872	6%
No ecological site identified		14,232	6%
Other[2]		8,619	4%
Total:		**232,949**	**100%**

[1] NRCS Ecological Site Descriptions available at: https://esis.sc.egov.usda.gov/Welcome/pgApprovedSelect.aspx
[2]Other Ecological Sites include Calcareous loam, Dry meadow, Loamy bottom 12-16, Mahogany savanna, Mountain ridge, and Very shallow stony loam 10-14; none of these make up more than 3% of the fire area.

Oregon

In Oregon, the rangeland landscape of the southeastern Oregon cool steppe environment is a product of geological and ecological processes, as well as human impacts. Immediately prior to settlement in the late 19th century, two major vegetation types dominated the lower elevation desert upland communities (USDI BLM 2015a). One type was typified by big sagebrush and bluebunch wheatgrass in which dominance of sagebrush varied according to the incidence of fire and other factors. The presence of other species varied with elevation, soil, and rainfall. Sandberg bluegrass and bottlebrush squirreltail are found in drier areas, and low sagebrush occurred on shallow soil. Idaho fescue and antelope bitterbrush reached co-dominance with bluebunch wheatgrass and big sagebrush at upper elevations and provided the understory in juniper (*Juniperus* spp.) woodlands. Other minor species included Thurber's needlegrass, prairie junegrass (*Koeleria macrantha*), needle and thread grass (*Hesperostipa comata*), and several shrubs.

The second major lower elevation steppe vegetation type, is composed primarily of shrubs, grows on alkaline soil and is dominated by shadscale (*Atriplex confertifolia*) and other shrubs, including fourwing saltbush (*A. canescens*), spiny hopsage, winterfat (*Krascheninnikovia lanata*), bud sagebrush, and greasewood. Bluebunch wheatgrass occurred in the understory, while larger amounts of bottlebrush squirreltail and Indian ricegrass dominated on sandy soils.

The area burned by the Soda Fire in Oregon is dominated by sagebrush/native bunchgrass communities. Big sagebrush/bunchgrass communities are the most widespread type within the burned area, with basin big sagebrush growing on deep alluvial soils, and Wyoming big sagebrush growing on well-drained soils at middle to lower elevations. Low sagebrush/bunchgrass communities dominate on shallow soils that are stony or clayey. Perennial grassland communities do not form a major climax vegetation type though they do dominate for a period following fire when the shrub component is eliminated. Historically, sagebrush/native bunchgrass communities were maintained with periodic wildfire as often as every 50–100 years in sites that support Wyoming big sagebrush, to even less frequent in low sagebrush communities with limited fine fuels. As a result of the elimination of fine fuels capable of supporting fire spread, many sites currently support a community with a much greater woody species (i.e., shrubs and trees) composition than was present prior to European settlement.

A number of vegetation communities are the products of past heavy grazing use, fire, or rehabilitation efforts. Shrub/annual grassland communities are the product of past disturbance where cheatgrass, medusahead and other annuals have either replaced or co-exist with the perennial bunchgrass component of a sagebrush/bunchgrass community. Increased fire frequency, supported by heavy loading of fine fuels, has resulted in areas dominated by annual grasslands with little or no shrub component. Where present in the pre-burn vegetation community, rabbitbrush has replaced other shrub species in the overstory of sagebrush/bunchgrass communities for a period following fire. Seedings of crested wheatgrass and other introduced perennial species, with varying amounts of sagebrush and other shrub overstory, have been completed to rehabilitate and stabilize some low-seral sagebrush/bunchgrass communities in the Soda Fire perimeter in Oregon (Table 3.3-3).

The portion of the Soda Fire that burned through Oregon generally burned at a low intensity. This was confirmed by photography and on-site visits where many islands of unburned vegetation were observed as well as partially burned sagebrush. Examination of the perennial grass showed little damage to the crowns and high likelihood of survival. Observations also showed that both medusahead and cheatgrass where common in the area, especially in the southern area that burned west of Highway 95, along roads and other high livestock use areas such as near reservoirs.

The elevation of the area burned in the Soda Fire in Oregon ranges from over 5,000 feet on Pole Top Table to less than 2,600 feet in the extreme northern reaches of the burn. Nearly 75 percent of the area lies above 4,000 feet and is expected to recover quickly especially if the medusahead is treated, as indicated in the Soda Fire ESR Plan (USDI BLM 2015a).

Table 3.3-3. Soda Fire Vegetation Communities in Oregon

Vegetation Type	Associated Species	Approximate Acres	Percent of Fire
Big sagebrush/perennial grassland	Wyoming big sagebrush, basin big sagebrush, mountain big sagebrush, antelope bitterbrush, bluebunch wheatgrass, Idaho fescue, Thurber needlegrass, Sandberg bluegrass, basin wildrye (*Leymus cinereus*), bottlebrush squirreltail, arrowleaf balsamroot (*Balsamorhiza sagittata*), phlox (*Phlox* spp.)	30,000	57%
Low sagebrush/grassland	Low sagebrush, bluebunch wheatgrass, Thurber needlegrass, Idaho fescue, cheatgrass, biscuitroot (*Lomatium* spp.), Sandberg bluegrass	5,000	10%
Big sagebrush/annual grassland	Big sagebrush, cheatgrass, tumble mustard (*Sisymbrium altissimum*), clasping pepperweed (*Lepidium perfoliatum*), foxtail barley (*Hordeum jubatum*), Sandberg bluegrass	5,000	10%
Annual grassland	Cheatgrass, foxtail barley, sixweeks fescue (*Vulpia octoflora*), Sandberg bluegrass, tumble mustard, clasping pepperweed	9,000	17%
Salt desert shrub/grassland	Shadscale, fourwing saltbush, bud sagebrush, spiny hopsage, horsebrush, winterfat, bottlebrush squirreltail, saltgrass, basin wildrye	500	1%
Crested wheatgrass	Crested wheatgrass	2,800	5%

Noxious and Invasive Weeds

A noxious weed is any plant designated by Federal, State, or county government as injurious to public health, agriculture, recreation, wildlife, or property (Sheley and Petroff 1999). A noxious weed is also commonly defined as a plant that grows out of place and is competitive, persistent, and pernicious (James et al. 1991). In Idaho, noxious is a legal designation given by the Director of the Idaho State Department of Agriculture (ISDA) to any plant having the potential to cause injury to public health, crops, livestock, land or other property (Idaho Statute 22-2402). The ISDA is responsible for administering the State Noxious Weed Law in Idaho and maintains a list of noxious weeds. In Oregon, the Oregon Department of Agriculture (ODA) Noxious Weed Control Program and the Oregon State Weed Board (OSWB) maintain the State Noxious Weed List.

Within the analysis area, 13,767 infestations of 21 Oregon and/or Idaho-designated noxious weed species have been documented (USDI BLM 2012; Table 3.3-4). Many of these infestations have been treated/are being treated as part of the weed control programs in each District.

Table 3.3-4. Idaho- and Oregon-listed Noxious Weeds Documented within the Analysis Area

Common Name	Scientific Name (Synonym Name)	State(s) with Noxious Weed Status[1]	Distribution[2]	Identified Priority Level for Treatment[3]
Bull thistle	*Cirsium vulgare*	Oregon	Generally limited occurrences in riparian areas, spring developments, and ponds.	This is a medium priority species for chemical treatment.
Kochia (burning bush)	*Bassia scoparia (Kochia scoparia)*	Oregon	Common along Hwy 95 in Oregon.	Not identified for treatment.
Canada thistle	*Cirsium arvense*	Idaho, Oregon	Occurs throughout Soda Fire perimeter in Idaho, primarily confined to riparian areas, spring developments and ponds. Common along Hwy 95 in Oregon.	Due to establishment throughout Soda Fire perimeter in majority of riparian areas this species is low priority for chemical treatment.
diffuse knapweed	*Centaurea diffusa*	Idaho, Oregon	Limited occurrence within Soda Fire perimeter in Idaho. In Oregon, scattered along Hwy 95 north of Cow Creek.	High priority for treatment.
field bindweed	*Convolvulus arvensis*	Idaho, Oregon	Common along Hwy 95 in Oregon.	Not identified for treatment.
jointed goatgrass	*Aegilpos cylindrica*	Idaho, Oregon	Limited known occurrence within Soda Fire perimeter in Idaho and Oregon.	This species has potential to expand and is high priority for treatment especially roadsides.
leafy spurge	*Euphorbia esula*	Idaho, Oregon	Several small infestations (0.1 - 0.5 acres) in Oregon and Idaho.	This is a high priority species due to the high potential for expansion and establishment.
medusahead	*Taeniatherum caput-medusae*	Oregon	Dense at lower elevations within analysis area, gradually decreasing at higher elevations.	Identified for chemical treatment; likely to spread following Soda Fire.
nodding plumeless thistle	*Carduus acanthoides*	Idaho, Oregon	Single occurrence along creek and roadside.	Not identified for treatment.
perennial pepperweed	*Lepidium latifolium*	Idaho, Oregon	Several infestations of low to moderate density in riparian areas of creeks, as well as ponds, springs, and roadsides.	This is a medium-high priority species.
poison hemlock	*Conium maculatum*	Idaho, Oregon	Limited, found in riparian areas.	This is a medium priority species due to the fact there are not many known occurrences of this species within or adjacent to the fire.
puncturevine	*Tribulus terrestris*	Idaho, Oregon	Located along several roads within analysis area.	This is a medium priority species and is primarily a roadside threat.
purple loosestrife	*Lythrum salicaria*	Idaho, Oregon	This is a very limited species with the potential to inhabit riparian areas.	Of low concern due to the effectiveness of biological control (beetle).

Common Name	Scientific Name (Synonym Name)	State(s) with Noxious Weed Status[1]	Distribution[2]	Identified Priority Level for Treatment[3]
rush skeletonweed	*Chondrilla juncea*	Idaho, Oregon	Known to occur in several areas, including along roadsides and creeks	This is a high priority species due to the increasing number of infestations and potential for establishment throughout the Soda Fire perimeter.
Russian knapweed	*Acroptilon repens*	Idaho, Oregon	The majority of known occurrences is less than 0.1 acre in size and located near travel routes.	This is a high priority species that is relatively limited within the fire perimeter but seems to be on the increase in the region.
saltlover/halogeton	*Halogeton glomeratus*	Oregon	Scattered along roads in Oregon.	Not identified for treatment; has the potential to spread back into the Soda Fire boundary in Oregon by vehicle traffic
Scotch thistle	*Onopordum acanthium*	Idaho, Oregon	Scotch thistle is very common throughout and around the Soda Fire perimeter in Idaho, usually occurring at reservoirs, spring developments and riparian areas. In Oregon, scattered along roadsides.	Medium to high priority.
spotted knapweed	*Centaurea stoebe*	Idaho, Oregon	There are no known spotted knapweed infestations within the Soda Fire perimeter in Idaho but it does occur in several locations around the Soda Fire perimeter. In Oregon, occurs in Succor Creek State Park and along Hwy 95.	High priority species
tamarisk/ saltcedar	*Tamarix ramosissima*	Idaho, Oregon	This species occurs throughout and around the fire perimeter in Idaho and Oregon, primarily in riparian areas, springs, ponds and creeks.	A biocontrol agent (beetle) has recently become established in western Oregon and on the Snake River in Idaho. It is expected this insect will continue to spread throughout the region and attack remaining tamarisk plants.
whitetop (hoary cress)	*Cardaria draba (Lepidium draba)*	Idaho, Oregon	Common throughout the analysis area, along roads and creeks.	Medium to high priority.
yellow star-thistle	*Centaurea solstitialis*	Idaho, Oregon	Scattered along roads and creeks in Idaho and Oregon.	High priority species.

[1] State listed noxious weed (ISDA 2016, ODA 2016)
[2] USDI BLM 2015a and USDI BLM 2012
[3] USDI BLM 2015a

Noxious weeds are now recognized worldwide as posing threats to biological diversity, second only to direct habitat loss and fragmentation. Noxious weeds are known to alter ecosystem functions such as nutrient cycles, hydrology, and wildfire frequency; to outcompete and exclude native plants and animals; and to hybridize with native species. The presence and abundance of noxious weeds in an ecosystem is highly dynamic, subject to changes in the local environment (Whitson, et al. 1992). All natural communities are susceptible to invasion by noxious weeds. Plant species identified as "weedy" are uniquely adapted to increase in numbers and spread into previously uninfested areas following disturbances, and have the potential to alter soil stability and plant community diversity. These 21 noxious species are at risk of encounter and/or spread as a result of implementation of the no action and action alternatives. These species vary in density and distribution in the analysis area, as identified in Table 3.3-3.

Noxious weeds spread by dispersal of seeds or plant parts in a variety of ways; wind, water, animals, machinery, and people transport seed and plant parts from one location to another. They produce abundant seeds, and many have attaching devices (e.g. hooks, barbs, sticky resins) that facilitate their transport and dispersal. Highways, roads, trails, and river corridors serve as routes of initial establishment and weeds may advance from these corridors into new areas. Noxious weeds are capable of invading and dominating disturbed areas (roadsides, areas burned by wildfire, etc.) over a wide range of precipitation regimes and habitats (Sheley and Petroff 1999).

3.3.2 Environmental Consequences

Alternative 1 – No Action

Under the No Action alternative, fuel breaks would not be constructed; therefore, vegetation within the proposed 100- or 200-foot fuel break footprints (11,550 acres or 21,260 acres, respectively) would not be disturbed or altered. However, without a strategic network of fuel breaks to facilitate fire containment and reduce the amount of acres burned annually, large and/or frequent wildfires are expected to occur across the project area based on wildfire trends over the last 30 years. Leaving intact and recovering sagebrush-steppe vegetation communities unprotected by fuel breaks could have major consequences including a probable vegetation type conversion to annual-dominated systems, shortened fire return interval, eventual loss of native plant diversity and degraded watershed function.

Other identified forested and shrub vegetation communities would likely also experience reduced community health as a result of overstory loss from fire. A conversion to non-native invasive annual grasses would increase the fire frequency and the potential for future large fires to occur. Higher fire frequency increases the risk to vegetation rehabilitation investments and to remaining vegetation adjacent to the burn. An increase in fires and subsequent fire suppression activities (e.g., dozer lines) can create disturbance and leave open niches for establishment of not only invasive species, but also noxious species.

General Effects of Action Alternatives

The general effects discussion is common to the action alternatives (2 and 3); general effects of each fuel break treatment method are described below. Vegetation within the fuel breaks (i.e., fuel treatment zones) would be directly affected, while indirect effects would occur adjacent to the fuel break footprint and beyond within the analysis area. By design, existing vegetation within the footprint of the fuel breaks would be replaced (except for perennial species in unseeded/natural fuel breaks that meet fuel break criteria) or modified. Seeded species would replace remnant native species and non-native invasive species to ensure fuel breaks consist of low statured, competitive, fire resilient perennial species. Existing native vegetation would not be expected to survive treatments in locations involving high levels of soil disturbance (e.g., disking), and would be degraded in locations involving periodic, repeated treatment (e.g., targeted grazing).

The modification of vegetation within the treatment footprint and, in some cases, the reciprocal replacement with seeded species would be a trade-off for the increased capability to reduce/control fire along the Owyhee Front and WUI, and within and adjacent to the analysis area; thereby protecting existing native plant communities as well as past, ongoing and future fire rehabilitation and restoration investments.

Targeted Grazing

Utilizing grazing animals to create and maintain fuel breaks would disturb and/or remove both target and non-target vegetation from the treatment footprint within the targeted grazing treatment area. Effects are expected to be most prominent within the 200-foot prescription area along existing roads while use would diminish with distance from the road (i.e., in the graduated use area). The extent of effects to non-target vegetation is dependent management parameters (e.g., timing, area, intensity, frequency, and duration), plant species tolerance to grazing, and site pre-treatment condition (Hendrickson and Olson 2006). Cattle prefer grasses, but will eat most vegetation if confined for an extended period of time, and/or with high animal numbers (Burritt and Frost 2006).

Utilizing annual spring grazing, prior to cheatgrass and medusahead seed dispersal could reduce the density and cover of these species over time (Finnerty and Klingman 1962). However, the perennial grasses Sandberg bluegrass and bottlebrush squirreltail (with similar phenology to cheatgrass) could also be impacted where present (Murray 1971). Treatments that weaken or eliminate components of a plant community open niches that noxious weeds and invasive plants exploit. However, areas where targeted grazing would occur are largely dominated by invasive plants, so impacts to native vegetation are unlikely to change the overall vegetation condition within treatment areas. As with many other treatments, targeted grazing with livestock can be most effective when used in combination with other treatments (USDI BLM 2010a). Targeted grazing could also be used as a seedbed preparation tool to remove the accumulation of annual biomass or to eliminate existing vegetation prior to seeding.

Indirect and long-term effects of properly managed targeted grazing and appropriate levels of fuel break maintenance are expected to include reduced potential for larger wildland fire and increased capability to protect existing native plant communities and past and future wildland fire vegetation rehabilitation and restoration investments. There would be disturbance to vegetation (e.g., trampling, breakage, and/or removal) in the short-term from water hauls and supplemental sites until the treatment is complete. In instances where temporary electric avoidance fencing is used (i.e., to protect riparian areas or possibly other sensitive resources), impacts to vegetation from the fence would be negligible. These impacts would increase both in intensity and duration if targeted grazing occurs every year. Management of targeted grazing activities and application of design features (Section 2.4.3) would minimize disturbance.

Mowing

Mowing would cut shrub branches and foliage to a height of 6-10 inches within the treatment footprint. Shrubs mowed to this height would initially resemble a low sagebrush site. Removal of the shrub canopy often results in a short-term increase in young plants following treatment. Mowing would be repeated as shrub canopies regrow and exceed 10-or-so inches. Repeated mowing of woody species would result in a decrease in vigor over the long term (10+ years) and these plants may eventually die off. Mowing would occur first in the unburned areas where shrubs are present in the fuel treatment zone. Over the long term (10+ years), mowing would occur in the areas burned by the Soda Fire as perennial grasses and shrubs recover or recolonize, as well as the project area as a whole to maintain fuel break effectiveness.

Opening the shrub canopy through mowing can result in a release of herbaceous plants in the short-term (1-3 years), especially annual species (Davies et al 2011). An indirect effect of mowing vegetation to create fuel breaks would include the potential for annual plants, including noxious and invasive species, to spread from the fuel break into adjacent vegetation communities. Herbicide applications and perennial plant seedings would likely be required in some areas to control noxious and invasive weeds and reduce the potential for spread into adjacent vegetation communities. Another indirect effect would include reduced potential for larger wildland fires and increased capability to protect existing native plant communities and current and future wildland fire vegetation rehabilitation and restoration investments.

Hand Cutting

The direct effect of hand cutting using chainsaws or loppers to create fuel breaks would be the reduction in density and canopy cover of shrubs (or trees) within the treatment footprint. As with mowing, effects would include a release of herbaceous plants in the short-term, potential spread of these plants into adjacent vegetation communities, and a reduced potential for larger and/or more frequent wildland fires.

Chemical Treatment

Herbicides could be used to prepare the seedbed for a seeding, to maintain a fuel break by reducing the amount of fuel available for wildfire, and to reduce the prevalence of annual grasses in stands of perennial grass. During seedbed preparation, all vegetation within the fuel break footprint would be targeted. As a maintenance treatment and annual grass reduction, target vegetation would include invasive annual grasses and forbs, noxious weeds, and any native vegetation that does not meet the fuel break criteria, including shrubs.

The direct effect of chemical treatment to create and maintain fuel breaks is the control of undesirable annual grasses and forbs, and the subsequent increase in density and vigor of existing seeded species due to lowered competition levels. The herbicide treatments to kill target vegetation and the extent of disturbance to non-target vegetation would vary by the type of chemical pathway employed (foliar vs soil), the timing of application (growing season vs. dormant season), as well as plant community composition and soil types in the area (Cox and Anderson 2004, Sheley et al. 2005, Nyamai et al. 2011). Individual herbicide effects to vegetation are described in the *Vegetation Treatments using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement* (USDI BLM 2007a), the 2016 Final PEIS for *Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on BLM Lands in 17 Western States* (USDI BLM 2016), and *Vegetation Treatments Using Herbicides on BLM Lands in Oregon Final Environmental Impact Statement (2010a) and Record of Decision (2010b).*

Harming or killing non-target vegetation could occur over the long-term with repeated chemical treatments to control noxious and invasive weeds in the fuel breaks. The risk would be minimized through strict adherence to label direction and adherence to the design features of the action alternatives developed for resource protection (Section 2.4.3).

<u>Seeding</u>

<u>General</u>

Mechanical seedbed preparation such as disking or chemical treatments may be used to reduce competition prior to planting. Potential impacts from disking are described below and chemical treatment impacts are described above. Depending on the type of equipment used to establish fuel break vegetation, soil disturbance would create conditions conducive to weed establishment and spread, particularly in the first two years or until seeded species become established. Design features of the action alternatives such as equipment cleaning and pre- and post-implementation herbicide treatments of noxious weed infestations and invasive annual grass and forb control would reduce this potential. Reducing noxious weed infestations would increase potential for success of the vegetated rehabilitation treatments, as well as improving potential future fire-fighting efforts.

Temporary fencing may also be necessary where regularly permitted livestock grazing would impact seedling establishment in fuel breaks; fencing in this case would only occur if other avoidance techniques are infeasible or impractical. Direct impacts to vegetation from temporary fencing include breakage, trampling, and/or removal, but these impacts would be short-term and vegetation should recover once the fence is removed. Again, all design features would apply to temporary fencing to minimize impacts.

<u>Seeding (other than prostrate kochia)</u>

Seeding perennial plant species for fuel breaks would change plant community composition and structure within the treatment footprint by replacing annual grasses and forbs, and/or native perennial grasses, forbs, and shrubs with perennial species that meet fuel break criteria. Species selected for this project have shown to be effective, or have potential to be effective at competing with invasive annual species. Design features to identify and treat introduced plants that spread beyond the treatment footprint are included in Section 2.4.3.

<u>Disking (for prostrate kochia seeding)</u>

As a prostrate kochia seedbed preparation technique, the direct effects of disking would be the removal of existing vegetation, including remnant shrubs, from the 200- or 400-foot wide treatment footprint. This disturbance would increase the need for herbicide treatments in the short term to counter the temporary increase in invasive annual grasses and forbs and/or noxious weeds as seeded species become established. Removed vegetation, invasive annual grasses and forbs, and/or noxious weeds would be replaced by seeded species that meet the fuel break design criteria. Another indirect short-term effect of disking for seedbed preparation would include a reduced potential for larger and/or more frequent wildland fire while disked areas remain bare or largely bare before seeding takes place. This would, in turn, increase the capability to protect extant native plant communities and current and future vegetation rehabilitation and restoration investments.

<u>Prostrate Kochia</u>

Established prostrate kochia seedings have effectively occupied available niches within other fuel breaks under similar conditions, thereby out-competing invasive annual grasses and forbs and providing a broken fuel bed disrupting fuel continuity. The direct effect of seeding prostrate kochia would be the replacement of current vegetation in the treatment footprint. Primary indirect effects of seeding prostrate kochia include: 1. monotypic or near monotypic stands of prostrate kochia would reduce species diversity and composition in the treatment footprint; and 2. the potential for prostrate kochia to spread outside of the treatment footprint.

The Paradigm Fuel Break Project EA (DOI-BLM-ID-2011-0060-EA; USDI BLM 2015e) provides an in-depth review and discussion of the pertinent literature regarding the spread potential for prostrate kochia. There are numerous research papers indicating that the spread distance is relatively small (McArthur et al. 1990, Clements et al. 1997, Harrison et al. 2000, Waldron et al. 2001, Monaco et al. 2003, Tilley et al. 2014). For example, Waldron et al. (2001) sampled 81 prostrate kochia seedings and found an average recruitment margin of 20 feet (ranging from 0-98 feet) and a maximum spread distance of 1,263 feet. However, Gray and Muir (2013) reported an average recruitment margin of 98 feet (ranging from 0-646 feet) with a maximum spread of 2,328 feet from 28 sites, but there is uncertainty around the proper delineation of previous prostrate kochia seeding boundaries in these instances, and Harrison et al. (2000) asserts that aerial seeding boundaries are difficult to identify due to wind gusts and seed drift.

While there is potential for prostrate kochia to spread into existing sagebrush and/or perennial bunchgrass stands with open and available niches, recruitment or spread of prostrate kochia has been most strongly correlated with the level of soil disturbance in the surrounding area, lack of competition from other vegetation, and open spaces surrounding established prostrate kochia plants. Spread was also correlated with prevailing winds but this was determined to be of less significance (Harrison et al. 2000), likely because the seed for this plant has no mechanism for wind dispersal. Gray and Muir (2013) found that soil cover was a "predictor of prostrate kochia spread," and suggested that this finding "may reflect that bare soil is necessary for its establishment."

Multiple studies have found that prostrate kochia will spread into disturbed sites with abundant bare soil and few native perennials, but spreads very little into established shrub and perennial stands (McArthur et al. 1990, Clements et al. 1997, Harrison et al. 2000, Harrison et al. 2002, Sullivan et al. 2013). Monaco et al. (2003) and Harrison et al. (2002) found that 10+ years after seeding prostrate kochia, it had not moved or spread only very little into the adjacent cheatgrass stands. Since prostrate kochia is proposed in an area largely dominated by cheatgrass, spread is unlikely across most of the area. Spread could occur nearby where remnant stands of shrubs with little herbaceous cover in the understory and interspaces occur or where soils have been disturbed leaving open niches. However, spread potential is expected to be minimal overall, and monitoring and subsequent control measures in the event spread is detected are designed to minimize impacts.

Prescribed Fire

Prescribed fire would be used where necessary to burn accumulations of weeds on fencelines or in topographical features such as draws or ditches associated with the proposed fuel breaks. Decomposition is extremely slow within the analysis area due to the arid environment, resulting in an accumulation of biomass and fuels over time, especially along fencelines and in topographical features where invasive species such as tumbleweed (i.e., Russian thistle [*Salsola tragus*]) are deposited during wind dispersal. As a result, fuel loading becomes predominantly composed of fine, flashy fuels; fire intensity during prescribed burns would be low, and of short duration, and unlikely to consume all seeds in the soil seed bank. Often only the seeds in the uppermost layer of the soil surface are destroyed by prescribed fire (Diamond et al. 2012).

Direct effects of prescribed fire would include the removal of accumulated biomass created by deposits of wind-dispersed invasive species such as Russian thistle, as well as the biomass of any perennial or annual plants on-site. An indirect effect of this treatment would be the reduced potential for larger and/or more frequent wildland fire, and increased capability to protect existing native plant communities and past and future vegetation rehabilitation and restoration investments. Burning would be done in spring when surrounding green vegetation would slow fire spread, or in the fall when surrounding live fuel moistures are high enough to slow fire spread outside of targeted prescribed fire areas; as a result, prescribed fires are not expected to spread from targeted areas.

Alternative 2 – Proposed Action

A maximum of 21,260 acres (approximately 3% of the vegetation analysis area) would be converted into fuel breaks in the 200-foot-wide treatment footprint (400 total feet) along 442 miles of road (Figures 1-1 and 2-1, and Table 2-1). Targeted grazing would be conducted on 1,757 acres of the Owyhee Front along 36 miles of road (Figure 2-2 and Table 2-1). Prostrate kochia would be seeded in the same footprint if targeted grazing does not meet fuel break treatment objectives, except where resource or other concerns preclude its use (see Methods and Design Features). The 19,503 acres of "other" fuel breaks would include unseeded fuel breaks as well as seeded fuel breaks where species other than prostrate kochia would be seeded along 406 miles of roads. Impacts to vegetation within the fuel break footprint by the various types of treatments would be as described above in the General Effects of Action Alternatives, Section 3.3.2.2.

Based on USGS LANDFIRE data, the majority of fuel breaks would occur in a shrubland vegetation type in both Idaho and Oregon, followed by exotic herbaceous and developed vegetation types (Table 3.3-5). However, in the Proposed Action footprint, 7,475 acres in Idaho and 2,104 acres in Oregon were burned in the Soda Fire and are currently in an early seral stage, including 5,036 acres of shrubland in Idaho and 1,029 acres of shrubland in Oregon.

Targeted grazing would impact 1,757 acres; 1,292 of these acres are identified as shrubland (1,013 acres in Idaho and 279 acres in Oregon), but this area is largely dominated by cheatgrass and other weedy annual vegetation. The prostrate kochia seeding (same footprint) poses some risk of spread, but the abundance of cheatgrass would largely preclude this from occurring. Other fuel breaks would modify up to 19,503 acres of vegetation (12,721 in Idaho and 6,783 acres in Oregon); an estimated 7,140 acres of unburned shrubland vegetation within the project footprint would be converted to Other fuel breaks namely by mowing, though seeding, chemical treatments, etc. may also be employed where necessary. Approximately 4,600 acres in the Other category are shrublands burned by the Soda Fire; therefore, mowing of shrubs would not occur or be necessary on these acres in the short term (0-3 years), but would likely be required to maintain fuel break effectiveness over the long term (10+ years) and for the life of the project.

A major long-term threat identified for sagebrush (and, thus, greater sage-grouse habitat) is wildfire. Although the disturbance footprint/treatment footprint is greatest under this scenario, the long-term benefit to vegetation (i.e., habitat) in and around the project area would also be greatest. A system of highly effective fuel breaks created to the specifications desired by fire managers to best reduce the imminent threat of wildfire fire by improving fire suppression activities (ensuring access and compartmentalizing the landscape) would protect intact habitat as well as recovering or rehabilitated habitat better than the No Action alternative and moderately better than Modified Proposed Action alternative.

Further, monitoring and control would limit impacts to vegetation outside the fuel break. Also, creating fuel breaks poses some risk of invasive or noxious species colonizing fuel breaks, but project design features and maintenance (e.g., herbicide treatment) would greatly minimize this risk.

Table 3.3-5. Acres of Targeted Grazing or Kochia and Other fuel breaks in Idaho and Oregon as a Result of the Proposed Action

USGS LANDFIRE Vegetation Community Type	Fuel Breaks			
	Idaho		Oregon	
	Grazing/Kochia	Other	Grazing/Kochia	Other
Agricultural	36	180	0	4
Barren	0	3	0	0
Conifer	0	1,061	0	16
Conifer-Hardwood	0	57	0	0
Developed	205	1,074	0	1,000
Exotic Herbaceous	149	1,182	30	1,546
Grassland	1	205	8	11
Hardwood	0	701	0	1
Open Water	0	3	0	0
Riparian	26	596	2	73
Shrubland	1,013	7,616	279	4,125
Sparsely Vegetated	5	38	2	7
TOTAL	**1,435**	**12,721**	**322**	**6,783**

Alternative 3 – Modified Proposed Action

As with the Proposed Action, the majority of the fuel breaks would occur in shrubland type vegetation followed by exotic herbaceous and developed vegetation types both in Idaho and Oregon (Table 3.3-6). Within the Modified Proposed Action footprint, 3,622 acres in Idaho and 920 acres in Oregon were burned in the Soda Fire and are currently in early seral stage, including 2,411 acres of shrubland in Idaho and 444 acres of shrubland in Oregon.

A total of 11,550 acres would be converted into fuel breaks in the 100-foot-wide treatment footprint (200 total feet); approximately 9,710 (46%) fewer acres of fuel breaks than under the Proposed Action (Figures 1-1, 2-1, and 2-2, and Table 2-2). Direct impacts to vegetation from targeted grazing and prostrate kochia seeding would be identical to the Proposed Action. Direct impacts to vegetation from development of Other fuel breaks would be similar to the Proposed Action, but to a lesser degree (9,793 acres versus 19,503 acres, respectively).

Fewer acres treated would result in less vegetation converted to fuel breaks compared to Alternative 2. However, fuel breaks under this scenario would be less effective at protecting intact and recovering habitats (i.e., ESR investments) from the threat of large and/or recurring wildfires over the short and long term. Long-term benefits to vegetation by implementing Alternative 3 would be greater than the No Action, but less than the Proposed Action.

Table 3.3-6. Acres of Fuel Breaks and Targeted Grazing in Idaho and Oregon as a Result of the Modified Proposed Action

USGS LANDFIRE Vegetation Community Type	Fuel Breaks			
	Idaho		Oregon	
	Grazing/Kochia	Other	Grazing/Kochia	Other
Agricultural	36	65	0	1
Barren	0	3	0	0
Conifer	0	458	0	6
Conifer-Hardwood	0	27	0	0
Developed	205	670	0	637
Exotic Herbaceous	149	622	30	767
Grassland	1	116	8	6
Hardwood	0	323	0	1
Open Water	0	1	0	0
Riparian	26	307	2	28
Shrubland	1,013	3,782	279	1,947
Sparsely Vegetated	5	20	2	5
TOTAL	**1,435**	**6,396**	**322**	**3,397**

3.3.3 Cumulative Effects

The cumulative effects analysis area for general vegetation, including noxious and invasive weeds, is the same as the 648,247-acre vegetation analysis area used for direct effects, which includes the project area polygon plus a 200-foot analysis buffer extending beyond the project area perimeter. This is the extent to which measurable effects would be anticipated in relation to project implementation. The effects are expected to occur over the life of the project. The collective effect of past actions has contributed to the existing condition of vegetation described in the Affected Environment above (Section 3.3.1). In particular, the levels and intensities of anthropogenic activities across all land jurisdictions, especially associated with lower elevation, more populated areas (i.e., the Owyhee Front) have perpetuated increases of early successional vegetation.

Actions that could cumulatively affect vegetation include the following: construction and maintenance of the Gateway West Transmission Line; vegetation treatments including post-fire treatments associated with the Soda ESR Plan (USDI BLM 2015a), the BOSH juniper reduction project, and noxious weed management; ongoing livestock grazing; recreation; wildfire; and climate change.

Effects to vegetation from the Gateway West Transmission Line project could include vegetation modification or removal and an increase in noxious and invasive weeds. However, conservation measures (e.g., off-site mitigation including native seedings) associated with these projects, as well as weed control measure, are likely to result in a net benefit to native vegetation communities, especially those associated with the greater sage-grouse.

Blading and grading of powerline rights-of-way disturb soils and vegetation and often create conditions conducive to noxious and invasive species establishment. Spraying of these sites helps to keep weeds and weedy species relatively restricted to the maintained buffers, or to a minimum (e.g., around powerline poles, which are kept relatively free of vegetation to prevent fire). As a result, upland vegetation is often sparse in these locations. These effects are confined spatially to existing locations and occur over a continuous temporal scale.

Older electrical distribution lines are a known source of wildfire. Past, present, and future maintenance of utility lines results in some small-scale vegetation disturbance or removal along access routes and around poles. Current and future maintenance activities are subject to restrictions to reduce the potential for unintended fire starts which would offset the risk of damaging or destroying vegetation by wildfire.

ESR treatments (seedings, shrub seedling planting, and herbicide application) would produce an overall benefit to sagebrush communities (i.e., habitat) in the cumulative impact analysis area. Removal of western juniper per the proposed BOSH project would also benefit sagebrush communities and improve greater sage-grouse habitat in the short and long term. Past and ongoing noxious weed treatments have, to some extent, reduced their potential establishment and spread. However, noxious weeds would continue to establish where not aggressively treated, particularly in the wake of large, frequent wildfires. Past, current, and future shrub restoration and noxious weed control treatments would be marginally successful without a reduction in fire size.

Current livestock grazing permits include terms and conditions to achieve or make significant progress toward meeting Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management. As such, ongoing and future livestock grazing is projected to maintain or improve upland vegetation on the whole. However, livestock grazing will continue to result in plant community alterations, particularly in localized areas adjacent to fences, gates, and livestock facilities (e.g. troughs and supplement sites). Primary impacts to vegetation from project implementation (21,260 acres) would be converted into fuel breaks would be confined to the fuel treatment zone (up to 200 feet along both sides of roads), which is a minimal portion (3 percent) of the 648,247-acre cumulative impact analysis area. While, implementation of targeted grazing could add to livestock grazing impacts along 36 miles of roads, but would be minor at most with application of design elements, monitoring and control, and adaptive management thresholds and response. Overall, cumulative impacts to vegetation would be negligible when considered in the context of the 648,247-acre vegetation analysis area.

Wildfires perpetuate increases of disturbance related plants, degrading overall vegetation community conditions. Disturbance related vegetation often equates to fine fuels which burn readily creating a feedback loop further degrading vegetation communities and increasing fine fuels. This is the case for the Owyhee Front zone where targeted grazing and prostrate kochia are being proposed for this project.

The effects of climate change on the analysis area are likely to be substantial; as the region becomes dryer and hotter, restoration of vegetated fuel breaks could become harder to establish and fires will likely become more prevalent. However, the proposed treatments should make the analysis area more resilient to fire, potentially mitigating the effects of climate change on vegetation in the analysis area.

Conclusion

Under the No Action Alternative, the effects of past, present, and foreseeable actions in the analysis area are expected to continue current trends for vegetation. This means that vegetation would continue to be converted to herbaceous plant communities and that fire would likely remove existing as well as recovering shrub stands, and that post-fire rehabilitation of vegetation would continue. To the extent that ESR treatments and other vegetation treatments are successful would help maintain vegetation communities and/or slow these trends, overall.

When added to the other cumulative effects, neither of the action alternatives (i.e., the Proposed Action or Modified Proposed Action) is expected to measurably directly affect (favorably or unfavorably) plant community condition across the landscape. However, there would be a greater opportunity to protect these areas from future wildfire and promote recovery.

3.4 Special Status Plants

3.4.1 Affected Environment

Special status plants (SSP) are those species listed, proposed for listing, or candidates for listing under ESA, and species designated as sensitive by the BLM State Director. In Idaho, SSP are given a numeric ranking (from 1 to 4) according to scarcity and risk of extinction. Species listed under ESA are assigned a ranking of Type 1 and those with a lower threat of extinction are assigned a ranking of Type 2, 3, or 4 as described below:

- Type 1 - Federally listed Threatened or Endangered Species and Critical Habitat
- Type 2 - Range-wide / Globally Imperiled Species - High Endangerment
- Type 3 - Range-wide / Globally Imperiled Species - Moderate Endangerment
- Type 4 - Species of Concern

In Oregon, SSP are not ranked by the BLM, they include species designated as sensitive and strategic by the BLM State Director.

As with General Vegetation (Section 3.3), the analysis area for SSP consists of the project area plus a 200-foot buffer to incorporate the full extent of all SSP design feature buffers. Within the analysis area, there are 201 occurrences of 33 SSP, including 31 species in Idaho and 11 species in Oregon (Table 3.4-1). For this analysis, an occurrence was considered unique if separated by 1 kilometer or greater, per NatureServe's standard separation distance (NatureServe 2004), and occurrences spanning the Idaho-Oregon border were split by this political boundary; data ranked as "historic" or "extirpated," or from prior to 1986 were excluded.

Table 3.4-1. SSP Occurrences within the Analysis Area by State

Scientific Name	Common Name	Number of Occurrences[1]		BLM Rank and/ OR Status[2]
		Idaho	Oregon	
Astragalus conjunctus	stiff milkvetch	18	0	4/none
Astragalus cusickii var. *sterilis*	barren milkvetch	5	12	3/OR-Sen
Astragalus mulfordiae	Mulford's milkvetch	1	0	2/OR-Sen
Astragalus purshii var. *ophiogenes*	Snake River milkvetch	3	0	4/none
Chaenactis cusickii	Cusick's false yarrow	7	4	2/none

Scientific Name	Common Name	Number of Occurrences[1]		BLM Rank and/ OR Status[2]
		Idaho	Oregon	
Chaenactis stevioides	desert pincushion	3	0	4/none
Cryptantha propria	Malheur cryptantha	10	0	4/none
Cymopterus acaulis var. *greeleyorum*	Greeley's wavewing	5	3	3/OR-Sen
Dimeresia howellii	dimeresia	3	0	3/none
Downingia bacigalupii	Bacigalupi's downingia	1	0	4/none
Eatonella nivea	white eatonella	6	0	4/none
Eriogonum novonudum	false naked wild buckwheat	2	0	3/none
Eriogonum salicornioides	playa buckwheat	1	3	OR-Sen
Escobaria vivipara	cushion cactus	1	0	4/none
Glyptopleura marginata	white-margined wax plant	5	0	4/none
Heteroplacidium congestum	compact earth lichen	1	0	4/none
Lomatium bentonitum	bentonite biscuitroot	0	1	OR-Sen
Lomatium cous	Cous biscuitroot	1	0	3/none
Lomatium packardiae	Packard's Desert-parsley	11	5	2/OR Strategic
Mentzelia mollis	smooth stickleaf	15	12	2/OR-Sen
Monardella angustifolia	Leslie Gulch monardella	2	2	2/will be added to list at next update
Nemacladus rigidus	rigid threadbush	4	0	4/none
Pediocactus simpsonii	Simpson's hedgehog cactus	2	0	4/none
Penstemon janishiae	Janish's penstemon	4	0	3/none
Penstemon seorsus	short-lobe beardtongue	2	0	4/none
Phacelia lutea var. *calva*	Malheur yellow phacelia	13	1	3//none
Phacelia minutissima	least phacelia	8	0	2/OR-Sen
Physaria chambersii	Chambers' bladder-pod	0	1	OR-Sen
Potamogeton diversifolius	water-thread pondweed	1	0	4/OR-Sen
Psathyrotes annua	annual brittlebrush	2	0	3/none
Sairocarpus kingii	King's snapdragon	1	0	3/none
Stanleya confertiflora	Malheur prince's plume	3	4	2/OR-Sen
Trifolium owyheense	Owyhee clover	1	14	2/OR-Sen
Total		**141**	**60**	-

[1]An occurrence was considered unique if separated by 1 kilometer or greater, and occurrences spanning the Idaho-Oregon border were split by this political boundary; excludes data ranked as "historic" or "extirpated," or from prior to 1986.
[2]Includes Idaho BLM number rank as defined above and "OR-Sen" for those ranked as a BLM Sensitive species in Oregon. Sources: ORBIC 2015, USDI BLM 2015c, IDFG 2016

SSP occurrences are scattered throughout the analysis area, including areas where plant communities have been modified by fire (including but not limited to the Soda Fire) and invasion of noxious weeds (USDI BLM 2012, USDI BLM 2013, USDI BLM 2015d, and USDI BLM 2015e). As described under General Vegetation (Section 3.3), 62 and 58 percent of the analysis area in Idaho and Oregon, respectively, have been previously burned, and noxious weeds are scattered throughout the analysis area, primarily along roads and drainages.

Type 1 Special Status Plants

No Type 1 SSP occur within the analysis area, including federally listed threatened or endangered species and species with USFWS-designated critical habitat.

Type 2 Special Status Plants

Eight BLM Type 2 plants occur within the analysis area: Mulford's milkvetch, Cusick's false yarrow, Packard's desert-parsley, smooth stickleaf, Leslie Gulch monardella, least phacelia, Malheur prince's plume, and Owyhee clover (Table 3.4-1). All eight species occur within the Idaho portion of the analysis area, and all but two of these species (Mulford's milkvetch and least phacelia) occur in the Oregon portion of the analysis area. Three of these species are designated as sensitive in Oregon: smooth stickleaf, Malheur prince's plume, and Owyhee clover. Neither of these Type 2 SSP is a USFWS Proposed or Candidate species.

Type 3 Special Status Plants

Nine BLM Type 3 plants occur within the analysis area: barren milkvetch, Greeley's wavewing, dimeresia, false naked wild buckwheat, Cous biscuitroot, Janish's penstemon, Malheur yellow phacelia, annual brittlebrush, and King's snapdragon (Table 3.4-1). All nine species occur within the Idaho portion of the analysis area, and three of these species occur in the Oregon portion of the analysis area. Three of these species are designated as sensitive in Oregon: barren milkvetch, Greeley's wavewing, and Malheur yellow phacelia.

Type 4 Special Status Plants

Thirteen BLM Type 4 plants occur within the analysis area (Table 3.4-1). All thirteen species occur within the Idaho portion of the analysis area; only one species (water-thread pondweed) occurs within the Oregon portion of the analysis area, and is designated as sensitive in Oregon.

Other BLM Oregon Sensitive Species

There are three additional SSP that are designated as sensitive in Oregon, but not ranked by the BLM in Idaho: playa buckwheat, bentonite biscuitroot, and Chambers' bladder-pod. Two of these species only have occurrences in Oregon; playa buckwheat has one occurrence in Idaho, along the Idaho-Oregon border at the southern end of the analysis area.

Habitat Information

While the analysis area has not been exhaustively inventoried, these occurrences are the result of surveys performed primarily by BLM and Idaho Power Company and their contractors, as well as records from IDFG in Idaho and ORBIC in Oregon. Following containment of the Soda Fire in 2015, the Interdisciplinary Team conducted a field reconnaissance between August 19 and August 23, and specialists assessed SSP resources within the Soda Fire perimeter, including habitat of SSP in Idaho and Oregon. The Soda Fire perimeter constitutes a large portion of the analysis area, and thus, the results of this effort are described below.

In Idaho, the identified SSP generally grow on specialized habitats, in this case often ash outcrops, sandy draws, or cindery openings. These open areas typically have low vegetative cover, and consequently were often unburned or burned at lower intensity by the Soda Fire than surrounding areas. However, the risk of conversion to invasive annual species is a threat that could have major consequences to these SSP within the Soda Fire perimeter, particularly in Idaho. Several rehabilitation treatments were implemented, or will be implemented, following the

Soda Fire that are designed to benefit SSPs and their habitats, including repairing fences, constructing barrier fences, noxious weed control, and habitat enhancement (USDI BLM 2015a.

Similar to Idaho, some of the SSP identified within the Soda Fire perimeter in Oregon generally grow in specialized habitats with low vegetative cover. Due to the harsh soils (ash and clay outcrops) these plants grow on, there is little vegetation present at the sites that would carry fire, or sustain fire for a period of time that would damage the plants. In Oregon, no treatments were identified following the Soda Fire designed to benefit these SSP.

GIS data from IDFG, ORBIC, and BLM (2016 and 2015) were reviewed relative to the proposed targeted grazing/prostrate kochia and other (unseeded/natural and seeding other than kochia to determine the potential for SSP presence in the analysis area. Twenty-three SSP were identified as potentially impacted by these treatments (Table 3.4-2).

Table 3.4-2. Habitat and Occurrences of SSP Potentially Impacted

Common Name	Habitat	Occurrence Details
stiff milkvetch	Sagebrush scrub and grassland on volcanic basalt soils.	Throughout previously burned and unburned sagebrush scrub in Idaho.
barren milkvetch	Dry ash areas, gravelly bluffs, and Wyoming big sagebrush, bitterbrush, and grassland habitat between 2,600 and 4,900 feet in elevation.	On ash outcrops and bluffs within Soda Fuel perimeter, primarily in Malheur County, Oregon and adjacent Owyhee County, Idaho
Snake River milkvetch	Wyoming big sagebrush/salt desert shrub and grassland.	Open, often shallow soil areas in previously burned areas in Idaho.
Cusick’s pincushion	Wyoming big sagebrush and salt desert shrub.	Ash outcrops primarily in previously burned areas in Oregon and Idaho.
desert pincushion	Open, usually sandy sites at elevations to 6,200 feet in elevation.	Within and outside previously burned areas in Idaho, on eastern edge of Project
Malheur cryptantha	Sagebrush and grassland.	Rocky openings or shallow soil scattered throughout analysis area in Idaho.
Greeley’s wavewing	Occupies Wyoming big sagebrush sites that experience a lot of soil movement.	Clay soil ash outcrops through analysis area in Idaho and Oregon.
white eatonella	Dry sandy or volcanic soils in salt desert shrub habitats on barren sites surrounded by sagebrush.	Open, loose-soil areas within and outside previously burned areas in Idaho, on eastern edge of analysis area.
false naked wild buckwheat	Wyoming big sagebrush/salt desert shrub and grassland on volcanic ash soils.	Burned and unburned areas on northeaster edge of analysis area in Idaho.
playa buckwheat	Dry, sparsely vegetated, white, ashy clay soils in shadscale-budsage and Wyoming sagebrush communities	Previously burned areas in Oregon.
white-margined wax plant	Dry, sandy-gravelly or loose ash soils.	Open, loose-soil areas on burned and unburned areas in Idaho, on the eastern portion of the analysis area.
compact earth lichen	Open desert scrub.	Open, desert pavement areas on the eastern edge of the analysis area in Idaho.
Packard’s milkvetch	Volcanic ash and rocky clay soils in sagebrush.	Clay/ash influenced sagebrush stands in burned and unburned areas in Idaho and Oregon.

Common Name	Habitat	Occurrence Details
smooth stickleaf	Dry, open, nearly barren soil comprised of clay and volcanic ash deposits with high potassium content from 4,200 to 5,200 feet.	On ash outcrops and clay and volcanic ash deposits within Soda Fire perimeter; endemic to Malheur County, Oregon in the Succor Creek Drainage and Owyhee County, Idaho.
Leslie Gulch monardella	Open ash/talus slopes.	Within the Soda Fire perimeter along the Idaho/Oregon border in the central to south central portion of the analysis area.
rigid threadbush	Loose, sandy, cindery or ashy outcrops, cracks in basalt, or in dried mud in shadscale-sagebrush zone.	Cindery soil openings in burned and unburned areas in Idaho.
Janish's penstemon	Volcanic ash-clay soils or lakebed sediments in Wyoming big sagebrush/salt desert shrub.	Burned and un-burned areas along eastern edge of analysis area in Idaho.
Malheur yellow phacelia	Volcanic ash soils in Wyoming big sagebrush and salt desert shrub.	Ash outcrops in center of analysis area, in Idaho.
least phacelia	Aspen/tall forb meadows, springs, along streambanks, wetter stream terraces, and snow bank areas.	In unburned area in southern portion of analysis area in Idaho.
Chambers' bladder-pod	Limestone soils in the mountains; washes, hillsides, ridges.	In a previously burned area along Hwy 95 in Oregon.
annual brittlebrush	Salt desert shrub communities.	In an unburned area on the southeastern edge of the analysis area in Idaho.
Malheur prince's plume	Open, dry, vernally moist habitats in the valleys and foothills on shallow stony basalt.	Ash outcrops in burned and unburned areas in Idaho and Oregon.
Owyhee clover	Barren, loose talus or volcanic ash slopes in Wyoming sagebrush grasslands.	In ash openings and in loose talus or ash slopes within burned and unburned areas, primarily in Malheur County, Oregon.

Sources: Wigglesworth 2012, Hagwood 2006, USDI BLM 2000

3.4.2 Environmental Consequences

Alternative 1 – No Action

A fuel break network would not be created and fire suppression personnel would utilize existing paved and county roads and natural topographic features to hold and control wildfire. If no action is taken, SSP and associated habitat would not be directly impacted by the establishment of fuel breaks and the associated effects as discussed in the following sections. However, large scale fires are expected to continue to burn throughout the analysis area. Over the short- and long-term, this trend would continue to modify SSP habitats, burning remnant and recovering plant communities, and limiting the potential for population recovery.

However, SSP that thrive in harsh soils where there is little vegetation present would not likely be affected. Wildfires typically result in changes to structure and composition of plant communities. Change occurs in the form of loss of shrub cover and dominance by non-native invasive annual plants or perennial grasses seeded to impede invasive species. These changes are accompanied by modification in the amount and arrangement of open plant interspaces, areas shaded and exposed to sunlight, and seasonal and daily moisture distribution. Thus, structural and compositional changes that result post-fire could change both the physical environment, as well as competition between plants for resources.

Activities associated with fire suppression and post-fire stabilization and rehabilitation, such as dozer line establishment or mechanical seeding, can cause soil surface disturbance, resulting in damage or mortality of undetected SSPs or their seed banks. These activities may also increase the potential for invasive species in these areas of disturbance creating an indirect impact to SSP viability over the long term. Current and on-going post-fire stabilization and rehabilitation projects attempt to emulate pre-fire plant community structure and composition to the degree possible. Lack of treatment where natural recovery is not possible would likely result in dominance by non-native invasive annual plants, which would also be contradictory to SSP population recovery. However, SSP that thrive in harsh soils where there is little vegetation present would not likely be affected.

In addition, frequent, repeated fires can result in areas of soil loss and deposition that can modify habitats in both burned and adjacent unburned areas. This could result in plant or seed burial or exposure, as well as changes in soil physical and chemical characteristics that could make habitats unsuitable for continued occupation.

General Effects of Action Alternatives

Mowing, disking, and hand cutting of vegetation, seedbed preparation treatments, and targeted grazing would result in soil surface disturbance and vegetation removal or trampling, which could directly and/or indirectly impact SSP occurrences within the proposed treatment areas. However, application of design features to protect SSP outlined in Section 2.4.3 (e.g., avoidance buffers and other stipulations) would limit or eliminate impact potential. Incidental use by cattle in the graduated use area associated with targeted grazing could occur; however, design features developed to protect SSP and minimize or avoid impacts would be applied here, as well.

Disturbance and vegetation removal from fuel break implementation could result in short-term increased potential for introduction and/or spread of noxious weeds and invasive plants within and beyond the proposed fuel break corridors, as described in the General Vegetation including Noxious and Invasive Weeds section (Section 3.3). This could have an indirect effect of competition with known or undetected SSP occurrences outside of the proposed treatment areas. However, this potential would be low due to noxious weed control and maintenance measures and design features described in Chapter 2.

A secondary impact of the action alternatives is the potential spread of prostrate kochia into SSP habitat outside of the treatment areas. There is some potential for prostrate kochia to spread into existing sagebrush and/or perennial bunchgrass stands with open and available niches. Reported recruitment or spread of prostrate kochia has been most strongly correlated with the level of soil disturbance in the surrounding area, lack of competition from other vegetation, and open spaces surrounding established prostrate kochia plants; spread was also correlated with prevailing winds but this was determined to be of less significance (Harrison et al. 2000) likely because the seed for this plant has no mechanism for wind dispersal. Waldron et al. (2001) collected spread data from 81 prostrate kochia seedings and found a maximum spread of 1,263 feet with a recruitment margin ranging from 0 to 98 feet with an average recruitment margin of 20 feet. Refer to the General Effects of Action Alternative for General Vegetation above (Section 3.2.2.2) for further discussion of prostrate kochia.

Smooth stickleaf is an annual species that grows in dry, open, nearly barren soil. This fits the description of the habitat most strongly correlated with recruitment or spread of prostrate kochia. Given that smooth stickleaf and prostrate kochia grow in similar environments, there is a possibility the prostrate kochia could spread to the smooth stickleaf plant sites and may cause detrimental competition. Per project design features specific to SSP (Section 2.4.3), the general avoidance buffer (200 feet) would be increased (e.g., up to 0.5-mile buffer) to substantially limit or remove the potential for prostrate kochia to encroach into these and other similar habitats.

Fuel break monitoring and control (Section 2.4.5) and maintenance (Section 2.4.2) would also constrain possible long-range dispersal and/or establishment of prostrate kochia outside of the proposed treatment areas. Overall, the potential for prostrate kochia to spread into unintended locations within the project area is considered minimal for reasons detailed in the General Vegetation impact analysis (Section 3.3.2).

While there is a potential for SSP to be negatively impacted by fuel break construction, those impacts are anticipated to be minimal due to protective measures (i.e., avoidance buffers, other design features, and intensive monitoring [particularly for kochia spread] would be in place) Moreover, putting a strategic system of fuel breaks in place would benefit SSP and SSP habitat over the long term by reducing the risk of large-scale fires that may damage or destroy SSP, as well as burn remnant and recovering plant communities, and limit the potential for population recovery.

Alternative 2 – Proposed Action

Targeted grazing is proposed within 200 feet to each side of 36 miles of roads along the Owyhee Front; prostrate kochia is being proposed in the same footprint (i.e., 400-foot total treatment area) in the event that the grazing treatment does not meet resource or fuel break objectives (See Methods and Design Features in Section 2.4) . Other fuel breaks proposed along 406 miles of roads include seeded fuel breaks where species (native and non-native) other than prostrate kochia would be seeded and natural/unseeded fuel breaks, as described in section 2.4.

In Idaho, 39 known SSP occurrences (4 in Targeted Grazing/Prostrate Kochia treatment area, 10 in the Graduated Use Area, and 35 in Other fuel breaks) consisting of 19 different species partially intersect or are within the Proposed Action footprint. In Oregon, 18 occurrences (1 in the Targeted Grazing/Prostrate Kochia treatment area and 17 in Other) consisting of 8 species total partially intersect or are within the Proposed Action footprint (Table 3.4-3).

Table 3.4-3. Number of SSP Occurrences within Fuel Breaks in Idaho and Oregon as a Result of the Proposed Action

	Idaho			Oregon		
Common Name	**Targeted Grazing/ Kochia**	**Graduated Use Area**	**Other**	**Targeted Grazing/ Kochia**	**Graduated Use Area**	**Other**
stiff milkvetch	0	0	7	0	0	0
barren milkvetch	0	0	1	0	0	4
Snake River milkvetch	0	0	1	0	0	0
Cusick’s false yarrow	0	3	4	0	0	0
desert pincushion	0	1	1	0	0	0
Malheur cryptantha	0	1	1	0	0	0

Common Name	Idaho			Oregon		
	Targeted Grazing/ Kochia	Graduated Use Area	Other	Targeted Grazing/ Kochia	Graduated Use Area	Other
Greeley's wavewing	1	0	0	1	0	1
white eatonella	0	0	1	0	0	0
false naked wild buckwheat	1	1	0	0	0	0
Playa buckwheat	0	0	0	0	0	2
white-margined wax plant	1[1]	2[3]	1	0	0	0
compact earth lichen	0	0	1	0	0	0
Packard's desert-parsley	0	0	1	0	0	3
smooth stickleaf	0	1	2	0	0	1
Leslie Gulch monardella	0	0	0	0	0	1
rigid threadbush	0	0	2	0	0	0
Janish's penstemon	1[2]	1[2]	0	0	0	0
Malheur yellow phacelia	0	0	3	0	0	0
least phacelia	0	0	5	0	0	0
Chambers' bladder-pod	0	0	0	0	0	1
annual brittlebrush	0	0	2	0	0	0
Malheur prince's plume	0	0	1	0	0	0
Owyhee clover	0	0	0	0	0	4
TOTAL OCCURRENCES	**4**	**10**	**35**	**1**	**0**	**17**

[1]This white-margined wax plant occurrence was last observed in 1979 and is possibly extirpated.

[2]This is one occurrence of Janish's penstemon present in both the targeted grazing/kochia 200-foot treatment area and the graduated use area.

[3]One of the white-margined waxplant occurrences reported here was last observed in 1957 and is an historic occurrence.

The potential for direct and indirect adverse effects to SSP from implementation of fuel break treatments (described above in General Impacts) would be greatest under this scenario, but would be only slightly greater than the Modified Proposed Action. The Other fuel break footprint would be larger (400-feet-wide vs. 200-feet-wide); therefore, the Proposed Action has the potential to directly impact 10 more SSP occurrences (7 more in Idaho and 3 more in Oregon, respectively) than the Modified Proposed Action alternative. However, the design features detailed in Section 2.4.3 (e.g., avoidance buffers) would greatly limit these impacts. Further, the long-term benefits to SSP and SSP habitat of an effective system of fuel breaks to better manage wildfires would be greatest under this scenario.

Alternative 3 – Modified Proposed Action

Under this scenario, 42 known SSP occurrences consisting of 15 species in Idaho are within or partially within the fuel break footprint. In Oregon, 15 occurrences consisting of 7 species are within or partially within the fuel break footprint (Table 3.4-4). In all, implementation of the Modified Proposed Action has the potential to directly impact 7 fewer SSP in Idaho and 3 fewer SSP in Oregon than the Proposed Action due to a narrower fuel break network associated with 406 miles of roads (Other fuel breaks would be 100-feet-wide on both sides of roads vs. 200-feet-wide).

Table 3.4-4. Number of SSP Occurrences within Fuel Breaks in Idaho and Oregon as a Result of the Modified Proposed Action

Common Name	Idaho			Oregon		
	Targeted Grazing/ Kochia	Graduated Use Area	Other	Targeted Grazing/ Kochia	Graduated Use Area	Other
stiff milkvetch	0	0	5	0	0	0
barren milkvetch	0	0	1	0	0	2
Snake River milkvetch	0	0	1	0	0	0
Cusick's false yarrow	0	3	4	0	0	0
desert pincushion	0	1	1	0	0	0
Malheur cryptantha	0	1	0	0	0	0
Greeley's wavewing	1	0	0	1	0	1
white eatonella	0	0	1	0	0	0
false naked wild buckwheat	1	1	0	0	0	0
Playa buckwheat	0	0	0	0	0	2
white-margined wax plant	1[1]	2[3]	1	0	0	0
compact earth lichen	0	0	1	0	0	0
Packard's desert-parsley	0	0	1	0	0	3
smooth stickleaf	0	1	2	0	0	0
Leslie Gulch monardella	0	0	0	0	0	1
rigid threadbush	0	0	0	0	0	0
Janish's penstemon	1[2]	1[2]	0	0	0	0
Malheur yellow phacelia	0	0	3	0	0	0
least phacelia	0	0	5	0	0	0
Chambers' bladder-pod	0	0	0	0	0	1
annual brittlebrush	0	0	1	0	0	0
Malheur prince's plume	0	0	1	0	0	0
Owyhee clover	0	0	0	0	0	4
TOTAL OCCURRENCES	**4**	**10**	**28**	**1**	**0**	**14**

[1]This white-margined wax plant occurrence was last observed in 1979 and is possibly extirpated.

[2]This is one occurrence of Janish's penstemon present in both the targeted grazing/kochia 200-foot treatment area and the graduated use area.

[3]One of the white-margined waxplant occurrences reported here was last observed in 1957 and is an historic occurrence.

Direct and indirect effects to SSP from treatments under the Modified Proposed Action would be identical to Proposed Action in the targeted grazing/prostrate kochia treatment area and similar to the Proposed Action elsewhere (i.e., Other). Fewer acres treated would result in less vegetation converted to fuel breaks. However, fuel break widths would be less than optimal so SSP would be at a greater risk for wildland fire and the associated long-term effects of habitat degradation than under the Proposed Action.

3.4.3 Cumulative Effects

The cumulative effects analysis area for SSPs is the same as the vegetation analysis area, which includes the proposed project area and a 200-foot buffer. Generally, the past, present, and foreseeable future actions and cumulative effects relative to SSPs resulting from these actions are similar to those described above for general vegetation (Section 3.3). However, the long-term effect of native habitat declines with the no action alternative would be more severe for SSP due to specificity of habitats, including pollinator habitat, and limited distribution. Actions that could cumulatively affect SSP are construction and maintenance of the Gateway West Transmission Line project; vegetation treatments including post-fire treatments associated with the emergency stabilization and burned area rehabilitation plan (USDI BLM 2015a), and noxious weed management; ongoing livestock grazing; recreation; and wildfire.

Conclusion

Under the No Action alternative, the effects of past, present, and foreseeable actions in the cumulative effects analysis area are expected to continue current trends for SSP. This means that SSP and their pollinator habitats would continue to be converted to invasive herbaceous plant communities, and that fire will likely remove existing as well as recovering SSP habitat. When added to either of the action alternatives (i.e., the Proposed Action or Modified Proposed Action), it is expected that there would not be a direct effect on plant community condition across the landscape. However, there would be a greater opportunity to protect SSP habitat. Authorized actions such as transmission lines, livestock grazing, and vegetation treatments would avoid or minimize effects to these communities, as a function of stipulations and design features. Therefore, their cumulative effects would be minimal and would not contribute to further loss of habitat when combined with either the No Action or Action alternatives.

3.5 Wildlife Including Fish and Special Status Animal Species

3.5.1 Affected Environment

The project area is located in the northwestern portion of the Owyhee Mountains where the Snake River Plain and Northern Basin and Range Level III ecoregions meet (U.S. Environmental Protection Agency 2011). The project area is spread across five Level IV ecoregions, including Partly Forested Mountains, Semiarid Uplands, Owyhee Uplands and Canyons, Unwooded Alkaline Foothills, and the Treasure Valley (U.S. Environmental Protection Agency 2011). For consistency with the vegetation descriptions in Section 3.3, this discussion of wildlife habitat will utilize the vegetation community type terms. In general, wildlife habitat includes conifer forests, hardwood forest, shrubland, grassland, exotic herbaceous, riparian, and open water. Elevations range from 2,300 feet to 7,400 feet.

Wildlife habitat within the project area consists mostly of shrubland vegetation type plant communities with a typical sagebrush overstory and varying amounts of perennial bunchgrasses and invasive annuals in the understory; however, shrublands suffered high mortality in the Soda Fire, so the burned area is currently in an early seral stage and restoration and recovery is in progress. In general, lower elevations tend to have a lower proportion of perennial bunchgrasses. In addition to sagebrush-steppe communities, other dominant upland wildlife habitats include native grasslands, annual grasslands, juniper woodlands, mountain shrublands, and sparsely vegetated rocky outcrops and canyons. Riparian/wetland wildlife habitats include wet meadow complexes and woody/herbaceous riparian areas along perennial and intermittent streams and around springs, seeps, and reservoirs. Annual grasslands dominated by cheatgrass and medusahead are prevalent at low- to mid-elevations. Cheatgrass is present throughout the project area, while medusahead is most abundant in the south and southwest portion of the project area.

Changes in vegetation communities occurring over the past 150 years have resulted in modified wildlife habitats within the project area. The introduction of Eurasian annual grasses (cheatgrass and medusahead) into the western United States in the latter part of the 1800s has greatly modified wildlife habitats, and these invasive species continue to expand to this day. This has resulted in a significant increase in fine fuels and frequency of wildfires, leading to reductions of sagebrush cover on the landscape at lower elevation drier habitats (Miller et al. 2011). At higher elevations, there has been an increased encroachment of western juniper into sagebrush communities following post-European settlement. Juniper woodlands encroach into sagebrush communities when the intervals between fires become long enough for juniper to become established and mature. The Soda Fire consumed a large portion of the vegetation in the project area in 2015. Most of the sagebrush is not anticipated to naturally recover in the near future because of the intensity and size of the fire. Perennial grasses, forbs, and riparian vegetation were also consumed by the fire. As a result, ESR efforts to rehabilitate and restore native shrubland communities are underway.

The analysis of wildlife includes big game, migratory birds, and special status animals. Big game species analyzed include mule deer (*Odocoileus hemionus*), pronghorn antelope (*Antilocapra americana*), and California bighorn sheep (*Ovis canadensis californiana*). Streams with documented fish presence are analyzed to cover all fish species. The analysis of migratory birds includes general discussions on birds and their associations with the dominant habitat types within the project area. Special status animals analyzed include greater sage-grouse, golden eagle (*Aquila chrysaetos*), Columbia River redband trout (*Oncorhynchus mykiss gairdneri*), and Columbia spotted frog (*Rana luteiventris*).

Big Game

The analysis area for all big game species is the project area. Acres of habitat within the analysis area for each species are presented below.

Pronghorn Antelope

Pronghorn are primarily a forb-eating species that prefer open landscapes where potential threats can be seen at long distances. Pronghorn antelope are associated with sagebrush and grassland steppes of the intermountain and Great Basin regions (Yoakum 1980). Pronghorn habitat in the analysis area is characterized by sagebrush shrublands and grasslands bisected by deep canyons. Generally, pronghorn avoid areas with sagebrush taller than about 30 inches. In winter, sagebrush can comprise up to 80 percent of the pronghorn diet.

The analysis area for pronghorn contains year-round and seasonal habitat, including areas that are important for pronghorn overwinter survival such as Shares Basin; the area west of Murphy, Idaho; McBride Creek along US 95 at the Oregon – Idaho border; the area between Owyhee Ridge and Succor Creek in Oregon; and the area around Sheaville, Oregon. Shares Basin and the area west of Murphy, Idaho, burned in the Soda Fire. GIS data from Idaho and Oregon BLM identified pronghorn habitat within the analysis area as defined in Table 3.5-1.

Table 3.5-1. Acres of Pronghorn Habitat within the Big Game Analysis Area

Habitat Type	Total Acres	Inside Burn Area	Outside Burn Area
Spring/Summer/Fall	188,068	119,862	68,206
Year-long	47,373	12,519	34,854
Winter	36,788	26,275	10,513
Total	**272,229**	**158,656**	**113,573**

A majority of pronghorn habitat within the big game analysis area is spring/summer/fall and year-long habitat, with approximately 14 percent being winter habitat. The largest proportion of pronghorn habitat within the big game analysis area that burned was winter habitat, with approximately 70 percent within the burned area. An overall majority of the pronghorn habitat within the big game analysis area burned in the Soda Fire, and areas of forage habitat for pronghorn was temporarily lost. Invasion of noxious weeds and annual grasses are a threat to pronghorn habitat (IDFG 2013a), and will likely result in the permanent conversion of some portions of pronghorn habitat to non-habitat within the burned portions of the analysis area. Shrub mortality from the Soda Fire was significant, which may create more year-long forage habitat for pronghorn but will also reduce the functionality of winter habitat by removal of an important winter browse component.

Mule Deer

Mule deer are habitat generalists and can be found in habitat throughout the big game analysis area, including shrubland and conifer forest habitat as well as hardwood forests and riparian areas.

The analysis area for mule deer is the project area. The analysis area contains year-round and seasonal habitat, including areas that are important for mule deer overwinter survival such as the area just east of Little Sugar Loaf between Diamond Creek and Sinker Creek in Idaho; the area southwest of Hemingway Butte in Idaho, above Reynolds Creek; the area near Buck Mountain and Shares Snout in Idaho; the area east of the Owyhee Reservoir from Mahogany Mountain north to Long Draw in Oregon; the area between Texas Basin and Succor Creek Reservoir in Idaho; and the area on the west slopes of Swisher Mountain and the Baxter Basin in Idaho. Mule deer winter habitat in Oregon was not burned during the Soda Fire; a portion of the Buck Mountain and Shares Snout winter habitat in Idaho either did not burn or had a low burn severity. GIS data from Idaho and Oregon BLM identified mule deer habitat within the big game analysis area as defined in Table 3.5-2.

Table 3.5-2. Acres of Mule Deer Habitat within the Big Game Analysis Area

Habitat Type	Total Acres	Inside Burn Area	Outside Burn Area
Spring/Summer/Fall	103,079	25,905	77,174
Year-long	285,437	172,214	113,223
Winter	145,058	47,193	97,865
Total	**533,573**	**245,312**	**288,261**

A significant portion of mule deer habitat within the big game analysis area burned in the Soda Fire, and areas of forage and cover habitat for mule deer was temporarily lost. Shrub mortality from the Soda Fire was significant, which is likely to cause some mule deer to move to appropriate habitat outside of the burned portion of the analysis area to meet life history needs.

California Bighorn Sheep

California bighorn sheep are an Idaho BLM Type 2 special status animal, but are not considered a special status species by Oregon BLM. Bighorn sheep rely mostly on grasses as forage, while forbs and shrubs are used seasonally (ODFW 2003). In general, bighorn sheep prefer rugged, open habitats with high visibility of their surroundings. Survival is positively correlated with amount of cliffrock, rimrock, and rocky outcroppings present on the landscape. Rocky outcrops are particularly important for lambing and escape from predators. Current bighorn sheep populations in both Idaho and Oregon are below IDFG and ODFW management objectives. Present-day stressors on bighorn sheep individuals and populations include habitat degradation, recreation, predation, competition with livestock and wild horses, and disease (IDFG 2010).

The big game analysis area contains the areas of bighorn sheep distribution as delineated by each state and lambing areas identified within Idaho. Lambing areas are completely contained within the bighorn sheep distribution within Idaho. IDFG manages bighorn sheep within the Owyhee Front Population Management Unit (PMU, IDFG 2013b). This PMU is within the foothills above the Snake River plain and contains scattered pockets of suitable escape terrain In Oregon, the Lower Owyhee River bighorn sheep herd area overlaps with the analysis area. The bighorn sheep in this area utilize the abundant escape terrain adjacent to the Owyhee Reservoir such as Leslie Gulch and the Hole in the Ground areas. The analysis area includes the northeastern portion of the herd area which contains habitat that is less likely to be utilized by bighorn sheep, such as Three Fingers Gulch and Steamboat Ridge areas; prior to the recent disease outbreak these areas were heavily used by bighorn sheep. Bighorn sheep within the Lower Owyhee River herd are currently experiencing a disease outbreak that is expected to result in sheep die-offs of unknown extent. GIS data from Idaho BLM and ODFW identified bighorn sheep habitat within the big game analysis area as defined in Table 3.5-3.

Table 3.5-3. Acres of Bighorn Habitat within the Big Game Analysis Area

Habitat Type	Total Acres	Inside Burn Area	Outside Burn Area
Bighorn Distribution	236,937	144,443	92,495
Lambing Areas (Idaho only)	21,954	21,954	0

A majority of the bighorn habitat within the analysis area burned in the Soda Fire, including all of the lambing areas in Idaho. None of the Oregon bighorn sheep herd area within the analysis area burned. Forage habitat (grasslands) for bighorn sheep in the Reynolds Creek area was temporarily lost.

Fish

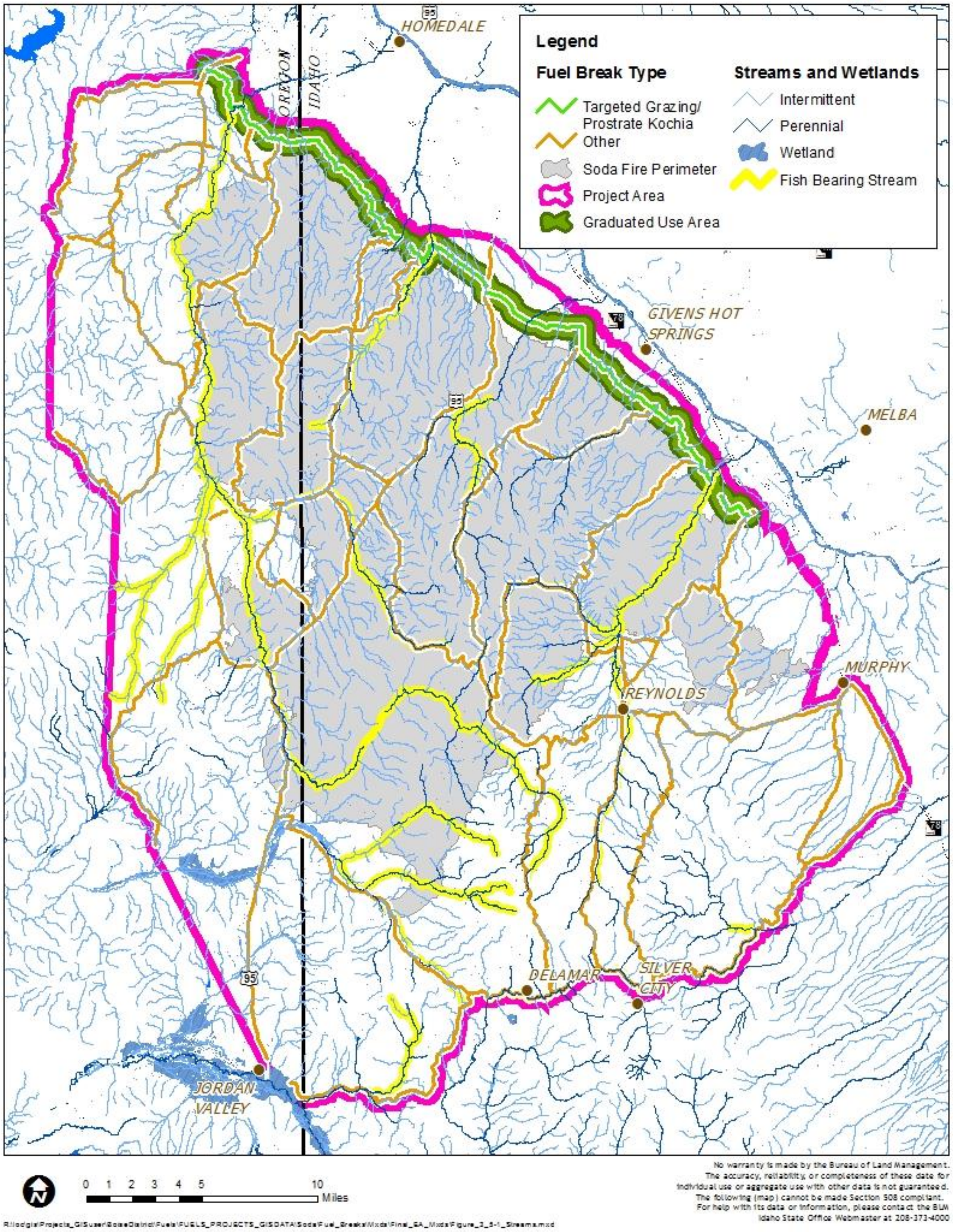
The analysis area for fish is the project area. Within the analysis area there are a total of 199 miles of fish-bearing streams (Figure 3.5-1). This includes 21 streams known to support at least seven different species of fish (IDFG 2016; Table 3.5-4).

Table 3.5-4. Fish Species Presence within the Fish Analysis Area

Common Name	Scientific Name	Location
Bridgelip sucker	*Catostomus columbianus*	Jordan Creek, Sinker Creek, and Succor Creek
Brook trout	*Salvelinus fontinalis*	Jordan Creek
Columbia River redband trout	*Oncorhynchus mykiss gairdneri*	Carter Creek, Cow Creek, Jackson Creek, Jordan Creek, Jump Creek, Little Cow Creek, Macks Creek, McBride Creek, Reynolds Creek, Salmon Creek, Scotch Bob Creek, Sinker Creek, Soda Creek, South Fork Carter Creek, Spring Creek, Succor Creek, Trout Creek, and 3 unnamed tributaries
Longnose dace	*Rhinichthys cataractae*	Succor Creek
Rainbow trout	*Oncorhynchus mykiss*	Jordan Creek, Sinker Creek, and Succor Creek
Redside shiner	*Richardsonius balteatus*	Jordan Creek and Succor Creek
Speckled dace	*Rhinichthys osculus*	Jordan Creek, Reynolds Creek, Sinker Creek, and Squaw Creek

Of the 199 miles of fish-bearing creeks within the analysis area for fish, approximately 80 miles were within the burned area of the Soda Fire. A significant percentage of the riparian areas within the burned area burned intensely, consuming the herbaceous understory and removing woody riparian vegetation in some areas. Areas sheltered from the fire front or within steeper canyons burned at a lower intensity, typically leaving vegetated islands in these areas.

Figure 3-2: Intermittent, Perennial, and Fish-Bearing Streams.



Migratory Birds

The analysis area for migratory birds is the project area. The shrubland habitat present prior to the Soda Fire supports several species of sagebrush obligate and facultative migratory birds including greater sage-grouse, sage thrasher (*Oreoscoptes montanus*), sagebrush sparrow (*Artemisiospiza nevadensis*), Brewer's sparrow (*Spizella breweri*), and loggerhead shrike (*Lanius ludovicianus*). Other migratory birds that utilize shrubland and grassland habitats in the analysis area include long-billed curlew (*Numenius americanus*), vesper sparrow (*Pooecetes gramineus*), lark sparrow (*Chondestes grammacus*), savannah sparrow (*Passerculus sandwichensis*), horned lark (*Eremophila alpestris*), western meadowlark (*Stumella neglecta*), and burrowing owl (*Athene cunicularia*). Red-winged blackbird (*Agelaius phoeniceus*), Bullock's oriole (*Icterus bullockii*), and Wilson's snipe (*Gallinago delicate*) are associated with riparian and wetland habitats within the analysis area, while rock wrens (*Salpinctes obsoletus*), rock pigeons (*Columba livia*), and cliff swallows (*Petrochelidon pyrrhonota*) are common within canyons and along rock outcrops. Conifer forests in the analysis area support species such as flycatchers (*Empidonax spp*), Cassin's finch (*Haemorhous cassinii*), and western tanager (*Piranga ludoviciana*).

The migratory bird analysis area occurs within Bird Conservation Region 9, the Great Basin (USDI USFWS 2008). Species listed by the USFWS as Birds of Conservation Concern that are likely to occur in the analysis area are golden eagle, ferruginous hawk (*Buteo regalis*), long-billed curlew, calliope hummingbird (*Stellula calliope*), Lewis's woodpecker (*Melanerpes lewis*), loggerhead shrike, sage thrasher, Brewer's sparrow, sagebrush sparrow, and green-tailed towhee (*Pipilo chlorurus*) (USDI USFWS 2008). Of these species, Lewis's woodpecker is on both the Oregon and Idaho BLM's special status species lists; while the golden eagle, ferruginous hawk, long-billed curlew, loggerhead shrike, sage thrasher, Brewer's sparrow, sagebrush sparrow, and green-tailed towhee are special status species within Idaho.

The Soda Fire temporarily eliminated nearly all migratory bird habitat within the perimeter, with the exception of small islands of unburned or low burn severity areas. Migratory birds that require shrubland have been displaced from the burned area and their abundance will remain low for several decades while those habitats recover. Migratory birds that utilize grassland (e.g., horned lark and long-billed curlew) will return to the burned area earlier as those habitats are the first to recover from wildfire.

Special Status Animals

<u>Greater Sage-grouse</u>

Sage-grouse are a broadly distributed species that are dependent on a diversity of seasonal habitats and include some wide-ranging populations; therefore, they are expected to be vulnerable to changes to the sagebrush ecosystem. Due to these factors, the focal species concept (Mills 2007) is applicable because sage-grouse can serve as an umbrella species for broader conservation of the sagebrush habitats across the West (Hanser & Knick 2011). The analysis of sage-grouse can be assumed to be similar for other sagebrush-dependent species such as pygmy rabbit, sagebrush sparrows, and sage thrashers, as well as generalist species such as mule deer and pronghorn antelope.

The analysis area for sage-grouse was established by following the Project Analysis Area Method for Permitting Surface Disturbance Activities in Appendix E of the Approved Resource

Management Plan Amendments (ARMPAs) for the Great Basin Region Sage-Grouse Sub-regions. This involved buffering the Proposed Action disturbance footprint by 4 miles. Then, all occupied sage-grouse leks within the buffer were also buffered by 4 miles. The Proposed Action buffer and lek buffer are combined to create the analysis area for sage-grouse (Figure 3.5-2).

The sage-grouse analysis area is within the Western Association of Fish and Wildlife Management Agencies (WAFWA) Snake River Plain Management Zone (MZ) (Stiver, et al. 2006). The Northern Great Basin population of sage-grouse within the Snake River Plain MZ (Garton, et al. 2011) is a large population in Nevada, southeastern Oregon, southwestern Idaho, and northwestern Utah). Of the three subpopulations identified by Connelly et al. (2004) within the Northern Great Basin population, the north-central Nevada/southeast Oregon/southwest Idaho (hereafter Owyhee) subpopulation overlaps the analysis area. Within the analysis area, the Owyhee subpopulation consists of sage-grouse managed within the West Owyhee Conservation Area in Idaho and the Cow Lakes Priority Area for Conservation (PAC) in Oregon.

Habitat conditions have deteriorated or been altered to some degree throughout the entire distribution of sage-grouse by a combination of man-made and natural forces (e.g., livestock management (including wild horse grazing), conversion to agriculture, wildfire, fire suppression, and natural progression) on the plant community over time. This has resulted in the loss of native bunchgrasses and the increased dominance of short-statured species such as Sandberg bluegrass and exotic species such as cheatgrass and medusahead. These forces have further contributed to increasing the frequency of wildfire in some habitat types at low-to-mid elevations removing sagebrush, and affecting sagebrush regeneration and reestablishment; increasing the spread of invasive species; and at mid-to-higher elevation habitat increasing the distribution and density of western juniper with increased encroachment into sagebrush habitats at these elevations. This has caused local extirpations or declines in sage-grouse populations throughout their historical range and within the analysis area. An Idaho population analysis conducted by Connelly et al., (2004) suggests a long-term decline for sage-grouse within the state. More recently, Garton et al. (2011) conducted a population analysis of the Northern Great Basin population based on data from 1965 to 2007. During the assessment period, the proportion of active leks decreased and average number of males per active lek declined by 17 percent (Garton, et al., 2011).

Priority Habitat Management Areas (PHMA), Important Habitat Management Areas (IHMA; Idaho only), and General Habitat Management Areas (GHMA) occur within the analysis area. PHMA, IHMA, and GHMA are defined under the ARMPAs to guide BLM management of sage-grouse habitat. PHMA are BLM-administered lands identified as having the highest value to maintaining sustainable sage-grouse populations. Areas of PHMA largely coincide with areas identified as priority areas for conservation in the USFWS's Conservation Objectives: Final Report (USDI USFWS 2013a). These areas include breeding, late brood-rearing, winter concentration areas, and migration or connectivity corridors. IHMA are BLM-administered lands that provide a management buffer for PHMA and connect patches of PHMA. IHMA encompass areas of generally moderate to high conservation value habitat and populations but that are not as important as PHMA. IHMA is only designated within Idaho. GHMA are BLM-administered lands where some special management will apply to sustain sage-grouse populations; areas of occupied seasonal or year-round habitat outside of PHMA or IHMA.

The ARMPAs also identify specific sagebrush focal areas (SFA), which are a subset of PHMA and encompass sage-grouse stronghold areas that have the highest densities of sage-grouse and other criteria important for the persistence of the species. SFA are managed as PHMA, except that some uses are restricted and SFA are prioritized for vegetation management and conservation actions. There are no SFA within the sage-grouse analysis area.

Table 3.5-5. Acres of PHMA, IHMA, and GHMA within the Sage-Grouse Analysis Area

Habitat Management Area	Acres	Inside Burn Area	Outside Burn Area
PHMA	278,962	48,450	230,512
IHMA	358,230	190,526	167,704
GHMA	193,397	36,446	156,951
Total	**830,589**	**275,422**	**555,167**

The greater sage-grouse is a sagebrush-obligate species that requires large areas of relatively undisturbed sagebrush steppe habitat. Within this requisite sagebrush landscape, important seasonal habitats (e.g., wet meadows, higher elevation mesic shrublands) are also necessary (Connelly et al. 2000). Sage-grouse traditionally congregate on communal strutting grounds (i.e., leks) from April to early May. The nesting season occurs soon after, extending from May to early June. Broods remain with females for several more months, and as seasonal changes occur, they move from early brood-rearing areas (e.g., forb- and insect-rich upland areas surrounding nest sites) to late brood-rearing and summer habitats (e.g., wet meadows and riparian areas) from June to August. Sage-grouse seasonal ranges associated with breeding (i.e., lekking, nesting, and early brood-rearing), late brood-rearing/summer, and winter habitats occur within the analysis area to varying degrees. Within Idaho, the BLM has mapped sage-grouse nesting and late brood rearing habitat and winter habitat using data from IDFG. Table 3.5-6 shows the acres of nesting/late brood rearing habitat and winter habitat within the sage-grouse analysis area. These two seasonal habitats have significant overlap within the sage-grouse analysis area (Figure 3.5-3). Oregon does not have similar seasonal habitat delineated within the sage-grouse analysis area.

Table 3.5-6. Acres of Sage-grouse Nesting/Late Brood Rearing and Winter Habitat within the Sage-grouse Analysis Area

Habitat Type	Acres	Inside Burn Area	Outside Burn Area
Nesting/Late Brood Rearing	393,175	170,190	222,985
Winter Habitat	250,009	90,084	159,925

In 2000, Idaho BLM drafted "*A Framework to Assist in Making Sensitive Species Habitat Assessments for BLM-Administered Public Lands in Idaho-Sage-grouse*" (Sather-Blair et al. 2000). This document, released to Idaho BLM field offices via Idaho BLM IM 2000-059 described a process for mapping sage-grouse habitat and potential restoration areas at the broad scale, to aid in conservation planning in the state. The resulting *Idaho Sage-grouse Habitat Planning* Map (sometimes referred to informally as the "Key habitat map") has been updated annually since that time, based primarily on wildfire polygons, expert opinion and/or other new information.

At a broad scale, the Idaho Sage-Grouse Habitat Planning Map and data are intended to: 1) Identify key sage-grouse habitat areas for Idaho BLM in need of conservation; 2) Identify areas of restoration potential that should be considered during restoration planning; 3) Be a tool for land use and fire planning at the Field Office, District, and State Office levels; 4) Graphically portray the degree of sage-grouse habitat fragmentation or recovery as it changes over time; 5) Assist field staff in identifying areas where sage-grouse habitat conservation or restoration will be a primary concern and those areas where sage-grouse will not be a management emphasis; 6) Serve as an educational tool for conservation planning and public outreach.

This data set contains simple, landscape-scale greater sage-grouse (GRSG) habitat types for Idaho and constitutes a current approximation of GRSG habitat in the state. The habitat types include: 1) key sage-grouse habitat areas (areas having greater than 10% sagebrush cover and perennial understories) and 2) four habitat restoration types: (a) perennial native and non-native grasslands with high restoration potential; (b) annual grass dominated areas (either shrubland or grassland) with low restoration potential; (c) conifer encroachment areas with high restoration potential and (d) areas that have recently burned and the type of habitat that is coming back and its restoration potential has not yet been determined. This dataset is not synonymous with ARMPA GRSG Habitat Management Areas, as those incorporate additional habitat and sage-grouse population data or models. Acres of key sage-grouse habitat and restoration types within the sage-grouse analysis area is presented in Table 3.5-7 and displayed in Figure 3.5-4. Generally, key habitat reflects the best condition of habitat but has been greatly reduced in the project area by the Soda Fire.

Table 3.5-7 Acres of Key Sage-grouse Habitat and Restoration Types within the Sage-grouse Analysis Area

Habitat Types	Acres	Inside Burn Area	Outside Burn Area
Key	142,865	2,777	140,088
Perennial Grassland	25,565	3,569	21,996
Annual Grassland	1,293	362	931
Conifer Encroachment	46,160	0	46,160
Recently Burned	195,863	195,863	**0**
Total	**411,746**	**202,571**	**209,175**

Within the sage-grouse analysis area, sage-grouse lek data from IDFG and ODFW identify 31 leks with a management status of occupied. The two states have different management definitions and terms to describe lek status; regardless, an additional 53 leks are identified within the analysis area as either unoccupied, undetermined, or pending a management status declaration. Of the 31 occupied leks, 12 are within the Soda Fire burned area. Sage-grouse lek abandonment has been linked to increased nonnative annual grass presence and active leks have been associated with less annual grassland cover than the surrounding landscape (Knick et al. 2013). Wildfire and the significant loss of shrubland habitat within the burned area promotes the establishment of invasive annual grasses. The presence of annual grasses increases fire frequency. This nonnative annual grass and fire feedback loop can result in conversion from sagebrush shrublands to annual grasslands (Davies 2011), and ultimately to lek abandonment.

Figure 3-3: Sage-grouse Analysis Area and Sage-grouse Habitat Management Areas.

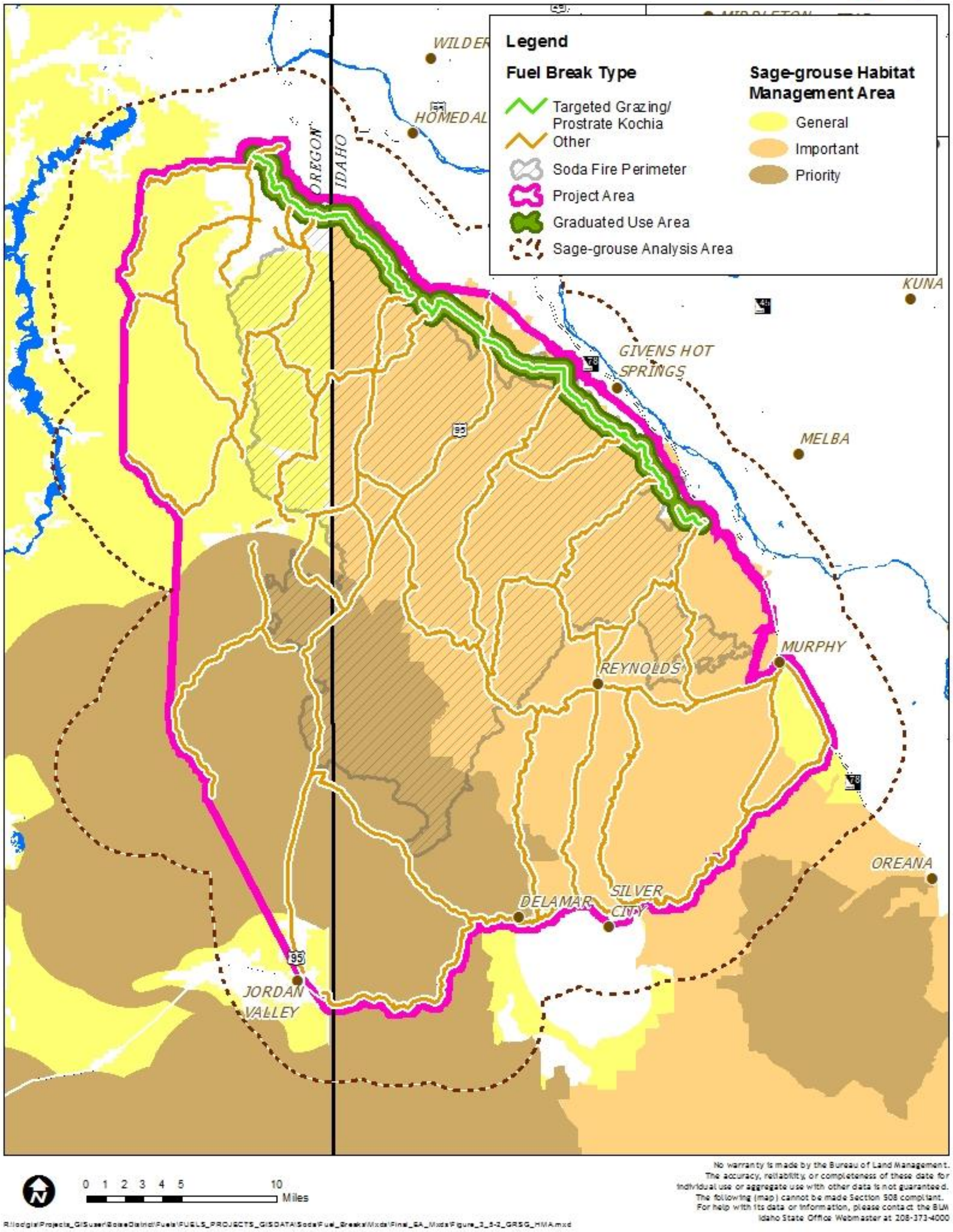


Figure 3-4: Sage-grouse Analysis Area and Sage-grouse Seasonal Habitat in Idaho.

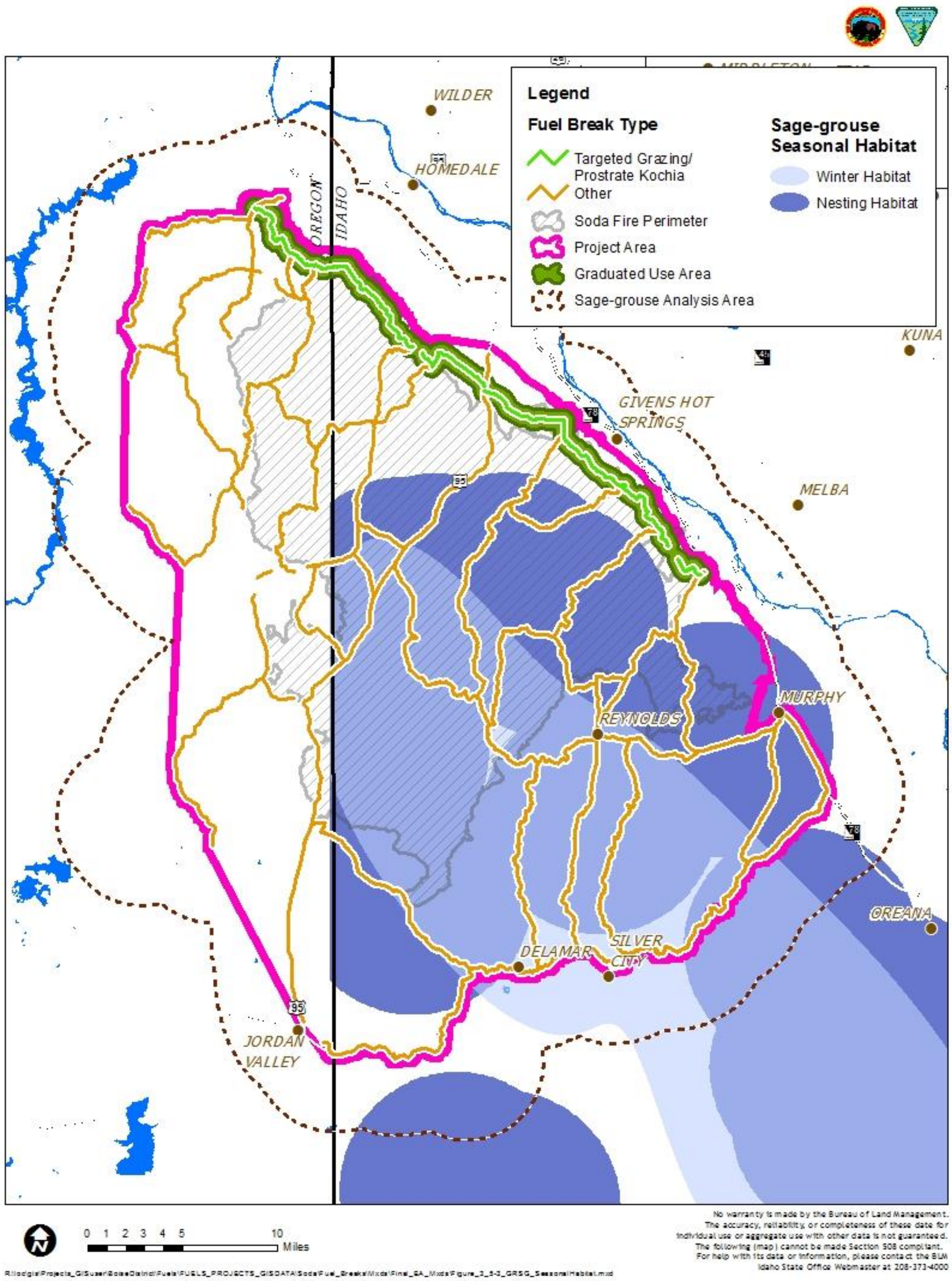
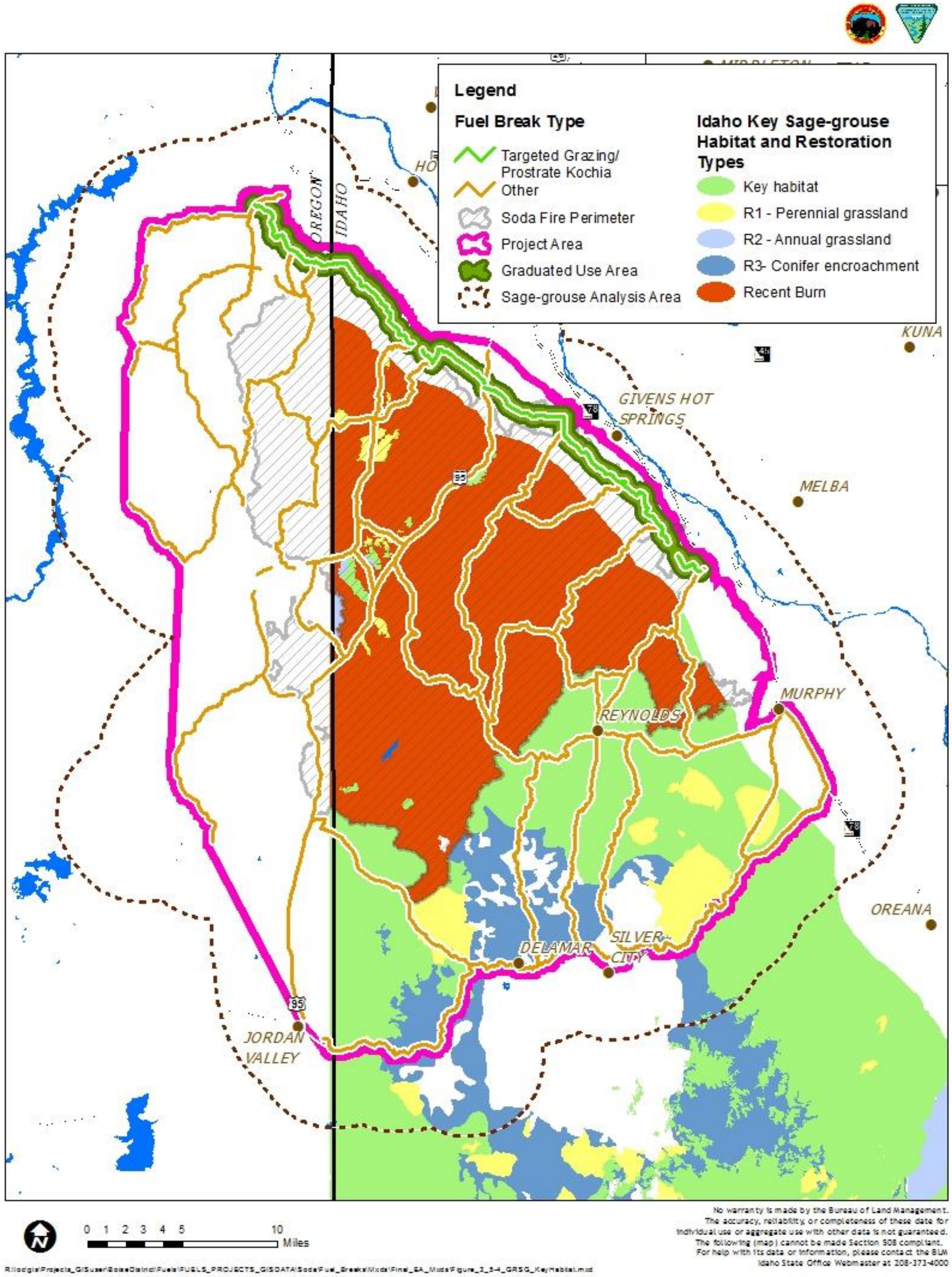


Figure 3-5: Key Sage-grouse Habitat and Restoration Types in Idaho.



Golden Eagle

Golden eagles are a Type 2 BLM special status animal in Idaho, but are not considered a special status species within Oregon. Golden eagles are protected under The Bald and Golden Eagle Act (1962) as amended. BLM manages golden eagles under Executive Order 13186 Sec. 3, which directs federal agencies to promote the conservation of migratory bird populations.

The analysis area for golden eagles includes the project area plus a 1-mile buffer of the project area to account for golden eagle nests that fall within the restriction buffer identified as a resource design feature (RDF) in Chapter 2. A review of BLM datasets for the past 10 years (2005 to 2015) identifies a total of 53 nest locations encompassed by 21 territories in Idaho and 4 breeding areas in Oregon within the golden eagle analysis area. Golden eagles are known to use and defend foraging areas and up to 18 nests within a territory (Kochert and Steenhof 2012).

Golden eagles in southwestern Idaho (and presumably southeastern Oregon) typically occupy territories year-round and rely on black-tailed jackrabbits (*Lepus californicus*) as their primary prey (Kochert et al. 1999). Ground squirrels (*Urocitellus* spp.*)*, rock doves, reptiles, yellow-bellied marmots (*Marmota flaviventris*), and cottontail rabbit (*Sylvilagus nuttallii*) are also important prey items (Marzluff et al. 1997). Golden eagle territories typically contain a significant shrubland component (such as sagebrush or rabbitbrush) that supports black-tailed jackrabbits; eagles tend to avoid grassland and agriculture habitat (Marzluff et al. 1997).

The significant loss of shrublands within the burned area has likely had a negative effect on golden eagles (Kochert et al. 1999). Of the 21 territories known to be established within the golden eagle analysis area, 16 occur within or partially within the burned area. However, loss of shrubland habitat from fire is not a significant predictor of territory occupancy or nesting success post-fire (Kochert et al. 1999). Variables such as neighboring territory occupancy, ability to use and productivity of alternate foraging habitat, and the underlying quality of the breeding pair (previous years of high nest success) within a territory play important roles in post-fire nesting success (Kochert et al. 1999).

Columbia River Redband Trout

The analysis area for redband trout is the same as discussed for fish. Redband trout are an Idaho BLM Type 2 sensitive species and an Oregon BLM sensitive species. Under the focal species concept, analyzing impacts to redband trout streams can be can be assumed to be similar for other aquatic and riparian-dependent species.

Columbia River redband trout is a sub-species of rainbow trout and is the resident life form of steelhead trout. They are found in a wide range of stream habitats from desert areas in to forested mountain streams. Spawning occurs in the spring from February to June, depending on temperature and location (IDFG 2005). They eat mainly streamside and benthic (bottom dwelling) macroinvertebrates (USDI USFWS 2013b).

Similar to other species of trout, redband trout abundance is strongly correlated with riparian cover components, including undercut banks, large woody debris, and overhanging vegetation. Productive redband trout habitat is associated with higher gradient channels, often in riffles or with substrates dominated by boulders, cobbles, and pocket water. Redband trout also occupy pools in lower gradient streams that provide important holding and rearing habitat, resting places, over-wintering areas, and refuges from floods, drought, and extreme temperatures.

Spawning habitat includes loose gravelly substrates to provide for oxygenation of eggs and embryos in redds in streams (USDI USFWS 2013b).

Approximately 195 of the 199 miles of streams with fish presence within the fish analysis area are identified as redband trout habitat, of which approximately 73 miles are within the burned area. The Soda Fire has resulted in the temporary loss or reduction of suitable stream habitat for redband trout within the burn area. For all aquatic species, until enough vegetation recovery has occurred on the uplands and within the riparian habitat within the burned area, degradation will continue and these habitats may become unsuitable.

Columbia Spotted Frog

The Great Basin DPS of the Columbia spotted frog occurs in eastern Oregon, southwestern Idaho, and northern Nevada. The species is highly aquatic and is seldom found far from water. They are most often found in herbaceous wetland plant communities comprised of sedges, rushes and grasses, and use thick floating algae and riparian vegetation for cover (Tait & Vetter, 2008). Frogs require well-oxygenated water for hibernation, and springs or saturated burrows are used as over-wintering sites.

Spotted frog population declines are attributed to habitat loss through conversion of wetlands to irrigated pastures, de-watering of rivers for irrigation uses, drying of ponds due to drought or overuse, and reduction of riparian habitat quality due to overgrazing (IDFG 2009). Improper grazing of the wetlands results in severely hummocked surface soils, broken-up the dense sod, which exposes mineral soil and leads to erosion potential and weed invasion. These disturbances lead to soil compaction, streambank sloughing, damage to vegetation, and premature drying of the soil surface (Engle & Munger 2003).

The analysis area for Columbia spotted frogs is the project area. Spotted frogs have been documented within the southern portion of the analysis area. Since 1996, a total of 53 Columbia spotted frogs observations have been recorded within the analysis area (IDFG 2016). One of the observations occurred within the Soda Fire burned area. Table 3.5-8 lists the locations of the observations.

Table 3.5-8. Columbia Spotted Frog Observations within the Analysis Area.

Location	Number of Observations	Inside Burn Area
Split Rock Canyon, tributary to Trout Creek	2	No
Soda Creek	3	Yes (1 of 3)
Cow Creek	1	No
Impoundment at head of West Fork Reynolds Creek	1	No
Johnston Lakes	27	No
Man-made ponds, upper Succor Creek	19	No

3.5.2 Environmental Consequences

Alternative 1 – No Action

Fuel breaks would not be constructed so vegetation would not be modified (i.e., removed or disturbed). No wildlife habitat would be directly impacted resulting in low- or non-functioning habitat within fuel breaks (400 feet or 200 feet-wide, respectively). However, the ability of wildland firefighters to effectively contain wildfires between travel routes would also not be enhanced. Because there would be no changes to improve fire management in the project area, the analysis for this alternative addresses the effects of the imminent threat of continued burning of habitat and subsequent spread of invasive annual vegetation.

Under the No Action alternative, large-scale fires are expected to continue to burn throughout the project area. A broad range of wildlife species may be injured or killed by large, fast-moving wildfires. Over the short- and long-term, this trend is expected to remove existing shrub cover, reduce perennial grass and forb cover, increase noxious weed and invasive plant cover, and impede establishment of shrubs seeded or planted following wildfire. It is not realistic to forecast the amount of habitat that could be lost to a wildfire, but wildfires are going to continue to occur within the project area and result in loss of shrub cover and increased likelihood of establishment of invasive annual grasslands. Loss of shrub cover would reduce and/or fragment wildlife populations that favor or are dependent on shrub habitats for breeding, nesting, hiding, thermal cover, and foraging. This would shift wildlife assemblages towards increased abundance of grassland species. However, even those species that favor grassland habitats benefit from the presence of shrubs for browse and thermal cover during winter. The potential replacement of perennial grass and forb cover with noxious weeds or invasive plants may eventually reduce the habitat quality for grassland species by reducing the structural diversity of the cover as well as the biological diversity of plant and insect forage species.

<u>Big Game</u>

Under the No Action Alternative, big game species will be similarly affected. Cox (2008) provided data strongly suggesting habitat loss from fire and cheatgrass invasion was the primary cause of large reductions in mule deer populations in Nevada. While mule deer do forage on cheatgrass, it does not provide thermal or hiding cover. Recurring fire within and adjacent to the analysis area would continue to reduce suitable mule deer habitat (especially winter habitat) and remaining unburned mule deer habitat within the big game analysis area would be degraded by increased levels of use by mule deer. Effects of recurring fire would be similar for pronghorn and bighorn sheep; however, these species are less dependent on shrublands for forage and cover than mule deer.

<u>Fish</u>

It is assumed under the No Action alternative that an increased frequency of wildfires would continue to remove streamside vegetation and indirectly impact fish species through increased water temperatures. Indirect impacts would also occur from increased sedimentation into fish-bearing streams due to the lack of soil stability and lack of water holding capability due to an absence of vegetation, especially shrub species.

Migratory Birds

Under the No Action Alternative migratory bird populations would modify their home ranges or seasonal use areas based on the habitat types available. Continued wildfire and loss of shrubland habitat would result in an increased abundance of grassland bird species within the migratory bird analysis area, especially those that can utilize disturbed areas and exotic herbaceous habitat types. Repeated fire events across the shrub-steppe landscape generally leads to reduced habitat diversity resulting in reduced bird species diversity.

Special Status Animals

Greater Sage-grouse

Conditions for this species would be expected to continue to degrade in the project area due to the presence and resulting spread of invasive annual grasses such as cheatgrass and medusahead, and increased fire frequency (Balch et al. 2013). Even in the remaining sage-grouse habitat outside of the Soda Fire burned area, another large wildfire would negatively impact sage-grouse for 25-120 years based on sagebrush species and growing conditions (Baker 2011). Cheatgrass-dominated grasslands without sagebrush represent an undesirable endpoint that remains stable because recurrent fires prevent re-establishment by sagebrush, native forbs and grasses (Knick and Hanser 2011). Without establishing fuel breaks, there is a greater likelihood of this species being extirpated in and adjacent to the project area. The successful recovery of sage-grouse habitat within the Soda Fire burned area would be unlikely.

Golden Eagle

Continued loss of sagebrush habitat would negatively impact golden eagles, mainly because their preferred prey, black-tailed jackrabbits, would decrease. Sands et al. (1999) cites studies suggesting golden eagles in the NCA have been adversely affected by changes in prey species abundance as a result of annual grassland expansion and corresponding loss of sagebrush cover. Black-tailed jackrabbit population declines are closely correlated with a loss of sagebrush cover, and current distribution is related to remaining habitat (Sands et al. 1999). Opening up areas to increased access to recreationist could have negative effects on nesting eagles (Steenhof et al. 2014). Continuation of wildfires burning across the project area would negatively impact golden eagles. Other raptor species that utilize shrubland habitat, such as ferruginous hawk and red-tailed hawks, would be similarly affected.

Columbia River Redband Trout

The effects of the No Action alternative on redband trout would be the same as those described for fish. In general, continued loss of streamside vegetation and resulting increased water temperatures and sedimentation would have a negative impact on redband trout.

Columbia Spotted Frog

The effects of the No Action alternative on Columbia spotted frog would be similar to those described for redband trout. In general, continued loss of riparian and wetland vegetation and resulting increase in water temperatures and sedimentation would have a negative impact on potential habitat for Columbia spotted frog.

General Effects of Action Alternatives

By design, existing wildlife habitat within the footprint of the fuel breaks would be modified to develop the prescribed treatments by mowing, prescribed fire, hand cutting, chemical treatment, targeted grazing, or seeding new species such as prostrate kochia. Seeded species may replace existing native habitat to ensure fuel breaks consist of fire resistant species. Most existing bunchgrasses and forbs would not be expected to survive treatments involving high levels of soil disturbance or yearly maintenance (e.g., disking, targeted grazing, and herbicides). Herbicide treatments to control competition would target invasive annual grasses and forbs; however, perennial grasses and forbs may also become unintended targets. Repeated maintenance mowing or herbicide application within mowing treatments may release an undesirable understory that may require a follow-up seeding treatment.

All of the vegetation treatment activities below that propose potentially disruptive mechanized equipment operation (tractors, chainsaws) and anthropogenic disturbance would adhere to temporal and spatial restrictions identified in the RDFs for big game seasonal habitat, occupied raptor nests, and sage-grouse leks (Section 2.5.2). This would reduce or eliminate the effects of ground disturbing activities on these species.

Over the long-term, establishment of fuel breaks as specified in the Proposed Action is expected to reduce large-scale fire size, protect remaining sage-grouse habitat and important habitats of other native wildlife, and allow for the recovery of natural and seeded plant communities that mostly consist of shrub-steppe habitats. This would result in improved habitat for wildlife which require or favor shrub habitats for breeding, hiding, thermal cover, and foraging.

Once established, fuel breaks and buffer areas could provide adequate cover for some small mammals, reptiles, and ground-nesting birds such as horned larks. Other wildlife may use these areas only temporarily for feeding or travel. Some species may avoid treatment areas completely due to lack of appropriate cover or food. For purpose of this analysis, the fuel breaks are considered to be low- or non-functioning wildlife habitat.

Habitat fragmentation has been identified as an issue by a few stakeholders. Habitat fragmentation has already occurred within the project area due to the Soda Fire. The fuel breaks planned where the Soda Fire burned will not contribute to habitat fragmentation because there is no habitat in the post fire condition. Fuel breaks planned in habitats outside of the Soda Fire area have been analyzed and are a critical component to protecting the investment of the Soda Fire rehabilitation efforts, to protect the intact habitat that exists within the area, and to break the fire cycle in the annual grass dominated landscape. Furthermore, fragmentation is already occurring at a large scale due to the trend of large catastrophic fires in and adjacent to the project area. Fuel breaks will provide fire suppression resources with more opportunities to safely engage large fires, protect areas of intact habitat, and prevent large scale habitat fragmentation.

General effects on wildlife of each fuel break method are described below.

Targeted Grazing

Targeted grazing requires the use of livestock at a high intensity over a short duration to remove fine fuels. Targeted grazing may be implemented as a stand-alone treatment or in concert with other treatments. Targeted grazing may require temporary facilities for implementation such as water haul sites and salt or mineral supplementation. Temporary electric avoidance fencing may be required to protect riparian (and possibly other) resources during targeted grazing treatments.

There is the potential for fences to create a collision hazard to wildlife, but most wildlife species can avoid the fences and either jump over or go under the fences. Livestock class would be restricted to cattle to protect bighorn sheep from potential disease transmission. Livestock exclosure fencing around riparian areas would reduce potential impacts on fish and other aquatic species. Five exclosures mauy be constructed along riparian areas associated with perennial streams. Watering facilities would require bird ladders to reduce associated bird, bat, rodent (and other small mammal) mortalities.

Mowing

Shrub branches and foliage would be mowed to a height of approximately 6 to 10 inches within the treatment footprint. Lowering and/or removing the shrub canopy would directly impact wildlife species by reducing available hiding and thermal cover as well as reducing forage availability to species such as mule deer and sage-grouse. Migratory birds that nest within or under shrubland habitat would lose nesting habitat. Mowing could result in mortality for less mobile wildlife species. Mowed shrubs may initially resemble a low sagebrush site which could still provide some habitat value to wildlife. Mowing would be repeated as shrub canopies regrow and exceed 12 inches. Repeated mowing of woody species can result in a decrease in plant vigor and increase in plant mortality of shrubs, which would eventually reduce the functionality of the habitat within the vicinity of the treatment to wildlife species that utilize shrubland habitat.

Direct impacts of mowing on birds and pygmy rabbits would be reduced by the RDF that states: Mowing of sagebrush and disking would not occur from February 1 through July 31 to protect nesting migratory birds and pygmy rabbit natal burrows.

Human activity associated with mowing would impact wildlife due to the visual and audible disturbance. While the response differs by species and among individuals, it is anticipated that human activity would cause temporary displacement or alter the activity level or behavior of some wildlife species. Several RDFs address avoiding disturbances to sensitive wildlife and habitats (including those for big game, raptor nests, and sage-grouse mentioned above), the applicable temporal and spatial restrictions associated with these RDFs would reduce anthropogenic disturbances to those species.

Opening the shrub canopy through mowing can result in an increase annual species (Davies et al 2011). An indirect effect of mowing vegetation to create fuel breaks would include the potential for annual species, including noxious and invasive weeds, to spread from the fuel break into adjacent wildlife habitat. Spread of annual plant species, including noxious and invasive weeds, generally results in reduced or lost habitat function for most wildlife species. However, this effect is expected to be temporary where the understory includes existing perennial vegetation or would be minimized through the use of herbicides and revegetation.

Another indirect effect would be the increased capability to protect existing native wildlife habitat and current and future ESR investments through a reduction in overall fire sizes within the project boundary. Protecting native habitat and restoration investments would benefit wildlife by preserving habitat and allowing for recovery of habitat diversity and structure as well as wildlife populations affected by the Soda Fire.

Hand Cutting

The direct effect of hand cutting using chainsaws or loppers to create fuel breaks would be the reduction in density and canopy cover of shrubs and trees within the treatment footprint. As with mowing, effects would include a reduction in available forage, hiding and thermal cover, and migratory bird nesting opportunity. Mortality of less mobile wildlife species would be unlikely with hand cutting. Shrubland habitat functionality in these areas would be reduced; however intact stands of shrubs would be maintained and the loss of function would be less severe than mowing. Visual and audible disturbance to wildlife associated with human activity during hand cutting would be similar to those described for mowing. The potential spread of annual plant species and mitigation (herbicide treatment and seedings) would have a similar effect on wildlife species as those described for mowing. The benefits associated with protecting habitat and restoration investments would be similar to mowing.

Chemical Treatment

Potential impacts of the chemical treatment to wildlife vary depending on type of herbicide and the duration and mechanism of exposure. Herbicide effects to wildlife are described in the *Vegetation Treatments using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement* (BLM 2007a), the 2016 Final PEIS for *Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on BLM Lands in 17 Western States* (USDI BLM 2016), and *Vegetation Treatments Using Herbicides on BLM Lands in Oregon Final Environmental Impact Statement (2010a) and Record of Decision (2010b).*

The PEIS states that risks from direct spray and spills, indirect contact with foliage after direct spray, and ingestion of contaminated food items after direct spray are generally low or non-existent for terrestrial fauna, with few exceptions, particularly for mammalian herbivores and pollinating insects. Birds, mammals, or insects consuming grass sprayed with herbicides have relatively greater risk for harm than animals foraging on other vegetative material, because herbicide residue is higher on grass (BLM 2007a). However, the PEIS states that harmful doses of herbicide are not likely unless the animal forages exclusively in the treatment area for an entire day.

While the level of risk is low, adverse effects to wildlife could occur; but reducing the negative impacts from non-native vegetation and noxious weeds would lead to improved conditions for wildlife across the landscape. The benefits of using herbicides outweigh the associated risks and the impacts from continued loss of habitat to wildfire and invasive vegetation. These general effects apply to all the wildlife species discussed below. Visual and audible disturbance to wildlife associated with human activity during chemical treatment would be similar to those described for mowing.

In addition, RDFs apply additional restrictions to herbicide applications specific to wildlife that would reduce potential exposure and associated effects on wildlife. This includes using herbicides with the lowest likelihood of impacting wildlife and application of harmful herbicides would not be applied at the maximum rate, not allowing broadcast spraying of 2,4-D within 300 meters of occupied pygmy rabbit burrows (only spot applications with 100 meters), no application of herbicides within 300 meters of occupied pygmy rabbit burrows from 1 hour before sunrise to 1 hour after sunrise, and no herbicide application within identified riparian/aquatic buffers.

Seeding

Fuel breaks may or may not require seeding, seedbed preparation such as disking, or chemical treatments to reduce competition prior to planting. Disking would be accomplished for the purpose of prostrate kochia seedbed preparation by using a rubber tired tractor or bulldozer or a series of disks to remove vegetation to expose bare mineral soil. Disking for seedbed preparation would be followed by seed application (and possibly herbicide treatment, then seeding). Seeded fuel breaks will consist of prostrate kochia, Sandberg bluegrass, bottlebrush squirreltail, crested wheatgrass, or a combination of these in some cases.

Over the long-term, the resulting prostrate kochia seedings and herbaceous seedings may be used by some wildlife for food and cover. Prostrate kochia provides a protein source (Waldron et al. 2010) and some species may utilize it for food. Due to its structure and nutrients, forage kochia may have the potential to be a desirable plant for forage material and cover to a number of species, such as sage-grouse (Graham et al. 2013). There are limited studies on wildlife use of prostrate kochia; but according to a study in Utah sage-grouse used the prostrate kochia areas as an extension of their lek (Graham et al. 2013), sage-grouse in the Minidoka desert were lekking on a recently established fuel break; pronghorn antelope have often been observed feeding on a prostrate kochia fuel break near Mountain Home, Idaho. Observations in prostrate kochia seedings also indicate use by small mammals (e.g., rabbits). Some wildlife are also expected to avoid the fuel breaks since the prostrate kochia is expected to outcompete other plant species within the seedings and eventually become a monoculture. Once that happens, diversity within the fuel break would be limited to species which might specifically utilize prostrate kochia either for food or cover.

Mechanized disturbances, such as disking, would not occur within sage-grouse nesting and winter habit during the appropriate seasons, or from February 1 through July 31 to protect nesting migratory bird and pygmy rabbit natal burrows. This would reduce impacts to sage-grouse, migratory birds, and pygmy rabbits as well as other species utilizing the same habitat at the same time.

Visual and audible disturbance to wildlife associated with human activity during vegetated fuel break preparation and maintenance would be similar to those described for mowing.

Temporary fencing to protect seeded plants in fuel breaks during seedling establishment may be necessary in cases where conflicts with regularly permitted livestock are unavoidable. Use of a wildlife friendly fence design that employs a smooth bottom wire would reduce injuries to wildlife. Temporary fences would not be constructed within 1.25 miles from occupied sage-grouse leks and would comply with all designated wildlife standards (e.g., ARMPAs).

<u>Prescribed Fire</u>

Occasionally prescribed fire would be necessary to burn accumulations of weeds on fence lines or accumulated in topographical features such as draws or ditches associated with the proposed fuel breaks to maintain fuel break effectiveness. Wildlife species are likely to temporarily avoid human activity associated with prescribed fire; however, this activity is anticipated to be minimal and short in duration and have little effect on a majority of wildlife species. Prescribed fire objectives of the ARMPAs are met by establishing fuel breaks to protect ESR treatments that will promote the recovery of sage-grouse habitat and protect remaining habitat. The use of prescribed fire will be of low risk to surrounding habitat as prescribed fire will be used to burn vegetation accumulated in fuel breaks such as weed accumulations along fencelines or topographic features such as swales or draws. Prescribed fire may also be used to burn piles of vegetation within the fuel breaks as a result of fuels reduction treatments such as hand cutting brush and trees to create fuel breaks. This type of Prescribed burning is termed pile burning and is accomplished when the surrounding vegetation has a high enough live fuel moisture content to prevent further spread of the fire, typically in the late fall/winter or spring). After prescribed burn, follow up treatments of herbicide application and/or seeding will prevent threats of invasive annuals.

Alternative 2 – Proposed Action

Proposed road maintenance under the Proposed Action would include using heavy equipment to blade or grade existing roadways, improvement and creation of ditches and shoulders, installing culverts, constructing rolling dip gravel stream crossings, road resurfacing, installing cattle guards and sediment barriers, and surfacing areas with gravel.

In general, road maintenance on public lands is likely to promote some increased use by the public due to easier access. An increase in traffic volume on newly maintained roads would increase the potential for spread of noxious weeds and other undesirable vegetation; however, design features applied to fuel break implementation and maintenance (Section 2.4.3) would limit these impacts. No or negligible increases in human caused fire starts would be expected above historical averages due to proposed road maintenance. Similarly, increases in animal strikes from vehicles would be negligible.

Big Game

Pronghorn Antelope

Many of the applicable impacts on pronghorn from implementation of the Proposed Action are addressed under Section 3.5.2.2. Specific impacts to pronghorn habitat within the big game analysis area are shown in Table 3.5-9.

Table 3.5-9. Acres of Pronghorn Habitat within the Proposed Action

Habitat Type	Inside Burned Area	Outside Burned Area	Total
Spring/Summer/Fall	2,799	2,017	**4,816**
Year-long	459	2,203	**2,662**
Winter	1,662	457	**2,118**
Total	**4,920**	**4,677**	**9,597**

The Proposed Action has the potential to disturb up to 9,597 acres of pronghorn habitat within the big game analysis area, approximately 4 percent of the total available pronghorn habitat within the big game analysis area. More than 50 percent of the pronghorn habitat proposed for disturbance under the Proposed Action burned in the Soda Fire, and is likely functioning at a reduced level. The Proposed Action would result in the disturbance of 9,597 acres of pronghorn habitat; however, this amount is relatively small compared to the available habitat within the big game analysis area, and the effect of fuel break establishment over the long-term is expected to protect pronghorn habitat from future wildfire.

Mule Deer

Many of the applicable impacts on mule deer from implementation of the Proposed Action are addressed under Section 3.5.2.2. Specific impacts to mule deer habitat within the big game analysis area are shown in Table 3.5-10.

Table 3.5-10. Acres of Mule Deer Habitat within the Proposed Action

Habitat Type	Inside Burned Area	Outside Burned Area	Total
Spring/Summer/Fall	1,348	3,362	**4,710**
Year-long	5,124	6,053	**11,177**
Winter	1,639	4,323	**5,962**
Total	**8,111**	**13,738**	**21,850**

The Proposed Action has the potential to disturb up to 21,850 acres of mule deer habitat within the big game analysis area, approximately 4 percent of the total available mule deer habitat within the big game analysis area. Approximately 40 percent of the mule deer habitat proposed for disturbance under the Proposed Action burned in the Soda Fire, and is likely functioning at a reduced level. The Proposed Action would result in the disturbance of 21,850 acres of mule deer habitat; however, this amount is relatively small compared to the available habitat within the big game analysis area and the effect of fuel break establishment over the long-term is expected to protect mule deer habitat from future wildfire.

California Bighorn Sheep

Many of the applicable impacts on bighorn sheep from implementation of the Proposed Action are addressed under Section 3.5.2.2. Specific impacts to bighorn sheep habitat within the big game analysis area is shown in Table 3.5-11.

Table 3.5-11. Acres of Bighorn Sheep Habitat within the Proposed Action

Habitat Type	Inside Burned Area	Outside Burned Area	Total
Bighorn Distribution	4,685	4,159	**8,844**
Lambing Areas (Idaho only)	386	0	**386**

The Proposed Action has the potential to disturb up to 8,844 acres of bighorn sheep habitat within the big game analysis area, approximately 10 percent of the total available bighorn sheep habitat within the big game analysis area. More than half of the bighorn sheep habitat proposed for disturbance under the Proposed Action burned in the Soda Fire, and is likely functioning at a reduced level. The Proposed Action would result in the disturbance of 8,844 acres of bighorn sheep habitat; however, this amount is relatively small compared to the available habitat within the big game analysis area and the effect of fuel break establishment over the long-term is expected to improve bighorn sheep habitat compared to the existing conditions.

Fish

Impacts to water quality (Section 3.15) are applicable to the analysis of impacts to fish. While riparian and aquatic buffers will be implemented to avoid disturbing riparian vegetation during creation of fuel breaks, and BMPs and conservation practices will minimize sediment discharge into streams and wetlands, road maintenance under the Proposed Action will occur within riparian areas.

Within the fish analysis area, a total of 460 stream crossings would occur at perennial and intermittent streams; 200 occur within the burned area and 260 occur outside of the burned area. A total of 44 crossings occur at streams with identified fish presence (Table 3.5-12).

Approximately half of those crossings are within the burned area where riparian vegetation was likely diminished and increased runoff and sedimentation from the fire are expected.

Table 3.5-12. Number of Road Crossings at Streams with Fish Presence by the Proposed Action

Stream Name	Crossings Inside Burned Area	Crossings Outside Burned Area	Total
Jordan Creek	-	2	**2**
Jump Creek	1	1	**2**
Macks Creek	-	1	**1**
McBride Creek	4	-	**4**
Reynolds Creek	-	3	**3**
Salmon Creek	8	-	**8**
Scotch Bob Creek	-	4	**4**
Sinker Creek	-	1	**1**
Soda Creek	1	2	**3**
Squaw Creek	8	-	**8**
Succor Creek	1	5	**6**
Trout Creek	-	1	**1**
Unnamed trib to Spring Creek	-	1	**1**
Total	**23**	**21**	**44**

Installation of culverts and construction of rolling dip gravel stream crossings would have the potential to result in temporary disturbance to streamside vegetation and increase sedimentation which would have a short-term impact on fish habitat through decreased water quality. However, road improvements to drainage design and ditches and improved stream crossings and culverts would improve water quality over the long-term.

Migratory Birds

Many of the applicable impacts on migratory birds are addressed under Section 3.5.2.2. Refer to the discussion of impacts on vegetation communities in Section 3.3.2.3 for detailed information regarding the vegetation communities disturbed under the Proposed Action. A vast majority of the proposed impacts on wildlife habitat would occur within shrubland habitat, with conifer forest, hardwood forest, exotic herbaceous and riparian habitat also being affected. Additional loss of shrubland, forest, and riparian habitat would continue to push the migratory bird population towards an abundance of grassland bird species within the analysis area. However, the amount of habitat proposed for disturbance is relatively small compared to the amount of habitat available within the migratory bird analysis area and the effect of fuel break establishment over the long-term is expected to protect migratory bird habitat and species diversity from future wildfire.

Special Status Animals

<u>*Greater Sage-grouse*</u>

Within the sage-grouse analysis area, 29 of the 31 occupied sage-grouse leks are within four miles of the Proposed Action footprint. There are no leks within 4 miles of the area proposed for targeted grazing or prostrate kochia, so the 29 leks would be associated with other treatments. The level of anthropogenic disturbance within 3.1 miles of leks is negatively associated with lek persistence (Manier et. al. 2014). Approximately 7,000 acres of the of the Proposed Action footprint are within 4 miles of the occupied leks and are subject to the RDF that states: Treatments would not occur within 4 miles of an occupied and active lek from March 1 through June 30 to reduce the likelihood of impacts to sage-grouse reproduction including lek attendance, nesting, and early brood rearing. Given the timing restrictions and relatively low level of long - term anthropogenic disturbance associated with the Proposed Action, it is unlikely that implementation of fuel breaks would have a negative effect on sage-grouse lek persistence.

Road maintenance would occur as part of the Proposed Action, and could result in an increase use of roads by the public. Increased traffic volume may reduce habitat effectiveness for sage-grouse beyond that associated with current traffic levels (ODFW 2012). Heavily used roads associated with oil field and gas development have been linked to reduced female grouse nest initiation (Lyon and Anderson 2003) and reduced male lek attendance (Holloran 2005). Road maintenance within the sage-grouse analysis area has the potential to indirectly impact sage-grouse by reducing habitat effectiveness of the adjacent PHMA, IHMA, and GHMA which would reduce the quality of available habitat for sage-grouse. However, road maintenance the BLM is proposing is minimal and associated with existing routes where light use occurs.

The Proposed Action has the potential to disturb up to 22,883 acres of sage-grouse habitat within the sage-grouse analysis area, approximately 3 percent of the total available sage-grouse habitat within the analysis area (Table 3.5-13). Approximately 40 percent of the sage-grouse habitat management areas proposed for fuel break development under the Proposed Action burned in the Soda Fire, and are likely functioning at a reduced level. Seasonal habitats delineated for Idaho will be similarly affected (Table 3.5-14).

Table 3.5-13. Acres of Sage-Grouse Habitat Management Areas Disturbed by the Proposed Action

Habitat Management Area	Inside Burned Area (acres)	Outside Burned Area (acres)	Total (acres)
PHMA	658	3,449	**4,107**
IHMA	7,256	6,872	**14,128**
GHMA	1,425	3,223	**4,648**
Total	**9,339**	**13,544**	**22,883**

Table 3.5-14. Acres of Sage-Grouse Nesting/Late Brood Rearing Habitat and Winter Habitat Disturbed by the Proposed Action

Habitat Type	Inside Burned Area (acres)	Outside Burned Area (acres)	Total (acres)
Nesting/Late Brood Rearing	6,462	5,056	**11,518**
Winter Habitat	2,446	4,791	**7,237**

In Idaho, a majority of the fuel breaks associated with the Proposed Action will occur within recently burned areas and key sage-grouse habitat (Table 3.5-15).

Table 3.5-15 Acres of Key Sage-grouse Habitat and Restoration Types Disturbed by the Proposed Action

Habitat Types	Acres
Key	4,517
Perennial Grassland	751
Annual Grassland	39
Conifer Encroachment	1,475
Recently Burned	5,330
Total	**12,113**

The Proposed Action is not anticipated to affect sage-grouse lek persistence and would result in the direct disturbance of 22,883 acres of sage-grouse habitat and have a potential indirect impact on habitat from increased traffic volume on improved roads. However, the potential impact on sage-grouse habitat amount is relatively small compared to the available habitat within the sage-grouse analysis area and the effect of fuel break establishment over the long-term is expected to protect sage-grouse habitat from future wildfire and reverse the trend in loss of sagebrush cover in the project area.

Golden Eagle

Of the 21 golden eagle territories and of the 53 golden eagle nests within the analysis area, 13 territories and 32 nests are within one (1) mile of the Proposed Action footprint. The RDFs state that raptor nest surveys would be performed at the appropriate time of year prior to potentially disturbing activities, and that temporal and seasonal restrictions would be put in place around occupied nests on a case by case basis. Therefore, impacts on golden eagle breeding behavior and nest success are expected to be eliminated by implementation of RDFs.

Reduction in shrubland habitat associated with the Proposed Action as described under Migratory Birds may result in a modification of potential foraging habitat for golden eagles. However, the amount of shrublands disturbed under the Proposed Action is relatively small compared to the amount available and golden eagles can modify behavior and home ranges to cope with the loss of shrubland habitat if resources exist. Ultimately, the expected result that the fuel breaks will protect the restoration and maintenance effort of native plant communities, including shrublands, within the golden eagle analysis area outweighs the potential effect on habitat resulting from the fuel breaks.

Inland Redband Trout

Effects of the Proposed Action on redband trout would be the same as those described for fish. A total of 36 stream crossings occur within redband trout habitat (Table 3.5-16). Approximately 40 percent of the redband trout stream crossings are within the burned area.

Table 3.5-16. Number of Road Crossings at Redband Trout Streams

Stream Name	Crossings Inside Burned Area	Crossings Outside Burned Area	Total
Jordan Creek	-	2	**2**
Jump Creek	1	1	**2**
Macks Creek	-	1	**1**
McBride Creek	4	-	**4**
Reynolds Creek	-	3	**3**
Salmon Creek	8	-	**8**
Scotch Bob Creek	-	4	**4**
Sinker Creek	-	1	**1**
Soda Creek	1	2	**3**
Succor Creek	1	5	**6**
Trout Creek	-	1	**1**
Unnamed trib to Spring Creek	-	1	**1**
Total	**14**	**21**	**36**

Columbia Spotted Frog

Impacts to water quality as discussed in Section 3.15 and impacts to Fish would similarly impact potential habitat for spotted frog under the Proposed Action. Of the 53 observations of spotted frogs within the analysis area, two are within the Proposed Action footprint. This includes one of the Soda Creek observations and one of the man-made ponds along upper Succor Creek. Riparian and aquatic buffers will be implemented to avoid disturbing riparian vegetation during creation of fuel breaks which will minimize or eliminate impacts on spotted frogs at these two locations. BMPs and conservation practices will minimize sediment discharge into streams and wetlands; however, road maintenance under the Proposed Action will occur within riparian areas and has the potential to temporarily reduce water quality in those streams. Crossings at Soda Creek and Trout Creek occur above Columbia spotted frog observations and temporary impacts to water quality during improvement of those crossings could affect spotted frogs. However, improved drainage design and ditches and culverts would improve the water quality over the long-term, which would benefit spotted frogs.

Alternative 3 – Modified Proposed Action

General effects on wildlife from the Modified Proposed Action would be similar to those described for the Proposed Action. The Modified Proposed Action would disturb fewer acres of wildlife habitat than the Proposed Action, due to over 50 percent fewer acres of habitat disturbance. However, the decreased width of fuel breaks and lack of additional road maintenance along access roads under the Modified Proposed Action are likely to reduce the effectiveness of the fuel breaks and wildland firefighter response time potentially not allowing for long-term protection of these vulnerable habitats.

Big Game

Pronghorn Antelope

Direct effects to pronghorn habitat within the big game analysis area would be less than half of what is expected under the Proposed Action (Table 3.5-17). However, recovery of burned pronghorn habitat and maintenance of existing habitat within the big game analysis area would be more susceptible to future disturbance and loss through fire events than under the Proposed Action.

Table 3.5-17. Acres of Pronghorn Habitat within the Modified Proposed Action

Habitat Type	Inside Burned Area	Outside Burned Area	Total
Spring/Summer/Fall	1,216	867	**2,083**
Year-long	212	984	**1,196**
Winter	715	194	**909**
Total	**2,143**	**2,045**	**4,188**

Mule Deer

Direct effects to mule deer habitat within the big game analysis area would be less than half of what is expected under the Proposed Action (Table 3.5-18). However, recovery of burned mule deer habitat and maintenance of existing habitat within the big game analysis would be more susceptible to future disturbance and loss through fire events than under the Proposed Action.

Table 3.5-18. Acres of Mule Deer Habitat within the Modified Proposed Action

Habitat Type	Inside Burned Area	Outside Burned Area	Total
Spring/Summer/Fall	578	1,445	**2,023**
Year-long	2,599	2,879	**5,468**
Winter	752	1,962	**2,713**
Total	**3,929**	**6,286**	**10,204**

California Bighorn Sheep

Direct effects to bighorn sheep habitat within the big game analysis area would be less than half of what is expected under the Proposed Action (Table 3.5-19). However, recovery of burned bighorn sheep habitat and maintenance of existing habitat within the big game analysis would be more susceptible to future disturbance and loss through fire events than under the Proposed Action.

Table 3.5-19. Acres of Bighorn Sheep Habitat within the Modified Proposed Action

Habitat Type	Inside Burned Area	Outside Burned Area	Total
Year-long	756	143	**899**

Fish

The total number of crossings of intermittent and perennial streams would be the same as the Proposed Action. This would include 44 crossings of streams with fish presence, same as the

Proposed Action. However, these roads are not proposed for maintenance and improvement under this alternative and would therefore have no additional impacts on streams and fish species above existing conditions other than an insignificant increase in use associated with implementation of the fuel break action.

Migratory Birds

Direct effects to migratory bird habitat within the migratory bird analysis area would be less than half of what is expected under the Proposed Action. However, recovery of burned habitat and maintenance of existing habitat within the analysis area would be more susceptible to future disturbance and loss through fire events than under the Proposed Action. The Modified Proposed Action is less likely to maintain important shrubland, forest, and riparian habitat than the Proposed Action and therefore less likely to promote a diversity of migratory bird habitat.

Special Status Animals

Greater Sage-grouse

Direct effects to sage-grouse habitat within the sage-grouse analysis area would be less than half of what is expected under the Proposed Action (Table 3.5-20). Effects on nesting/late brood rearing habitat, winter habitat, and key sage-grouse habitat and restoration types would also be less than half of what is expected under the Proposed Action. However, recovery of burned sage-grouse habitat and maintenance of existing habitat within the analysis would be more susceptible to future disturbance and loss through fire events than under the Proposed Action.

Table 3.5-20. Acres of Sage-Grouse Habitat Disturbed by the Modified Proposed Action

Habitat Type	Inside Burned Area	Outside Burned Area	Total
PHMA	271	1,474	**1,745**
IHMA	3,507	3,155	**6,662**
GHMA	610	1,383	**1,993**
Total	**4,388**	**6,012**	**10,400**

Golden Eagle

The same 13 golden eagle territories and 31 nests are within one (1) mile of the Modified Proposed Action's footprint as the Proposed Action. Direct effects to golden eagle habitat would be less than half of what is expected under the Proposed Action. However, recovery of burned habitat and maintenance of existing habitat within the analysis area would be more susceptible to future disturbance and loss through fire events than under the Proposed Action.

Inland Redband Trout

Under the Modified Proposed Action there would be 36 crossings of redband trout streams, which is the same as the Proposed Action. However, these roads are not proposed for maintenance and improvement under this alternative and would therefore have no additional impacts on streams and fish species above existing conditions other than an insignificant increase in use associated with implementation of the fuel break action.

Columbia Spotted Frog

Impacts to water quality under the Modified Proposed Action as discussed in Section 3.15 and impacts to Fish would similarly impact potential habitat for spotted frogs. The same two spotted frog observations within the Proposed Action footprint are within the Modified Proposed Action footprint, potential impacts to those would be the same for both action alternatives. The lack of road improvements under the Modified Proposed Action would eliminate the potential effects on spotted frogs associated with these improvements under the Proposed Action.

3.5.3 Cumulative Effects

Cumulative effects can vary greatly by species and their distribution across the landscape. However, given the importance of the greater sage-grouse and its suitability to serve as an umbrella species for broader habitat protection of sagebrush communities on which the majority of wildlife species addressed above depend, at least at some point or in some manner, the cumulative effects analysis area for all wildlife species will be the 830,589-acre sage-grouse analysis area described in section 3.5.1 and depicted in Figure 3.5-2. Current habitat conditions for wildlife are as described in Section 3.5.1. Although the cumulative effects analysis area is larger for most species than what was presented in the affected environment, habitat condition is expected to be relatively consistent with what was described since management and activities are similar across this area.

The 830,589-acre analysis area was derived per Appendix E of the ARMPAs and by buffering the project area by 4 miles, plus buffering leks by 4 miles. This area is appropriate because it provides context at a scale that is fitting for the project and sage-grouse within the project area as it considers effects on a broad to site-specific scale. The analysis area is greater than the range of many less mobile species (e.g., Columbia spotted frogs) but still provides context because it does not consider the whole range. The effects described below are expected to occur over the life of the project.

Actions that could cumulatively affect wildlife habitat are construction and maintenance of the Gateway West Transmission Line project; vegetation treatments including post-fire treatments associated with the Soda Fire ESR Plan (USDI BLM 2015a), the BOSH juniper treatment project, and noxious weed management; ongoing livestock grazing; recreation; wildfire; and climate change.

Effects to wildlife habitat from the Gateway West Transmission Line project and other land and realty actions could include habitat modification, habitat removal, potential increase in noxious weeds, and reduced habitat functionality for some species (like sage-grouse) adjacent to the transmission line or right-of-way. However, conservation measures for sage-grouse have been developed through the project's NEPA processes that are designed to achieve a net conservation benefit for the sage-grouse (USDI BLM 2015f, USDI BLM 2015g).

Ongoing and future vegetation treatments, particularly ESR and weed treatments have in part shaped current habitat conditions. ESR treatments which often include seedings, seedling plantings, and weed treatments are done in response to loss of habitat consumed by wildfire. The extent that these treatments are successful will influence future habitat conditions following wildfires. Past and ongoing noxious weed treatments have, to some degree, reduced potential establishment and spread. Additionally, successful seedings help to stem the spread or establishment of weeds. However, noxious weeds continue to establish where not aggressively treated. Currently the BLM is actively treating noxious weeds inside and adjacent to the Soda Fire as part of ESR and will continue to do so over the next several years. The BLM is also treating weeds outside the perimeter of the Soda Fire as time and funding allows as part of its active weed control program. Current and future weed control treatments will be marginally successful without a reduction in fire size and/or fire frequency.

The degradation and loss of sagebrush-steppe vegetation from juniper encroachment and the resulting threat to sage-grouse has been widely documented (Roundy et al. 2014; Bates et al. 2014; Miller et al. 2000; USFWS 2010; Davies et al. 2011; Baruch-Mordo et al. 2013; Miller et al. 2011; Farzan et al. 2015). Juniper encroachment in the proposed BOSH project area is threatening habitat for sage-grouse and other sagebrush obligate species. The loss of sagebrush from the Soda Fire combined with encroachment of juniper in the analysis area is expected to constrain the available habitat for sage-grouse to smaller areas in the future without proactive measures. The BOSH juniper treatment project is expected to improve habitat for sage-grouse, other shrub obligate wildlife, and big game where it overlaps the analysis area. The removal of juniper trees is expected to increase habitat availability (because sage-grouse avoid juniper encroached areas), improve nesting success, and potentially reduce predation on adult sage-grouse over the short and long term.

Past grazing practices have affected wildlife habitat to varying degrees. To address wildlife concerns, the BLM has modified grazing permits (e.g., changing the season of use, reducing permitted livestock numbers, and/or implementing new grazing systems) and developed range improvement projects to improve livestock grazing management. Ongoing permitted livestock grazing and trailing may contribute to cumulative effects on wildlife habitat. Grazing can reduce vegetation height and biomass which potentially competes with cover and forage requirements of wildlife species. Grazing could also alter fuel loading within and adjacent to treatment areas, potentially reducing the rate of spread for fire or fire severity. However, livestock use at currently permitted levels is not expected to substantially compete with the forage and cover requirements for wildlife, or to contribute much to reducing fire. However future grazing management practices are expected to maintain and/or improve wildlife habitat in the analysis area by making significant progress toward meeting Standards for Rangeland Health and Guidelines for Livestock Grazing Management through the permit renewal process.

Recreation use, particularly off-highway vehicles (OHVs) including ATVs, UTVs, motorcycles, and other 4-wheel drive vehicles, occurs within the analysis area. Many two-track roads and OHV trails occur within the analysis area; though, much of the OHV use is located within the Murphy Subregion Travel area (e.g., Hemingway Butte) and near the town of Silver City, Idaho. Major paved and graveled roads transect wildlife habitat in the analysis area. Although all roads may present spatial and temporal barriers to home range, dispersal, and migratory movements of wildlife species (the extent to which depends on the species), the effects are generally limited to major paved roads and graveled roads, and to a lesser extent two-track roads and trails in the Murphy Subregion Travel area.

Wildfire is a natural part of the landscape; however, as discussed in the General Vegetation section (3.3.3), wildfires often perpetuate increases of disturbance related plants, degrading overall vegetation community conditions, and thus wildlife habitats. Disturbance related vegetation often equates to fine fuels which burn readily creating a negative feedback loop and shortening fire return intervals (e.g., from 50 years to 5 years).

The effects of climate change on the analysis area are likely to be substantial; as the region becomes dryer and hotter, restoration of vegetated fuel breaks could become harder to establish and fires will likely become more prevalent. However, the proposed treatments should make the analysis area more resilient to fire, potentially mitigating the effects of climate change on wildlife habitat in the analysis area in the foreseeable future.

Under the No Action Alternative, the effects of past, present, and foreseeable actions described above are expected to continue current trends for wildlife habitat and species diversity in the analysis area, as some actions are beneficial and others are detrimental to habitat. Without a system of strategically located fuel breaks, wildfires are likely to remove existing as well as recovering and treated shrubland and forest habitats. Therefore, wildlife habitat in the analysis area is expected to continue to be converted to herbaceous plant communities, and the sage-grouse habitat hard trigger tripped by the Soda Fire is not expected to reverse into the foreseeable future without the added protection of fuel breaks to address the threat of large or repeated wildfire.

Under the Modified Proposed Action Alternative, when the effects of past, present, and foreseeable future actions are combined, wildlife habitat within the analysis area will be somewhat protected. The potential for habitat degradation is expected to continue and sagebrush cover is expected to continue to be low across the project area if existing or recovering wildlife habitat is subjected to repeated large wildfires that negate habitat improvement efforts. The effectiveness of the fuel break system within the modified proposed action alternative will be much less than the proposed action simply because the modified proposed action alternative results in a fuel break that is not designed to meet the predicted and observed fire behavior that has been witnessed during these large wildfire events.

The Proposed Action, when combined with other actions (ESR treatments and BOSH), is expected to promote habitat improvement and restoration with an increase in species and structural diversity. Of all the proposed alternatives, the proposed action alternative provides a greater level of safety and potential for success for fire suppression resources to control large wildfires. The increased ability to control large wildland fires will result in the protection of existing and recovering wildlife habitat.

3.6 Cultural and Paleontological Resources

Cultural resources are locations of human activity, occupation, or use. They include expressions of human culture and history in the physical environment, such as pre-contact or historic archaeological sites, buildings, structures, objects, districts, or other places. Cultural resources can also include natural features, plants, and animals that are considered to be important to a culture, subculture, or community or that allow the group to continue traditional lifeways and spiritual practices. This section provides an analysis of regulatory compliance related to cultural resources as well as a summary of cultural resource identification efforts completed to date for the Project, including anticipated impacts on cultural resources under NEPA.

Generally, cultural resources are considered to be “historic properties” under the National Historic Preservation Act (NHPA) if they are over 50 years old and meet the significance criteria for listing on the NRHP (36 CFR Part 60.4). However, there are considerations made for culturally significant resources less than 50 years old. Adverse effects to historic properties under the NHPA are typically considered significant impacts under NEPA, but may be mitigated to lessen the degree of significance.

For the purposes of this analysis, paleontological resources are also addressed in this section.

3.6.1 Affected Environment

The affected environment for cultural resources falls within approximately 647,267 acres of lands in the Owyhee Mountains south of the Snake River and along the Oregon and Idaho state line. For the purposes of this analysis, the affected environment is considered the project area. The direct effects analysis area (Area of Potential Effects, APE) is limited to the surfaces and depths that would be directly affected by the Proposed or Modified Proposed actions. For the Proposed Action, the APE consists of 21,260 acres of fuel treatment and maintenance areas as well as the focus area of the targeted grazing. For the Modified Proposed Action, the APE consists of 11,550 acres of treatment and maintenance areas as well as the focus area of targeted grazing. Under both alternatives, the APE extends to the maximum depth of disturbance (approximately 10 inches). The graduated use area covers 21,408 acres of BLM, BOR, State and Private lands in both Oregon and Idaho (5,323 acres are Privately owned).

The study area is considered part of the Western Snake River Plain and is considered mountainous with gently rolling hills and incised drainage cuts. The Snake River corridor and its plain served as a travel corridor for both prehistoric and historic groups. This area is within the northern Great Basin Cultural region and straddles the ethnographic territories of the Northern Paiute and Northern Shoshone and Bannock. Pre-contact site types known in the region include sedentary villages, temporary or seasonal campsites, procurement localities, rock art, and burials.

Explorers and fur trappers began to explore southwestern Idaho in the early nineteenth century, often utilizing trails created by Native Americans. The first Euro-Americans known to have traveled overland through the Project region were members of the Pacific Fur Company, led by W.P. Hunt (Evans 1991). Hunt's route to Astoria followed the Snake River and then traversed the Blue Mountains and the Umatilla River to reach the Columbia River (Meinig 1968). Other expeditions soon followed, including trapping brigades led by Alexander Mackenzie, Peter Skene Ogden, and Nathaniel Wyeth. The first naturalists to record new flora and fauna from the interior of the Northwest, John Townsend and Thomas Nuttall, accompanied Wyeth on one of several trips he undertook through western Idaho and eastern Oregon (Evans 1991).

The influx of Euro-American settlers, combined with the arrival of the horse and firearms, led to conflicts across the Plains as cultural lands and hunting territories were encroached upon by mobile aboriginals and newly introduced trappers and traders (Murphy and Murphy 1986:302). It was Captain Benjamin Louis Eulalie de Bonneville who led the first wagons west over South Pass, Wyoming and continued on across the Snake River Plain into Oregon in 1832. The 1840s saw an increase in the number of people traveling along the Snake River Plain on their way to Oregon, largely due to the gold discoveries in California.

The main Oregon Trail and the "South Alternate" passed just north of the project area. The principal route of migration westerly across southern Idaho to Oregon and California was via the Oregon Trail. The first wave of migration came during the 1830s as Protestant missionaries came west to convert the native populations (Hutchinson and Jones 1993). The first true emigrant wagon train arrived in southern Idaho in 1841, conducted by the Western Emigration Society and lead by Thomas Fitzpatrick. Shortly after the Fitzpatrick party, Captain John C. Frémont explored the region during his travels as part of a federal expedition and published accounts that became the trail guides for subsequent emigrants along the Oregon Trail (Hutchinson and Jones 1993). By the mid-1840s, the Oregon Trail was established as the preferred route for emigrants making their way west. Eventually more than 500,000 would-be settlers trudged over the Oregon Trail, accompanied by hundreds of thousands of animals. Portions of the Oregon Trail continued to be used into the late 1890s, but the trail saw a decline once the transcontinental railroad was completed in 1869, which provided faster, safer, and, usually, cheaper travel east and west.

By the late 1880s, Idaho was largely settled by emigrants from other parts of the West who sought their fortune in gold or land. In reality, many of them ended up making a living as farmers or storekeepers during the gold rush years and stayed on to raise livestock and crops. Few people were initially drawn to Idaho for its land, much of which, especially on the Snake River Plain, appeared sterile and uninviting (Schwantes 1991). Once the gold rush went bust, many emigrants stayed and learned that crops would grow well on the sage-covered flats of the Snake River Plain if water were available. The introduction of large-scale irrigation in the early 20th century soon made it possible to settle and farm this area (Schwantes 1991). By 1900, grazing, intensive agriculture, and timber production were the primary economic drivers in the region. Old mining ditches were put back to work to provide water for orchards, hayfields, row crops, and dairy cows (Braswell 1986). Opportunistic use of the old mining ditches faded as a more formal system of irrigation ditches developed. The ditch system devised by the early homesteaders in Owyhee and Malheur counties is still important to the area's agricultural base.

Identified Cultural and Paleontological Resources

In order to determine the potential for the alternatives to impact cultural and paleontological resources, BLM provided Tetra Tech (contractor that drafted the EA for the Soda Fuel Breaks project proposal) with GIS data for previously recorded resources and surveys conducted within the affected environment study area. These data included the results of a recent survey conducted for drill seeding in the northern portion of the study area in Idaho and Oregon. Tetra Tech has supplemented BLM's data with the results of a recent survey conducted for a separate, unrelated project that passes through the study area. Data from the drill seed survey and Tetra Tech's recent survey are considered preliminary, but are included here for a better understanding of potential Project impacts. Tables 3.6-1 through 3.6-4 summarize the surveys conducted within the study area and direct effects analysis areas (APEs) and the resources recorded. The cultural resources surveys cover 6.5 percent of the study area, 18.40 percent of the Proposed Action, and 23.40 percent of the Modified Proposed Action. A total of 885 resources have been identified in the study area, including 669 sites and 115 isolated finds. An additional 101 resources could not be determined to be sites or isolated finds based on the analyzed data. Of these study area resources, 33 resources (32sites and 1 isolated find) are within targeted grazing areas; 189 resources (169 sites and 20 isolated finds) are within the APE of the Proposed Action; and 138 resources (129 sites and 9 isolated finds) are within the APE of the Modified Proposed Action. Some of the individual resources identified are within the DeLamar and Silver City Historic Districts, both of which are bisected by proposed fuel breaks. A District is defined as "a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development" (NPS 1991). Districts are not included in the site count summaries as a whole; however, individual sites within the proposed project boundaries are included in the site number totals in Tables 3.6-3 through 3.6-4, if applicable.

A total of 23 paleontological localities are within the study area, one of which is within the direct effects analysis areas (APEs) of the Proposed Action and Modified Proposed Action. No known localities are within the targeted grazing or graduated use areas. The one known locality is within 300 feet of a road designated for fuel break construction under both the Proposed Action and the Modified Proposed Action. Paleontological resources often manifest on the ground's surface or in drainage cuts. It should be noted that due to the overlapping nature of much of the Proposed Action and Modified Proposed Action, many of the resources are considered to be within the APE of both actions.

Native American Consultations

In addition to the above resources, BLM is currently conducting government-to-government consultations with Indian Tribes to identify traditional resources (such as traditional cultural properties) and other concerns Tribes may have regarding the Project. BLM is consulting with three tribes.

3.6.2 Environmental Consequences

This section addresses impacts on cultural and paleontological resources. Native American consultations regarding traditional cultural properties, sacred sites, and other tribal concerns are ongoing. Impact analysis focuses on the implementation of the alternatives described in Chapter 2. As cultural and paleontological resources are non-renewable resources, any direct impact is considered permanent.

BLM will continue government to government consultation with Tribes regarding fuel break treatments. The BLM will continue to consult with SHPO regarding historic and cultural resources per Section 106 of the NHPA. Unevaluated or cultural resources with unresolved NRHP-eligibility statuses within the selected alternative's APE would be reviewed to determine whether they meet the criteria of eligibility for listing on the NRHP. If impacts on NRHP-eligible resources within the selected alternative's APE cannot be sufficiently avoided, consultation would be required to determine appropriate mitigation.

Potential impacts on cultural resources could occur if an alternative were to have an adverse effect on historic properties under Section 106 of the NHPA (36 CFR 800). Impacts on non-historic properties may also occur under NEPA. Tables 3.6-1 through 3.6-4 show the number of previously recorded cultural resources within the APE of each alternative.

Alternative 1 – No Action

Under the No Action Alternative, a fuel break network would not be created. Therefore, impacts on cultural and paleontological resources would not occur as a result of fuel break construction (i.e. ground disturbance). However, the project area would remain subject to future fire incidents, which may result in damage to or destruction of cultural and paleontological resources. All NRHP-eligible, unevaluated, and unidentified cultural resources within the project area will continue to be threatened by fire as well as wildfire suppression activities, such as bulldozer lines, that may occur during the incident.

General Effects of Action Alternatives

Impacts on cultural resources may occur as a result of design features common to all alternatives. However, the cultural resource design features (Section 2.4.3) would limit the majority of these impacts to less than significant. Furthermore, fuel break treatments within a historic property would be determined following consultation with the local Tribe(s) and Idaho or Oregon SHPO.

Targeted Grazing

Targeted livestock grazing would require the use of cattle at high intensity levels over short durations. Temporary fencing, watering sites, and salt or mineral stations may be required. These would be installed along roads with the most severe impacts expected to occur within 200 feet of the installation. Impacts on cultural resources may occur as a result of trampling, particularly when cattle are concentrated in one area due to salt and mineral stations or water trough placement. Trampling may result in churning of site soils, disturbance of cultural features and artifacts, breakage of artifacts, soil erosion, and looting of artifacts that become more visible from reduced vegetation. According to one study (Coddington 2008) if a water trough was placed within an archaeological site the most severe impacts would occur within 32 meters (105 feet) of the watering trough. The same would hold true for salt or mineral stations. That same study indicated that moderate impacts increasingly lessened in the next 32 meters (210 feet) from the installation. The Targeted Grazing area on public and state lands covers approximately 1,501 acres. Approximately 799 acres (53.2%) have been previously surveyed. Cultural resource surveys covering 100% the targeted grazing area would occur prior to any livestock entering the area.

Cultural resource inventories would also occur prior to installation of fences, or placement of troughs, or salt or mineral blocks in the targeted grazing area in order for specialists to determine avoidance areas and protect resources. Targeted grazing may occur when soils are wet or saturated which could result in significant adverse impacts to cultural resources through trampling and vertical movement of artifacts. Features associated with targeted grazing would be placed no less than 150 meters from the outside boundary of identified historic properties, unless there is another barrier that would protect the site (see Design Features, Section 2.4.3). If a historic property crosses a road, cattle would be confined to the road when moved from one location to the next.

The graduated use area extends one half mile from the targeted grazing area in both directions. However, since the bulk of the ground disturbing impacts are expected to occur within the 400-foot-wide treatment area, impacts to cultural resources in the graduated use area are expected to be minimal; provided there are no water features or other reasons which congregate livestock outside the targeted grazing area. Although the graduated use area is not part of the proposed action the potential for adverse effects to cultural resources exists. A monitoring plan will be developed in this area to determine if livestock grazing in the graduated use area is adversely impacting cultural resources. If sites are being impacted then the design features described in the adaptive management section (Section 2.4.3) will be applied. Approximately 4,067 acres (19% of the 21,408 acres) have been previously surveyed in the graduated use area. There are 123 known cultural resource sites, 54 which are either unevaluated, have unknown eligibility, are listed or are eligible for listing on the NRHP. The remaining 69 cultural resource sites were determined ineligible for listing on the NRHP.

One isolated find and 33 sites are known within the area proposed for targeted grazing under both the Proposed and Modified Proposed actions. The one isolated find is not eligible for listing on the NRHP. One of the sites is NRHP-listed, 4 are NRHP-eligible, 13 are NRHP-ineligible, and 14 are unevaluated. The listed resource is the Poison Creek Stage Station (10OE3609). Table 3.6-1 summarizes the NRHP eligibility of the resources within the targeted grazing area.

Table 3.6-2 summarizes the NRHP eligibility of the resources within the graduated use area. Table 3.6-1. Summary of NRHP Eligibility of Cultural Resources within Targeted Grazing Areas Common to Both Action Alternatives

Resource Type	NRHP Eligibility	Idaho	Oregon	Total
Isolated Find	Not Eligible	0	1	1
	Unevaluated	0	0	0
Site	Listed	1	0	1
	Eligible	3	1	4
	Not Eligible	13	0	13
	Unevaluated	13	1	14
	Unknown	0	0	0
Total:		***30***	***3***	***33***

Table 3.6-2. Summary of NRHP Eligibility of Cultural Resources within the Graduated Use Area Common to Both Action Alternatives (Does not include targeted grazing area)

Resource Type	NRHP Eligibility	Idaho	Oregon	Total
Isolated Find	Not Eligible	18	11	29
	Unevaluated	4	0	4
Site	Listed	1	0	1
	Eligible	9	2	11
	Not Eligible	38	2	40
	Unevaluated	33	2	35
	Unknown	0	3	3
Total:		***103***	***20***	***123***

Mowing

Mowing vegetation to a height of no less than 10 inches utilizing a rubber-tired vehicle and in accordance with the cultural resources design features will avoid impacting known cultural resources, provided there are no features taller than 10 inches or artifacts that are above the 10 inches in height. In areas where survey for cultural resources has not been conducted, mowing to a height less than 10 inches and not in accordance with the cultural resources design features may result in impacts to unidentified cultural resources. Furthermore, preliminary consultations with Tribes in Idaho have suggested that having differing mowing heights between cultural resource sites and other treated areas may draw attention to the cultural resource areas and potentially lead to increased looting. These potentially significant impacts may be reduced to less than significant through implementation of Mitigation Measures CR-1 and CR-2.

Mitigation Measure CR-1: Treatment areas that have not been previously surveyed for cultural resources will be surveyed by qualified Archaeologists prior to treatment. BLM will initiate government to government consultation with Tribes regarding any newly identified cultural resources when needed or appropriate. Newly identified cultural resources will be assessed for NRHP-eligibility in consultation with the applicable state SHPO. Those resources identified as NRHP-eligible or cannot be satisfactorily evaluated in accordance with the treatment schedule will be avoided or treated in accordance with the cultural resource design features, whichever is recommended and agreed upon through consultation by the BLM and SHPO.

Mitigation Measure CR-2: To reduce the potential for looting of cultural resource sites, mowing heights will be gradually increased/decreased around the site boundary so as to avoid abrupt changes in vegetation height.

No significant impacts on paleontological resources from mowing are anticipated because any treatments within a paleontological site will adhere to design features similar to those designed to protect cultural resources sites.

Hand Cutting

Hand cutting of trees or shrubs with chainsaws or loppers may result in significant impacts where such vegetation is considered a component of a cultural resource. However, under the cultural resource design features, tree and shrub cutting within sites will be determined on a site by site basis. Further, pile burning of large amounts of residual debris would not be allowed within unevaluated or NRHP-eligible or –listed properties under the cultural resource design features. Therefore, no impacts on identified cultural resources are anticipated. However, impacts may occur on unrecorded cultural resources where hand cutting occurs within previously un-surveyed portions of the APE. Implementation of Mitigation Measure CR-1 above would reduce these potential impacts to less than significant.

Hand cutting vegetation is not anticipated to impact paleontological resources, however, pile burning could have a direct significant effect on surface-exposed resources; therefore cut trees and shrubs will not be piled where visible surface fossils are present.

Chemical Treatment

Application of herbicides may impact cultural resources if the application vehicle is driven through the resource, if the herbicide is applied to rock art, or if herbicide is applied within a Native American plant gathering area. However, under the cultural resource design criteria, herbicides would only be applied on NRHP-listed or -eligible sites through the use of hand sprayers. UTV/ATV-mounted sprayers may also be used when soils are not wet or saturated to avoid disturbance of soils. Herbicides would not be applied where it would affect rock art images or within traditional Native American plant gathering areas (as identified through consultation with affected Tribes). Therefore, chemical treatments are not anticipated to impact known cultural resources. However, impacts may occur on unrecorded cultural resources where chemical treatments would occur within previously un-surveyed portions of the APE. Implementation of Mitigation Measure CR-1 above would reduce these potential impacts to less than significant.

Where re-vegetation is necessary, seeding design features and recommended mitigation measures discussed below under Vegetated Fuel Breaks would be implemented. Therefore, significant impacts on cultural resources as a result of re-vegetation treatments post-chemical treatment application are not anticipated.

Chemical treatment of vegetation is not anticipated to directly impact paleontological resources; however, the use of heavy equipment on a fossil site could result in fossil breakage and movement. Additionally indirect effects may occur as a result of exposure from reduced vegetation cover leading to unauthorized collection of fossils. Design criteria regarding use of motorized vehicles on a cultural resource site will be applied to paleontological sites to avoid such impacts.

Seeding

Areas identified for vegetated fuel breaks may or may not require seeding or, mechanical seedbed preparation such as disking or chemical treatments to reduce competition prior to planting. Chemical treatments associated with vegetated fuel breaks are anticipated to have the same impact as described above for chemical treatments. As described below, most impacts from the various vegetated fuel break treatments are expected to be less than significant with implementation of the cultural resource design features. However, these design features apply only to previously identified resources. Impacts may still occur on unrecorded cultural resources in un-surveyed areas. These potentially significant impacts may be reduced to less than significant with implementation of Mitigation Measure CR-1, described above.

Due to the heavy ground disturbing nature of disking, the potential for disturbance to cultural resources from such activities is considered high. Disking through a site would impact the site's vertical and horizontal spatial integrity through churning soil up to 9" deep. Disking can destroy features, break artifacts, and either cover or uncover artifacts by soil movement. Post disking there is the potential for soil erosion where silty or loose soils are prevalent. Additionally, linear cultural features would also be heavily impacted by disking through flattening of feature berms and in general minimizing a linear site's features. With implementation of cultural resource design features the potential for significant impacts would be reduced to less than significant. These design features would not allow disking within the boundaries of any NRHP-listed, -eligible, or unevaluated cultural resource within the APE.

Drill or broadcast seeding would be utilized to establish a fuel break consisting of desirable perennial vegetation where natural recovery is unlikely. Rangeland drills or minimum-till drills would be utilized, depending on soils and topography. Rangeland drills result in disturbance between 1 and 6 inches in depth. A minimum-till drill would also result in disturbance, but to a lesser depth. Such disturbances within a NRHP-eligible, -listed, or unevaluated cultural resource would result in significant impacts. With implementation of the cultural resource design features, these impacts are anticipated to be reduced to less than significant. Seeding in NRHP-listed or –eligible sites would be accomplished through hand seeders or UTV/ATV mounted seeders. Seeding using a standard rangeland or minimum till drill would be allowed within a site on a case-by-case basis, depending on the resource present, soil conditions, and drill type proposed. Seeding vehicles would be pulled by a rubber-tired tractor when soils are not wet or saturated to minimize disturbance. Additionally, drills would be equipped with depth bands to minimize the depth of disturbance as appropriate.

Broadcast seeding, followed by a cover treatment, would be utilized where the terrain is not conducive to drill seeding. Cover treatments would utilize a harrow, culti-packer, or roller packer implement when possible. Use of a harrow would have similar impacts to those described for no-till drills. Use of harrows, culti-packers or roller packers present less potential for ground disturbance than under use of a drill seeder; however the potential for impacts is still present. The primary disturbance from the culti-packer and roller packer would occur from the vehicle. Under the cultural resource design features, the use of a rubber-tired culti-packer within any cultural resource would be determined on a site-by-site basis in consultation with affected Tribes and SHPO. Soils would be required to be firm and the vehicle would not turn within the site. Use of a harrow, on the other hand, would likely result in dragging and displacement of artifacts, a significant impact within NRHP-eligible, -listed, or unevaluated cultural resources. These potentially significant impacts may be reduced to less than significant through implementation of Mitigation Measure CR-3.

Mitigation Measure CR-3: Harrows will not be utilized for cover treatment within an NRHP-eligible, -listed, or unevaluated cultural resource site.

Four species of plants, two native and two non-native, have been identified for use within the APEs: prostrate kochia, Sandberg bluegrass, bottlebrush squirreltail, and crested wheatgrass. Although native vegetation is the preferred species, particularly within cultural resource sites and Native American plant gathering areas, the use of any of the species of plant proposed is acceptable provided the seeds are dispersed according to the methods described above. Many of the archaeological sites that have burned over in the past are now covered by highly combustible annual plants that increase the fire return interval. The growth characteristics of the proposed plant seedings will be effective in reducing the spread of wildlife and decreasing the intensity and size of fire burning across a resource. Therefore, the potential for future significant impacts on cultural resources as a result of fire and wildfire suppression activities would be decreased.

Ground disturbing activities associated with vegetated fuel breaks may have significant impacts on paleontological sites through breakage of fossils, exposing buried fossils and movement of fossils. Appropriate treatment types will be determined on a site-by-site basis to minimize adverse impacts.

The cultural resource design features for the Project reduce the potential for impacts on cultural resources from targeted grazing by requiring surveys of areas where significant adverse impacts could occur from livestock concentrations. In the larger targeted grazing area, surveys may be conducted where there is an increased potential for NRHP-eligible sites that may be adversely impacted. Temporary fencing to avoid targeted grazing within archaeological sites would be determined on a case-by-case basis. With implementation of these design features, impacts on cultural resources as a result of targeted grazing are expected to be less than significant.

Activities associated with targeted grazing may result in impacts on paleontological resources. Concentrations of cattle on surface fossil resources may directly result in fossil breakage, and exposing or burying of fossils if soils are wet or saturated. A significant reduction in vegetative cover may also expose fossils to unauthorized collection. The same design features developed for archaeological sites will apply to paleontological sites to protect them from adverse impacts.

Prescribed Fire

Prescribed fire will be used along fence lines or topographical features where tumbleweeds accumulate in density. Many of the cultural resources in the study area and APE have been previously burned under severe wildfire conditions. In most cases prescribed fire will have little to no impact on any site if allowed to burn across the site. Any combustible materials that were present have likely been consumed; other non-combustible materials that reflect a site's importance remain.

Survey for cultural resources in previously un-surveyed portions of prescribed fire treatment areas will be impeded, if not prevented, by the dense tumbleweed accumulation. However, since burning will be done when live fuel moisture levels are high enough to retard fire beyond the weed concentrations and no ground disturbing activities, such as a disking, will be conducted, no impact on unidentified cultural resources is anticipated as a result of prescribed fire treatments. Surveys will be conducted prior to burning in areas where previous surveys have not been conducted, but are possible.

Burning vegetation in areas with paleontological resources will be considered on a site-by-site basis. Research has shown that fossil specimens that come into contact with burning fuel will discolor and fracture depending on the intensity of the fire (Benton and Reardon 2006). In addition to the direct effects, the reduction of vegetation on a paleontological site may indirectly result in unauthorized collection of fossils.

Maintenance

Maintenance of fuel breaks over the life of the project would consist of mowing, hand cutting shrubs from the fuel break, application of herbicides, and targeted grazing. Impacts on cultural resources as a result of these maintenance activities would be the same as those described above. Cultural resource design features require that installation of culverts, cattle guards, or other road maintenance treatment that goes beyond the current road prism or previously disturbed areas be surveyed prior to construction activities. With these design features, road maintenance activities are expected to have less than significant impacts on cultural resources.

Impacts on paleontological resources as a result of fuel break maintenance activities such as mowing, hand cutting, and herbicide applications would be similar to those described above. Road maintenance may impact paleontological resources when roads are widened or bladed, or when features such as culverts are installed. Direct impacts would include fossil breakage, digging up intact fossil resources, horizontal and vertical movement of fossils and exposure of fossils. Indirect impacts may include unauthorized collection from increased exposure and potential weathering of fossils.

Livestock Grazing Management

Livestock grazing management activities may include temporary fencing, herding, avoidance by trailing, shutting off water sources, and removing salt or mineral sources in order to protect seeded areas from cattle. Impacts on cultural and paleontological resources would be the same as described for targeted grazing.

Alternative 2 – Proposed Action

Table 3.6-3 summarizes the NRHP eligibility of the 189 resources within the APE of the Proposed Action, which includes the targeted grazing area. The Proposed Action APE has been 18.40 percent surveyed for cultural resources. Additional resources may exist within the Proposed Action's APE in areas that have not been previously surveyed or in areas that were surveyed with poor ground surface visibility. Therefore, additional surveys would be conducted prior to any ground disturbing activities to identify historic properties (see Design Features, Section 2.4.3).

Table 3.6-3. Summary of NRHP-Eligibility of Cultural Resources within APE of Proposed Action

Resource Type	NRHP Eligibility	Idaho	Oregon	Total
Isolated Find	Not Eligible	14	2	16
	Unevaluated	4	0	4
Site	Eligible	25	1	26
	Not Eligible	44	1	38
	Unevaluated	63	1	55
	Unknown	9	25	25
Total:		***159***	***30***	***189***

The potential for significant impacts on cultural resources (as described above in Section 3.6.2.2) is greatest under the Proposed Action, given the larger area of disturbance, inclusion of road maintenance, and the increased number of known historic properties (NRHP-eligible, unevaluated, or unknown NRHP status). However, with the implementation of cultural resource design features, additional surveys and site identification, and the mitigation measures described above (e.g., avoidance), these impacts will be reduced to less than significant, meaning that the characteristics that make a site eligible for listing on the NRHP will not be adversely affected.

Paleontological locality #264 (Reynolds Creek Area) is within the APE of the Proposed Action. Mitigation measures will be applied to this locality, as appropriate, to protect the values that make this site significant.

Alternative 3 – Modified Proposed Action

Table 3.6-4 summarizes the NRHP eligibility of the 138 resources within the APE of the Modified Proposed Action, which includes the targeted grazing area. The Modified Proposed Action APE has been 23.40 percent surveyed for cultural resources. Additional resources may exist within the Modified Proposed Action's APE in areas that have not been previously surveyed or in areas that were surveyed with poor ground surface visibility.

Table 3.6-4. Summary of NRHP-Eligibility of Cultural Resources within APE of Modified Proposed Action Alternative 3

Resource Type	NRHP Eligibility	Idaho	Oregon	Total
Isolated Find	Not Eligible	7	2	9
Site	Eligible	24	1	22
	Not Eligible	32	0	30
	Unevaluated	44	1	45
	Unknown	9	18	18
Total:		***116***	***22***	***138***

Impacts from treatments and maintenance would be similar to those described for the Proposed Action. However, the Modified Proposed Action has less potential for significant impacts than the Proposed Action due to the smaller disturbance area (i.e. reduction of acres proposed for fuel break development). With the implementation of cultural resource design features, additional surveys and site identification, and the mitigation measures described above, impacts would be reduced to less than significant.

Impacts to paleontological resources would be the same as described under the Proposed Action.

3.6.3 Cumulative Effects

To determine which other actions should be included in a cumulative impacts analysis, the regions of influence must first be defined. For cultural resources, both the larger affected environment and direct effects areas must be considered in terms of cumulative impacts, visual, cultural, and scientific relationships between sites in the region, and the interface between cultural resources and historic landscapes. Since this EA addresses fuel breaks within and partially outside a burn area in the Owyhee Mountains adjacent to the Snake River Plain of southwestern Idaho, and is within an area of unique prehistoric patterns and early historic western expansion, the region of influence for cultural resources in evaluating cumulative impacts is considered to be primarily in the Owyhee Mountains, but also secondarily considers the Snake River Plain. The analysis area for paleontological resources is the project boundary.

The cumulative impact analysis for cultural and paleontological resources incorporates the sum of the effects of past, present, and reasonably foreseeable future actions combined with the anticipated effects of the proposed alternatives. This analysis considers past, present, and reasonably foreseeable future actions consistent with the proposed alternatives analyzed in this EA. Cumulative impacts analysis includes: 1) determining the geographic and temporal extent of analysis; 2) determining what past, present, and reasonably foreseeable actions and trends are likely to affect both cultural and paleontological resources and how these actions impact those resources; 3) considering the baseline conditions of cultural and paleontological resources described in Section 3.6.1 and the anticipated impacts on those resources, as described in Section 3.6.2; and 4) considering the incremental contribution of each alternative’s impact to the overall regional and temporal pattern of impacts on cultural resources.

Those past, present, and reasonably foreseeable projects and trends in the cumulative analysis area considered likely to contribute to the cumulative impact on cultural and paleontological resources are listed below:

- Gateway West Transmission Line
- Soda Fire Emergency Stabilization and Restoration Plan
- Recreation
- Livestock Grazing
- Weed treatments
- Wildfires
- The BOSH project
- Land and Realty actions

The Gateway West Transmission Line project as well as other land and realty actions would introduce modern elements to a generally rural landscape that closely portrays the prehistoric and historic settings of the Owyhee Mountains and Snake River Plain. Additionally, the construction of towers and access roads may have significant impacts on cultural resources, which would be mitigated to less than significant, when possible, under Historic Property Treatment or Management Plans developed for those projects. Direct impacts would be mitigated through site avoidance or by applying Section 106 of the National Historic Preservation Act. Indirect impacts would occur through tower and structure construction impacting the visual aspects of a site. Because the proposed Soda Fuel Breaks project is predominately along existing roads there would be no cumulative visual impacts to any cultural property from construction of new access roads. The construction of transmission towers would be mainly along the eastern and northern portion of the project area, in some instances close to currently existing transmission lines. Additional lines with larger towers may cumulatively impact the visual integrity of sites but that would only be within a small portion of the project area.

The Soda Fire ESR Plan identifies cultural resources impacted by the Soda Fire and describes protective measures such as avoidance, monitoring, and aerial seeding for those historic properties during ESR activities. Surveys for cultural resources will be conducted prior to any ESR work in high site probability areas in consultation with the local Tribes and respective SHPO in order to identify those locations requiring protective measures. With these protective measures in place there will be no adverse impacts to historic properties. Because design features have been proposed to protect historic properties from adverse impacts due to fuel break construction and maintenance there will be no cumulative impacts to historic properties from Soda Fire ESR activities.

Recreation impacts may include ground disturbance, vandalism, and unauthorized collection of artifacts and fossils. Although most recreational activities are managed through the Section 106 process as developed recreation sites are proposed, certain recreational activities may have an adverse impact on cultural and paleontological sites. Dispersed recreation may impact known and unknown sites through ground disturbing actions or unauthorized collection of artifacts or fossils. It is not uncommon for people to collect historic or prehistoric artifacts or fossils, use grinding stones in campfire rings, use wood from historic structures or features as firewood, or dig pits and trenches in campsites. These actions could destroy the integrity of a site by moving artifacts from their original location or off site, destruction of features, and ground disturbing activities that adversely affect the integrity of subsurface resources.

In general, road maintenance on public lands may promote increased use by the public for recreational purposes due to easier access increasing the potential for illegal collection of artifacts. However, no documentation exists to support a significant increase of use from road maintenance for the purpose of a fuel break.

Off-highway vehicle (OHV) use outside of designated trails can also adversely impact sites. OHV use on an archeological site could damage the site through loss of soil and vegetation, gullying, deflation of cultural deposits, and displacement and damage to artifacts and features (Sampson 2007). These impacts are typically the result of repeatedly driving through a site; the magnitude of impacts is dependent upon soil types and the type of resource being impacted. These impacts could range from short term to long term and could range from no effect to major effects dependent upon the artifacts or features present on the site. The maintenance of roads that have previously been unmaintained or minimally maintained may encourage higher use rates from an increased accessibility to areas. If cultural or paleontological resources are in those areas, there may be an increase in ground disturbing activities or unauthorized collections.

Therefore, cumulative adverse effects to sites from recreation and the proposed project could occur.

Several studies indicate that livestock grazing can have adverse direct and indirect impacts on archeological sites. "Direct impacts include trampling, chiseling, and churning of site soils, cultural features, and cultural artifacts including artifact breakage. Impacts occurred from standing, leaning, and rubbing against historic and prehistoric structures and features including rock art panels. Indirect impacts included soil erosion and gully formation and increased access from roads and trails that attract higher recreational use and vandalism. The studies concluded that areas of livestock concentration could cause substantial ground disturbance and cumulative, long-term, irreversible adverse effects to historic properties" (USDI BLM 2006). These effects could also translate to paleontological sites.

Livestock grazing will continue to impact sites when livestock congregate around gates, corrals, salt licks, troughs, water gaps and wet areas. Livestock congregation areas typically result in trampling of sites and churning soils to a depth greater than 3 inches. In the targeted grazing area design features have been developed to avoid impacts to sites, however, in the graduated use area there may be impacts to known and unknown sites, mainly if there is a water source attracting the livestock or other area that attracts livestock congregation. There could be cumulative adverse effects to sites if this occurs. These impacts could range from short term to long term and could range from no effect to major effects, depending on the intensity of livestock grazing in the area, and on the artifacts, features, or fossils present on the site.

Weed treatments in the Boise District are covered under the "Noxious and Invasive Weed Treatment for the Boise District and Jarbidge Field Offices Environmental Assessment #ID-100-2005-EA-265". In that document it was determined that weed treatments would have minimal adverse impacts to cultural resources since "treatment areas are small and scattered throughout the project area". Limitations to off-road vehicle use for spraying weeds reduce the chances of adversely impacting any cultural or paleontological site. Weed treatments under this proposed project have also imposed limitations to vehicle use on sites as well as avoiding particular types of sites. These design features and mitigation measures will limit adverse impacts to sites. No additive impacts to cultural or paleontological resources are expected from weed treatments.

Wildfires impact cultural and paleontological resources through damage to or destruction of combustible artifacts and features. In addition, non-combustible artifacts or fossils may be affected when temperatures are hot enough. Wildfire suppression tactics impact cultural and paleontological resources primarily via ground disturbance (i.e., dozer lines and hand lines). The proactive construction of fuel breaks along roads in the project area should reduce the amount of dozer lines or hand lines necessary during a wildfire event, as well as reduce the relative size and frequency of fires, thus impacting fewer unknown sites. The modification of vegetation from targeted grazing and other fuel break treatment methods would reduce the chances for a wildfire to burn over large acreages into areas that have not been previously inventoried for cultural or paleontological resources. However, wildfires may still burn over known and unknown sites potentially impacting those sites through destruction of combustible materials, erosion from lack of vegetation following a fire, and unauthorized collection of artifacts and/or fossils due to increased visibility.

No adverse impacts to cultural or paleontological resources are expected from implementation of the BOSH juniper removal project. Design features incorporated into that project would mitigate adverse effects to any site. Since adverse impacts to sites will also be avoided for the Soda Fuel breaks project no cumulative effects are expected from implementation of BOSH.

3.7 Visual Resource Management

3.7.1 Affected Environment

The analysis area for visual resource management is the proposed project area because project impacts would not extend beyond this boundary (Figure 3.7-1). The 1999 Owyhee RMP (USDI BLM 1999) directed that visual or scenic values of BLM lands be considered whenever any physical actions are proposed and designated the spatial extent of four Visual Resource Management (VRM) Classes [Southeastern Oregon RMP & ROD (2002) p. 64]. BLM Manual H-8410-1 (Visual Resource Inventory) describes Visual Resource Class objectives are as follows:

Class I – The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention. There are 609 acres designated as VRM Management Class I in the proposed project area.

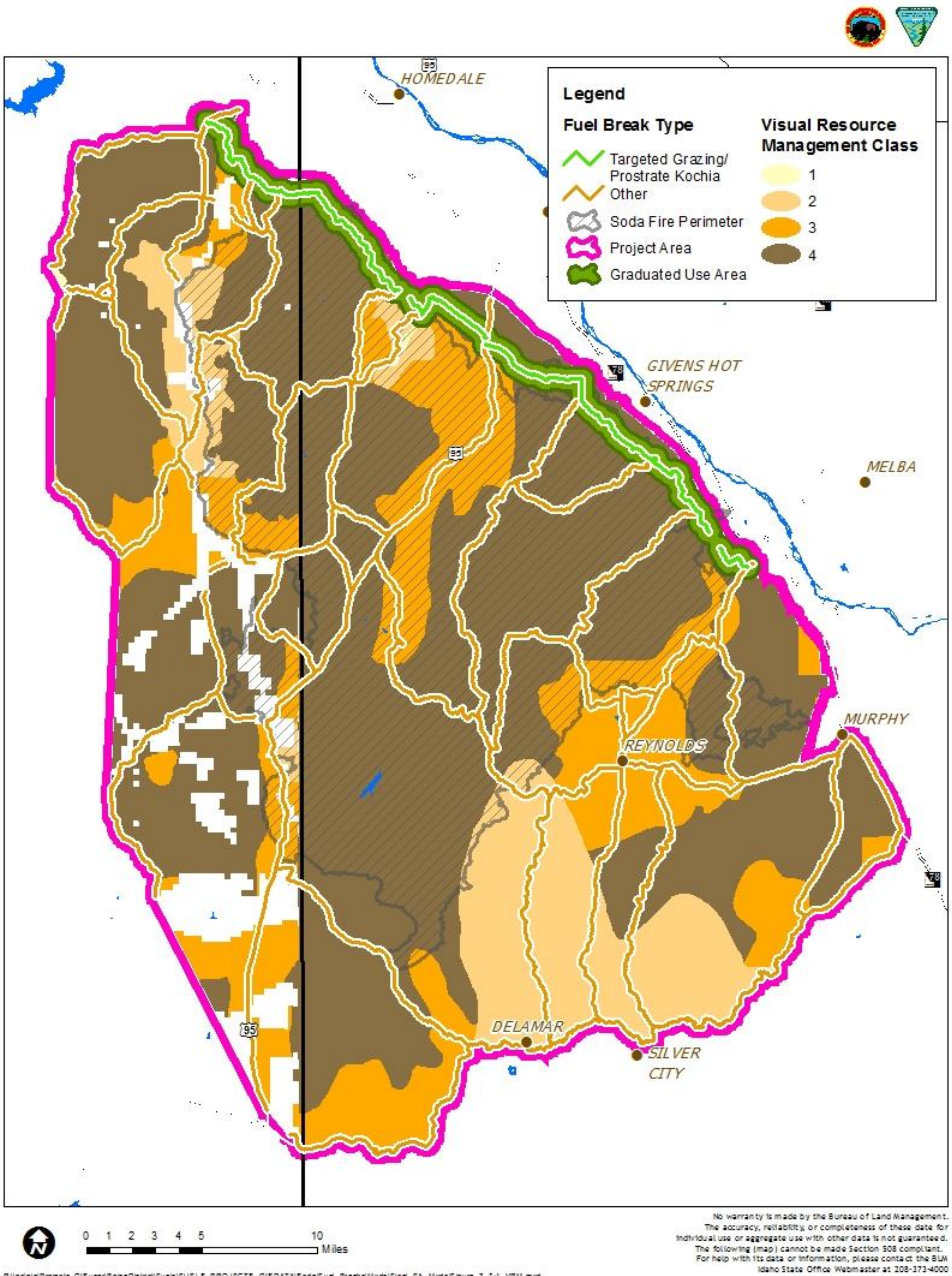
Class II – The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape. There are 76,235 acres designated as VRM Management Class II in the proposed project area.

Class III – The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape. There are 125,801 acres designated as VRM Management Class III in the proposed project area.

Class IV – The objective of this class is to provide for management activities which require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements. There are 406,770 acres designated as VRM Management Class IV in the proposed project area.

Most of the fuel break segments occur in areas classified as VRM Management Class IV. However, some portions of segments occur in areas with more restrictive VRM classifications. Acreage figures are for public lands administered by BLM only, as VRM is not classified for military, State of Idaho, or private lands.

Figure 3-6: Visual Resource Management Classes in the Project Area.



3.7.2 Environmental Consequences

Alternative 1 – No Action

Under the No Action alternative no short- or long-term change to visual resources would occur due to treatment implementation. The impacts of not doing the treatments would create other short- and long-term impacts. Potential impacts to visual resources due to fire and associated fire suppression and post-fire Soda Fire ESR Plan activities are still expected to occur, including blackened vegetation and soil, dozer lines, red coloration from retardant drops, and soil surface disturbance due to post-fire seeding. Some visual impacts to vegetation and soils would be short-term and would be reduced or disappear following recovery of on-site vegetation or seeding establishment. Without a system of fuel breaks, potentially large fires and shortened fire return intervals are anticipated leading to major changes in vegetation (i.e., from native shrubs and herbaceous perennial dominated plant communities to non-native invasive annual plants). As a result, this could create long-term, indirect impacts to visual resources (e.g., a VRM Class II area could be degraded to a Class III or Class IV VRM area).

The visual impacts of dozer lines can be long-term, even if these areas are seeded, and can last for several decades post-fire, or until vegetation completely obscures the disturbance. Retardant drops result in short-term visual impacts that last until weathering or vegetation growth are adequate to eliminate the red coloration. Contrast would occur where recovering or seeded vegetation is different than surrounding; for example, where surrounding vegetation is shrub-dominated and post-fire vegetation is dominated by herbaceous plants. In this case, visual impacts would be long-term and would last for about 10 to 15 years or until shrub establishment is adequate to blend with the surrounding vegetation.

Alternative 2 – Proposed Action

Implementation of the Proposed Action would result in short- and long-term impacts to visual resources (Table 3.7-1). Short-term impacts would consist of linear areas of visual contrast adjacent to travel routes resulting from vegetation removal, mechanical treatments, road and ditch maintenance, and targeted grazing. Visual contrast would be more pronounced in the burned area, as the contrast would be seen from a longer distance and would not be broken up by vegetation as it would in the unburned area. The visual contrast resulting from this disturbance would be greatest during the period from treatment through seeding establishment.

Table 3.7-1. VRM Management Class Crossed by Proposed Action

VRM Management Class	Acres Crossed by Proposed Action	Percentage of Total VRM Class in Project Area
Class I	7	1%
Class II	3,496	4.6%
Class III	6,392	5%
Class IV	14,499	3.7%

In the proposed project area, road and ditch maintenance along which fuel breaks would be established provide the greatest degree of contrast over the long-term. The long-term visual contrast following treatment establishment would be weak to moderate in most areas. The primary contrast in these areas would be created by maintained roads along with the 200 foot-wide vegetated strips on one or both sides of the road, which would have a slightly different color and texture compared to the adjacent area. This contrast would be most obvious in late summer and fall, in the prostrate kochia fuel breaks when the kochia is red and the surrounding vegetation is tan or gold in color. The remainder of the year the color would be green to brown and the contrast weak. Following seeding establishment, the greatest level of contrast would result along segments where fuel breaks are adjacent to sagebrush stands. This would be due to differences in vegetation height (about 2 to 3 feet tall for sagebrush versus about 1 foot tall for fuel break vegetation) and slight differences in vegetation color, which would be most obvious in late summer/fall.

Areas managed within VRM Classes I and II are along existing roads. In addition, topography in these areas limits the visual extent in these Class I and II areas. Over the long-term, the level of contrast resulting from fuel break establishment would be consistent with objectives for VRM Classes II, III and IV, which comprise most of the proposed project area and fuel break segments. Implementation of the Proposed Action with design features to reduce visual impacts, similar to those identified as lands with wilderness characteristics, would not likely result in long-term visual contrast that is different from the current condition.

Alternative 3 – Modified Proposed Action

Short- and long-term visual impacts from the fuel breaks would be similar to those described for the Proposed Action. However, contrast would be much lower than the Proposed Action because it would not include road and ditch maintenance and the fuel breaks would be half the width and would cover a smaller geographic area (Table 3.7-2).

Table 3.7-2. VRM Management Class Crossed by Modified Proposed Action

VRM Management Class	Acres Crossed by Proposed Action	Percentage of Total VRM Class in Project Area
Class I	1	<1%
Class II	1,524	2%
Class III	2,911	2.3%
Class IV	6,853	1.7%

3.7.3 Cumulative Effects

The cumulative impact analysis area includes BLM managed lands within the Field Office boundary because the vegetative fuel treatments are a small percentage of Field Office but in combination with other past, present, and foreseeable future actions within the project area could have impacts to scenic values. Impacts associated with the Proposed Action and alternatives are consistent with contrast levels allowed for VRM Classes II, III and IV, which comprise the majority of the proposed project area Cumulative actions that when taken into consideration with the proposed project would be noticeable to visitors include the proposed construction and maintenance of the Gateway West Transmission Line project and potential future wildfire. Beneficial impacts to visual resources would be post-fire vegetation treatments.

3.8 Soils

3.8.1 Affected Environment

The analysis area for soils is the proposed project area because soil disturbing activities would only occur within this area (figure 1-1). Soil information is derived from the Soil Survey of Owyhee and Canyon County Area, Idaho (USDA NRCS 2015). Malheur County soil information is derived from a fourth order soil survey conducted by the Oregon State Water Resources Board and Soil Conservation Service (OSWRB and SCS 1969).

Predominant landforms include alluvial fans and bottomlands giving way to moderately steep hills and canyons; rolling lava plateaus and dissected raw old lacustrine sediments occurring as “badland” areas are also found throughout the area. Occasional rock outcrops are a distinct feature of this landscape. Generally, these soils are derived from volcanic rock including rhyolite, welded tuff, and basalts. Most soils in the analysis area are well drained loams, gravelly loams, and sands. Common soils to the north and east include Graveya-Ratsnest- Rock outcrop association derived from volcanic ash or a loamy colluvium from welded tuff over lacustrine deposits, as common are Hardtrigger complexes originating from loess and loamy alluvium. Mckeeth-Veta gravelly loams, comprised of volcanic ash and mixed alluvium, are found to the east as well. To the south, Vitale-Cleavage-Bauscher complex and Snell-Kiyi association are commonly found. These soils consist of colluvium over bedrock derived from basalt, igneous rock, or welded tuff. To the west, soils are generally loamy, shallow, stony, and well drained residing over basalt, rhyolite, or welded tuff.

Wind erosion of the surface soil horizon is a problem in dry shrub and grassland communities following vegetation and biological crust disturbance. In addition to vegetation, biological soil crust plays an important role in protecting and stabilizing soils in these arid communities. Biological soil crust condition and spatial extent are indicators of the ecological health of the plant community; they influence site fertility; increase soil productivity; and aid in soil moisture retention and soil surface stability (Peterson 2001). Removal of vegetative cover or biological crust from events such as wildfire, wildlife and livestock grazing, or recreation expose the soil surface to temperature extremes, wind and rain, and may result in some level of soil erosion.

Soils are grouped based on their susceptibility to wind erosion. This rating, referred to as a Wind Erodibility Index (WEI), has values that range from 0 through 310 based on compositional properties of the surface horizon that are considered to affect susceptibility to wind erosion. Texture, size, and durability of surface peds, percentage of rock fragments, presence of carbonate, and the degree of decomposition of organic matter are the major criteria. Soils with an index above 160 are the most susceptible to wind erosion, while those with an index less than 38 are the least susceptible. In the analysis area[6], common soils (92 percent) are identified as having moderate to low susceptibility to wind erosion and have WEI values of 56 or less. A very small percentage of soils in the project area have high susceptibility with WEI values greater than 56.

[6] WEI and K Factor were not available for soils mapped as part of the Malheur County fourth order soil survey (OSWRB and SCS 1969). Reported values are derived from Owyhee and Canyon County soils layers and are assumed to be representative of the entire analysis area because soils in Oregon developed from similar parent material, and experienced similar climate and disturbance regimes.

Similarly, soil susceptibility to water erosion is quantified using what is referred to as a K factor. The K factor is an index with values that range 0.02 (least erodible) to 0.64 (most erodible), and indicate a soil's relative susceptibility to sheet and rill soil erosion. K factor is based on soil texture, organic matter content, structure, etc. Soils high in clay content have low K values because they resist detachment. Coarse textured soils (such as sandy soils) have low K values because of low runoff (USDA NRCS 2016). In contrast, soils high in silt have a high K factor because they are highly erodible (USDA NRCS 2016). The majority (82 percent) of soils within the analysis area have low susceptibility ($K \leq 0.2$) to erosion, whereas the remaining soils are split nearly equally between moderate ($K = 0.2 - 0.40$), and high susceptibility ($K \geq 0.41$) to water erosion. Vegetative community structure and other ground cover including biological soil crusts, gravel/rock, and plant litter play a key role in soil stability and function.

In 2015, the Soda fire burned a large portion of the analysis area. Field reconnaissance of the Soda fire revealed that most of the burned area soils fell into a moderate to low burn soil severity classification within every region despite the moderate to high fire intensity that was uniformly distributed across most of the burn. Areas with a high burn severity classification were limited to several relatively small and scattered locations, mostly in the central to southern part of the fire (USDI BLM 2015a).

3.8.2 Environmental Consequences

Alternative 1 – No Action

No treatments would occur under this alternative to reduce the scale of wildfire within the analysis area. As a result, large wildland fires may continue to occur, removing protective vegetation and damaging biological crust, which reduces soils ability to resist the erosional forces of wind and water and exposes soils to thermal extremes. Large scale surface soil erosion is anticipated under this alternative because of future and expected fires resulting from current conditions on the landscape. Post-fire ESR treatments would help limit soil erosion from burned sites.

Further decreases and/or compositional changes in soil organisms and biological soil crusts would occur in areas dominated by annual grasses and forbs over time. Increases in soil erosion and decreases in soil organisms and biological soil crusts would lower site productivity over the long-term.

General Effects of Action Alternatives

<u>Targeted Grazing</u>

Direct short-term effects to the soil resource from hoof action during targeted grazing would include removal of vegetation cover and disturbance of the soil surface horizon (including biological soil crusts where they exist) and a subsequent increase in temperature, dryness, and wind erosion potential (and water erosion potential on steeper terrain). The depth of this disturbance in the soil profile is much less than either disking or drill seeding (less than 1 inch on dry soils and approximately 1-2 inches on wet soils) making the potential for soil loss through erosion considerably less compared to either of these two methods. Over the long-term, targeted grazing without additional treatment methods would have to occur on a yearly basis over the same area to be an effective fuel break, making the soil surface horizon vulnerable to erosional processes for as long as the fuel break is maintained. When combined with establish vegetated fuel breaks, vegetation would help protect soil surface horizons and biologic crusts where they exist, reducing short-term disturbance, temperature increase, drying, and wind and water erosion. Continued reductions in disturbance and associated erosional processes are expected under long-term targeting grazing.

Management of grazing activities that maintain sufficient vegetation cover (2 inch stubble height) would help to ensure that erosion levels are kept to minimal levels.

Mowing

Compaction of the surface soil horizons would be a minor short-term effect from mowing sagebrush using a rubber-tired tractor pulling a deck mower. Compaction decreases the number and size of pores in the soil matrix potentially effecting water infiltration, permeability, and air exchange. This effect would be more pronounced on fine textured soils (i.e. silts and clays). Normally, only one pass with a tractor would be made in the same location during implementation, so compaction would be minimal and confined to those areas where tractor tires cross.

Disturbance to soil surface horizons, including biological soil crusts, would also be confined to those areas where the tractor tires cross, but the use of rubber tires are expected to minimize these impacts. Sagebrush and the herbaceous understory would be left at a height of at least six (6) inches and the remaining cut debris would be left on site. As a result, soil erosion from wind or water in mowed areas would not be expected to increase above normal levels. No long term effects or indirect effects to the soil resource from mowing would be expected. Periodic maintenance mowing, particularly of shrubs (which is the primary aim of mowing), would occur relatively infrequently (e.g., 5-10 years); therefore, added soil compaction or erosion from mowing would not exceed minor levels. Further, design features (Section 2.4.3) would ensure that sensitive resources are protected, minimizing overall impacts to soils in the project area.

Hand Cutting

Short-term effects to the soil resource from using chainsaws to thin sagebrush and other woody species would be minimal and confined to those areas where removed material was piled and burned. If burn piles are large or burn very hot, small areas of the soil surface underneath these burned piles could become sterilized and unable to support vegetation until adjacent soil is deposited onto these locations over time. Soil erosion from these burned areas could occur until vegetation is reestablished. Limiting pile size, location, and burning when soils are either wet or frozen would help to minimize the potential for soil sterilization and long-term wind and water erosion potential. No indirect effects would be expected. If woody material is removed off-site following sagebrush thinning no effects to the soil resource would occur.

Herbicides

Impacts to the soil resource from the application of BLM approved herbicides and adjuvants for the control of invasive, non-native vegetation species have been assessed in the *2007 Vegetation Treatments Using Herbicides on BLM Lands in the 17 Western States Programmatic EIS (PEIS) and Herbicides Approved for Use on BLM Lands in Accordance with the 17 PEIS ROD – May 14, 2014 update, 2016 Final PEIS for Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on BLM Lands in 17 Western States DOI-BLM-WO-WO2100-2012-0002-EIS*, and *Vegetation Treatments Using Herbicides on BLM Lands in Oregon Final Environmental Impact Statement (2010a) and Record of Decision (2010b)*. The direct, short and long-term effect of herbicide application to existing biological soil crusts is largely unknown (Peterson 2001). Depending on the type of herbicide used, organisms in other portions of the soil profile may be affected. Herbicide use for seedbed preparation followed by drill seeding, would reduce or eliminate existing vegetation cover, resulting in a short-term increase in soil surface temperature, dryness, and wind erosion potential (and water erosion potential on steeper terrain) until planted fuel break species become established. An indirect effect could include damage and/or death of non-target vegetation due to off-site movement of herbicides adsorbed to soil particles, however avoiding the use of pre-emergent herbicides on highly erodible soils where vegetation cover has been removed would minimize this potential.

Seeding

Areas identified for vegetated fuel breaks may or may not require seeding and mechanical seedbed preparation such as disking. Where disking would be necessary, erosion by wind would be the primary short-term effect to the soil resource. Short-term soil erosion by water could also occur on steeper terrain (> 20% slope) until seeded vegetation establishes and helps protect soils from erosion. Disking would result in the immediate disturbance of biological soil crusts where they exist and could affect the presence and abundance of soil microorganisms (cyanobacteria fungi, etc.) that contribute to overall soil quality. Soil organisms living close to the soil surface would be exposed to desiccation and predation. Recovery rates for biological crust are generally species dependent, and can range from 14 to 35 years for cyanobacteria, 45 to 85 years for lichens, and 20 to 250 years for mosses (Peterson 2001), representing a long-term loss in soil stability and productivity until seeded vegetation and associated biological crust reestablish.

Erosion by wind would be the primary short-term impact from drill seeding using a standard rangeland drill. Depending on the type of vegetation present on-site during implementation, some or all of the vegetation cover and biological soil crusts would be removed. Soil surface horizons to a depth of 2-4 inches (Asher and Eckert 1973) would be disturbed altering soil aggregates and making the soil susceptible to wind erosion (and water erosion on steeper terrain) as well as increases in temperature and dryness for a year or more until planted species become established. In areas where cheatgrass or medusahead are the dominant herbaceous species, drill seeding would remove most to all of the vegetation cover. Perennial bunchgrasses and sod forming grasses where they exist would, for the most part, survive a drill seeding disturbance and would provide partial vegetation cover thereby limiting short-term increases in temperature, dryness, and erosion potential. Use of a no- till drill for seeding would substantially decrease the depth and extent of soil disturbance, making increases to soil temperature, dryness, and erosion potential a minor effect.

Increased erosion potential would last until seeding establishment is adequate to prevent soil movement by wind and water, approximately one to three years for each treated area. Soil movement due to wind in the linear treatment areas could blow onto roads or adjacent untreated areas. This impact is expected to be sporadic, corresponding with wind events. While most of the proposed fuel break segments occur on relatively flat topography, water erosion could occur in treatment areas that occur on slopes, resulting in formation of rills and soil deposition at the bottom of the slope. This impact is expected to be sporadic, corresponding with high intensity rain events.

Maintenance treatments are not anticipated to result in increased soil surface erosion once seeded species are established. Maintenance would consist of mowing or hand cutting shrubs from the fuel break and/or chemical treatments to control noxious and invasive weeds. Effects on the soil resource from mowing, hand cutting, and chemical treatments are described above.

Prescribed Fire

Prescribed fire used to remove accumulated weeds along fence lines or in topographic depressions would be light in intensity and of short duration causing little to no subsurface heating of the soil and therefore little to no short or long term effects to the soil resource are anticipated. Where weeds are thick (~10 inches or greater) or thinned and piled sagebrush debris is burned, short term effects may include the consumption of organic matter in the soil surface horizon and subsequent loss of some nutrients (e.g. nitrogen) through volatilization. Biological soil crusts (particularly mosses and lichens), if present, could be damaged or killed by prescribed fire. Removal of vegetation and soil crusts would expose soils to thermal extremes, reducing the soils ability to resist the erosional forces of wind and water. Depending on the severity of the impact to soils, vegetation may reestablish in the short-term; if soils are sterilized, long-term soil deposition may be needed before soils would support vegetation. No indirect effects would be expected.

Alternative 2 – Proposed Action

Under this alternative, roughly 21,260 acres of fuel breaks along 442 miles of roads would be created. The majority (87 percent) of these fuel breaks would be located in areas identified as having moderate to low susceptibility to wind erosion. Similarly, 73 percent of these soils would have low susceptibility to water erosion.

Targeted grazing or prostrate kochia seeding would occur on approximately 1,757 acres. The majority (79 percent) of targeted grazing would occur in areas identified as having moderate to low susceptibility to wind erosion. The majority, 75 percent, of these soils would have low susceptibility to water erosion. Proposed road maintenance actions would represent permanent soil surface disturbance and compaction across the road surface. In areas with a high percentage of silt and clay in the road surface, aggregate may be applied to roadway surfaces to harden surfaces, improving road safety and durability.

Appropriate engineering designs such as use of culverts, ditches, and sediment barriers would reduce erosion on and adjacent to roadways, resulting in minor, short-term soil loss following rain events, and grading and maintenance activities.

General direct and indirect effects related to fuel breaks are described above. Implementation of the Proposed Action would result in short-term disturbance (1 to 5 years) to soil resources in the fuel break footprint (200 feet to both sides of roads). However long-term impacts would be reduced when compared to Alternative 1 because the size of wildfire would be reduced due to fuel breaks. As perennial vegetation and biological soil crusts recover, long-term soil productivity and resistance to disturbance would improve. Maintenance treatments are not anticipated to result in increased soil surface erosion once seeded species are established.

Short-term effects to soil resources would occur along the outer edge of maintained road surfaces. Side cast from road blading and installation of drainage features would disturb soil surface horizons. Minor surface erosion would occur until vegetation established in these disturbed areas (1 to 5 years). Surface soil horizons would be bladed and mixed with gravel fill and underlying mineral soil. This impact would be for the life of the road.

Alternative 3 – Modified Proposed Action

Approximately 11,550 acres would be developed into fuel breaks in this scenario. This represents a decrease in soil resource disturbance of over 50 percent compared to the Proposed Action. Targeted grazing would occur on approximately 1,757 acres; a 15 percent reduction in the amount of targeted grazing when compared to the Proposed Action.

General direct and indirect effects related to vegetated fuel breaks, and targeted grazing would be similar to those described for the Proposed Action. Implementation of this alternative would result in reduced short-term soil resource impacts when compared to the Proposed Action, due to a reduction in the amount of ground disturbing activities. Over the long term, impacts to soils due to wildfire would be greater than for the Proposed Action. This increase in wildfire risk would be due to the anticipated decrease in fuel break effectiveness from reduced fuel break widths.

3.8.3 Cumulative Effects

The cumulative effects analysis area is the project area including a 0.25 mile buffer. This buffer includes the Hemingway substation and would include portions of the Gateway West Transmission Line project proposed in the area. The temporal scale for cumulative impacts to soil resources is 10 years; which includes implementation of the Soda Fire ESR Plan, land and realty actions, and may include transmission line construction. Of the actions identified for consideration of cumulative effects, wildfire, livestock grazing and recreation have shown to have the most potential for impact because these are chronic impacts, occurring year after year.

Recreation impacts are largely from dispersed activities and with the phased in implementation of the project, no cumulative impacts would be expected. Soil impacts from livestock grazing would largely be dispersed, although concentrated impacts occur especially near gates, water troughs, mineral supplementation sites, and where trailing occurs. Transmission line construction would result in short-term impacts at sites temporarily disturbed by vegetation removal and compaction from heavy equipment. Long-term impacts would occur along improved roads and newly constructed roads associated with transmission line development, increasing the likelihood of soil erosion at these sites. Decommissioning activities, when they occur, would also result in exposed soils and accelerated erosion for a period of time until vegetation reestablishes. Compaction of soils would occur where heavy equipment traffic takes place during construction, operations, and decommission.

Revegetation and erosion control treatments completed as part of the Soda Fire ESR Plan would benefit soil in the long-term by promoting perennial vegetation establishment and controlling surface water flow. Wildfire will continue to burn through the area however, ESR implementation would reducing fire size and intensity through the use of vegetative fuel breaks and targeted grazing. Smaller and less intense fires would limit vegetation and biological crust damage, helping protect soils from exposure to climate extremes and wind and water erosion.

Past, present, and foreseeable future actions within the project area would continue to have moderate impacts to the soil resource through disturbance of soil structure, biological crusts, and subsequent exposure of the upper soil horizons to erosional forces resulting in soil loss and decreased productivity. The action alternatives would only slightly increase the cumulative impacts to the soil resource while providing treatments to reduce the long-term effects of erosion from large burned areas on the landscape from frequent wildland fire.

3.9 Air Quality

3.9.1 Affected Environment

The analysis area for air quality is Owyhee and Malheur Counties which are designated as Class II air quality areas, as is most of Idaho and eastern Oregon. Areas of Class II need reasonably or moderately good air quality protection. Much of the focus on air quality in the region has centered on the Treasure Valley, which is the largest and most highly populated urban area in Idaho. Although air pollution is generated in Owyhee County and Malheur County as well, the location and distance from other populated areas in the valley prevent significant exchange of air pollutants.

Impacts to air quality across the project area can be derived from several sources including wildfire, prescribed fires, agricultural operations, fugitive dust, and to a small degree vehicle emissions. Other activities that remove vegetation and create fugitive dust include vegetation treatments using a plow and/or drill, livestock grazing, and off-highway vehicle use.

3.9.2 Environmental Consequences

Alternative 1 – No Action

There would be no impacts to air quality from establishing fuel breaks. However, the spread of invasive annual grasses such as cheatgrass and medusahead would increase wildfire activity (Balch et al. 2013), and increased periods of smoke throughout the area. Smoke from a wildland fire event would expectedly degrade air quality of Idaho Department of Environmental Quality (IDEQ) designated PM10 limited maintenance areas and/or impact zones such as the city of Boise.

The effects on climate change from establishing fuel breaks would be minimal. Fuel breaks would reduce the amount of carbon released into the atmosphere by minimizing the extent of fires that burn through the area. Establishing fuel breaks would likely have minimal if any measureable impacts to carbon sequestration as the habitats in the proposed project area do not store much carbon.

General Effects of Action Alternatives

Occasional prescribed fire would be of short duration due to the light fuels that would make up the majority of prescribed fire areas. Smoke from such fires would cause short-term localized adverse impacts to air quality at the time of burning. Burning within prescription and participation in the Montana Idaho Airshed Group Prescribed Fire Program would keep airshed emission levels within the IDEQ’s air quality standards. The Vale District complies with the Oregon Smoke Management Plan, with the goal of minimizing emissions from prescription burning consistent with air quality objectives of State and Federal clean air laws. Smoke could possibly be present for two to three hours, but the likelihood would be low due to the type of fuels being targeted and by burning within prescription. The likelihood of smoke being present for periods longer than two to three hours is negligible. The overall effects to air quality from prescribed burning would be minimal.

Disking and seeding of fuel breaks could increase the levels of dust in the area. Seeding would occur in early to late fall when precipitation would be expected reducing the likelihood of dust. Highly erodible soils would be seeded using methods that minimize soil disturbance, which would also reduce the likelihood of dust.

Alternative 2 – Proposed Action

Road maintenance activities including grading and blading roads could have sort term impacts to air quality; however, dust suppression activities would minimize the impacts. The effects of the Proposed Action on fire would indirectly impact air quality by reducing fire intensity and providing the largest margin of success for suppression crews in battling wildfire, thereby reducing areas burned and reducing air pollutants from wildfire.

Alternative 3 – Modified Proposed Action

The indirect effects of the Alternative 3 on air quality would be much lower, as there would be a lower margin of success for suppression crews in battling wildfire, which would not reduce air pollutants from wildfire to the same extent as the Proposed Action.

3.9.3 Cumulative Effects

The action alternatives analyzed would not cause measureable degradation to air quality so no cumulative effects would result.

3.10 Livestock Grazing Management

3.10.1 Affected Environment

The analysis area for livestock grazing management includes all allotments that intersect the project area boundary because project actions will not take place beyond these allotment boundaries and while allotments are divided into pastures, permit and management actions can affect the entire allotment. Within the analysis area, the BLM manages all or part of 50 grazing allotments with active permits (Table 3.10-1; Figure 3.10-1). Livestock use is from cattle and/or horses at various times throughout the year. Available forage in grazing allotments is allocated based on expected pounds per acre of herbaceous biomass for a given area. The amount an average cow and calf consume in a typical one month period is estimated to be 800 pounds, and is referred to as an Animal Unit Month (AUM). Grazing permits are issued based on the expected AUMs that the allotment can support without damaging soil or vegetation resources.

Table 3.10-1. Grazing Allotments within the Project Area

Allotment Name	Operator	Livestock Type[1]	Season of Use	Active AUMs	Suspended AUMs
Board Corrals	Bar 71 LLC.	C	3/1-5/30	911	762
		C	11/1-2/28	734	0
		H	3/1-5/30	24	0
		H	11/1-2/28	32	0
	Sam And Bonnie Mackenzie	C	11/1-2/28	331	172
		C	3/1-4/1	88	0
		H	4/1-10/31	28	0

Allotment Name	Operator	Livestock Type[1]	Season of Use	Active AUMs	Suspended AUMs
	Larry & Kay Davis	C	11/1-2/28	335	172
		C	3/1-4/1	89	0
		H	4/1-10/31	21	0
	Mark Mackenzie LLC.	C	11/1-4/1	700	311
Rockville	Glenda Or Ted L. Gammett	C	10/1-2/28	45	20
	Mary Ellen Allison	C	4/1-10/5	1,050	472
	Greeley Trust, Andrew & Mary Irene	C	4/1-10/5	1,050	473
	Bar 71 LLC.	C	4/1-9/30	541	480
Spring Mountain	Baltzor Cattle Co.	H	4/1-9/30	42	0
	Mark Mackenzie LLC.	C	12/1-2/28	77	0
		C	4/1-9/30	3,117	1,532
		H	4/1-9/30	42	0
	Cow Creek Ranch	C	4/5-9/30	927	459
		C	12/1-2/28	3	0
	Tim McBride	C	4/1-9/30	1,413	607
		C	11/2-2/28	266	0
	Doug Burgess	C	4/1-9/30	584	289
Three Fingers	Cunningham Ranch	C	3/1-10/31	2,777	1,368
		C	10/1-2/28	40	0
		H	4/1-10/31	49	0
	Mark Mackenzie LLC.	C	3/1-10/31	830	631
		C	10/31-3/31	710	0
	Crater Land And Livestock	C	11/1-3/31	845	347
	Greeley Trust, Andrew & Mary Irene	C	3/1-10/30	1,507	736
		C	10/28-2/28	122	0
		H	4/1-10/30	35	0
	Mary Ellen Allison	C	3/1-10/22	1,583	764
		C	6/1-2/28	81	0
	Bar 71 LLC.	C	3/1-10/31	1,396	600
		H	4/1-10/31	91	0
East Cow Creek	Jeff Anderson Estate	C	4/1 - 6/10	183	38
	John Stoddart	C	4/1 - 11/30	1,697	428
		C	10/1 - 2/23	86	0
	Elordi Cattle Co. LLC.	C	4/1 - 6/15	388	97
	James Hayhurst	C	4/1 - 6/15	155	40
	Terry Ranch Partnership	C	4/1 - 8/25	242	58
	Clint And Laura Fillmore	C	4/1 - 9/30	640	300
	Cow Lakes Grazing Associati on	C	4/1 - 8/30	397	110
		C	9/1 - 2/28	48	
	Terry Warn	C	4/1 - 8/30	2648	642
	Charles Pippus	C	12/1 - 2/28	18	0
Tunnel Canyon	Bar 71 LLC.	C	3/21-10/31	888	615
		C	11/1-12/31	493	

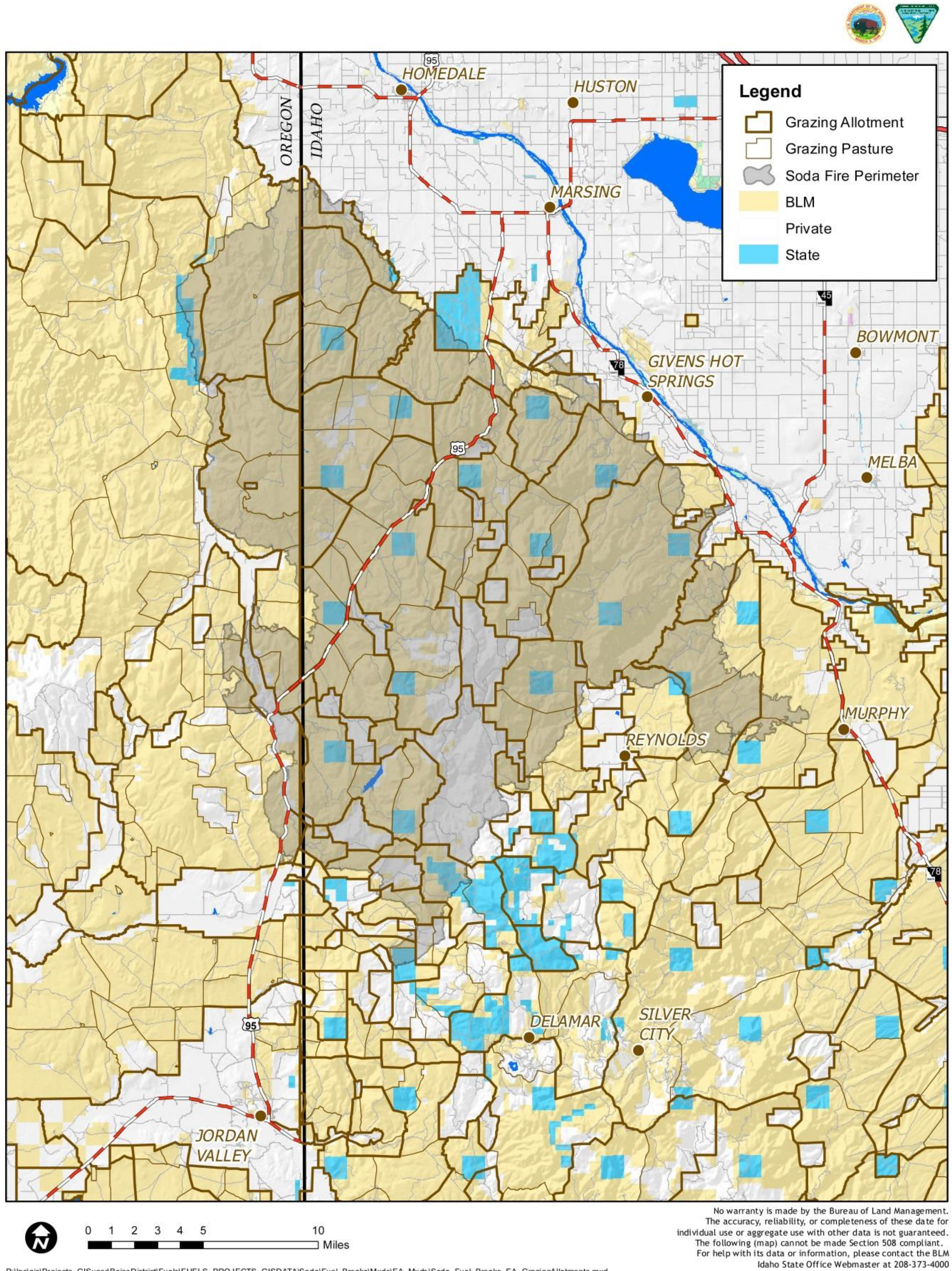
Allotment Name	Operator	Livestock Type[1]	Season of Use	Active AUMs	Suspended AUMs
Bass FFR[2]	Tony & Brenda Richards	C	12/1-12/30	46	0
		C	12/1-12/31	46	0
Blackstock Springs	Ted Blackstock	C	5/1-11/15	1052	0
	Chipmunk Grazing Assoc.	C	5/1-11/18	190	0
	Alan Johnstone	C	5/1-11/15	192	0
Burgess	Doug Burgess	C	4/16-8/15	240	0
Canal	Glenda Gammett	C	11/1-3/14	48	0
Chipmunk Field FFR	Chipmunk Grazing Assoc.	C	12/1-12/31	72	0
Con Shea	Joyce Livestock Co.	C	11/1-2/28	990	0
Corral Creek FFR	Alan Johnstone	C	12/1-12/31	9	0
East Reynolds Creek	Jaca Livestock	C	4/5-6/30	1,434	829
	Chipmunk Grazing Assoc.	C	4/5-6/30	547	330
Elephant Butte	Ted Blackstock	C	3/15-5/31	305	0
		C	12/1-2/28		
	Chipmunk Grazing Assoc.	C	4/1-5/31	85	0
		C	11/1-12/31		
Evans FFR	Hook Family LLC.	C	3/1-11/30	84	0
Gaging Station FFR	Jerry Hoagland	C	6/1-9/30	4	0
Graveyard Point	Alan Johnstone	C	5/1-6/15	129	0
Gusman	Gusman Ranch Grazing Assoc. LLC.	C	4/16-10/30	1,731	1,946
Gusman FFR	Gusman Ranch Grazing Assoc. LLC.	C	11/1-11/30	26	0
Hardtrigger	Junayo Ranch Ltd. Partnership	C	4/1-11/30	70	64
	Daniel & Bailey Richards	C	4/1-10/31	35	45
		C	4/1-10/31	820	694
	Tim & Gwen Miller	C	4/1-10/31	635	308
Jaca FFR	Jaca Livestock	C	3/1-11/30	61	0
Joint	John Isernhagen	C	4/16-11/13	601	0
Jordan Valley	06 Livestock	C	5/1-8/15	30	0
		H			
Joyce FFR	Joyce Livestock Co.	C	11/1-2/28	87	0
		H	4/1-7/31		
Jump Creek	Hook Family LLC.	C	7/1-9/30	450	0
	Chipmunk Grazing Assoc.	C	6/1-9/30	494	0
		C	7/1-9/30	95	0
	Jaca Livestock	C	7/1-9/30	188	0
Juniper Spring	Ed & Debby Wilsey	C	3/1-11/30	1,715	0
Louse Creek	Craig & Rhonda Brasher	C	5/1-10/31	1,915	1,169
		H			
Lowry FFR	Lu Ranching Co.	C	3/1-2/28	6	0
Madriaga	Chad & Dannelle Hensley	C	6/1-12/1	647	0
Poison Creek	Poison Creek Grazing Assoc.	C	4/1-11/30	740	21

Allotment Name	Operator	Livestock Type[1]	Season of Use	Active AUMs	Suspended AUMs
		H	4/1-11/30		
R Collins FFR	Sean & Andrea Burch	C	3/1-2/28	24	0
Rabbit Creek/Peters Gulch	Hook Family LLC.	C	5/1-8/8	2193	1892
		C	11/1-2/28		
Rats Nest	Chipmunk Grazing Assoc.	C	4/1-5/27	557	160
Reynolds Creek	Junayo Ranch Ltd. Partnership	C	3/17-6/1	2,032	1,972
		C	10/1-2/28		
	Bill Watterson	C	3/15-8/1	104	46
	Tony & Brenda Richards	C	4/1-8/1	1,657	779
		C	10/15-12/31		
	Daniel & Bailey Richards	C	4/1-8/1	81	35
Rockville	Glenda Gammett	C	3/15-10/31	2,112	125
	Poison Creek Grazing Assoc.	S	4/1-5/31	176	10
		S	10/1-10-31		
Sands Basin	Chipmunk Grazing Assoc.	C	4/1-6/5	999	0
		C	10/1-10/31		
Shares Basin	Ted Blackstock	C	4/1-11/30	1,419	320
	Ken Sevy	C	4/1-7/15	1,419	320
		C	10/1-11/30		
Silver City	Wintercamp Ranch Trust	C	3/15-10/31	695	888
	Joyce Livestock Co.	C	3/15-10/31	4,237	5,128
		H			
Soda Creek	Elordi Sheep Camp Inc.	C	6/1-10/31	33	0
	Elordi Cattle Co. LLC.	C	6/1-10/31	467	0
		H			
Strodes Basin	Alan Johnstone	C	3/15-5/31	1,978	7
		C	11/15-12/31		
Trout Creek	Sean & Andrea Burch	C	4/1-10/31	342	0
Tyson FFR	Junayo Ranch Ltd. Partnership	C	12/1-12/31	69	0
Akali-Wildcat	Chipmunk Grazing Assoc.	C	04/01-05/31	469	0
	Ted Blackstock	C		154	0
Burgess FFR	Doug Burgess	C	12/01-12/31	11	0
Bush Ranch FFR	Ed Wilsey	C	03/01-02/28	24	0
Corral FFR	Alan Johnstone	C	12/01-12/31	9	0
Cow Creek Ind.	Tim Lowry	C	04/01-09/30	1,214	0
Murphy FFR	Paul Nettleton	C	03/01-03/31	5	0
Stateline	Tim McBride	C	07/15-12/16	102	0
Walker FFR	Ted Blackstock	C	03/01-03/31	8	0
	Ken Sevy	C			0

[1] C = Cattle; H = Horse

[2] Fenced Federal Range - Grazing allotments consisting of a high percentage (>30%) of unfenced private lands compared to BLM administered lands. Permits are issued for the percent of BLM lands only.

Figure 3-7: Grazing Allotments in the Project Area.



Much of the native perennial rangeland in the project area was burned by the Soda Fire and subsequently has been or will be seeded as part of ESR. These and other areas burned by the Soda Fire will remain closed to livestock grazing until objectives determined through the ESR process and presented in the Plan are obtained (two growing seasons at a minimum). In many cases, entire pastures have been closed or temporary three-strand wire fences have been constructed to separate the burned portion from the unburned portion.

However, targeted grazing may be used during the closure at the discretion of the authorized officer to meet fuel break treatment objectives as described in the Methods and Monitoring and Control sections (2.4.1 and 2.4.5); there may be instances where a pasture has not met ESR objectives, but the fuel break corridor requires treatment (e.g., a buildup of fine fuels). Table 3.10-1 reports the number of total permitted use (active and suspended AUMs), once grazing resumes after ESR treatments are complete and objectives for grazing resumption are met.

The proposed treatment areas cross portions of 40 allotments. Proposed treatment areas typically comprise less than 10% of a pasture’s acreage, and in most cases less than 5%. These linear areas would be primarily located adjacent to travel routes that are used for trailing cattle and/or sheep.

3.10.2 Environmental Consequences

Alternative 1 – No Action

Under the No Action alternative, the current trend of large-scale, frequent wildfires is expected to continue. Based on current BLM policy regarding post-fire stabilization and rehabilitation treatments, partial or full allotment closures for a minimum of two growing seasons (or longer) would continue to occur to allow for natural vegetation recovery and/or seeding establishment. Large continuous burned areas within allotments result in significant impacts to livestock operations, forcing operators to relocate livestock or find other means of providing livestock forage while the burned areas are being rested from livestock grazing, allowing vegetation to recover.

Repeated fire would maintain vegetation in an herbaceous state, which would provide greater forage availability when compared to shrub-dominated plant communities. However, repeated fire can also degrade plant communities, removing perennial vegetation in favor of invasive annual plants which respond rapidly following wildfire. These plant species provide adequate early season forage, but become unpalatable quickly and do not produce the same quantity of forage produced by perennial plant communities.

Alternative 2 – Proposed Action

Implementing the Proposed Action would result in approximately 21,040 acres of fuel breaks transecting allotment boundaries. Fuel breaks would range from less than 1 percent of an allotment to 28 percent of the Lowery FFR (Table 3.10-2). Where seeding treatments are used to create fuel breaks, operators may need some temporary, short-term means of restricting livestock use along the linear fuel breaks where they cross allotments while seeded vegetation is establishing. This could be accomplished by limiting water sources adjacent to the newly seeded areas, active herding, temporary protective fencing, altering rest-rotation schedules, or deferring use to late fall/winter. In extreme cases when a substantial portion of a pasture is involved, temporarily closing the entire pasture may be required. The options available to livestock permittees vary by the terms and conditions that are specific to the individual grazing permit.

These management adjustments represent a potential short-term loss in AUMs, and will vary by operator and allotment.

Table 3.10-2. Percent of Grazing Allotments to Be Converted to Fuel Breaks

Allotment Name	Total Allotment Acres[1]	Acres of Fuel Break	Percent Disturbance by Allotment
Alkali-Wildcat	6,211	25	0.4
Bass FFR	1,991	41	2.2
Blackstock Springs	17,337	587	3.6
Board Corrals	43,388	2,037	5.1
Burgess	1,310	95	8.0
Burgess FFR	723	11	1.5
Bush Ranch FFR	1,219	15	1.3
Canal	4,495	193	4.6
Chipmunk Field FFR	12,970	287	2.4
Con Shea	12,030	90	0.8
Corral FFR	272	27	10.1
Cow Creek Individual	7,956	23	0.3
East Cow Creek	17,688	166	0.9
East Reynolds Creek	31,027	1,611	5.6
Elephant Butte	9,174	374	4.2
Evans FFR	5,225	243	5.0
Gaging Station FFR	598	73	13.2
Graveyard Point	3,778	302	8.6
Gusman	6,403	250	4.2
Gusman FFR	2,889	22	0.8
Hardtrigger	24,035	797	3.6
Jaca FFR	3,719	90	2.6
Joint	4,217	189	4.9
Jordan Valley	323	9	2.8
Joyce FFR	5,195	7	0.1
Jump Creek	17,785	783	4.8
Juniper Spring	9,907	271	2.9
Louse Creek	2,603	167	6.9
Lowry FFR	266	68	28.0
Madriaga	4,106	65	1.7
Murphy FFR	306	27	8.8
Poison Creek	5,280	622	12.7
R Collins FFR	435	67	16.5
Rabbit Creek/Peters Gulch	32,994	1,152	3.8
Rats Nest	5,531	212	4.1
Reynolds Creek	47,015	1,548	3.6
Rockville	37,431	1,104	3.2
Sands Basin	13,523	310	2.5
Shares Basin	16,401	569	3.7

Allotment Name	Total Allotment Acres[1]	Acres of Fuel Break	Percent Disturbance by Allotment
Silver City	66,430	1,678	2.7
Soda Creek	8,798	182	2.2
Spring Mountain	48,105	1,224	2.8
Stateline	1,002	14	1.4
Strodes Basin (Oregon and Idaho)	14,944	304	2.2
Three Fingers	138,799	2,473	1.9
Trout Creek	3,447	110	3.5
Tunnel Canyon	3,599	92	2.7
Tyson FFR	7,272	418	6.2
Walker FFR	625	18	2.9
Total	**710,777**	**21,040**	2.9

Six of these allotments are specifically associated with the use of the targeted grazing tool to create fuel breaks: Canal (Pasture 01), East Reynolds Creek (Pasture 01), Elephant Butte (Pastures 01, 02, 03, and 04), Graveyard Point (Pasture 01), Hardtrigger (Pastures 01, 02, 03), Poison Creek (Pasture 01), Reynolds Creek (Pastures 01 and 03) in Idaho, and Board Corrals (Pastures 03 and 05) in Oregon (Figure 2-3; Table 3.10-3). Each of these pastures is dominated by invasive annual grass where the fuel break is proposed, making them good candidates for targeted grazing. Utilizing the mandatory design features, the targeted grazing treatment area would, like all of the fuel breaks, be focused in the 400ft fuel break corridor desired (200ft on either side of the road). This area ranges from 0.1 percent to 10 percent of the livestock grazing pastures involved and would not impact permitted AUMs or livestock grazing management.

Because livestock are mobile, the BLM anticipates that some light grazing may occur beyond the fuel treatment zone in the graduated use area (the ½-mile buffer area adjacent to the fuel treatment zone/fuel break). Design features and Monitoring and Control detailed in Section 2.4 (e.g., utilization caps for perennial grasses in the graduated use area, monitoring for resource damage, etc.) have been developed for the graduated use area to ensure that targeted grazing does not impact regularly scheduled grazing or the permits' terms and conditions.

Table 3.10-3. Summary of Targeted Grazing and Livestock Grazing Information by Allotment/Pasture

Allotment Name/Pasture Name	% of Targeted Grazing within Pasture[1]	% of Graduated Use Area within Pasture[2]	Maximum Utilization	Begin and End Date on Grazing Permit
Board Corrals/ Alkali	1	14	Moderate (41-60%)[3]	03/01-2/28
Board Corrals/ Antelope	0.6	6		
Canal/ Canal	3	38	50%	11/1-3/14
East Reynolds Creek/	0.1	5	50%	4/5-6/30

Allotment Name/Pasture Name	% of Targeted Grazing within Pasture[1]	% of Graduated Use Area within Pasture[2]	Maximum Utilization	Begin and End Date on Grazing Permit
Elephant Butte/ Elephant Butte 1	1	27	40% (Spring) 50% (Winter)	4/1-5/31 11/1-2/28
Elephant Butte/ Elephant Butte 2	2	41		
Elephant Butte/ Elephant Butte 3	5	66		
Elephant Butte/ Elephant Butte 4	4	66		
Graveyard Point/ Graveyard Point	7	70	40%	5/1-6/15
Hardtrigger/ Hemingway Butte	2	22	40%	4/1-10/31
Hardtrigger/ Alfalfa	10	77		
Hardtrigger/ Opalene	1	18		
Poison Creek/ Poison Creek	1	12	40%	4/1-11/30
Reynolds Creek/ Wilson	5	51	50%	3/17-2/28
Reynolds Creek/ Soldier's Cap	0.1	1		

[1]The targeted grazing area is the 400-foot fuel treatment zone (200 feet to both sides of road).
[2]The graduated use area is the ½-mile buffer to each side of the fuel treatment zone where adaptive management thresholds have been applied to ensure the targeted grazing treatment does not infringe upon livestock grazing permits.
[3]Utilization for the Board Corrals Allotment and associated pastures would not be allowed to exceed moderate use (41-60%) as identified in the Southeastern Oregon RMP, 2002. The moderate utilization class interval is derived from Key Species and Landscape Appearance Methods per Technical Reference #4400-3 "Utilization Studies and Residual measurements".

Conflicts between targeted grazing and regularly permitted livestock are not anticipated because of the implementation of robust targeted grazing design features, including resource adaptive management thresholds and response (Section 2.4.3). These design elements would also ensure that targeted grazing would not infringe upon AUMs, utilization levels, or other terms and conditions associated with grazing permits. For example, utilization levels in the graduated use area – 30% utilization cap (light use) in the first ¼-mile and 16% utilization cap (slight use) from ¼ to ½ mile where treatment occurs prior to regularly scheduled grazing, and not to exceed permitted utilization where treatment occurs after regularly scheduled grazing – were set to make sure that targeted grazing would not interfere with livestock grazing. As such, achievement of Standards for Rangeland Health and Guidelines for Livestock Grazing Management in these allotments should not be adversely impacted.

The BLM does not expect the maximum allowed utilization to occur in the graduated use area. Such use, should it occur, would not prevent the allotments at issue from meeting or making significant progress toward meeting standards given the invasive annual grasses being grazed and BLM’s ability to cease use of the tool at any time. Moreover, that some use may occur in the graduated use area adjacent to the 400 foot fuel break corridor could increase the overall effectiveness of the fuel break, at least marginally.

If BLM determines that the targeted grazing treatment does not meet the four criteria to provide benefit to firefighters, is not cost effective, utilization limits are in excess of that identified in the design criteria, or unanticipated resource impacts occur, prostrate kochia would be seeded to create the fuel break. Again, BLM would retain the ability to cease use of the targeted grazing tool at any time if BLM determines is not effective or desirable for any reason.

Long-term benefits would be realized with potentially smaller wildfires and an increased potential for successful vegetation treatments to restore native sagebrush-steppe habitat. Perennial vegetation communities provide a larger quantity of high quality forage than annual grass communities. Road maintenance would improve the safety of livestock transportation to and from allotments and facilitate placement of water hauls and supplement for the purposes of targeted grazing.

Alternative 3 – Modified Proposed Action

Impacts to livestock grazing under this alternative would be similar to those described under the Proposed Action. Fuel break treatment would impact approximately 10,544 acres within allotments. However, the reduced fuel break buffer width (total of up to 200 feet, except for targeted grazing), compared to the Proposed Action (total of up to 400 feet) would not be as effective at limiting the size of wildfires in the analysis area. As a result, more allotments and larger areas would need to be rested from livestock grazing following wildfire, reducing available AUMs for longer periods of time than under the Proposed Action. Impacts from targeted grazing and prostrate kochia seeding would be identical to those described for the Proposed Action. However, no roads would be maintained above current levels which may limit options for placement of water haul containers or supplements to effectively concentrate livestock for the purposes of targeted grazing.

3.10.3 Cumulative Effects

The cumulative impacts analysis area for livestock grazing is the same as the affected environment analysis area described above, which includes an area greater than the direct footprint of the proposed project and would include portions of the Gateway West Transmission Line projects proposed in the area. The temporal scale for cumulative impacts to soil resources is 10 years, which includes implementation of the Soda Fire ESR Plan, and may include transmission line construction. Actions that could cumulatively affect livestock grazing are wildfire, vegetation treatments including noxious weed management, post-fire stabilization and rehabilitation treatments, construction and maintenance of the Gateway West Transmission Line project, and recreation.

The No Action alternative would not have a network of fuel breaks constructed throughout the project area. Response time required to catch fires before they grow beyond the capabilities of initial attack would remain unchanged and landscapes more distant from improved roads with intact sagebrush steppe would remain most vulnerable to large fires. This would result in the continued trend of wildfires, post-fire burned lands rested from grazing for 1 to 5 years combined with activities such as transmission line construction could result in negative short-term cumulative impacts for some operators, depending on the location of transmission line roads and structures, and burned areas. Conversion from perennial plant communities to annual plant communities would reduce rangeland diversity and forage availability, putting further pressure on livestock operators.

Recreation and vegetation treatments would continue to occur in the analysis area. Recreation disturbance is dispersed and would likely increase over time as would the occurrence of noxious weeds; however, these impacts would not result in additive effects to livestock grazing management. Transmission line construction may occur and limit herd access to some areas. Temporary disturbance associated with transmission line construction would be reclaimed, resulting in a short-term loss of AUMs.

Livestock grazing decisions and associated permits for the 50 allotments in the analysis area include grazing schedules and terms and conditions to achieve or make significant progress toward meeting Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management (Standards and Guides). Therefore, current and future livestock grazing management is expected to maintain or improve allotment conditions (i.e., continue to meet or make significant progress toward meeting Standards 1-8). Overall, cumulative adverse effects to livestock grazing management from the action alternatives are expected to be to be minor at most, and would not interfere with the allotments' Standards and Guides. Project implementation may affect livestock grazing where seeding treatments are used for fuel break development, but only on a short-term basis (while seeded vegetation is establishing). Implementation of targeted grazing may add to cumulative effects on livestock grazing management, but would be minor at most with application of design elements, monitoring and control, and adaptive management thresholds and response and would be negligible overall when considered across the 50 grazing allotments in the analysis area identified in Table 3.10-1.

Moreover, wildfire size is anticipated to decrease. Native and seeded vegetation would mature over the long-term, providing quality forage for livestock grazing. Recreation would continue to occur in the analysis area. Recreation disturbance is dispersed and would likely increase over time as would the occurrence of noxious weeds; however, these impacts would not result in cumulative effects to livestock grazing management. Transmission line construction may occur and limit livestock access to some areas within select allotments. Temporary construction disturbance would be reclaimed and rested from grazing until monitoring criteria were met, resulting in a short-term loss of AUMs.

3.11 Wild Horses and Burros

3.11.1 Affected Environment

The analysis area for wild horses is the same as the project area. Portions of four Herd Management Areas (HMA) are located within this analysis area: Sands Basin, Hardtrigger, Black Mountain, and Three Fingers in Oregon (Figure 3.11-1). Each HMA has been studied to determine how many wild horses the area can support while also providing for other land uses and resource values. The overall capacity of the HMA to support wild horses is called its

Appropriate Management Level (AML). Table 3.11-1 presents the AML and animal unit months (AUMs) allocated for the HMAs in the analysis area.

Table 3.11-1. Herd Management Area allocated AML and forage level

Herd Management Area	Appropriate Management Level	Population Range	Forage (AUMs)
Hardtrigger	98	66 – 130	1,176
Black Mountain	45	30 – 60	540
Sands Basin	49	33 - 64	588
Three Fingers	75-150[1]	75-150	1,800

[1] AML is stipulated as a range (not a specific value) in Vale District RMP (USDI BLM 2002).

The Soda fire impacted all four HMAs. Burned areas within the Three Fingers HMA were not sufficient to justify reducing current herd numbers. In contrast, the other three HMAs were extensively burned, adversely impacting approximately 2,304 AUMs within these HMAs (USDI BLM 2015). Because all three herd management areas were burned by the Soda Fire, they will be closed to horse grazing for one full year and through a second growing season at a minimum or until monitoring or professional judgment indicate that health and vigor of desired vegetation has recovered to levels adequate to support and protect upland function.

In response to the Soda Fire, an emergency gather was conducted as a means to maintain the health of the herds and protect rangeland resources. The gather began on August 27, 2015, and concluded on September 4, 2015. A total of 308 horses were gathered from the Hardtrigger, Sand Basin, and Black Mountain HMAs. Several horses evaded capture Sand Basin HMA due to the complexity of the terrain and continue to use the area despite fire impacting 100 percent of the vegetation in the area. In the Black Mountain HMA, 10 horses were returned to the area because one-third of the HMA was not damaged by the Soda Fire. Future herd numbers will be determined based on resource objectives.

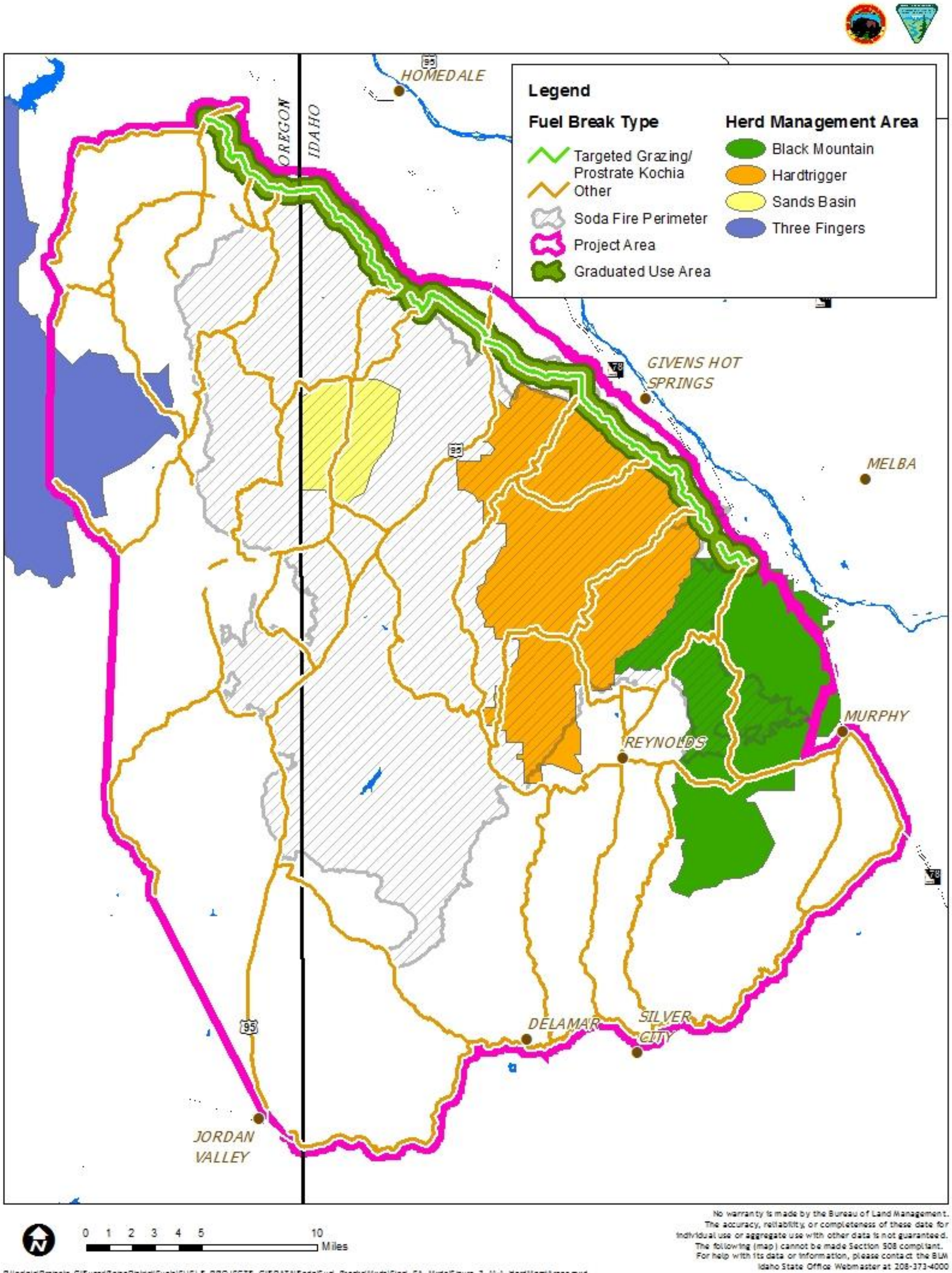
3.11.2 Environmental Consequences

Alternative 1 – No Action

Under the No Action alternative, there would be no disturbance to the wild horse herd associated with fuel break treatment implementation and horse distribution would not need to be modified to allow for fuel break establishment. In the short-term, Hardtrigger and Sand Basin HMAs would continue to be rested until resource management objectives are reached. A greatly reduced herd would continue to use the Black Mountain HMA.

Large-scale wildfires are expected to continue to burn at current intervals. This would result in disturbance to the wild horses due to fire and suppression activities, potential for injury or death, loss of forage, possible exclusion from burned portions of the HMA, and potential for emergency gather to protect both the horses and recovering vegetation or new seedings. Repeated fire would maintain vegetation in an herbaceous state, which would provide greater forage availability when compared to shrub-dominated plant communities. However, repeated fire can also degrade plant communities via soil loss and noxious weed and invasive plant introduction and spread, reducing long-term rangeland diversity.

Figure 3-8: Herd Management Areas within the Project Area.



Alternative 2 – Proposed Action

Under the Proposed Action, up to 5,179 acres of fuel break treatment and would occur. Treated areas would be protected from wild horse use, typically two to three years post-treatment. This protection could occur via exclusion from pastures containing treatments, temporary electrical or wire fencing, or by modifying water availability in the vicinity of treated areas and would occur primarily in the Three Fingers HMA because herds are currently active in this HMA.

The fuel breaks and buffer areas would tolerate use by wild horses once established. In the Hardtrigger and Black Mountain HMAs, prostrate kochia would be used for fuel break treatments (1,111 acres), providing higher protein forage than grasses during late summer through winter when the nutritional quality of herbaceous vegetation drops (Waldron et al. 2010). While an indirect benefit for horses in these areas, the limited amount of prostrate kochia would have little impact on overall animal health.

Over the long-term, this alternative is expected to reduce wildfire size, which would result in protection of existing and recovering shrub communities. This would slow the conversion of shrub communities to herbaceous-dominated areas and allow for increased shrub cover, potentially resulting in a gradual decrease in available forage. Smaller, less frequent fires would reduce the potential for wild horse disturbance, injury, mortality, forage loss, and/or the need for emergency gather.

Treatment implementation and maintenance could result in short-term disturbance to wild horses due to increased human presence and use of prescribed fire and mechanical equipment. This disturbance would occur for the duration of treatments, typically 2 weeks or less for each treatment area. Individual herbicide effects on wild horses are described in the *Vegetation Treatments using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement* (USDI BLM 2007a), the 2016 Final PEIS for *Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on BLM Lands in 17 Western States* (USDI BLM 2016), and *Vegetation Treatments Using Herbicides on BLM Lands in Oregon* Record of Decision (2010b).

Chemicals used for treatments to remove or reduce existing vegetation or to maintain fuel breaks pose little risk to horses. There is some risk to horses from consumption of Glyphosate-treated vegetation due to herbicide residues in grasses. However, Glyphosate would be applied to vegetation sprouting following prescribed burning; therefore it is anticipated that little vegetation would be present for consumption. In addition, disking would eliminate vegetation following chemical treatment. Risks to animals from these herbicides are low, as noxious weeds are treated with spot application and the treated weeds do not comprise a large proportion of the horses' diets. In addition, fuel break segments are along maintained roads and not within preferred areas; therefore horses would not likely be in treatment areas except for temporary passage. Only a fraction of the horses' habitat would be treated at any given time, further reducing the potential for consumption or foliar contact.

Alternative 3 – Modified Proposed Action

General direct and indirect effects would be the same as under the Proposed Action. It is anticipated that wildfire size would not be controlled to the same extent as it would under the Proposed Action. Prostrate kochia forage would decrease by 50 percent with the decrease in fuel break size (200 feet maximum) when compared with the Proposed Action (400 feet maximum).

3.11.3 Cumulative Effects

The cumulative impacts analysis area for wild horse herds is the same as the affected environment analysis area described above, which includes an area greater than the direct footprint of the proposed project and would include portions of the Gateway West Transmission Line project proposed in the area. The temporal scale for cumulative impacts to soil resources is 10 years; which includes implementation of the Soda Fire ESR Plan, and may include transmission line construction. Actions that could cumulatively affect wild horses are wildfire, vegetation treatment, post-fire stabilization and rehabilitation treatments, construction and maintenance of the Gateway West and Transmission Line project, and recreation.

The No Action alternative may result in the continued trend of larger, wildfires. Post-fire burned lands rested from herd use for 1 to 5 years combined with activities such as transmission line construction could result in negative short-term cumulative impacts to horses, limiting their movements to areas with less disturbance and abundant forage. Conversion from perennial plant communities to annual plant communities would reduce rangeland diversity and alter forage availability for wild horse herds. Recreation and vegetation treatment would continue to occur in the analysis area. Recreation disturbance is dispersed and would likely increase over time, which may alter herd activities or result in injury if animals are harassed near roads and trails. Over the long-term, vegetation treatments would be designed to reduce noxious weed and annual plant occurrence, improving rangeland habitat for herds. Transmission line construction may occur and limit herd access to some areas. Temporary disturbance associated with transmission line construction would be reclaimed, resulting in a short-term loss of forage.

Cumulative effects for action alternatives are not anticipated. Wildfire size is anticipated to decrease. Native and seeded vegetation would mature over the long-term, increasing the availability of quality forage. Recreation disturbance is dispersed and would likely increase over time, which may alter herd activities or result in injury if animals are harassed near roads and trails. Transmission line construction may occur and limit livestock access to some areas within select allotments. Temporary disturbance would be reclaimed and rested from grazing until monitoring criteria were met, resulting in a short-term loss of AUMs.

3.12 Recreation

3.12.1 Affected Environment

The analysis area for recreation is the proposed project area as proposed project disturbance would only occur in this area. Several high use recreation areas are found within the project area, and less concentrated recreation occurs throughout. Recreational activities include hunting, camping, biking, hiking, off-highway vehicle (OHV) use, horseback riding, rock hounding, and bird and wildlife watching.

The Hemmingway/Rabbit Creek/Wilson Creek Trail accounts for approximately 950 miles of motorized and non-motorized trails. Motorized use is concentrated in the Hemmingway and Rabbit Creek areas, while non-motorized use occurs in the Wilson Creek trail system. These trail systems are widely visited and are used to host organized events such as bike, running, and motorcycle races. This area sees approximately 75,000 visitors per year (USDI BLM 2015a).

The Soda Fire burned though this area and portions of the trail systems were damaged by suppression activities.

The Jump Creek area is popular for both motorized and non-motorized recreation. There are trails for motorized and non-motorized users as well as facilities for camping. This area sees approximately 20,000 visitors per year (USDI BLM 2015a). This area was impacted minimally by the Soda Fire.

3.12.2 Environmental Consequences

Alternative 1 – No Action

The No Action alternative would result in no fuel breaks being constructed in the project area, no road maintenance and no targeted grazing. There would be no immediate direct impact to recreational activities.

In the future, increased risk of large wildfires may affect the experiences of visitors. Fires may result in damage to recreational facilities and trails which may lead to closures during and after the fire. Fires may create dusty environments that are undesirable to visitors and the scenic quality may be degraded. Dozer lines and hand lines created during suppression may become unofficial trails that can encourage cross-country use and detract from the recreationalist's experience.

Alternative 2 – Proposed Action

Under the Proposed Action there may be direct impacts to recreational activities, but they are likely to be minimal and largely short-term. These may include degradation of the scenic quality due to the construction of fuel breaks. Prescribed fire activity may also result in area closures and smoky or dusty conditions that impact recreation.

In general, road maintenance on public lands may promote increased use by the public for recreational purposes due to easier access; however, no documentation exists to support a significant increase of use from road maintenance for the purpose of a fuel break. The potential increase in road use by the public would only be associated with the roads that are not currently being maintained to desired specifications (accessible to fire resources and the roadway free of vegetation). However, there would be no additional signage to indicate accessibly, trails and recreation sites associated with roads would not be improved, and the class of vehicles that can currently navigate these roads is not expected to change.

The fire start history for the Boise District BLM shows a concentration of human caused fire starts associated with major travel routes- primarily routes that are maintained as primary travel routes between communities and are primarily transportation routes for the general public to use with any type of vehicle from passenger car to semi-tractor rig. The proposed road maintenance associate with the fuel break proposal would be a minor improvement to some routes in regards to increasing access for fire suppression vehicles and equipment but for the majority of the routes little to no increase in road maintenance would be expected.

Over the long term, the Proposed Action may serve to limit the negative effects of large wildfires on recreational activities in the area.

Alternative 3 – Modified Proposed Action

Impacts under Alternative 3 would be similar to those described for the Proposed Action. However, the narrower fuel breaks may not be as effective at limiting the spread of large fires so, the negative impact of large wildfire may be higher under this alternative in the long-term. Additionally, under this alternative would not increase access to the area compared to the Proposed Action as no additional road and ditch maintenance would occur.

3.12.3 Cumulative Effects

The area of analysis for cumulative impacts for recreation is the proposed project area. Actions that could cumulatively impact the resource are primarily transmission lines and wildfire.

Under the No Action alternative the effects of past, present and future foreseeable actions would likely result in a continuation of current trends in recreational activity. Fire would remain an important influence on the landscape and on recreational opportunities. Impacts by fire on recreation may be felt during and after the fires. Past fires have contributed to the spread of non-native invasive annual grasses that lead to more intense fire behavior, and future fires are expected to continue that trend. The development of transmission lines in the project area may result in short term impact to the resource during construction, and long term impact due to road construction. Road building associated with transmission line development may lead to better access for recreationists, but may detract from the experience of those desiring solitude. Therefore, there may be positive and negative impacts from road building, as roads may increase access, but detract from solitude.

Cumulative impacts for the Modified Proposed Action would be identical to the No Action alternative as roads, and therefore access, would remain unchanged. More regular road maintenance and, in some cases, minor improvements to ensure firefighter access to fuel breaks could increase public access and recreation opportunities following implementation of the Proposed Action. However, increases in public use would likely be negligible to minimal due to the remoteness of most of these roads.

3.13 Lands with Wilderness Characteristics

3.13.1 Affected Environment

The analysis area for lands with wilderness characteristics is the proposed project area as proposed project disturbance would only occur in this area. Under the 1976 Federal Land and Policy Management Act (FLPMA), the BLM has numerous authorities to maintain inventories of all public lands and their resources, including wilderness characteristics, and to consider such information during the land use planning process. BLM Manual 6310 provides guidelines to assess public lands for wilderness characteristics that are not currently managed for such characteristics (that is, lands other than existing designated wilderness areas and wilderness study areas (WSAs).

Such assessment is based on determining whether certain roadless tracts of public land meet minimum Wilderness Act criteria, as follows:

- At least 5,000 acres in size or adjacent to other existing designated wilderness areas or wilderness study areas, and contain the following wilderness characteristics;
- Generally natural in appearance, and has either
- Outstanding opportunities for solitude, or
- Outstanding opportunities for primitive and unconfined recreation.

Additional supplemental values that are associated wilderness values, such as wildlife viewing, photography, fishing and hunting, are also recorded during the assessment but are not a determining factor for wilderness characteristic findings.

The assessment reflects current conditions and was used to update wilderness inventories. The process entails the identification of wilderness inventory units, an inventory of roads and wilderness characteristics, and a determination of whether or not the area meets the minimum Wilderness Act criteria (listed above). Units found to possess such characteristics are being evaluated during the land use planning process in order to address future management. The following factors are documented for each Wilderness Inventory Unit (WIU):

Size – Roadless areas with over 5,000 acres of contiguous BLM lands, or roadless areas of less than 5,000 acres that are contiguous with lands which have been formally determined to have wilderness or potential wilderness values, or any Federal lands managed for the protection of wilderness characteristics. State or private lands are not included.

Naturalness – Lands that appear to have been affected primarily by the forces of nature and any work of human beings must be substantially unnoticeable. Examples of human-made features that may be considered substantially unnoticeable in certain cases are: trails, trail signs, bridges, fire breaks, pit toilets, fisheries enhancement facilities, fire rings, historic properties, archaeological resources, hitching posts, snow gauges, water measuring devices, research monitoring markers and devices, minor radio repeater sites, air quality monitoring devices, fencing, spring developments, barely visible linear disturbances, and stock ponds. Apparent naturalness refers to whether or not an area looks natural to the average visitor who is not familiar with biological composition of natural ecosystems versus human-affected ecosystems.

Outstanding Opportunities for Solitude or Primitive and Unconfined Types of Recreation – Visitors may have outstanding opportunities for solitude or primitive and unconfined types of recreation, when the sights, sounds, and evidence of other people are rare or infrequent; where visitors can be isolated, alone or secluded from others; or where the area offers one or a combination of exceptional non-motorized, non-mechanical recreation opportunities.

Supplemental Values – Does the area contain ecological, geological, or other features of scientific, educational, scenic, or historical value?

Wilderness Inventory Unit (WIU) Updates

Oregon

In 2004, a citizen group provided the BLM Vale District with an inventory report containing maps, photos, photo logs, and GIS spatial data for 42 proposed new wilderness study areas (WSAs) or wilderness areas of critical environmental concern covering over 2.2 million acres of public land in the planning area (ONDA 2004). The BLM considered all of the group’s submissions, and between 2007 and 2012 conducted wilderness inventory updates for public lands outside of designated WSAs (approximately 1.3 million acres in the planning area) following current inventory guidance. Interdisciplinary (ID) teams reviewed the existing wilderness inventory information contained in the BLM's wilderness inventory files, previously published inventory findings, and citizen-provided wilderness information.

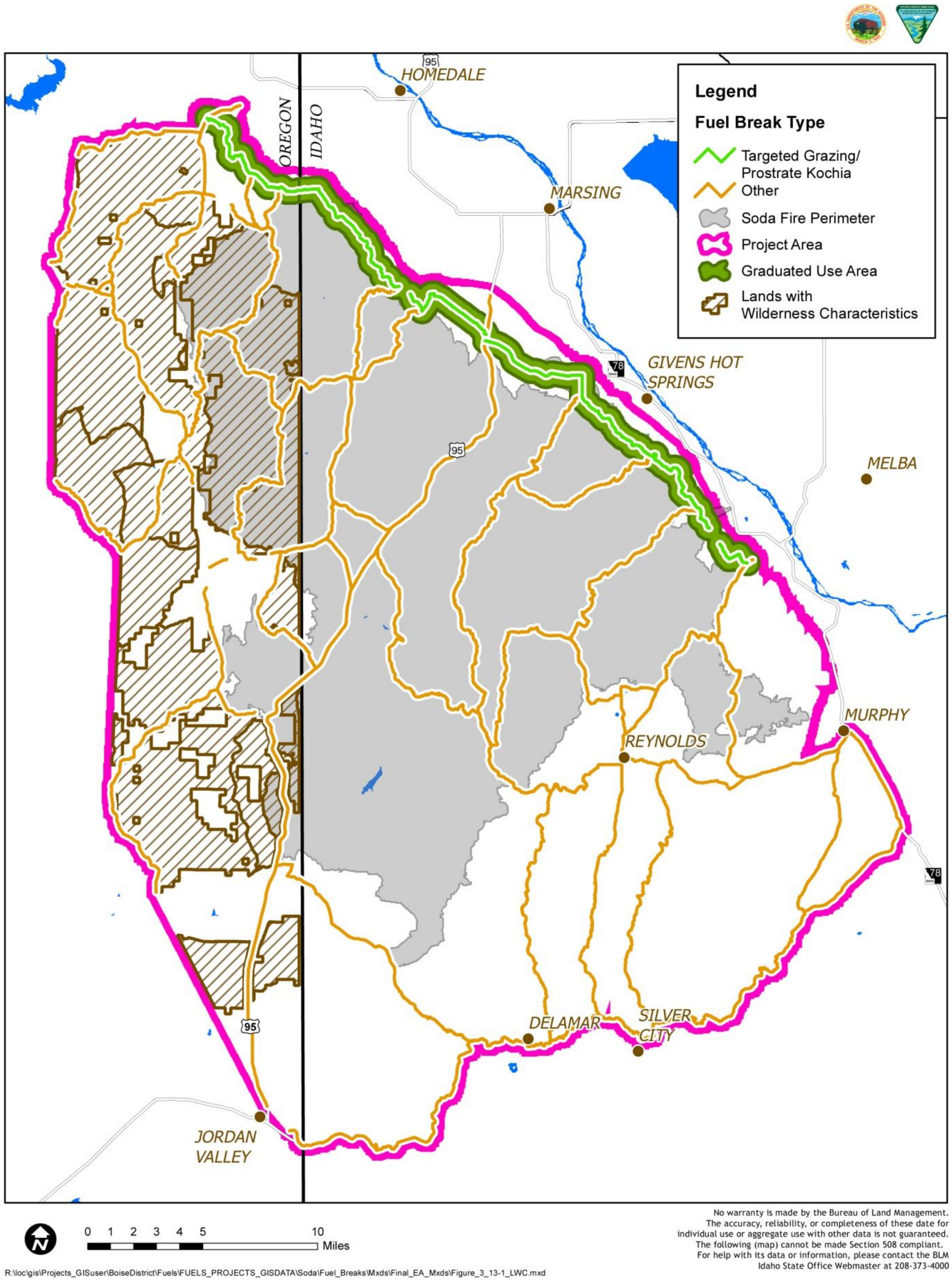
The BLM identified preliminary boundaries for WIUs and reviewed existing pertinent information within the unit to determine if data updates or additional field inventory information was needed. Updates and inventories were completed prior to conducting an evaluation of a given unit. Inventory unit boundaries are principally formed by public land boundaries and roads. The ID teams made final route and boundary determinations and, subsequently, evaluated wilderness characteristics in each unit. BLM staff compiled the new and existing photographs, resource information, ID team discussion records, and route information into individual unit records. With this information, the ID teams then made draft wilderness characteristic determinations and provided these to BLM managers for final concurrence. This process is documented in further detail in USDI BLM (2011b). The Vale District Office completed the wilderness characteristics inventory update process for all areas within the analysis area, including all lands identified by citizen proposals received by the Vale District in 2012 or earlier. Final wilderness characteristics determinations have been made available to the public on the BLM Vale District website at: http://www.blm.gov/or/districts/vale/plans/wce/malheur-index.php

The project area contains portions of 17 wilderness inventory units in Oregon. Of these units, BLM determined that eight meet the criteria to be classified as lands with wilderness characteristics which are summarized in Table 3.13-1 and Figure 3.13-1.

Table 3.13-1. Summary of Inventory Units classified as Lands with Wilderness Characteristics within or overlapping the Analysis Area in Oregon

Inventory Unit Name	Wilderness Criteria					Acres In Project Area	Acres Burned in Soda Fire
	Size	Naturalness	Recreation	Solitude	Supplemental Values		
Antelope Creek	Y	Y	Y	Y	Y	10,739	8,016
Bannock Ridge	Y	Y	Y	Y	Y	6,643	0
Board Corral Mountain	Y	Y	N	Y	Y	14,971	0
Honeycomb Contiguous	Y	Y	Y	Y	Y	88	0
McIntyre Ridge	Y	Y	Y	N	Y	14,610	0
Spanish Charlie Basin	Y	Y	Y	Y	Y	20,682	19,133
Spring Mountain	Y	Y	Y	Y	Y	18,312	6
Three Fingers Rock North	Y	Y	Y	Y	Y	12,276	0
Total Acres						**98,321**	**27,155**

Figure 3-9: Lands with Wilderness Characteristics.



Idaho

In Idaho, 22 WIUs totaling 290,286 acres fall within or overlap the proposed project area in the BLM Boise District. All WIUs in the Boise District were delineated and inventoried post-FLPMA (mid-1970s to early 1980s). WIU boundaries were created, similar to Oregon, using roads, public ownership boundaries, as well as geographic features (e.g., rivers and streams). Per BLM Manual 6310, BLM conducted wilderness inventory updates. Inventory updates for the 22 WIUs in the project area were completed between 2011 and 2013. None of the WIUs inventoried in the project area fully meet the criteria for lands with wilderness characteristics and, therefore, are not considered or managed as lands with wilderness characteristics.

3.13.2 Environmental Consequences

Treatments proposed in lands determined to have wilderness characteristics were selected to maintain, protect and/or enhance values identified by BLM through the wilderness characteristics inventory. All proposed actions are designed to have only short-term, if any, impact to wilderness characteristics. Proposed treatments were also designed to: minimize the risk of invasion of cheat grass or noxious weeds; incorporate seed mixes, including native species, to enhance the natural character of the area; and utilize methodologies that minimize the short term visual and aesthetic impacts to the area.

In Oregon, a settlement agreement (ONDA v. BLM, 2010) prohibits projects that would diminish the size of an inventory unit determined by BLM to possess wilderness characteristics, or cause the entire BLM inventory unit to no longer meet the criteria for wilderness characteristics. BLM's analysis has determined that nearly all proposed treatments would not diminish the size of any inventoried WIU or cause any WIU to no longer meet the criteria for wilderness characteristics. Nor would the proposed actions cause any area with BLM-identified wilderness characteristics to no longer meet the minimum wilderness characteristics criteria. There are no lands with wilderness characteristics in Idaho associated with the project area, so no there would be no impacts as a result of fuel break development.

Alternative 1 – No Action

The No Action alternative would result in no fuel breaks being constructed in the project area (i.e., no modification of vegetation in the fuel treatment zone and no road maintenance). There would be no immediate direct impact to lands with wilderness characteristics. However, the long-term trend of conversion of native grasslands to annual grasslands resulting from disturbances such as recurring wildfire would continue, decreasing the naturalness of these lands.

Alternative 2 – Proposed Action

Approximately 200-foot-wide fuel breaks along both sides of 83 miles of roads (totaling 4,042 acres) would be converted to fuel breaks adjacent to lands with wilderness characteristics in Oregon (Figure 3.13-1). Direct impacts of mowing, hand cutting, chemical treatment (herbicide), seeding (including seed bed preparation techniques), and prescribed fire (e.g., fenceline and pile burning) would be predominately unnoticeable to the casual observer. Design Features (Section 2.4.3) applied during implementation of treatments within lands with wilderness characteristics, particularly mowing and seeding, would ensure that the requirements to maintain lands with wilderness characteristics are met. No targeted grazing treatments or prostrate kochia seedings are proposed in lands with wilderness characteristics.

Proposed treatments are designed to minimize the risk of invasion of cheatgrass and noxious weeds, and would incorporate seed mixes, including native species, to enhance the natural character of the area. Fuel break treatments would not affect the size of a unit, naturalness, or other wilderness characteristics criteria. As such, implementation of Alternative 2 would not diminish the size of any inventoried WIU or cause any WIU to no longer meet the criteria for wilderness characteristics, nor would it cause any area with BLM-identified wilderness characteristics to no longer meet the minimum wilderness characteristics criteria.

Fuel breaks proposed in this alternative would reduce the size and threat of recurring wildfire in lands with wilderness characteristics substantially better than the No Action and moderately better than the Modified Proposed Action. In turn, this would reduce the likelihood that natural perennial grass and shrub communities would be burned and converted to annual grasslands, and help maintain wilderness characteristics, overall.

Proposed road maintenance would improve access to these lands along existing roadways, particularly where low or no maintenance occurs. However, with the exception of one route in the Spanish Charlie Basin WIU, road maintenance would not adversely affect wilderness characteristics, diminish the size of any inventoried WIU, or cause any WIU to no longer meet the criteria for wilderness characteristics; nor would road maintenance cause any area with BLM-identified wilderness characteristics to no longer meet the minimum wilderness characteristics criteria.

Direct, long-term impact of the Spanish Charlie Basin WIU would occur with the improvement of 5.5 miles of the existing primitive route crossing the center of the WIU. Maintenance activities along this route might impact the size of the unit by splitting it into two smaller areas. However, while this action is analyzed in the EA, BLM acknowledges that improvement of these 5.5 miles could not be authorized until the 9th Circuit Court Settlement Agreement requirement is fulfilled and management objectives for the Spanish Charlie Basin WIU are finalized through the SEORMP Amendment.

Alternative 3 – Modified Proposed Action

Fuel breaks developed in lands with wilderness characteristics would be along the same 83 miles of roads as the Proposed Action, but would be half the width (100 feet to both sides of road vs. 200 feet to both sides of road) totaling around 2,027 acres. Direct impacts under the Modified Proposed Action would be similar to but less than those described for the Proposed Action. However, the long-term benefit of wildfire reduction and subsequent reduction in plant community conversion to maintain naturalness would be minimized compared to the Proposed Action.

3.13.3 Cumulative Effects

The area of analysis for cumulative impacts is the proposed project area. Reasonably foreseeable future actions that could cumulatively impact the wilderness characteristics resource are recreation, livestock grazing, and wildfire.

Under the No Action alternative the effects of past, present and future foreseeable actions would likely result in a continuation of current trends in public use of, and values associated with, wilderness characteristics. Increased recreational use in the analysis area is anticipated as populations increase.

Fire is and would remain an important influence on the landscape and on wilderness characteristics. Impacts by fire on lands with wilderness characteristics are both immediate and delayed; opportunities to experience wilderness characteristics immediately after a fire can be diminished as well as over the long term due to lengthy vegetation recovery periods and/or conversion of native vegetation to annual grasslands. Past fires have contributed to the spread of non-native invasive annual grasses that lead to more intense fire behavior, and future fires are expected to continue that trend.

Cumulative impacts for the Modified Proposed Action would be identical to the No Action alternative as roads, and therefore access, would remain unchanged. More regular road maintenance and, in some cases, improvements to ensure firefighter access to fuel breaks could increase public access and recreation opportunities following implementation of the Proposed Action. However, increases in public use would likely be negligible to minimal due to the remoteness of most of these roads.

The cumulative impacts for the Proposed Action and the Modified Proposed Action alternatives would be similar. Under the Proposed Action, road maintenance would occur, and recreational use may increase slightly with improved access. It is not anticipated that this increase would detract from wilderness characteristics because increased use would likely be minor and dispersed. Neither the cumulative effects of the Proposed Action nor those associated with the Modified Proposed Action would diminish the size of any inventoried WIU or cause any WIU to no longer meet the criteria for wilderness characteristics; nor would they cause any area with BLM-identified wilderness characteristics to no longer meet the minimum wilderness characteristics criteria. Additionally, the impacts from fire would be expected to decrease over time, though to a lesser extent under the Modified Proposed Action than the Proposed Action, because fire size would be reduced slowing the rate of native vegetation conversion to annual grassland, and thus maintaining overall naturalness.

3.14 Areas of Critical Environmental Concern

3.14.1 Affected Environment

The analysis area for Areas of Critical Environmental Concern (ACECs) is the project area because proposed actions would not occur outside of this area. There are six ACECs in the project area, five in Idaho and one in Oregon (Figure 3.14-1). Five of the ACECs were burned to varying degrees during the Soda Fire. However, the Spring Mountain ACEC was not burned. Table 3.14-1 identifies ACEC values and post-burn conditions for each ACEC (USDI BLM 2015a).

Figure 3-10: ACECs within the Project Area.

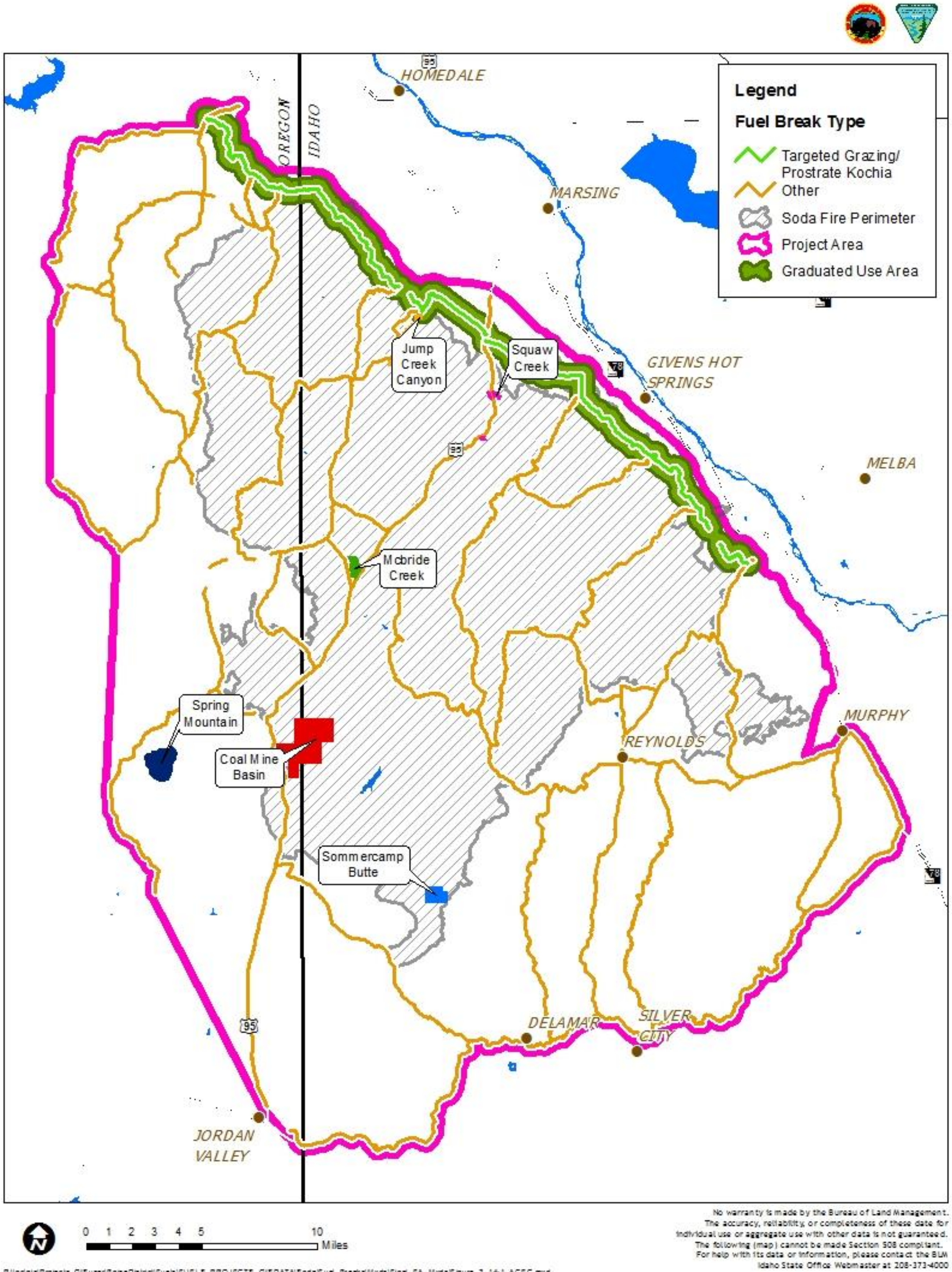


Table 3.14-1. ACECs within the Project Area

ACEC Name / Location	ACEC Acres	ACEC Values (per RMP)	Post-burn Condition
Coal Mine Basin Idaho/Oregon	Total: 2,408.2 Burned: 2,246.4 Unburned: 161.8	Special status plants, scenic values, fossils.	Ash outcrops unburned to low intensity. Surrounding vegetation moderate to high intensity burn. Exclosure fence corner posts burned.
Jump Creek Canyon Idaho	Total: 612.5 Burned: 610.1 Unburned: 2.4	Riparian community, Wyoming sagebrush-bluebunch community, wildlife, scenic values, recreation	Up-land vegetation high burn intensity. Riparian low intensity on lower stretch; moderate intensity upstream. Few impacts to recreation facilities.
McBride Creek Idaho	Total: 261.6 Burned: 261.6 Unburned: None	Special status plants	Ash outcrops unburned to low intensity. Surrounding vegetation moderate to high intensity burn. Exclosure fence mostly intact.
Sommercamp Butte Idaho	Total: 439.7 Burned: 439.7 Unburned: None	Mountain mahogany-bluebunch wheatgrass and oceanspray communities, scenic values	High intensity burn in much of the mountain mahogany.
Spring Mountain Oregon	Total: 994.7 Burned: None Unburned: 994.7	Three vegetation plant cells, including two upland cells and one riparian cell.	ACEC was not burned.
Squaw Creek Idaho	Total: 145.6 Burned: 145.6 Unburned: None	Wyoming sagebrush-bluebunch wheatgrass community	Northern portions with moderate to high burn intensity. Southern portion unburned.

3.14.2 Environmental Consequences

Alternative 1 – No Action

No fuel breaks would be constructed, so no values within ACECs would be directly impacted. However, without a strategic network of fuel breaks to facilitate containment and reduce the amount of acres burned annually, large and/or frequent wildfires are expected to occur across the project area, based on wildfire trends over the last 30 years. ACEC values for vegetation, SSP, scenic values, fossils, and recreation would continue to be degraded due to wildfire as discussed in Sections 3.3 – General Vegetation Including Noxious and Invasive Weeds, 3.4 – Special Status Plants, 3.6 – Cultural Resources, 3.7 – Visual Resources, 3.12 – Recreation, and 3.13 - Lands with Wilderness Characteristics.

Alternative 2 – Proposed Action

Under the Proposed Action, the 200-foot-wide fuel breaks implemented along 442 miles of roads would directly affect a total of 25.5 acres within ACECs: 4 acres of Coal Mine Basin, 3 acres of Jump Creek Canyon, 10 acres of McBride Creek, and 8.5 acres of Squaw Creek (Table 3.14-2). By and large, these acres comprise the very edges of the ACEC boundaries they overlap, and all of these acres burned in the Soda Fire (Figure 3.14-1).

Table 3.14-2. Acres and proportion of ACECs affected by the Proposed Action

ACEC	Total Acres	Acres in Fuel Break Footprint	Percent of ACEC
Coal Mine Basin	2,408.2	4	0.2
Jump Creek Canyon	612.5	3	0.5
McBride Creek	261.6	10	3.8
Sommercamp Butte	439.7	0	0
Spring Mountain	994.7	0	0
Squaw Creek	145.6	8.5	5.8
TOTAL	4,862.3	25.5	0.5

ACEC values for vegetation, SSP, scenic values, fossils, and recreation would be affected as discussed in Sections 3.3 – General Vegetation Including Noxious and Invasive Weeds, 3.4 – Special Status Plants, 3.6 – Cultural Resources, 3.7 – Visual Resources, 3.12 – Recreation, and 3.13 - Lands with Wilderness Characteristics. While adverse impacts would be greatest under this scenario, they would still be negligible to minimal overall, as only small portions of these ACECs would be affected (Table 3.14-2). Benefits to ACEC values would also be greatest with implementation of the Proposed Action by substantially improving fire suppression and reducing the threat of recurring and/or large-scale fires over the long-term.

Alternative 3 – Modified Proposed Action

Under Alternative 3, direct impacts to ACEC values from fuel break implementation would be the same as the Proposed Action, but acres would be cut in half (i.e., 100-foot-wide fuel breaks along 442 miles of roads). A total of 12.8 acres of ACECs would be directly impacted: 2 acres of Coal Mine Basin, 1.5 acres of Jump Creek Canyon, 5 acres of McBride Creek, and 4.3 acres of Squaw Creek (Table 3.14-3). Similar to the Proposed Action, these acres comprise the very edges of the ACEC boundaries they overlap, and all of these acres burned in the Soda Fire (Figure 3.14-1).

Table 3.14-3. Acres and proportion of ACECs affected by the Modified Proposed Action

ACEC	Total Acres	Acres in Fuel Break Footprint	Percent of ACEC
Coal Mine Basin	2,408.2	2	0.1
Jump Creek Canyon	612.5	1.5	0.3
McBride Creek	261.6	5	1.9
Sommercamp Butte	439.7	0	0
Spring Mountain	994.7	0	0
Squaw Creek	145.6	4.3	2.9
TOTAL	4,862.3	12.8	0.3

Adverse impacts would be negligible overall, as minor proportions of these ACECs would be affected. Long-term benefits of improving fire suppression and reducing wildfire threat would be greater than the No Action alternative under this scenario, but less than Alternative 2 (Proposed Action).

3.14.3 Cumulative Effects

Cumulative effects for ACEC values for vegetation, SSP, scenic values, fossils, and recreation would affected as discussed in Sections 3.3 – General Vegetation Including Noxious and Invasive Weeds, 3.4 – Special Status Plants, 3.6 – Cultural Resources, 3.7 – Visual Resources, 3.12 – Recreation, and 3.13 - Lands with Wilderness Characteristics.

3.15 Water Quality

3.15.1 Affected Environment

The analysis area for water is the same as the project area because surface disturbing activities would occur within this area. The project area contains or is bordered by approximately 323 miles of perennial streams; 275 miles in Idaho and 48 miles in Oregon (see Figure 3.5-1 in Section 3.5). Of the 323 miles of perennial streams, 134 miles are within the Soda Fire burned area and 189 miles are outside the fire perimeter. Perennial streams flow continuously and are generally associated with a water table in the localities through which they flow (USDI BLM 1998).

The project area contains or is bordered by approximately 1,798 miles of intermittent streams; 1,126 miles in Idaho and 672 miles in Oregon. Of the 1,798 miles of intermittent streams, 856 miles are within the Soda Fire burned area and 942 miles are outside the fire perimeter. Intermittent or seasonal streams flow only at certain times of the year, when they receive water from springs or some surface source such as melting snow (USDI BLM 1998).

Ephemeral streams flow only in direct response to precipitation. Ephemeral stream channels are above the water table at all times (USDI BLM 1998). Ephemeral stream channels are common throughout the project area. Due to lack of consistent water and depth to the water table, riparian vegetation is not present.

The project area contains approximately 39 miles of artificial water bodies such as canals; approximately 5 miles of artificial water bodies are within the Soda Fire burned area and 34 miles are outside the fire perimeter (NHD 2010; USDI BLM 2015a). The project area also includes a portion of the Reynolds Creek Experimental Watershed (RCEW) maintained by the USDA Agricultural Research Service (ARS).

Water resources in the area primarily contribute to irrigation, livestock production, fisheries, recreation, and wildlife habitat.

3.15.2 Environmental Consequences

Alternative 1 – No Action

No fuel break treatments would occur under this alternative have the potential to disturb riparian systems and subsequently affect water quality. Fuel breaks would not be in place to reduce the scale of wildfire within the project area. As a result, large wildland fires would continue to occur, removing protective vegetation and have the potential to reduce soil stability increasing erodibility leading to deposition in water ways impacting water quality.

Indirect impacts would be the continued potential for increased sediment deposition into water bodies within the project area due to vegetation removal by wildfires. This is expected to continue until natural vegetation recovery and/or post-fire seeding establishment is adequate to prevent soil movement by wind or water. In some cases, additional post-fire soil stabilization treatments may be necessary to prevent water quality degradation, particularly in perennial streams. Sediment deposition is expected to occur primarily during precipitation events and spring run-off, but could also result from wind deposition during dry periods. Over the long term, these impacts are expected to repeat throughout the project area due to frequent, potentially large fires, as demonstrated by the fire history of the area.

General Effects of Action Alternatives

All action alternatives include the design features to buffer perennial and intermittent streams, riparian areas, and wetlands that occur within or adjacent to the proposed fuel break segments (see Section 2.4.3 Design Features). This would reduce or eliminate direct sediment deposition into these areas due to treatment implementation. However, implementation of an action alternative could result in short-term increases in ash and sediment deposition, primarily into streams lacking riparian vegetation or ephemeral drainages within or adjacent to treated fuel breaks. Ash would be produced as a result of burning vegetation and litter using prescribed fire. Soil sediment would be produced as a result of vegetation removal, mechanical treatments, and targeted grazing. Sediment and ash could be transported by either wind or water. This could result in short-term increases in sedimentation that could reduce water quality. This effect is expected to last from project implementation until seeding establishment is adequate to prevent soil movement. Short-term impacts to water quality due to sedimentation would be greater in the burned area than the unburned area due to lack of established vegetation to filter sediment.

Over the long term, implementation of an action alternative is expected to reduce water quality impacts as a result of reduced wildfire size within both burned and unburned portions of the project area.

Alternative 2 – Proposed Action

Short-term effects of the Proposed Action on water quality would occur due to vegetation removal, mechanical treatments, road and ditch maintenance, and targeted grazing. While riparian and aquatic buffers will be implemented to avoid disturbing riparian vegetation during creation of fuel breaks, and BMPs and conservation practices will minimize sediment discharge into streams and wetlands, road maintenance under the Proposed Action will occur within riparian areas.

There would be a total of 812 crossings of intermittent and perennial streams, 407 in the burned area and 405 outside the Soda Fire perimeter by roads that are proposed for maintenance.

Maintenance of fuel breaks are not anticipated to result in increased sedimentation. Installation of culverts and construction of rolling dip gravel stream crossings would have the potential to result in temporary disturbance to streamside vegetation and increase sedimentation which would have a short-term impact on water quality.

Over the long-term, implementation of the Proposed Action is expected to reduce water quality impacts due to reduced wildfire size. Maintenance of roads and ditches with improved stream crossings and culverts would improve water quality due to improved sediment management in both the burned and unburned portions of the project area.

Alternative 3 – Modified Proposed Action

General direct and indirect effects related to vegetated fuel breaks and targeted grazing would be similar to those described above. Short-term effects of Alternative 3 on water quality would be less in geographic extent than Alternative 2, due to over 50 percent fewer acres of vegetation removal, mechanical treatments, targeted grazing as well as the result of not maintaining or improving roads. There would be a total of 673 crossings of intermittent and perennial streams, 323 in the burned area and 350 outside the Soda Fire perimeter by roads; however these roads are not proposed for maintenance and improvement under this alternative.

Over the long term, implementation of Alternative 3 is expected to reduce water quality impacts due to reduced wildfire over less of a geographic area compared to the Proposed Action. This is due to the decreased acreage of the fuel break segments and the result of not maintaining or improving the roads which would decrease the fuel break effectiveness compared to the Proposed Action.

3.15.3 Cumulative Effects

The cumulative impacts analysis area for water quality is the project area plus a 0.25 mile buffer. This area was selected because this is likely an extent to which cumulative impacts to water quality would be measurable, and it provides context at a scale befitting the project and water resources within the project area. The effects described below would be expected for the life of the project.

Water quality is affected by human uses on federal, state, and private lands in and adjacent to the project area. Actions that could cumulatively affect water quality are treatments in the Soda Fire ESR Plan, noxious weed management, the proposed Gateway West Transmission Line project and other lands and realty actions; ongoing livestock grazing; ongoing recreation and ongoing wildfire. Human uses can also include alteration of stream flows on non-federal lands. Past and current alterations contribute to the baseline condition and may influence the duration of stream flow on public lands.

The Clean Water Act requires that permitted activities not contribute to water quality impairment. This is achieved via design features associated with these projects to reduce or eliminate deposition of sediment or pollutants or vegetation removal that could contribute to increased water temperatures.

Vegetation treatments that result in removal of upland cover, such as past plow-and-seed or prescribed fires to remove shrubs, may have resulted in sediment deposition into perennial, intermittent, or ephemeral drainages lasting several months to a year or more. Noxious weed treatments along drainages could also result in short-term sediment deposition through small-scale vegetation removal. Sediment deposition slows with reestablishment of perennial vegetation through seeding or planting. In particular, post-fire ESR treatments that include grass and forb seeding to stabilize soils and reestablishment of upland and/or riparian shrubs through seeding or planting would gradually slow sediment deposition. In addition, reestablishment of streamside cover would increase shading and decrease water temperatures. Establishment of structures to slow or stop soil erosion in vulnerable areas post-fire would have a more rapid effect.

The Gateway West Transmission Line project and other lands and realty actions could potentially affect water quality through sedimentation. The exact locations are still to be determined. Effects on water quality from this project could include vegetation removal and potential sedimentation due to construction activities. When routes are determined, the anticipated direct, indirect, and cumulative impacts of the project will be disclosed. Past, present, and future maintenance of utility lines results in some small-scale vegetation disturbance or removal along access routes and around poles that could result in some localized erosion and sediment deposition. Current and future maintenance activities are subject to restrictions to reduce the potential for adverse effects to water quality.

Ongoing livestock use within riparian areas, either as permitted grazing or trailing, can have impacts to water quality. Livestock use can result in soil compaction and loss of vegetation cover on both upland and riparian sites. This can accelerate surface erosion and increase the amount of fine sediment and nutrients introduced to streams. Fecal wastes can be introduced to streams as a result of direct deposition or erosion from adjacent areas. This can result in increased bacterial concentrations in streams. Terms and conditions on livestock grazing and crossing permits are expected to limit livestock access in areas vulnerable to water quality degradation. This, coupled with buffers and exclosures placed on fuel break segments for perennial streams, riparian areas, and wetlands, is expected to reduce the potential for cumulative impacts related to livestock use. Range improvements occur on lands throughout the project area and include livestock watering troughs, pipelines, wells, and fences constructed of various materials. Concentrated livestock use reduces vegetation cover and causes compaction within close proximity of troughs and mineral supplement sites, causing these areas to be susceptible to erosion. One to two acres surrounding these sites would likely have increased bare ground and sediment movement by wind or water. This could result in some minor contributions to sediment in water. However, range improvements can also be used to divert grazing from vulnerable areas and reduce impacts to streams. Thus, range improvements and proactive grazing management could reduce the potential for water quality degradation.

All recreational travel in Owyhee County is restricted to existing roads and trails. Recreational travel in Malheur resource area has both limited and open use for OHVs. This results in less potential for OHV impacts that result in damage to stream banks and drainage beds. Travel management can also enhance fire management by improving roads for reduced response time and reducing the potential for unintentional starts resulting from cross-country travel. This would also result in fewer fire-related impacts to water quality.

Past, present, and foreseeable future actions within the project area would continue to have impacts to water quality through soil disturbance. The action alternatives would only slightly increase the cumulative impacts to water quality while providing treatments to reduce the long-term effects of erosion and sedimentation from large burned areas on the landscape from frequent wildland fire.

4.0 Consultation and Coordination

4.1 List of Preparers

This section contains the list of preparers and contributors for this Draft EA.

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4.2 Cooperating Agencies

BLM is actively coordinating on this project with U.S. Fish and Wildlife Service, a cooperating agency.

4.3 Agencies, Organizations, Tribes, and Individuals Consulted

4.3.1 Tribal Consultation

BLM is required to consult with Native American tribes to "help assure (1) that federally recognized tribal governments and Native American individuals, whose traditional uses of public land might be affected by a proposed action, will have sufficient opportunity to contribute to the decision, and (2) that the decision maker will give tribal concerns proper consideration" (U.S. Department of the Interior, BLM Manual Handbook H-8120-1). Tribal coordination and consultation responsibilities are implemented under laws and executive orders that are specific to cultural resources which are referred to as "cultural resource authorities," and under regulations that are not specific which are termed "general authorities." Cultural resource authorities include: the National Historic Preservation Act of 1966, as amended (NHPA); the Archaeological Resources Protection Act of 1979 (ARPA); and the Native American Graves Protection and Repatriation Act of 1990, as amended (NAGPRA). General authorities include: the American Indian Religious Freedom Act of 1979 (AIRFA); the National Environmental Policy Act of 1969 (NEPA); the Federal Land Policy and Management Act of 1976 (FLPMA); and Executive Order 13007-Indian Sacred Sites. The Proposed Action is in compliance with the aforementioned authorities.

Southwest Idaho is the homeland of two culturally and linguistically related tribes: the Northern Shoshone and the Northern Paiute. In the latter half of the 19th century, a reservation was established at Duck Valley on the Nevada/Idaho border west of the Bruneau River. The Shoshone-Paiute Tribes residing on the Duck Valley Reservation today actively practice their culture and retain aboriginal rights and/or interests in this area. The Shoshone-Paiute Tribes assert aboriginal rights to their traditional homelands as their treaties with the United States, the Boise Valley Treaty of 1864 and the Bruneau Valley Treaty of 1866, which would have extinguished aboriginal title to the lands now federally administered, were never ratified.

Other tribes that have ties to southwest Idaho include the Bannock Tribe and the Nez Perce Tribe. Southeast Idaho is the homeland of the Northern Shoshone Tribe and the Bannock Tribe. In 1867 a reservation was established at Fort Hall in southeastern Idaho. The Fort Bridger Treaty of 1868 applies to BLMs relationship with the Shoshone-Bannock Tribes. The northern part of the BLM Boise District was also inhabited by the Nez Perce Tribe. The Nez Perce signed treaties in 1855, 1863 and 1868. BLM considers off-reservation treaty-reserved fishing, hunting, gathering, and similar rights of access and resource use on the public lands it administers for all tribes that may be affected by a proposed action.

Consultation and Coordination with the Shoshone-Paiute Tribes occurred on February 18, 2016, March 17, 2016, April 21, 2016, and May 18, 2016 at the Wings and Roots Campfire Meetings. Consultation and Coordination with the Shoshone-Bannock Tribes took place June 17 and October 6, 2016, and informational emails regarding the project were sent to the Shoshone-Bannock Tribes. A specific alternative without additional road maintenance was developed as a result of this process.

4.3.2 Other State and Local Agencies

Boise District Resource Advisory Council

Idaho Department of Fish and Game

Idaho State Historical Preservation Office

Oregon State Historical Preservation Office

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6.0 Appendices

6.1 Appendix A: Fire Behavior and Fuel Breaks – Southern Idaho Examples

A network of effective fuel breaks along roadsides can mean the difference between containment and control of a wildfire at a few thousand acres as opposed to tens of thousands of acres, especially when only limited firefighting resources are available. Wildfire intensity and rate of spread would decrease as it entered these fuel breaks and in some cases, would extinguish before reaching the other side of the fuel break, thus reducing the chance of the fire burning over the road. In addition, opportunities to safely engage wildfires would be increased and acres burned would likely be reduced over time.

The effectiveness of an established fuel break on the spread of wildfire can be demonstrated by first hand observations from firefighters in the field. Discussions and synopses of these fires are provided below. In other fire suppression activities and research, fuel breaks have either slowed enough for suppression crews to control the incident or have removed fuel sufficient to contain any further spread (Monsen and Memmott 1999).

Southsim Fire

During the Southsim fire in 2011 the prostrate kochia fuel break along the east side of Simco Road gave firefighters a safe location from which to back burn due to decreased flame lengths and the lack of spotting within the fuel break (L. Neiwert, Fire Operations Specialist Battalion 10, Boise District BLM, personal communication, 2014; L. Okeson, Fuels Program Manager, personal communication, 2014). Additionally, the only location where the Southsim fire crossed control lines was along Highway 67 (Grandview Highway) in an area with heavy sagebrush immediately adjacent to the road (L. Neiwert, Fire Operations Specialist Battalion 10, Boise District BLM, personal communication, 2014). The weather hampered suppression efforts, but the prostrate kochia fuel breaks functioned well even as winds gusted to 28 mph.

Cox's Well Fire

In the spring of 2012, the Idaho Falls District BLM implemented the first phase of the Big Desert Fuel Breaks Project. Fuel break construction began on April 30, 2012 and consisted of roto-mowing existing vegetation to a height of roughly eight inches in a 100-150 feet wide swath from the centerline, creating fuel breaks 200-300 feet in width. The Cox's Well Fire ignited on the afternoon of July 10, 2012 within the National Park Services (NPS) portion of the Craters of the Moon National Monument and Preserve (CMNMP). Strong, gusty winds and hot dry conditions allowed the fire to spread quickly north, east, and south and into the Upper Snake Field Office area. Suppression operations of the wildfire began around 13:30 with initial attack crews attempting to anchor and tie the fire into the Great Rift within the BLM managed CMNMP lands. When direct attack efforts failed, crews backed off to the Arco/Minidoka Road and started improving the road grade and back burning from the road. In the spring of 2012, portions of the Arco/Minidoka Road had been treated to establish a fuel break. These treated portions ultimately aided in suppression operations. During back burning off the Arco/Minidoka Road, flame lengths in the treated fuels compared to the untreated fuels were substantially lessened, averaging a height of approximately 2-feet. The mowed areas provided an area for suppression crews to safely and effectively implement the back burn operation and were instrumental in controlling this wildfire (Dyer 2012).

MM86 I84 Fire

Similar fire behavior was observed during the MM86 I-84 fire of 2012. This was a human caused fire that started along I-84 near Lockman Butte, northwest of Mountain Home, ID. Following ignition, the fire meandered through the prostrate kochia fuel break adjacent to I-84 before eventually breaking through to the other side. Because this fire was started in October, response time was slower than during the active fire season. If the fire had been started during the regular fire season it is likely that fire crews could have controlled the fire before it broke through the prostrate kochia fuel break (L. Okeson, personal communication, 2014).

6.2 Appendix B: Defining the Fire Environment Soda Fire Fuel Breaks are designed to address – Fire Behavior, Weather, and Fuel Modeling

This appendix provides the weather and vegetative fuel conditions present during the Soda Fire (2015) which is used to model fire behavior using four standard fuel models represented within the Soda Fire Fuel Breaks EA.

The design of the proposed fuel breaks is based on the science of altering fire behavior – specifically flame length, rate of spread, and fire line intensity – by altering fuel loadings and continuity of fuels as well as the arrangement of fuels within the proposed fuel break system. Fire behavior is a function of fuels, topography, and weather. Models have been developed to help predict expected and current fire behavior to aid fire managers in anticipating and predicting fire behavior. Wildland fuels which occur naturally across the landscape as well as fuels that have been manipulated (such as mowing brush, targeted grazing, or planting species that reduce fire behavior) have been grouped into standard sets of fuel models. These fuel models are used to run predictive models that predict flame length, rate of spread, and fire line intensity (Scott and Burgan 2005).

1. Grass-Shrub Fuel Type Model 2 (GS2): Moderate Load, Dry Climate Grass-Shrub (Dynamic) – This fuel model represents the predominant natural fuel complex that occurs across the project area and is the fuel model used to model fire behavior across much of the Great Basin where you have sagebrush and grass fuels together. **The GS2 is the typical sagebrush steppe that is indicative of the fuels burned in the Soda Fire and is also the fuel model that represents the unburned areas with sagebrush outside and adjacent to the Soda Fire Perimeter** (Figure B-1).
2. Grass Fuel Type Model 4 (GR4): Moderate load, Dry Climate Grass (Dynamic) – Primary carrier of fire in this fuel model is continuous, dry-climate grass. This fuel model represents a heavy fuel load of cheatgrass or medusahead in the project area. **This fuel model represents the annual grasses communities present throughout and adjacent to the Soda Fire before targeted grazing is applied.** The resulting fuel model after targeted grazing is GR1 (see description below of GR1).

Desired Fuel Models within Fuel Breaks

1. Grass Fuel Type Model 1 (GR1): Short, Sparse Dry Climate Grass (Dynamic) – Primary carrier of fire in this fuel model is sparse grass, though small amounts of fine dead fuel may be present. **This fuel model best represents the fuel model that is expected to comprise the fuels within the proposed fuel break system after mowing existing sagebrush (GS2 fuel model) and changing it to more of a GR1 fuel model** (Figure B-1). It is also the fuel model used to represent the burned areas that were GS2 before the fire and will be GR1 now that the brush has burned off. Important to note that GR1 is also indicative of a grass fuel model that has been grazed – rationale – grazing will resume at some point in the future and we feel this best represents the fuel model we are striving to achieve in our finished fuel breaks.

2. Shrub Fuel Type Model 1 (SH1): Low Load Dry Climate Shrub (Dynamic) – Primary carrier of fire in this fuel model is short woody shrubs – very little to no grass is present in the interspaces between shrubs. **This fuel model best represents the fuel model that is expected to comprise the vegetation in the prostrate kochia fuel breaks.** Prostrate kochia is a non-native plant that is classified as a half shrub meaning it has a woody base and a herbaceous top. Kochia when established in pure stands is able to occupy a site and compete with annual grasses such as cheat grass and medusa head. Once established prostrate kochia is able to create bare interspaces between Kochia plants – it is these bare areas between the plants that makes prostrate kochia an effective fuel break material. As fire moves into fuel breaks of prostrate kochia the fire struggles to move from plant to plant and eventually stalls or is easily suppressed by suppression resources.

It is important to note that all four of these fuel models are labeled as “Dynamic”. Dynamic means that these fuels change in their burning characteristics over time as the plants go from green in the spring to dry in the summer and fire season. This is a relevant point because the Soda Fuel breaks have been designed to address a specific fire behavior exhibited in Soda Fire 2015 and other recent large fires such as the Buzzard 2015, Long Draw 2012, Holloway 2012, and Murphy Fire 2007 all within the same fuel types. This fire behavior is described as having extreme rates of spread and excessive flame lengths caused by excessive fuel accumulations and fuel continuity issues that:

- occur at a specific time of year when fuels are dry or stressed by drought (i.e., mid- to late-fire season – generally July, August, and early September in the Northern Great Basin);
- result from a specific event (e.g., lighting events that spread across a broad geographical region resulting in multiple, simultaneous fires and depletion of fire suppression resources on a local and national scale); and
- occur in vast areas of high, continuous fuel loading.

Figure B-1: Soda Fire behavior in different fuel types as suppression resources attempt to hold Highway 95 north of Jordan Valley, Oregon.

Figure B-1demonstrates the difference in fire behavior characteristics between the two fuel models – GS2 sagebrush/grass and GR1 grass fuel model located on road shoulder.

Soda Fire History, Weather Conditions, Fire Progression, and Live Fuel Moistures

The Soda Fire ignited on August 10, 2015 approximately 8 miles northeast of Jordan Valley, OR on the Boise District BLM in Idaho. The fire was detected by the South Mountain BLM Lookout at 13:10 MDT and reported to Boise Dispatch. The initial attack Incident Commander size-up was 250 acres, running in grass and brush with south winds at 10-20 mph and the potential to reach 5,000 acres by the end of the day. Initial attack resources stated the fire was 100% active when they arrived (USDI BLM 2015). Wind gusts at the two closest remote automated weather stations (RAWS), Triangle and Owyhee Ridge, were recorded at 28 mph and 35 mph, respectively.

The weather conditions preceding the fire were hotter and drier than normal with maximum temperatures around 10-20 degrees above normal. Persistent extreme drought conditions across Owyhee County resulted in very dry fuels. Primary fuels on the fire were grass and sagebrush. The continuous fuel bed was the primary factor in the rapid spread and large acreage burned. In much of the area the sagebrush appeared decadent and had a significant dead component that contributed to fire spread and very high flame lengths (Whalen et al. 2015).

Low humidity and high winds were significant factors in fire spread throughout the fire duration. The continuous flashy fuels on the fire resulted in rapid rates of spread with moderate winds and extreme rates of spread (up to 450 ch/hr) under high wind conditions. Flame lengths in grass reached upwards of 8-10 feet and 20-30 feet in sagebrush (Whalen et al. 2015).

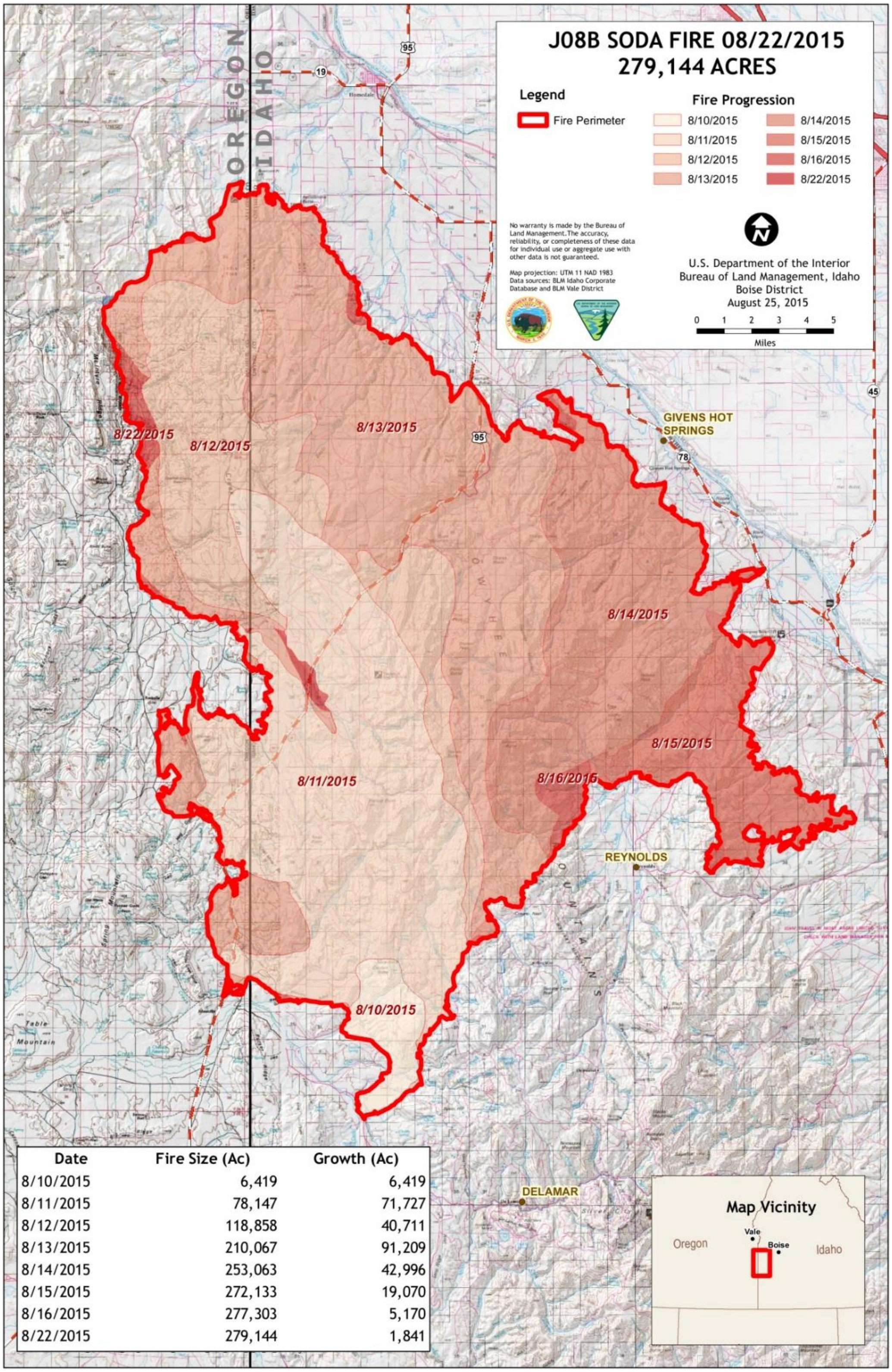
The table below (Table B-1) provides a summary of the fire's progression and associated weather conditions from August 10-15, 2015 during the time periods of extreme fire behavior and fire growth. Figure B-2 illustrates the Soda Fire's progression from August 10-22, 2015.

Table B-1. Fire Size and Weather Conditions of Soda Fire.

Date	Fire Size (Ac)	Growth (Ac)	Max. Temp (°F)[1]	Max. Winds (mph)[1]	Min. RH (%)[1]
8/10/2015	6,419	6,419	85	35	19
8/11/2015	78,147	71,727	94	30	10
8/12/2015	118,858	40,711	94	30	8
8/13/2015	210,067	91,209	97	28	5
8/14/2015	253,063	42,996	93	43	8
8/15/2015	272,133	19,070	81	19	17

[1]Weather conditions from the Owyhee Ridge RAWS display the maximum temperature, maximum wind, and minimum relative humidity recorded between 12 pm and 5 pm for each day.

Figure B-2: Soda Fire Progression from 8/10/15-8/22/15



Date	Fire Size (Ac)	Growth (Ac)
8/10/2015	6,419	6,419
8/11/2015	78,147	71,727
8/12/2015	118,858	40,711
8/13/2015	210,067	91,209
8/14/2015	253,063	42,996
8/15/2015	272,133	19,070
8/16/2015	277,303	5,170
8/22/2015	279,144	1,841

The following guidelines and fuel moisture break-points in Table B-2 were developed by Nevada BLM from years of past fire and fuels observations (USDI BLM 2007).

Table B-2. Guidelines and Fuel Moisture Break-Points.

181% and Higher	Fires will exhibit **VERY LOW FIRE BEHAVIOR** with difficulty burning. Residual fine fuels from the previous year may carry the fire. Foliage will remain on the stems following the burn. Fires can generally be attacked at the head or flanks by persons using hand tools. Handline should hold fire without any problems. Fires will normally go out as soon as the wind dies down.
151% to 180%	Fires will exhibit **LOW FIRE BEHAVIOR** with fire beginning to be carried in the live fuels. Both foliage and stem material up to ¼-inch in diameter will be consumed by the fire. Burns will be generally patchy with many unburned islands. Engines may be necessary to catch fires at the head and handline will be more difficult to construct, but should hold at the head and the flanks.
126% to 150%	Fires will exhibit **MODERATE FIRE BEHAVIOR** with a fast continuous rate of spread that will consume stem material up to 2-inches in diameter. These fires may be attacked at the head with engines but may require support of dozers and retardant aircraft. Handline will become ineffective at the fire head, but should still hold at the flanks. Under high winds and low humidity, indirect line should be considered.
101% to 125%	Fires will exhibit **HIGH FIRE BEHAVIOR** leaving no material unburned. Frontal attack with fire engines and dozers will be nearly impossible on large fires, but may still be possible on smaller, developing fires. Aircraft will be necessary on all these fires. Flanking attack by engines and indirect attack ahead of the fire must be used. Spotting should be anticipated. Fires will begin to burn through the night, calming down several hours before sunrise.
75% to 100%	Fires will exhibit **EXTREME FIRE BEHAVIOR**. Extreme rates of spread and moderate to long range spotting will occur. Engines and dozers may be best used to back up firing operations, and to protect structures. Indirect attack must be used to control these fires. Fires will burn actively through the night. Air turbulence caused by the fire will cause problems for air operations.
74% and Below	Fires will exhibit **ADVANCED FIRE BEHAVIOR** with high potential to control their environment. Large acreage will be consumed in a very short time period. Backfiring from indirect line, roads, etc. must be considered. Aircraft will need to be cautious of hazardous turbulence around the fire.

Live fuel moisture readings captured on August 3rd indicated the potential for **EXTREME FIRE BEHAVIOR** and are illustrated in Table B-3. The nearest sites to the Soda Fire were the Wild West site located along I-84 at mile marker 13, and the Triangle site just east of the fire.

Table B-3. Live fuel moisture readings captured on August 3rd, 2015

Site	Elevation	Fuel Type	Average Past % Moisture	%Moisture Computrac (8/3/2015)	Previous % Computrac (7/16/2015)	Change % Computrac	Fire Behavior	Years of Data
Kuna	3,060 ft	Wyoming Sagebrush	83	84	95	-11	Extreme	14
Wild West	2,593 ft	Wyoming Sagebrush	80	80	97	-17	Extreme	14
Hammett	2,706 ft	Wyoming Sagebrush	89	89	96	-7	Extreme	14
Triangle	5,186 ft	Mountain Sagebrush	114	99	119	-20	Extreme	7
Blackstone	5,000 ft	Wyoming Sagebrush	55	79	76	3	Extreme	4
Triangle	5,186 ft	Western Juniper	83	90	98	-8	Moderate	4
Wild West	2,593 ft	Forage kochia	NA	93	128	-35	Moderate	2
Simco	3,000 ft	Forage kochia	NA	74	86	-12	Moderate	2

Fuel Model Comparisons

Fuel breaks are designed to address specific fuels conditions on the ground taking into account the expected weather parameters (wind, temp, and relative humidity) and resulting fire behavior. Flame lengths of 8 feet or less are desired within fuel break segments. Empirical evidence coupled with decades of experience in fire suppression have established general rules used to determine suppression tactics based on flame length and fire line intensity (Table B-4, USDA USFS 2011). A flame length of 8 feet or less and fire line intensity of less than 100 Btu/ft/s are the desired fire behavior characteristics within fuel break segments.

Table B-4. Relationship of surface fire flame length and fire line intensity to suppression interpretations.

Flame length		Fireline intensity		Interpretation
ft	m	Btu/ft/s	kJ/m/s	
< 4	< 1.2	< 100	<350	• Fires can generally be attacked at the head or flanks by persons using hand tools. • Hand line should hold the fire.
4 – 8	1.2 – 2.4	100 – 500	350 – 1700	• Fires are too intense for direct attack on the head by persons using hand tools. • Hand line cannot be relied on to hold the fire. • Equipment such as dozers, pumpers, and retardant aircraft can be effective.
8 – 11	2.4 – 3.4	500 – 1000	1700 – 3500	• Fires may present serious control problems—torching out, crowning, and spotting. • Control efforts at the fire head will probably be ineffective
> 11	> 3.4	> 1000	> 3500	• Crowning, spotting, and major fire runs are probable. • Control efforts at head of fire are ineffective.

GR1 and GS2 Comparison

The following comparison demonstrates the difference in fire behavior characteristics (rate of spread, fire line intensity, and flame length) between the GS2 fuel model (representing sage brush/steppe) and the proposed fuel breaks after removing sagebrush represented by GR1. When these fuel types are modeled side by side (Table B-5 & Figures B-3 through B-6b), the results show the surface rate of spread, fire line intensity, and flame length are less for GR1 than GS2. For the purpose of modeling predicted fire behavior between these fuel types, weather observations recorded on the Triangle and Owyhee RAWS were used along with live fuel moisture readings captured on August 3, 2015.

Table B-5. Comparison between GR1 and GS2 under Varied Wind Speeds

Fire Behavior Characteristics	Fuel Model GR1 (Desired Fuel Break Conditions)					Fuel Model GS2 (Soda Fire Fuel Conditions)				
	Wind Speed (MPH)					Wind Speed (MPH)				
	5	**10**	**20**	**30**	**40**	**5**	**10**	**20**	**30**	**40**
Surface Rate of Spread (chains/hour)	20	21	21	21	21	26	68	185	250	250
Fire line Intensity (Btu/ft/s)	34	35	35	35	35	238	633	1721	2320	2320
Flame Length (ft)	2.3	2.3	2.3	2.3	2.3	5.6	8.7	13.9	15.9	15.9

Figure B-3: Surface Rate of Spread (ch/hr) Comparison between GR1 (red) and GS2 (blue)

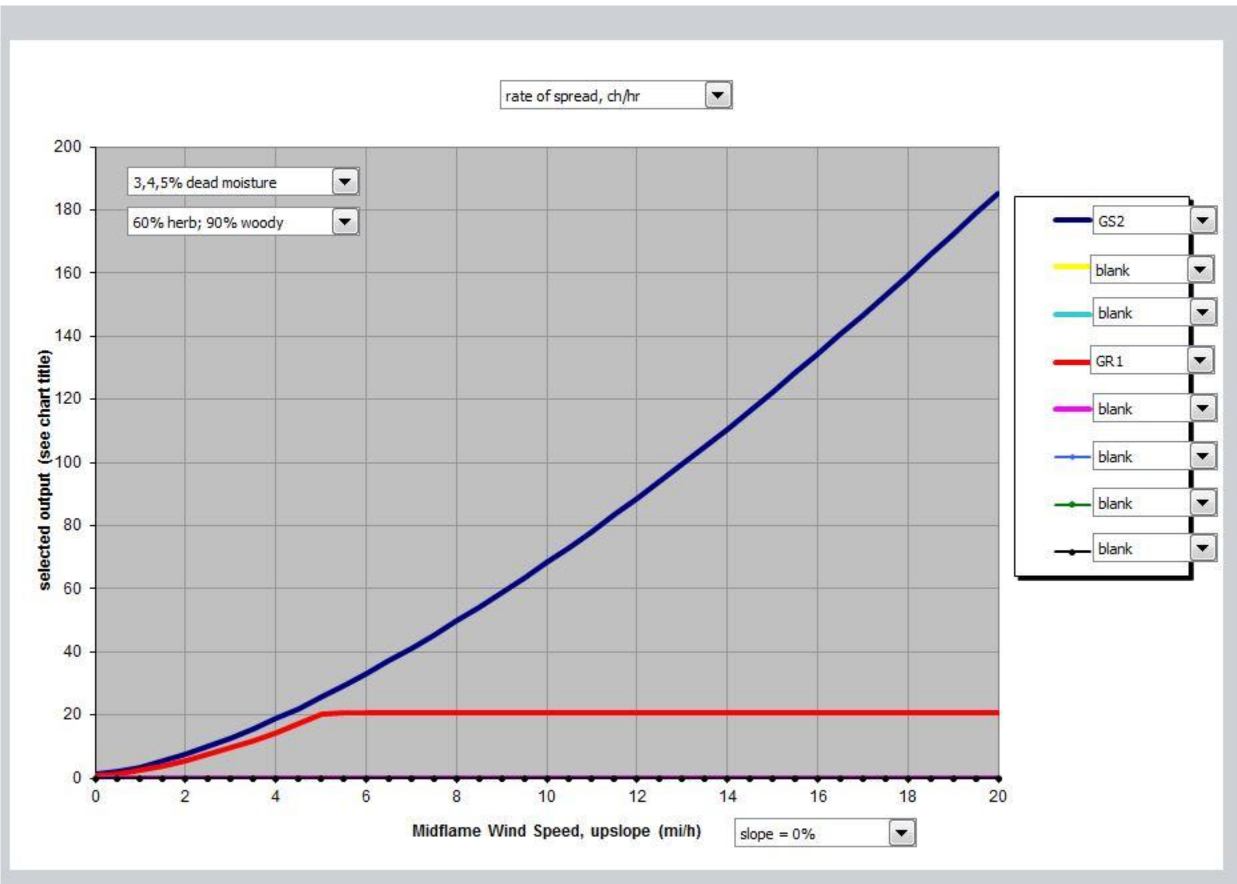


Figure B-3 demonstrates the difference in rate of spread between the GS2 fuel model (the typical fuel model across the project area before Soda Fire and the remaining unburned fuel complex adjacent to the Soda Fire, i.e., sagebrush steppe) and the desired fuel model in the proposed fuel breaks which is best represented with GR1 fuel model (perennial bunch grasses grazed). Note the steep increase in rate of spread in the GS2 vs GR1 when wind speeds increase above 5 mph. Many of the wind speeds experienced during the Soda Fire were in excess of 28 mph. Important to note this model was run with a zero slope input- topography on Soda Fire was rolling to steep so actual rates of spread would be even higher where increase in slope was present. This graph clearly demonstrates the reduction in rate of spread within the proposed GR1 fuel break to that of the GS2 fuel model outside the fuel breaks.

Figure B-4: Fire line Intensity (Btu/ft/s) Comparison between GR1 (red) and GS2 (blue)

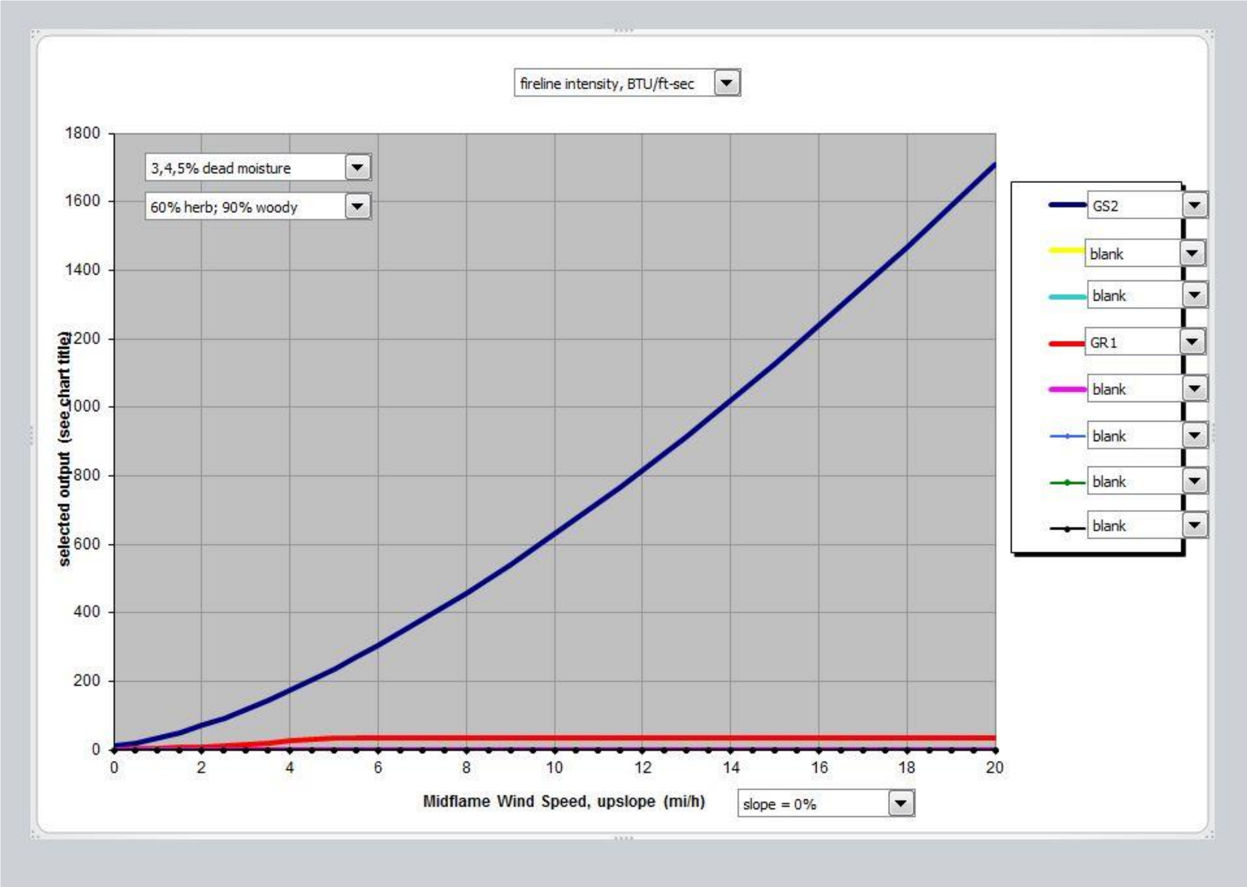


Figure B-4 demonstrates the difference in fire line intensity between the two fuel models GS2 (the representative fuel model across the project area before Soda Fire and the remaining unburned fuel complex adjacent to the Soda Fire i.e. sagebrush steppe) and the desired fuel model in the proposed fuel breaks which is best represented with GR1 fuel model. Note the steep increase in fire line intensity between the GS2 vs GR1 fuel models when wind speeds increase above 2 mph. Many of the wind speeds experienced during the Soda Fire were in excess of 28 mi/h. This graph demonstrates the reduction in fire line intensity between the two fuel models. Fire line intensity is the heat energy release per unit time from a foot (or meter) wide section of the fuel bed extending from the front to the rear of the active flaming zone. Fire line intensity is a function of rate of spread and heat per unit area, and is directly related to flame length. Fire line intensity and the flame length are related to the heat felt by a person standing next to the flames.

Figure B-5: Flame Length (ft) Comparison between GR1 (red) and GS2 (blue)

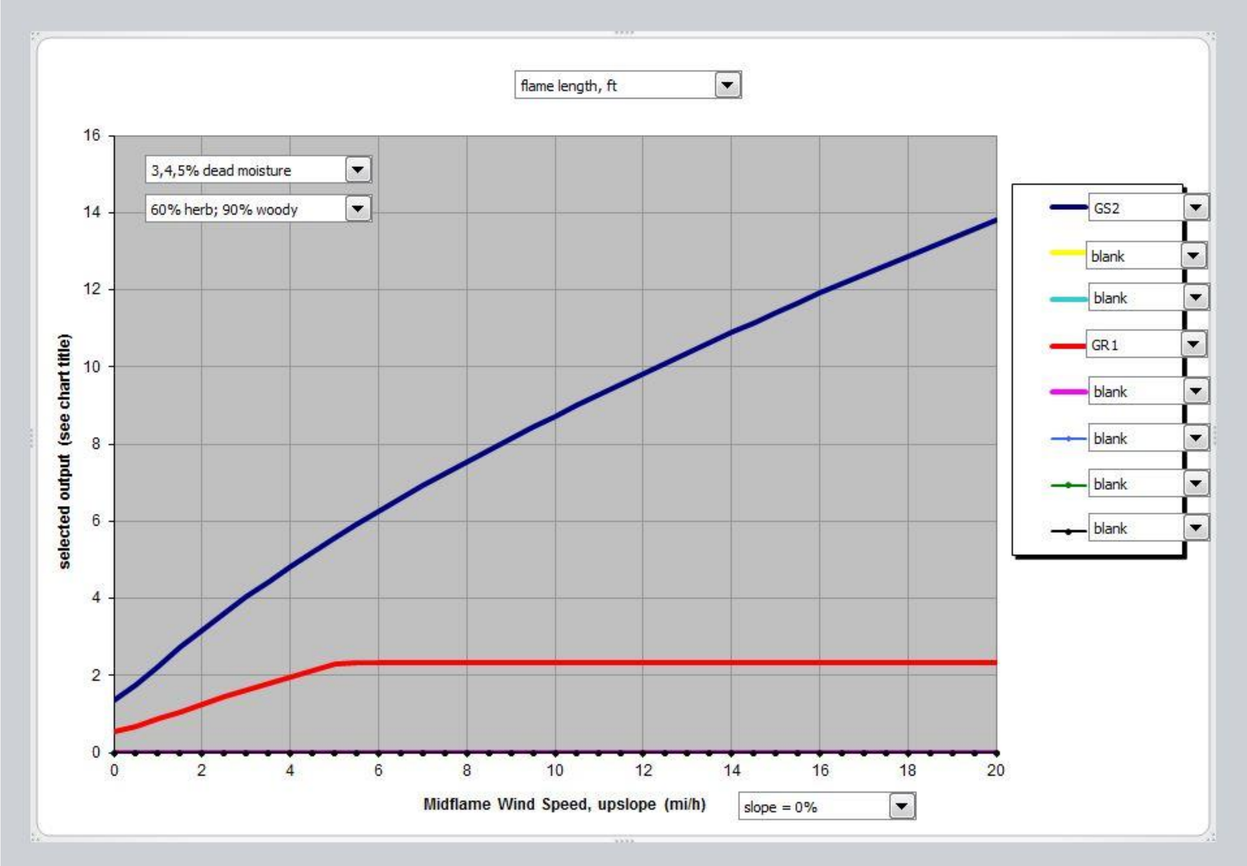


Figure B-5 demonstrates the difference in flame lengths between the two fuel models GS2 (the representative fuel model across the project area before Soda Fire and the remaining unburned fuel complex adjacent to the Soda Fire, i.e., sagebrush steppe) and the desired fuel model in the proposed fuel breaks which is best represented with GR1 fuel model. This graph demonstrates the difference in flame lengths between the two fuel models. Note the continuous increase in flame length of the GS2 fuel model with increase in wind speed vs GR1 fuel model which peaks around 5 mph. Many of the wind speeds experienced during the Soda Fire were in excess of 28 mph and flame lengths experienced on the Soda Fire were 15 to 30 feet in many instances.

Figure B-6a: Soda Fire behavior as suppression resources attempt to hold Highway 95 north of Jordan Valley Oregon.

Figure B-6a demonstrates the difference in fire line intensity and flame lengths between the two fuel models used to represent pre-treatment conditions in the sagebrush/grass fuels (GS2) across the landscape, versus the primarily grass fuel model (GR1) immediately adjacent to the roadway along the shoulder.

Figure B-6b: Soda Fire behavior as suppression resources attempt to hold Highway 95 north of Jordan Valley Oregon.

Figure B-6b demonstrates the difference in fire line intensity and flame lengths between the two fuel models used to represent pretreatment conditions in the sagebrush/grass fuels (GS2) across the landscape versus the primarily grass fuel model (GR1) immediately adjacent to the roadway along the shoulder.

<u>SH1 and GS2 Comparison</u>

The following comparison demonstrates the difference in fire behavior characteristics (rate of spread, fire line intensity, and flame length) between the GS2 fuel model (representing sagebrush steppe) and the proposed fuel breaks vegetated with prostrate kochia (SH1). When these fuel types are modeled side by side (Table B-6 & Figures B-7 to B-9), the results show the surface rate of spread, fire line intensity, and flame length are less for SH1 than GS2. For the purpose of modeling predicted fire behavior between these fuel types, weather observations recorded on the Triangle and Owyhee RAWS were used along with live fuel moisture readings captured on August 3, 2015.

Table B-6. Comparison between SH1 and GS2 under Varied Wind Speeds

Fire Behavior Characteristics	Fuel Model SH1 (*Desired Fuel Break Conditions below 4,000 ft.*)					Fuel Model GS2 (*Soda Fire Fuel Conditions*)				
	Wind Speed (MPH)					Wind Speed (MPH)				
	5	**10**	**20**	**30**	**40**	**5**	**10**	**20**	**30**	**40**
Surface Rate of Spread (chains/hour)	2.5	2.5	2.5	2.5	2.5	26	68	185	250	250
Fireline Intensity (Btu/ft/s)	5	5	5	5	5	238	633	1721	2320	2320
Flame Length (ft)	.9	.9	.9	.9	.9	5.6	8.7	13.9	15.9	15.9

Figure B-7: Surface Rate of Spread (ch/hr) Comparison between SH1 (red) and GS2 (blue)

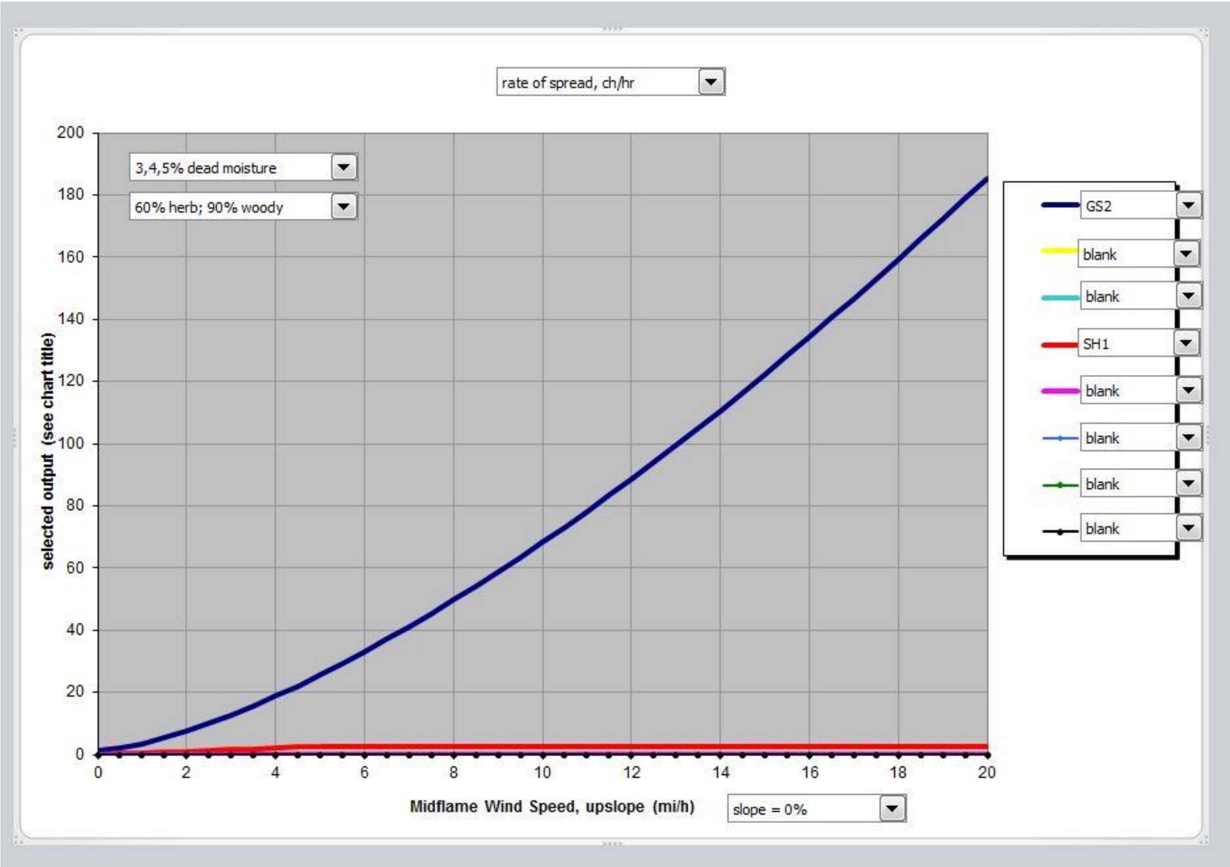


Figure B-7 demonstrates the difference in rate of spread between the two fuel models GS2 (the representative fuel model across the project area before Soda Fire and the remaining unburned fuel complex adjacent to the Soda Fire, i.e., sagebrush steppe) and the desired fuel model in the proposed prostrate kochia fuel breaks which is best represented with SH1 fuel model (Low Load Dry Climate Shrub). Note the steep increase in rate of spread in the GS2 vs SH1 when wind speeds increase above 2 mph. Many of the wind speeds experienced during the Soda Fire were in excess of 28 mph. This model demonstrates the reduction in rate of spread between the two fuel models. It is important to note that this model was run with a zero slope input- topography on Soda Fire was rolling to steep so actual rates of spread would be even higher where increases in slope was present.

Figure B-8: Fire Line Intensity (Btu/ft/s) Comparison between SH1 (red) and GS2 (blue)

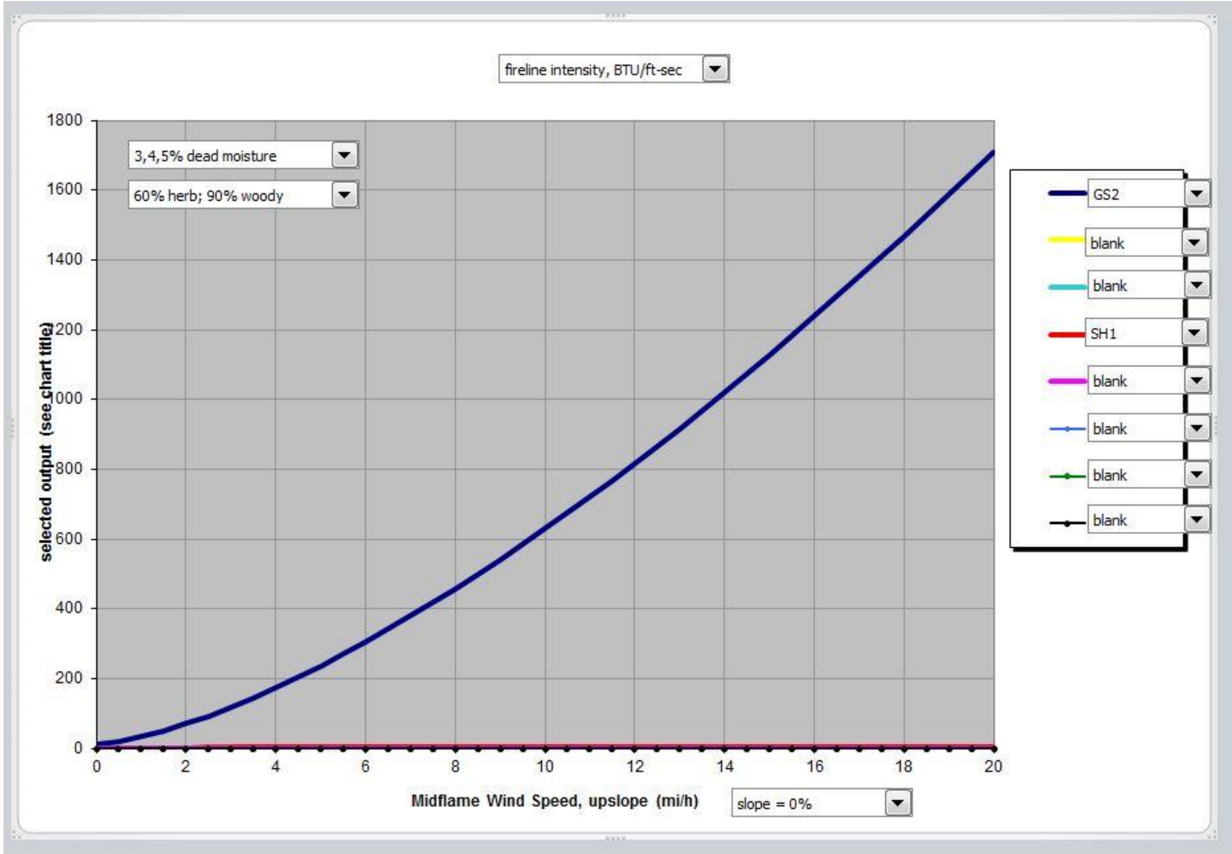


Figure B-8 demonstrates the difference in fire line intensity between the two fuel models GS2 (the representative fuel model across the project area before Soda Fire and the remaining unburned fuel complex adjacent to the Soda Fire, i.e., sagebrush steppe) and the desired fuel model in the proposed prostrate kochia fuel breaks which is best represented with SH1 fuel model. Note the steep increase in fire line intensity between the GS2 vs SH1 fuel models when wind speeds increase above 2 mph. Many of the wind speeds experienced during the Soda Fire were in excess of 28 mph. Fire line intensity is the heat energy release per unit time from a foot (or meter) wide section of the fuel bed extending from the front to the rear of the active flaming zone. Fire line intensity is a function of rate of spread and heat per unit area, and is directly related to flame length. Fire line intensity and the flame length are related to the heat felt by a person standing next to the flames. This graph clearly demonstrates the effectiveness of the proposed prostrate kochia in reducing fire line intensity to that experienced in adjacent GS2 fuel types.

Figure B-9: Flame Length (ft) Comparison between SH1 (red) and GS2 (blue)

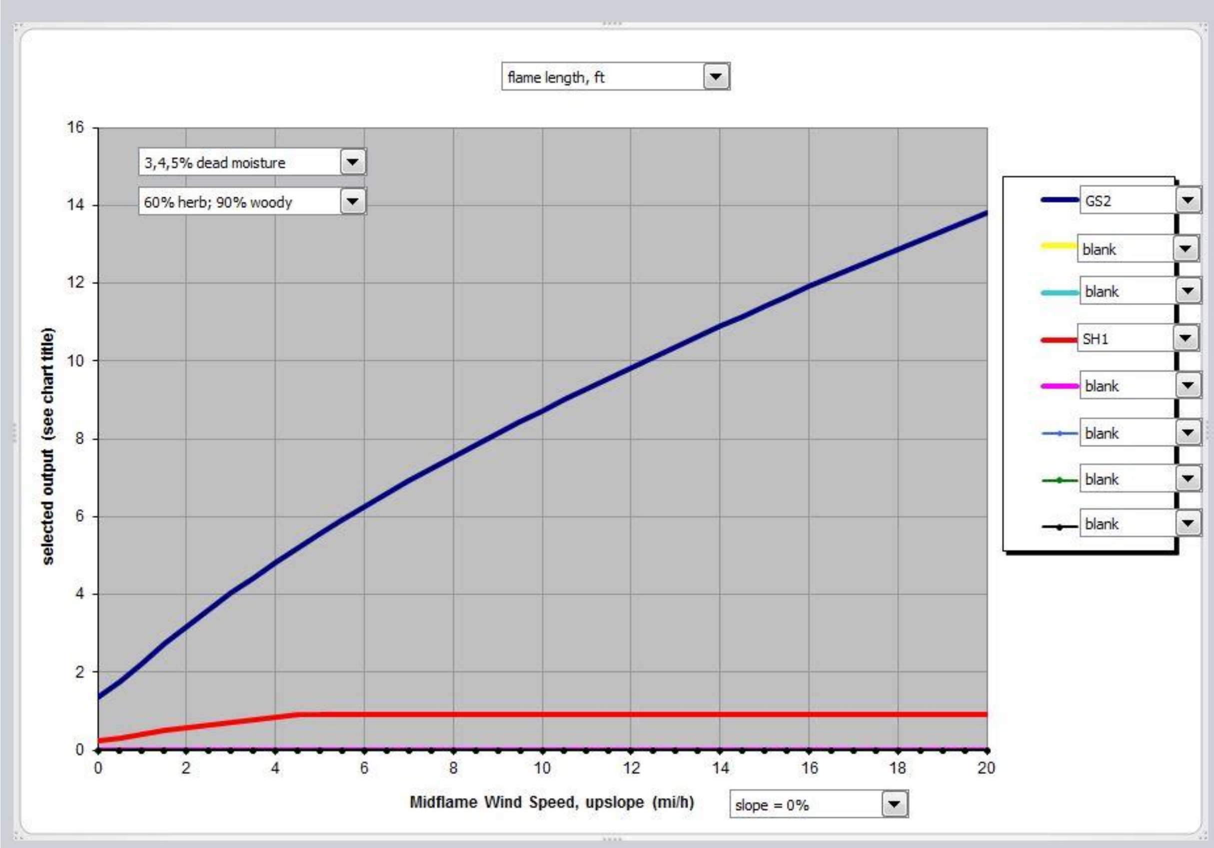


Figure B-9 demonstrates the difference in flame lengths between the two fuel models GS2 (the representative fuel model across the project area before Soda Fire and the remaining unburned fuel complex adjacent to the Soda Fire, i.e., sagebrush steppe) and the desired fuel model in the proposed prostrate kochia fuel breaks which is best represented with SH1 fuel model. Note the continuous increase in flame length of the GS2 fuel model with increase in wind speed vs SH1 fuel model which peaks around 5 mph. and remains well below 2 feet in height. Many of the wind speeds experienced during the Soda Fire were in excess of 28 mph and flame lengths experienced on the Soda Fire were 15 to 30 feet in many instances in the GS2 fuel model. This graph demonstrates a dramatic reduction in flame lengths within in the proposed prostrate kochia fuel breaks as compared to the adjacent GS2 fuel model.

GR1 and GR4 Comparison

The following comparison demonstrates the difference in fire behavior characteristics (rate of spread, fire line intensity, and flame length) between the GR4 fuel model (representing heavy cheat grass fuel bead no brush no grazing) and the proposed targeted grazing fuel breaks after grazing represented by GR1. When these fuel types are modeled side by side (Table B-7 & Figures B-10 to B-12, the results show the surface rate of spread, fire line intensity, and flame length are less for GR1 than GR4. For the purpose of modeling predicted fire behavior between these fuel types, weather observations recorded on the Triangle and Owyhee RAWS were used along with live fuel moisture readings captured on August 3, 2015.

Table B-7. Comparison between GR1 and GR4 under Varied Wind Speeds

Fire Behavior Characteristics	Fuel Model GR1 (Post Grazing Fuel Break Conditions)					Fuel Model GR4 (Soda Fire Fuel Conditions – Pre Grazing)				
	Wind Speed (MPH)					Wind Speed (MPH)				
	5	**10**	**20**	**30**	**40**	**5**	**10**	**20**	**30**	**40**
Surface Rate of Spread (chains/hour)	20	21	21	21	21	85	227	617	910	910
Fire Line Intensity (Btu/ft/s)	34	35	35	35	35	836	2237	6084	8971	8971
Flame Length (ft)	2.3	2.3	2.3	2.3	2.3	10	16	25	30	30

Figure B-10: Fire Line Intensity Comparison between GR1 (red) and GR4 (blue)

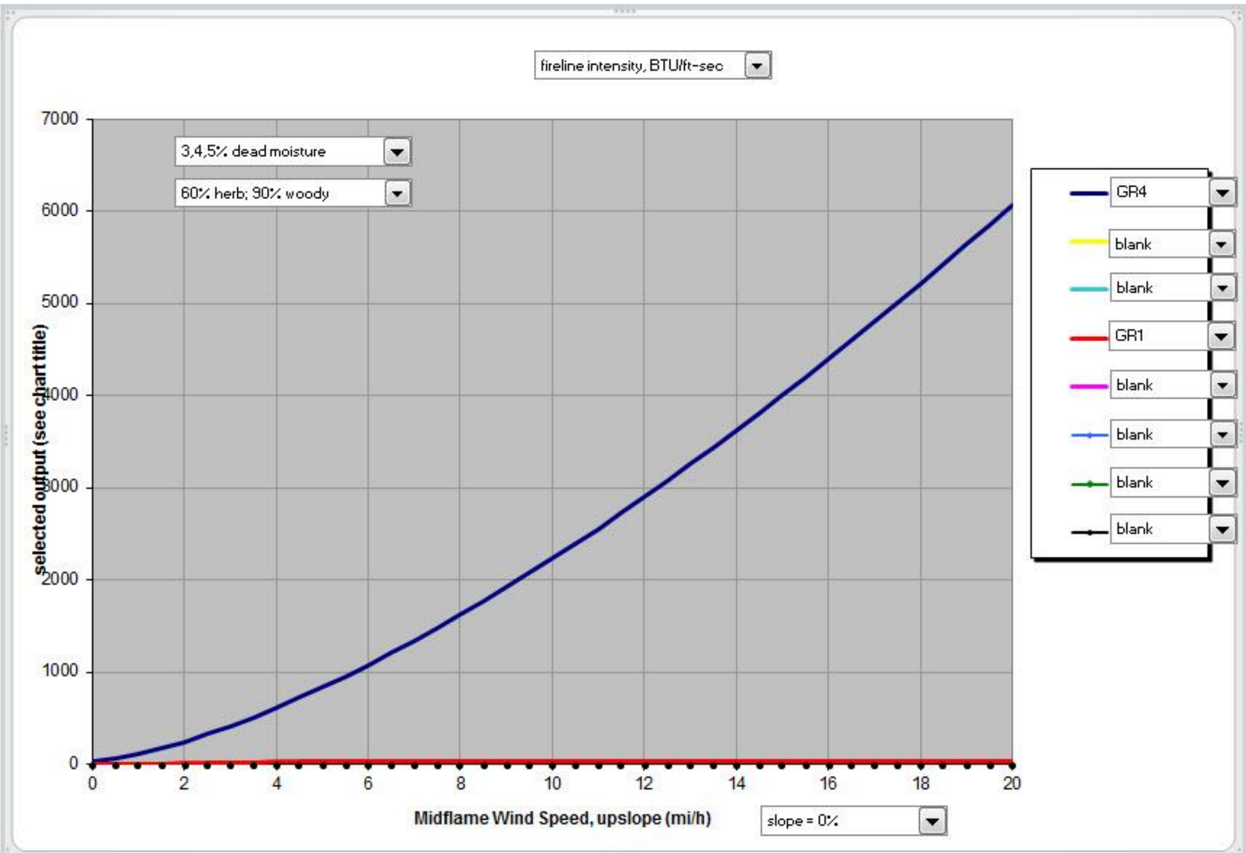


Figure B-10 demonstrates the difference in fire line intensity between the two fuel models GR1 and GR4. GR1 is the representative fuel model in the proposed fuel break targeted grazing area after grazing and GR4 is the representative fuel model (heavy load cheat grass) prior to targeted grazing outside the proposed fuel break. Note the steep increase in fire line intensity between the GR4 vs GR1 fuel models when wind speeds increase above 2 mph. Many of the wind speeds experienced during the Soda Fire were in excess of 28 mph. Fire line intensity is the heat energy release per unit time from a foot (or meter) wide section of the fuel bed extending from the front to the rear of the active flaming zone. Fire line intensity is a function of rate of spread and heat per unit area, and is directly related to flame length. Fire line intensity and the flame length are related to the heat felt by a person standing next to the flames. This graph clearly demonstrates the effectiveness of the proposed targeted grazing fuel model GR1 in reducing fire line intensity to that experienced in the ungrazed GR4 fuel model.

Figure B-11: Flame Length (ft) Comparison between GR1 (red) and GR4 (blue)

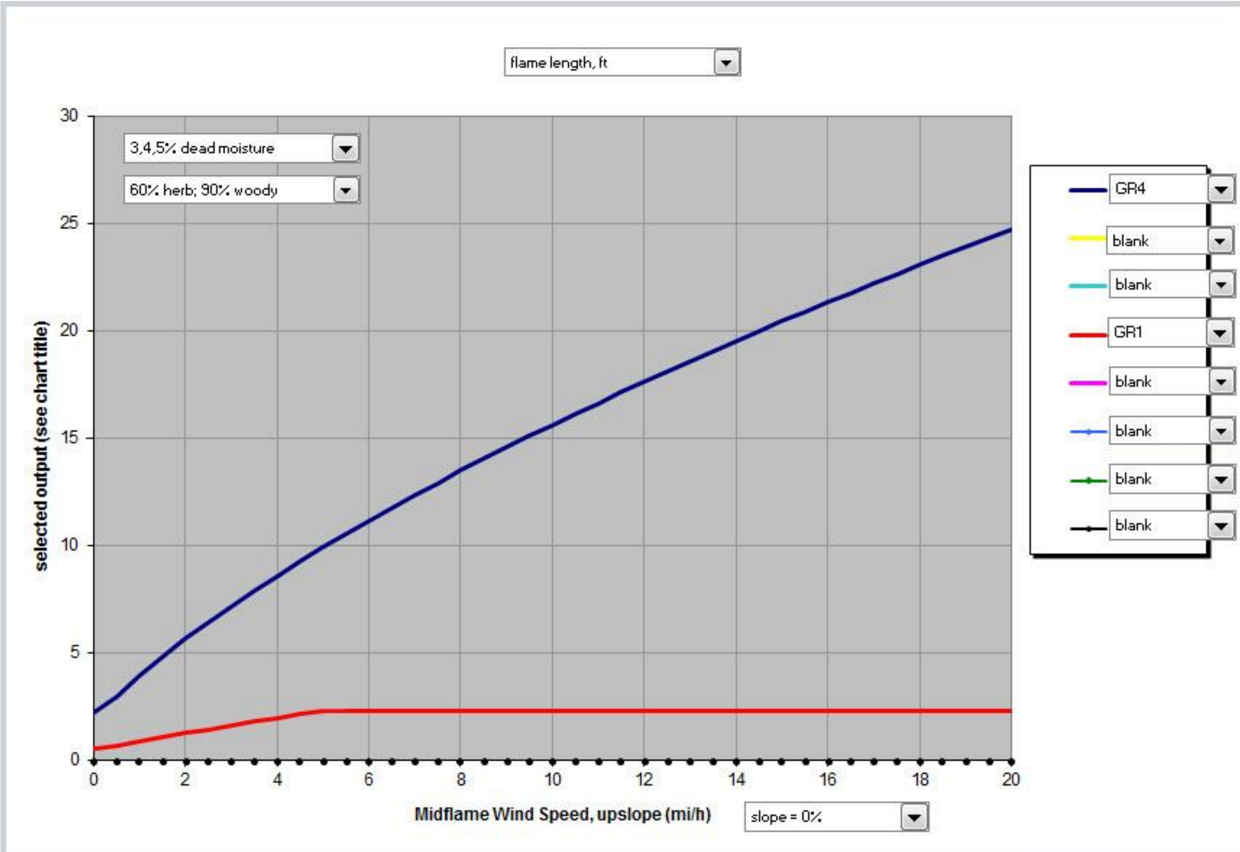


Figure B-11 demonstrates the difference in flame lengths between the two fuel models GR1 and GR4. GR1 is the representative fuel model in the proposed fuel break targeted grazing area after grazing and GR4 is the representative fuel model (heavy load cheat grass) prior to targeted grazing outside the proposed fuel break. Note the continuous increase in flame length of the GR4 fuel model with increase in wind speed vs GR1 fuel model actually peaks around 5 mph. and remains well below 5 feet in height. Many of the wind speeds experienced during the Soda Fire were in excess of 28 mph. This graph demonstrates a dramatic reduction in flame lengths within in the proposed targeted grazing fuel breaks as compared to the adjacent GR4 ungrazed fuel model.

Figure B-12: Rate of Spread (Ch/hr) Comparison between GR1 (red) and GR4 (blue)

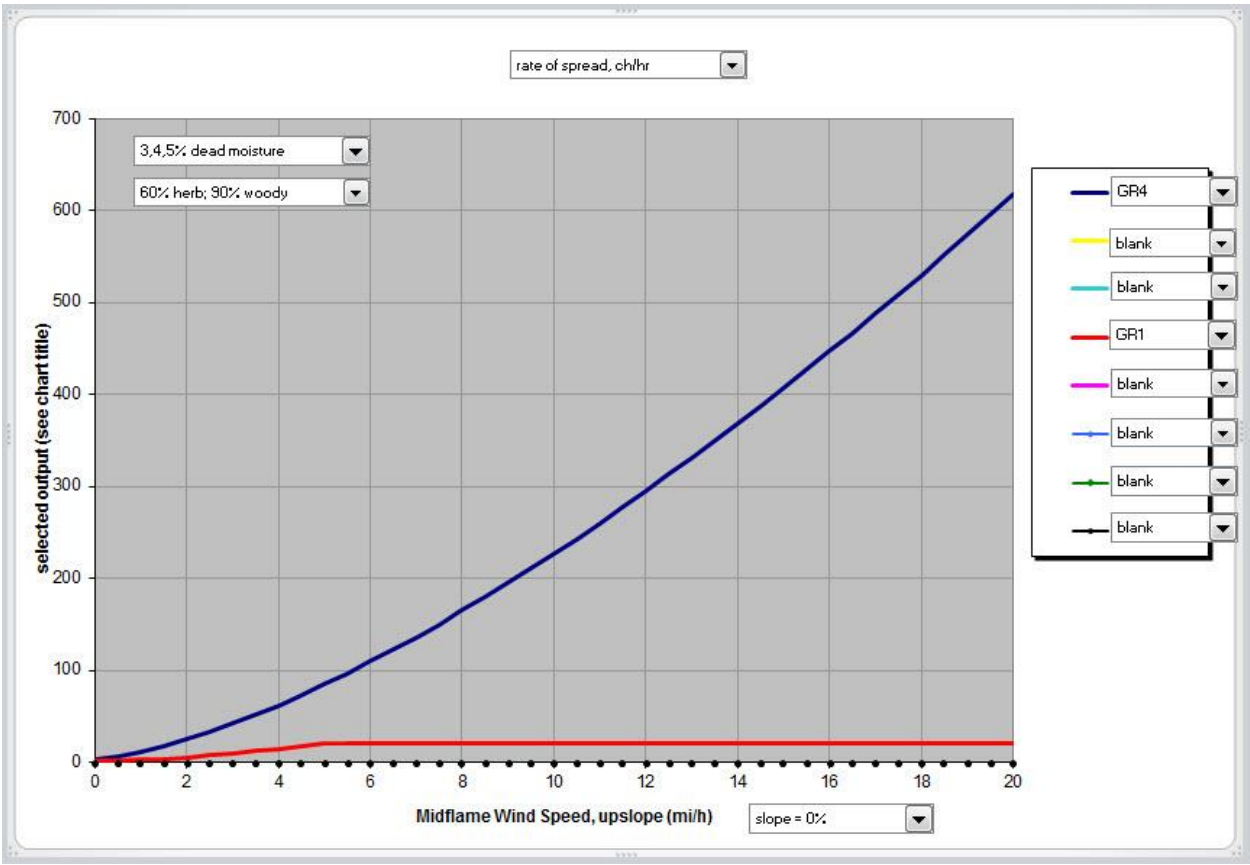


Figure B-12 demonstrates the difference in rate of spread between the two fuel models GR1 and GR4. GR1 is the representative fuel model in the proposed fuel break targeted grazing area after grazing and GR4 is the representative fuel model (heavy load cheat grass) prior to targeted grazing outside the proposed fuel break. Note the steep increase in rate of spread in the GR4 vs GR1 when wind speeds increase above 2 mph. Many of the wind speeds experienced during the Soda Fire were in excess of 28 mph. This graph demonstrates a dramatic reduction in flame lengths within in the proposed targeted grazing fuel breaks as compared to the adjacent GR4 ungrazed fuel model.

Note: this model was run with a zero slope input; topography on Soda Fire was rolling to steep so actual rates of spread would be even higher where increase in slope was present.

References

Scott, J.H., and R.E. Burgan. 2005. Standard fire behavior fuel models: a comprehensive set for use with Rothermel's surface fire spread model. General Technical Report RMRS-GTR-153. Rocky Mountain Research Station, Fort Collins, CO. 72 pp.

USDI BLM. 2007. *Fuel Moisture Sampling Guide*. April 20017

USDI BLM. 2015. *Large Fire Response Assessment*. August 18, 2015.

USDA USFS. 2011. How to Generate and Interpret Fire Characteristics Charts for Surface and Crown Fire Behavior. Available online: http://www.fs.fed.us/rm/pubs/rmrs_gtr253.pdf.

Whalen et al. 2015. Soda Fire Final Report Homedale, Idaho. August 15-18, 2015.

6.3 Appendix C: Responses to Public Comments

The table below documents the review of all comments for the Soda Fuel Breaks Project Draft EA. Letters were assigned numbers based on the date they were received. The table is organized by letter number and comments gleaned from letters have been numbered. Issues and alternatives identified through this review have been discussed in the Final EA.

Sender	Letter Number
U.S. Fish and Wildlife Service Oregon	1
U.S. Fish and Wildlife Service Idaho	2
Karen Steenhoff	3
Doug Heiken, Oregon Wild	4
Katie Fite, Wildlands Defense	5
Richards Livestock	6
Chipmunk Grazing Association	7
Western Watersheds Project	8
T. Tucci	9
Idaho Conservation League	10
M. Kochert	11
Oregon Department of Wildlife	12
Owyhee County Commissioners	13
Oregon Natural Desert Association	14
Idaho Department of Fish and Game	15
Idaho State Department of Agriculture	16
Owyhee Cattlemen’s Association	17

Letter #/ Comment #	Comment	Response
1/1	As the project occurs in sage-grouse habitat, protection of the remaining intact habitat, as well as the post-fire restoration investments implemented through the Emergency Stabilization and Burned Area Rehabilitation Plan for the Soda Fire is a key concern to the USFWS.	Concerns are noted regarding protection of the remaining intact sage-grouse habitat as well as post-fire restoration investments.
1/2	In general, the Service is in favor of the approaches identified in the Soda Fire Fuel Breaks Project, as they have relied upon science-supported techniques intended to ensure the best possible outcomes for sage-grouse habitat.	Support is noted of approaches in the project to ensure the best possible outcomes for sage-grouse habitat.
1/3	The detailed monitoring articulated in Environmental Assessment is a strength of this plan. However, one monitoring area could be strengthened: 1. Monitoring of road improvements to assess if they result in increased public usage that could be detrimental to environmental and wildlife values. Thresholds should be established for increased public road usage based on the scientific literature that demonstrates impacts to sage-grouse and other wildlife, as well as increased transmission of invasive vegetation or other vegetation damage (e.g. development of unauthorized trails). A summary of sage-grouse related impacts of roads and recreation, including the associated human and noise disturbance, can be found in the Oregon Sage-grouse Action Plan (SageCon 2015, p. 139-141, and p. 161-164, http://oregonexplorer.info/content/oregon-sage-grouse-action-plan?topic=203&ptopic=179). An adaptive management approach should be developed to respond to any negative impacts demonstrated through monitoring. Adaptive management could include seasonal travel restrictions or limits to road access.	Monitoring of roads for increased public usage and incorporating adaptive travel management are outside the scope of this project. The roads proposed to be maintained are existing and available for use. However, these ideas could be considered in travel management planning efforts in the future. The primary issues that this section of the Sagecon Action Plan addresses is disturbance from noise and increased density and expanded use of roads. The Plan cites that even light use of roads (1-12 vehicles per day) has substantially reduced nest initiation rates (Lyon and Anderson 2003). The primary increase in use of the roads in the project area would likely be by recreationists (not large machinery associated with oil and gas development), but the BLM does not anticipate a measurable change in road use as they are largely in remote areas. The noise and increased use described in the Plan is related to oil and gas development which implies ongoing and repeated disturbance to a much greater degree than would occur with the creation of fuel breaks. Further, sage-grouse specific project design features would preclude noise and other impacts during sensitive periods (breeding and nesting)
2/1	The Service recognizes the devastating impacts that wildfires have caused to the sagebrush steppe ecosystem in the Owyhee landscape. We support the concept that fuel breaks are a useful tool for disrupting fuel continuity to manage the size and severity of wildfires when used in combination with fire suppression resources. We support the application of fuel breaks within the Soda Fire are to protect our restoration investments and increase our probability of minimizing further Greater sage-grouse (sage-grouse) habitat fragmentation and degradation, while we work to restore the area across ownership boundaries to a functional landscape for sage-grouse and other sagebrush dependent species.	Support is noted of the concept of the project.
2/2	Additional specificity in the Description of the Alternatives (Section 2.2) would assist the BLM in conducting a thorough effects analysis and would help my staff provide the BLM with detailed feedback on the proposed action. For example, incorporate an analysis and rationale for the proposed fuel break widths as they pertain to adjacent fuels, associated fire behavior, and the values at risk.	The EA has been modified to include analysis and rationale for fuel break widths in Section 3.2.1.

Letter #/ Comment #	Comment	Response
2/3	We would like to work with your staff to develop a more robust monitoring, maintenance and adaptive management plan to be more specific.	As USFWS is a cooperating agency on this project, BLM will continue to work with the USFWS on this project.
2/4	Recommendations: Provide more firebreak detail regarding where, and to what extent the methods (i.e. mechanical, chemical, fire and biological thinning) would be applied within each of the Action Alternatives.	Firebreak detail is provided in the EA under Section 2.0 Description of the Alternatives.
2/5	Recommendations: Develop a comprehensive maintenance plan to ensure the long-term effectiveness and sustainability of the fuel breaks.	BLM has proposed a maintenance plan to ensure the long-term effectiveness of the fuel breaks in Section 2.4.2.
2/6	Recommendations: Per the "All Hands, All Lands" management approach directed by Secretarial Order 03336, collaborate with other Federal and State partners to connect fuel breaks where they intersect non-BLM lands.	As USFWS is a cooperating agency on this project, BLM will continue to work with the USFWS on this project.
3/1	The statements "By design, existing vegetation within the footprint of the fuel breaks would be eliminated" (p.47) and "By design, existing wildlife habitat within the footprint of the fuel breaks would be eliminated" (p. 79) indicate the significance of the issue, given that the "footprint would be 11,771 acres under Alternative 3 and 25,517 acres under Alternative 2. In fact, not all vegetation or wildlife habitat would be "eliminated" within the footprint, but they would be seriously modified. In my opinion, the proposed action warrants more review and public input under NEPA. Many interested parties did not receive timely information about the document and the extended comment period, and many did not have time to review and comment during one of the busiest times of the year.	The statements on pages p.47 and p.79 will be changed to "modified" as it is stated under the Proposed Action that fuel breaks may or may not require seeding, mechanical seedbed preparation such as disking, or chemical treatments. BLM allowed a 30-day public comment period, which is more than what is required by NEPA for an EA. BLM maintains a current database with interested party contacts. The notification of the public review period was sent to the current list of interested parties.
3/2	I was disappointed that BLM did not include an alternative that called for fuel breaks within but not outside of the burned area. The EA presents data on the acres of habitat for various species inside and outside the burn that will be altered within the project area. It also should quantify the total number of proposed miles and acres of fuel breaks inside and outside the Soda burn perimeter. I could not find this statistic anywhere in the EA.	Analyzing an alternative for fuel breaks within the burned areas only would not meet the purpose and need of limiting the potential for future wildland fires to burn out into intact native vegetation (protect remaining habitat). The Final EA has been updated to reflect the total number of miles and acres of fuel breaks inside and outside the Soda burn perimeter for each action alternative.
3/3	The EA analyzes mechanical, chemical, fire, and biological thinning methods. However, except for targeted grazing and Kochia, the EA is incomplete in that it does not identify which treatments would be applied to each road segment.	The Final EA has been updated to further explain BLM proposed fuel break treatments in Section 2.4.1 Methods.
3/4	As I noted in my scoping comments, the BLM should adopt different approaches for fuel breaks in burned and unburned areas. Fuel break designs and strategies within intact shrub stands should differ from those in disturbed annual grass communities. Shrubs in the unburned parts of the project area will provide an important seed source for adjacent burned areas, and it would be unwise to compromise those areas until shrub recovery has occurred in the burned area. Disking, drilling, and hand cutting should not be allowed in undisturbed areas outside the fire perimeter. Mowing and herbicides should be used with discretion. Fragmentation of sagebrush rangelands has been identified by western state wildlife agencies and the U.S. Fish and Wildlife Service as a primary cause of sage-grouse population declines. The concept of "compartmentalizing" (p. 9, 58) runs counter to this goal of retaining	The BLM will take this into consideration while planning development of the fuel breaks in both burned and unburned areas. See Section 3.5.2.2 concerning fragmentation. The USFWS as cooperating agency has expressed their support of the project.

Letter #/ Comment #	Comment	Response
	large stands of intact sage habitat.	
3/5	Page 1 of the EA states that "a system of fuel breaks is needed to minimize the threat of wildfire to human life and property; the threat of wildfire in rehabilitation efforts and investments in the burned area; and the threat of wildfire to habitat within and outside of the burned area." The proposed action should identify the order in which various segments will be treated to meet these goals. I suggest that creation of fuel breaks outside the fire perimeter be the lowest priority and implemented only after fuel breaks within the burn have been completed and shown to be effective.	The order in which fuel break treatments are prioritized for implementation are beyond the scope of the EA, but this will be considered while planning development of fuel breaks.
3/6	I was pleased to see that riparian areas will be protected under the proposed action. I was particularly concerned about any alteration of the riparian habitat along Rabbit Creek Road, which provides habitat for several species of raptors as well other wildlife. The prohibitions against seeded fuel breaks (p. 17), soil disturbance, herbicide application, or vegetation removal (p. 21 and 22) in riparian areas are sound and important guidelines. Avoiding heavy equipment in or within 300 feet of the margins for all springs/seeps/riparian habitats (p. 22) is also essential.	Support is noted of the protection of riparian areas.
3/7	Overall, I support Alternative 3 (the Modified Proposed Action) over Alternative 2 (the Proposed Action) because of fewer acres treated/disturbed and no improved access for the public. The EA correctly states on page 83 that "In general, road improvement and maintenance on public lands is likely to promote increased use by the public due to easier access. An increase in traffic volume on these roads would increase the potential spread of noxious weeds and other undesirable vegetation, increase the potential for human-caused wildfire, and increase the potential for negative interactions with wildlife including the temporary disturbance of wildlife as well as vehicle collisions with wildlife." These issues deserve more than one paragraph in the analysis. I assume that Alternative 2 will require amending existing Travel Management Plans (Murphy, Wilson Creek, and Hemmingway), and I assume this will require additional public review and input.	Support is noted in the support of Alternative 3. Maintained roads do not change the Travel Management designations of those roads and should not be considered as "opening" those roads to use not authorized.
3/8	Alternative 3 would be in the best interests of firefighters because more miles of fuel break could be created in a timelier manner. If BLM implements fuel breaks on 2000 acres per year (p. 30), it will take more than 12 years to implement Alternative 2 and less than 6 years to implement Alternative 3. Establishing more miles of fuel break quickly should be a higher priority than establishing wide fuel breaks in a few areas. At the end of the project, if monitoring indicates that wider fuel breaks were needed, the BLM could propose extending the 100-foot fuel breaks to 200 feet.	As stated in Section 3.0, assumptions made were necessary to provide a standard basis for comparison between alternatives. Section 3.0 also states that all treatments, including implementation and maintenance, are subject to federal budgets. At this time, the amount of time it will take to implement the fuel breaks is unknown.
3/9	The analysis of effects on Golden Eagles is incomplete and inadequate. To evaluate the effects of the proposed action on nesting populations of Golden Eagles, the EA needs to assess how many Golden Eagle pairs have been nesting within 1, 2, and 3 miles of proposed fuel breaks. Golden Eagles can have anywhere from 1 to 18 nests in a single nesting territory, and only one pair nests in a territory each year. Therefore, the number of nest structures is irrelevant to this analysis. The EA should analyze the number of historical nesting territories in the Project Area instead of the number of nest structures. Page 86 states that:" Of the 77 golden eagle nest locations identified within the golden eagle analysis area, 37 are within 0.5 mile of the Proposed Action." I have received clarification that this means that 37 "nests" are within 0.5 miles of	The Final EA has been revised to include golden eagle territories.

Letter #/ Comment #	Comment	Response
	proposed fuel breaks (J. Bisson pers. comm.) This means that somewhere between 2 and 37 historical territories (and therefore eagle pairs) could be affected.	
3/10	The EA addresses possible effects of fire and shrub loss on Golden Eagles but it does not specifically address effects of the fuel breaks on eagles. And for some reason, the EA did not specifically address effects of Alternative 3 (the Modified Proposed Action) on Golden Eagles. The difference between the effects of Alternative 2 and Alternative 3 on Golden Eagles is very significant. Opening up increased access to recreationists will pose a serious threat to any of these nesting eagles. See Steenhof et al. (2014) and Spaul (2015). Data collected by a Boise State University study that was supported by BLM show that increasing recreation use has resulted in decreased eagle reproductive rates on the Owyhee Front. Golden eagles are protected by the Bald and Golden Eagle Protection act. Regulations pursuant to that act prohibit "disturbance that causes nest abandonment or a decrease in productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior." The BLM is obligated to manage lands to regulate disturbance that affects eagle reproduction. As motorized access to nesting areas expands, golden eagles will be increasingly susceptible to disturbance, and managers will face challenges as they try to manage for multiple uses. The statements on page 86 "...temporal and seasonal restrictions would be put in place around active nest [sic] on a case by case basis. Therefore, impacts on golden eagle breeding behavior and nest success are expected to be eliminated by implementation of RDFs." Unfortunately, RDFs (Resource Design Features) apply to BLM activities only. Increased public activity is likely to affect breeding behavior and nest success adversely. Clearly Alternative 2 would have more negative impacts on eagles than Alternative 3.	The Final EA addresses the effects to golden eagles under all alternatives. The roads proposed to be maintained are existing and available for use. The EA has disclosed the impacts to golden eagles.
3/11	Note: the term "active" (p. 21, 71, 79, 86) is ambiguous and undefined. It should be avoided when referring to raptor nests (Steenhof and Newton 2007). Please use the term "occupied" instead. Instead of citing Sands et al. 2000 on page 78, the EA should cite Kochert et al. 1999, the primary reference on effects of fire on Golden eagles. Instead of citing Kochert et al. 1999 on Page 71, Paragraph 1, the EA should cite the more recent analysis by Kochert and Steenhof (2012), which indicates that eagles use up to 18 nests within a nesting territory (mean = 7; range = 1–18).	The term active was changed to occupied… Kochert and Steenhof 2012 paper citation was added. Kochert et al. 1999 was added.
3/12	I suggest that the EA provide a more balanced analysis of how effective and successful fuel breaks really are. On page 3, the EA presents anecdotal evidence "that established fuel breaks provided a greater margin of safety for firefighters, effectively reduced flame lengths, and slowed the progression of wildfires." The EA fails to present other anecdotal evidence that fuel breaks are often ineffective (particularly during the Soda Fire event). One of the purposes and goals of the proposed action (page 4) is: "to stem the subsequent threat of invasive plant expansion within and adjacent to the fire." History shows that many fuel breaks are a reservoir of invasive plants, especially when not maintained. Greenstrips did not work well in the Birds of Prey Area: the EA should describe what will be different about the proposed fuel breaks and why they will work on the Owyhee Front. Pyke et al. (2014) noted that "Fire, mowing, and imazapic may be effective in reducing fuels for 3 yr, but each has potentially undesirable consequences on plant	A fuel break is defined as a roadway free of vegetation and the adjacent vegetation treatment zone, as such the existing roads are not considered fuel breaks. The discussion of what makes an effective fuel break has been expanded in the Final EA. Appendix B provides further analysis of fire behavior and fuel break design. Maintenance of the fuel breaks is discussed in Section 2.4.2 and monitoring and control of the fuel breaks is discussed in Section 2.4.5. The maintenance, monitoring and control of the fuel breaks will be determined as the fuel breaks are developed over time.

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	communities." Maintenance of fuel breaks (first mentioned on p. 4) will be key to the project's success. But the EA presents no details about or schedules for proposed maintenance. The paragraph about maintenance on page 16 is ambiguous. What does periodically mean? What is the life of the project?	The periodic maintenance would be driven by the monitoring and control data collected as described in Section 2.4.5. The life of the project will be determined upon the success of the fuel breaks and as such cannot be quantified at this time.
3/13	p.12. Mowing of sites dominated by annual grasses (especially in burned areas) is a good idea, but mowing areas with intact shrub stands with a tractor should be avoided because it could reduce soil crusts and introduce weeds.	As described in Section 2.4.1, mowing will be conducted where the condition of the road, terrain and vegetation would allow. The type of method used will be determined on these factors.
3/14	p. 12. Hand Cutting. The EA should specify which woody vegetation is the target. Hand cutting of trees should be reserved for invasive junipers. Other species of trees are usually associated with springs or riparian areas and are a valuable and scarce resource for wildlife on the Owyhee Front. Fuel breaks should be routed away from these valuable wildlife habitats, so hand cutting should not be necessary.	As noted in Section 2.4.3, design features are in place to protect riparian areas; no trees in riparian areas will be removed.
3/15	pp. 14-15. I believe it is questionable how "effective" prostate kochia (also known as forage kochia, little salt cedar, and summer cypress) has been for 30 years. I understand that it is known to invade slick spots and playas. It concentrates salt, making areas unsuitable for native vegetation. And it has a deep tap root that can remove ground water and change the hydrology of an area. These issues should be addressed in the EA.	Forage kochia fuel breaks are proposed along 36 miles of existing roads as depicted in Figure 2-1 and are along the Owyhee Front in the wildland-urban-interface (WUI). The use of forage kochia as an effective species for fuel breaks is discussed in Section 2.4.1. Also as described in Section 2.4.5, monitoring and control of the kochia fuel breaks will be conducted to assess spread from treatment areas.
3/16	Page 17. Why are we setting up new fencing near sage-grouse leks? Page 20. How far will fuel breaks be from leks? Page 21. Wouldn't it be better to keep all fences and fuel breaks more than 1.2 miles from occupied leks?	As stated, temporary fencing could be used as a tool to protect the newly seeded areas from livestock grazing. Fences in the proximity of sage-grouse leks would be marked according to current policy to reduce collision potential and design features to protect sage-grouse are listed in Section 2.4.3. What is being proposed follows current guidance.
3/17	Page 21: Who will be locating pygmy rabbit burrows and how? Avoid or define the term "active." What is the difference between an active and an occupied burrow?	Pygmy rabbit burrows surveys will be conducted by BLM or their contractors. Active was changed to occupied in the EA.
3/18	Page 24: the term "treatment footprint" is not defined here… but page 49 suggests it would be the 200 foot (Alternative 3) or 400 foot (Alternative 2) fuel breaks:	The treatment footprint for each action alternative is described under that action alternative: 435 feet for Alternative 2 – 35' road plus 200' buffer on either side of road, and 200 feet for Alternative 3 – 100 feet on either side of road centerline.
3/19	Page 47. The EA states that "Currently, approximately 62 percent of the Proposed Action footprint in both Idaho and Oregon is mapped as shrubland, while 10 percent of the analysis area in Idaho and 24 percent of the analysis area in Oregon is mapped as exotic herbaceous, respectively." It is unclear whether this mapping based on pre-fire or post-fire conditions.	The LANDFIRE vegetation data set became available (Zahn 2015) in July 2015, which was prior to the Soda Fire.
3/20	p. 86. The EA states: "Road improvement and maintenance would occur as part of the Proposed Action, and could result in an increase use of roads by the public." This sentence should read "would" not "could" to be consistent with the statement on page 83.	The context of each of the sentences is different; no changes made to the document.

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3/21	p. 87. It looks like the units reported in Tables 3.5-12 and 3.5-13 are acres, but this should be made clearer in these and other tables.	The units are indeed acres as indicated in the table title. The units (acres) have been added to column headings in tables for clarity.
3/22	p. 87. The EA states: "The Proposed Action is not anticipated to effect sage-grouse lek persistence" "effect" is misspelled; it should be "affect".	This has been corrected in the Final EA.
3/23	p. 87. The rationale behind this statement is unclear: "the effect of fuel break establishment over the long-term is expected to improve sage-grouse habitat compared to the existing conditions." The EA makes a case for protecting sage-grouse habitat from future fires, but it is not clear how fuel breaks will improve habitat compared to existing conditions. The sentence contradicts the statement on pp. 86-87 that "Road improvement and maintenance within the sage-grouse analysis area has the potential to have an indirect impact on sage-grouse by reducing habitat effectiveness of the adjacent PHMA, IHMA, and GHMA which would reduce the quality of available habitat for sage-grouse."	Text has been added to this paragraph to clarify the statement: "…the effect of fuel break establishment over the long-term is expected to improve sage-grouse habitat compared to the existing conditions and reverse the trend in loss of sagebrush cover in the project area. The two sentences are not contradictory, they are stating differing effects.
3/24	Page 121. Section 3.11 does not address the possibility that new fencing associated with fuel breaks could trap wild horses trying to escape wildfires, similar to what happened in the Soda and Sunk fires.	Temporary fences may be used during targeted grazing at very limited times of the year in a limited portion of the project area and would not occur during the summer months when wildfires would pose the most risk.
3/25	Page 125: The EA states: "Increased road maintenance under the Proposed Action may facilitate increased access to portions of the project area for recreational purposes." I suggest changing "may" to "will likely," to be consistent with the statement on page 83.	Text has been changed in the Final EA to: "In general, road maintenance on public lands may promote increased use by the public for recreational purposes due to easier access; however, no documentation exists to support a significant increase of use from road maintenance for the purpose of a fuel break."
4/1	BLM's response to the Soda Fire needs to be driven by detailed knowledge of ecological processes. BLM should do more to involve scientists with knowledge of these ecosystems.	The Environmental Assessment process required by law provides opportunities for public involvement and comment. Comments have been received and incorporated by a wide variety of interested publics which include professors and scientists outside of the BLM organization. We will continue to follow the process which ensures public involvement of all interested parties.
4/2	We do not support targeted grazing as a fuel reduction strategy. Livestock grazing comes with far too many undesired side effects such as soil compaction, loss of biological soil crusts, erosion, water pollution, spread of weeds, damage to cultural resources, loss of wildlife habitat and hiding cover, loss of soil structures used by wildlife such as reptiles, rabbits, and birds, and high effort and expense for livestock management, etc. The conditions under which targeted grazing might be effective and have acceptable trade-offs are exceedingly narrow and unlikely to be realized in a project of this scale.	This is a position statement. Concerns over targeted grazing are noted. The effects of targeted grazing are presented in the EA.
4/3	BLM should avoid using non-native plants such as crested wheatgrass and kochia. Non-native plants do not belong here. They are very likely to spread beyond where they are planted. These plants alter hydrology and simplify plant communities. Planting them is not consistent with natural ecological processes.	Concerns regarding using crested wheatgrass and kochia are noted. Cultivars specifically developed for use in fuel breaks have been selected based on their ability to provide effective fuel breaks. Seeded areas will be monitored to control spread.

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		Simplifying plant communities in the fuel breaks would be beneficial for reducing flame length.
4/4	BLM should focus more on restoring native forbs, not just grasses. BLM should avoid methods and practices (such as herbicides) that kill plants non-selectively.	Native forbs have not been identified as a cultivar effective for fuel break vegetation.
4/5	BLM should do more to conserve and restore biological soil crusts and mycorrhizal fungi which help prevent weeds, conserve water, fix nitrogen, and reduce fuels. Livestock grazing, discing, drilling, off-road use by heavy equipment should be avoided	BLM understands that biological soil crusts and mycorrhizal fungi are important components of the ecosystem. The range of methods proposed to create effective fuel breaks are described in the EA; avoiding the methods would not meet the purpose and need of the action.
5/1	I am writing to make you aware of a recent 2016 scientific review by Smith et al. of a 2015 study by Burns Ag. Experiment Station Kirk Davies and others. The paper hypes winter grazing. Davies has written many papers hyping grazing, and it is primarily this type of "study" from that BLM's disastrous post-fire rehab and grazing schemes are based on.	This comment does not identify any issues relevant to the EA.
5/2	The 67 million dollar Soda Fire Rehab including the "targeted" grazing scheme and the impending BOSH are based in significant part on highly questionable 'range" studies that ignore the fundamentals of ecological processes in arid land lands ecosystems, sweep the effects of grazing under the rug, and go to great lengths to justify massive manipulation no matter the weeds left in their wake. THIS is why a review by outside experts is essential NOW, and a moratorium on Soda actions needs to be put in place until that review occurs.	This is an opinion. Unable to identify a specific comment to respond to in this statement.
5/3	Preparation of an EIS is essential.	An EA has been prepared. If through the process of analysis a FONSI cannot be reached, the field manager may decide to prepare an EIS.
5/4	We are dismayed at BLM proposing projects that are very likely to make the lands more vulnerable to frequent landscape-dooming wildfires by creating hotter, drier, windier, intensively grazed sites for weed infestation and spread.	Fuel breaks are not shown to create hotter, drier, windier, or intensively grazed sites.
5/5	This jeopardizes both terrestrial and aquatic biota as well as the recreational public and neighboring landowners. It creates a false illusion that BLM is addressing declining and degraded habitat conditions for sage-grouse, pygmy rabbit, raptors migratory songbirds, Columbia River redband trout, Columbia spotted frog and many other important rare, and imperiled native species.	The effects of the action alternatives are described in the EA.
5/6	There are serious unresolved issues over control and maintenance of the roads, RS 2477 claims and rights-of-way, roads as weed corridors with grazing then spreading weeds cross-country (especially when combined with so-called "fuel breaks", sediment from roads polluting watersheds and choking what remains of red band trout habitat that the cows have not already killed in the Owyhee region.	This is an opinion. Unable to identify a specific comment to respond to in this statement.
5/7	Any targeted grazing is an ecological disaster, as WLD explains in detail in the Appeal – promoting increased irreversible wed infestations, destroying values that the RMP requires BLM protect, and turning public lands into dustbowl-like feedlot.	This is an opinion. Unable to identify a specific comment to respond to in this statement.

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5/8	We are dismayed at BLM continuing to squander 67 million dollars, and using fearmongering over fire to cram a highly controversial and damaging exotic seeding and native vegetation destroying system of "fuel breaks" and other disturbance down the public's throat. BLM could readily rein in the abusive grazing taking place across this landscape, and reduce the threat of future fires, It could consider a broad range of alternatives including limiting grazing impacts to minimize flammable invasive weeds and make sure lands are in better conditions when they inevitably do burn. BLM could replace the hazardous crested and Siberian wheatgrass seeding fuels that have aided i rapid fore fire spread. For example, many of the areas burned near the Oregon border had crested wheatgrass present, and the Soda Fire rehab made this worse by seeding even more uniform dense exotic grass. BLM"s Ecosites, veg community,s use of fire return and fire disturbance intervals is based on outdated and self-sergin information that does not accurately reflect the current scientific understanding of western jun pier and sagebrush communities, disturbance intervals, and ecological characteristics including important components in plant community composition, function and structure such as microbiotic crusts.	This is an opinion. Unable to identify a specific comment to respond to in this statement. BLM considered a range of alternatives that were identified through internal and external scoping. Alternatives are described in Chapter 2.0.
5/9	Absolutely no forage kochia and crested/Siberian wheat should be used. They are weedy, and cwg/swg results in fires flashing through a landscape.	As stated in Section 2.7 of the EA, an alternative using only native plants was considered but not analyzed in detail because it did not meet the purpose and need of the project because they do not meet the requirements of an effective fuel break.
5/10	We are dismayed that BLM continues to fail to properly characterize the fire setting - as trees are the least flammable in the landscape yet the fuelbreaks and the BOSH and other projects target trees for destruction.	This is an opinion. Unable to identify a specific comment to respond to in this statement.
5/11	We are greatly concerned that BLM has failed to adequately assess the serious cumulative and other impacts of the two new transmission lines that would tear up this landscape, elevate fire risk, and promote industrial wind energy or other development sprawl across this landscape.	Cumulative impacts from project identified to potentially have cumulative impacts to resources when considered with the proposed project are discussed in the cumulative effects sections for each resources in this EA.
5/12	We are greatly concerned that BLM is stonewalling release of basic FOIA information necessary to understand bow the agency has monitored red band trout habitats and populations in this livestock and soon to be treatment-battered, and burned landscape.	This is an opinion. Unable to identify a specific comment to respond to in this statement that relates to the EA.
5/13	We are very concerned that these fuelbreaks and other "treatments" including the soda post-fire seeing that was extraordinarily "heavy" on exotic forage grasses is aimed at undoing the meager grazing changes and AUM cuts in the Owyhee 68 allotments. These fuel breaks further jeopardize land health and will result in continued and expanded FRH violations through intensifying disturbance including loafing areas for weedcausing livestock. Candid analysis and discussion of the severe and harmful footprint of livestock grainy on this landscape must be provided in this NEPA analysis.	Impacts to livestock grazing from the action alternatives are disclosed in Section 3.10 of the EA.
5/14	The rare and sensitive species populations are already perilously low. But instead of even undertaking the extreme minimal protections" of the GRSG sage-grouse amendment, BLM refused to reduct the disturbance footprint of grazing in unburned lands, or take other basic steps to rein in abusive grazing to limit flammable weeds taking over the landscape, and to minimize threat of future fires.	This is an opinion. Unable to identify a specific comment to respond to in this statement.
5/15	BLM Has not yet provided the Interested Public with post-fire Grazing Decisions, and we are greatly concerned, given the extreme	This is an opinion. Unable to identify a specific comment to respond to in this statement.

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	concessions already made to livestock interests (tens of millions of dollars worth of exotic grass seedings promised, “scorched earth “targeted grazing, and now the added bonanza of “fuel breaks”, BLM will not adequately control grazing in relation to any of the segmented series of projects and other treatments being spun off in this landscape.	
6/1	In general we are in favor of the Fuel Breaks project and feel that this could be a very effective project in minimizing fire size in the future. There are a few concerns that we have with the draft EA that we feel need to be addressed and they are outlined below.	Support is noted of the project.
6/2	EA: Map- Page 2 needs more clarification on the use of forage kochia within the same areas that are designated for targeted grazing. It is unclear if targeted grazing is to be implemented on the ground first and the forage kochia planted at a later date, or if the Kochia will be planted and after it has established then targeted grazing will be implemented.	The intent is to use targeted grazing as the initial treatment method to establish a fuel break along the Owyhee front. Should BLM determine that targeted grazing is ultimately not meeting fuel break and/or management objectives or is not feasible, etc., the adaptive management response will be to seed prostrate kochia within the same 200-foot fuel treatment area (Section 2.4.3 Design Features - Livestock Grazing and Section 2.4.5 Monitoring).
6/3	EA: Page 13 indicates that fuel break seeding could be done over multiple years and closures of entire allotments or pastures could take place. There needs to be more clarification of the planting and closure procedures. Closing a pasture or allotment for multiple years beyond the Soda Fire ESR in order to establish green strips would create substantial economic and logistical issues for any small ranch business plan. The EA needs to specify and detail options in order to avoid these situations	New seedings associated with fuel break establishment will be evaluated on a case by case basis to determine if any rest from normally scheduled livestock grazing may be required. The EA will allow for temporary fencing if necessary to protect new seedings from normal permitted grazing.
6/4	EA: Page 16 The monitoring of the Fuel Breaks needs clarification of how it will be done and the guidelines that will be used. The parameters of what will deem a pasture or allotment to be closed should be explained and what the guidelines are to resume grazing or targeted grazing. The EA should have some remedies to the use of forage Kochia, instead of closures in regards to targeted grazing, to avoid the accumulation of fine fuels over the series of years that the fuel break seedings are being established. (i.e. Temporary Fence, Hot Wire Fence, Herding, other)	New seedings associated with fuel break establishment will be evaluated on a case by case basis to determine if any rest from normally scheduled livestock grazing may be required. The EA will allow for temporary fencing if necessary to protect new seedings from normal permitted grazing. Section 2.4.5 describes the proposed monitoring and control of the fuel breaks.
6/5	Targeted Grazing: The targeted grazing should be based on an agreement with the permittee of record setting forth the class of livestock, timing of use, degree of use and flexibility necessary to alter the use in accordance with onsite conditions. An agreement is needed to assure that the terms of use will not disrupt the normal ranch small business operation plan.	The Record of Decision provides a full description of how targeted grazing will be implemented and how disruption to the normal ranch small business operation plan will be avoided. In order to reduce conflicts and avoid infringement on permitted AUMs, the BLM will not authorize targeted grazing in pastures at the same time regular preference or term-permitted use is taking pace.
6/6	Timeline Issue: We are concerned that there is no projected timeline for completion of the listed alternatives. While we understand the need to protect the ability to continue implementation of plans without being restricted by dates, we feel that the Fuels Breaks Project EA should not hinder the resumption of grazing beyond the Soda Fire ESR, nor should it create additional instability to the normal small ranch business plan than has already occurred post	New seedings associated with fuel break establishment will be evaluated on a case by case basis to determine if any rest from normally scheduled livestock grazing may be required. The EA will allow for temporary fencing if necessary to protect new seedings from normal

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	Soda Fire.	permitted grazing. BLM will continue to work with affected permittees to minimize impacts to permittees.
7/1	Chipmunk Grazing Association Inc. has examined the June 6, 2016 Owyhee County Comment to the Soda Fuel Breaks Project pre-decisional Draft Environmental Assessment (EA) (DOI-BLM-ID-B030-2016-0003-EA) CGA Inc. finds that the county comment addresses virtually all of the issues of concern to the Association in regard to the pre-decisional EA and implementation of the Fuel Breaks Project. Accordingly CGA Inc. is adopting and submitting those comments as their comment to the pre-decisional EA. (Copy attached). Chipmunk Grazing Association (CGA) generally supports the Fuel Breaks Project, there are a significant number of issues to be resolved along with a need for clarification of ambiguities. CGA Inc. at this time cannot give a preference for either Alternative 2 or Alternative 3 over the no action Alternative 1. Should the clarification of issues of concern be resolved and clarified CGA Inc. will reexamine the issues brought forward in the County Comment.	This comment does not identify any issues to be responded to.
8/1	As we noted in our scoping comments, the Soda Fire Fuel Breaks project is extensive, expensive, and controversial and requires a full Environmental Impact Statement (EIS) rather than an EA to fully consider the significance of the project. The National Environmental Policy Act (NEPA) requires that the agency conduct a full EIS when a proposal may significantly affect the quality of the human environment, or when the effects of a project are likely to be highly controversial. 40 C.F.R. 1508.27 (b)(4). Here, where the Bureau of Land Management (BLM) is proposing to construct 452.6 miles of fuel breaks in 400 feet swaths of public land in two states, using chemical herbicides, fire, and mechanical and targeted grazing animal treatments, in areas that provide substantial habitat for several imperiled or otherwise protected species, the significance criteria is tripped in both context and intensity.	An EA has been prepared. If through the process of analysis a FONSI cannot be reached, the field manager may decide to prepare an EIS.
8/2	The significance criteria is also met for the fact that this proposed project is highly controversial, with former state level BLM employees publicly questioning the wisdom of BLM's vegetation plans. The Soda Fire rehabilitation project has been called, "illfated" by Dr. Roger Rosentretter, Dr. Eric Yensen, Dr. John Connelly, and Dr. Donald Mansfield.1 The BLM should follow the recommendations of these scientists in its full EIS.	This is an opinion. An EA has been prepared. If through the process of analysis a FONSI cannot be reached, the field manager may decide to prepare an EIS.
8/3	The purpose and need statement remains inappropriately narrow, and is designed to support the agency's proposal. The agency's purpose and need must include, and prioritize, recovering sagebrush steppe and wildlife habitat. Instead, the BLM has prioritized heavy handed "recovery" efforts that caused more harm than good, and these massive fuel breaks that use methods of questionable effectiveness and that are largely unproven as well as potentially damaging. To that end the agency must consider a habitat restoration alternative with reduced grazing.	The agency's purpose and need is identified in Section 1.2: the purpose or goal of the fuel break project is to protect private land in the WUI area, to protect surrounding intact sage-grouse habitat, to stem the subsequent threat of invasive plant expansion within and adjacent to the fire, and to protect the investment of ESR efforts.
8/4	At this stage in the Soda Fire ESR, the BLM has proceeded wildly off course and has caused much more harm to the irreplaceable resources within the Soda Fire recovery area than good. Drill seeding in areas where it was not warranted, using herbicides in areas where it was not warranted causing a massive loss of plant biodiversity, establishment of crested and Siberian wheatgrass in areas where Sandberg's bluegrass could have effectively competed	This is an opinion on actions that occurred under the Soda Fire ESR Plan. This comment does not identify any issues to be responded to regarding the proposed project.

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	against annual grasses, drill seeding and proposing to mow intact sagebrush areas, and proposing to use non-native prostrate kochia knowing that it has the potential to spread are all disastrous The whole Soda Fire disaster has been made markedly worse by the BLM and serves as a fine example of Disaster Capitalism where profiteers rush in to the aftermath of a disaster to implement expensive and disastrous policies that are likely to perpetuate the problems we face. It seems that the BLM has received a huge amount of money to implement "projects" and is rushing to find a way to spend it. Take a breath, step back, and listen to your scientists before you cause more irreparable harm.	
8/5	Despite requests by WWP and others during the scoping period, BLM has still not provided a map that overlays the proposed project onto habitats for sensitive species, wilderness study areas, lands with wilderness characteristics, areas of critical environmental concern, horse management areas, grazing allotments, roads, inventoried weed sites, existing seedings, and previous fires.	Maps are not required as part of the EA, however; maps for many of the resources have been added to the Final EA. These GIS layers are available on Inside Idaho (https://insideidaho.org) and WWP can download them and make the maps they want.
8/6	The BLM did include maps of Greater sage-grouse (GRSG) habitat in broad terms, but did not specifically relate the miles of fuel breaks within Priority Habitat Management Areas (PHMA), Important Habitat Management Areas (IHMA), or General Habitat Management Areas (GHMA) or relate any portion of the proposed action to the locations of leks within the project area. This level of detail is important to share with the public because the spatial restrictions associated with GRSG habitat mitigation will affect implementation. The EA states that there are 84 leks within the analysis area (EA at 76) but does not calculate the buffer distance for the fuel breaks projects and assess the feasibility of their completion	Effects to PHMA, IHMA and GHMA are discussed in Section 3.5 in the Final EA. Design features developed to minimize or eliminate adverse impacts to resources, including required buffer distances are identified in Section 2.4.3.
8/7	Similarly, the timing restrictions associated with GRSG and other sensitive species leave very small windows in which the proposed projects could occur. See Table 1. It appears that the implementation timing will be very restricted and some analysis of whether this is feasible or – more likely – will end up being waived at the time of construction is warranted. This is a paramount concern for WWP, whether or not the BLM will strictly adhere to the promises it is pledging to mitigate impacts to native wildlife that have already been displaced or stressed by the Soda Fire. Please take a hard look at the spatial and temporal overlays concerning wildlife habitat in the forthcoming EIS, as well as if these mitigation measures will be such that BLM will adequately be able to use the fuel breaks when they are most needed during June through mid- September. EA at 5.	BLM is required to adhere to the design features in the EA. An EA has been prepared. If through the process of analysis a FONSI cannot be reached, the field manager may decide to prepare an EIS.
8/8	The EA does not detail the where the improvements would be made and how many of the existing roads are two-track roads or improved roads. Based on analysis of GIS information, it appears that greater than half of the roads where fuel breaks would be established are unimproved or primitive roads. Many of these roads are two-track roads which receive far less use than the rest of the roads in the proposed alternative receive. These two-track roads are little more than trails and the proposed improvements would entirely change the character of the area and greatly increase use and access. These improvements would be permanent and cause significant impact.	A reduced routes selection, a subset of the proposed action (271 miles vs. 442 miles), is identified for fuel break development in the Record of Decision (ROD). Current road maintenance is adequate to meet fuel break objectives on 257 miles of roads selected for fuel break development in the ROD. Approximately 14 miles (only 5%) will need to be maintained as necessary to allow access for fire suppression equipment and to meet fuel break objectives.

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8/9	The EA fails to adequately examine the deleterious impacts of the proposed road improvements which would promote greater access. These impacts could include a greater incidence of human caused fires, increased rate of weed expansion and spread to new areas from vehicle use, increased soil disturbance by off-road use of vehicles, increased wildlife disturbance, increased hunting and poaching pressure, increased vehicle collision risk with wildlife (Connelly et al. 20042, Lyon and Anderson 20033).	This is an opinion. The EA discusses the impacts due to road maintenance.
8/10	The BLM proposal to create 400-foot wide fuel breaks is not justified and is not consistent with the practices of other field offices that use only 40-foot fuel breaks. Rather than using 400-foot breaks the BLM should simply maintain the existing roads and use them as fuel breaks.	This is an opinion. Please read Section 1.2 Purpose and Need and Section 3.2 Wildfire Management for additional information on what criteria are for effective fuel breaks.
8/11	Many fuel breaks that WWP has examined have not been maintained and have filled with cheatgrass and other invasive species which have spread from the fuel breaks to invade adjacent areas because the disturbance provides an opportunity for these weeds to thrive and increase seeds to invade new areas that may be left untouched by the treatments. Rather than being a fuel break, many of these treatments have become fuel sources and weed corridors which defeats the entire purpose of them.	This is an opinion. The fuel breaks proposed in this project will be maintained and monitored for the life of the project, which as identified in Section 1.2 is "for as long as it takes for the habitat to be restored to desired management levels."
8/12	The fuel breaks proposed next to unimproved or primitive roads also pass very close to sage-grouse leks and the increased disturbance to soils, habitat, and increased human disturbance to these areas is not adequately examined.	Design features developed to minimize or eliminate adverse impacts to resources, including required buffer distances are identified in Section 2.4.3. The EA addresses the impacts of the fuel breaks on sagebrush habitats and species in Sections 3.3, 3.4 and 3.5.
8/13	Under the Proposed Action (Alt. 2), BLM states that "direct, long-term impact" to the Spanish Charlie Basin WIU would occur with the improvement of 5.5 miles of primitive road across the center of the unit. "Impacts would be permanent, affecting the WIU's naturalness and solitude." Draft EA at 129. This is not permitted under the Settlement Agreement between BLM, ONDA, and WWP. Paragraphs 18-19 provide that until BLM completes the RMP amendment, "the BLM shall not implement any project if its analysis determines that the effects of the project would cause an area with BLM identified wilderness character to no longer meet the minimum wilderness character criteria." BLM must in this EA consider at least one "alternative" that "analyzes both mitigation and protection of any BLM-identified wilderness character that exists within the project area." Settlement Agreement at para. 19 (emphasis added).	Language has been included in the Final EA that while this action is specifically analyzed in the EA, the action would not occur until the 9th Circuit Court Settlement Agreement requirement is fulfilled.
8/14	Knick and Hanser 20114 as well as Manier et al. 20145 indicate that the anthropogenic surface disturbance within 5 km (3.1 mi) is "negatively associated with lek persistence." However, the BLM claims, with little rationalization that "it is unlikely that implementation of fuel breaks would have a negative effect on sage-grouse lek persistence,". The BLM provides no mapping of leks in relation to the proposed fuel breaks to back this claim, however, lek information obtained by WWP from Oregon, with records up to 2012, and Idaho, with records up to 2015, shows that there are approximately 36 leks that are classified as occupied (n=31) by Oregon and Idaho, or classified as occupied pending (n=5) by Oregon in the Sage-grouse Analysis Area. The proposed fuel breaks and associated road improvements would be placed within 1000	Design features developed to minimize or eliminate adverse impacts to resources, including required buffer distances are identified in Section 2.4.3. The EA addresses the impacts of the fuel breaks on sagebrush habitats and species in Sections 3.3, 3.4 and 3.5.

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	meters of at least 8 of the 36 leks in the Sage-grouse Analysis Area, the fuel breaks and associated road improvements would be within 5 km (3.1 mi) of 32 of the 36 leks in the Sage-grouse Analysis Area, and all of the leks in the Sage-grouse Analysis Area would be within 4 miles of the fuel breaks. Updated Oregon data may show additional occupied leks within the 4-mile buffer used to define the Sage-grouse Analysis Area. The EA fails to analyze or quantify any of this information.	
8/15	Knick and Hanser 2011 as well as Manier et al. 2014 indicate that 64% of nesting occurs within 5 km (3.1 mi) from leks. The BLM fails to quantify the amount of sage-grouse nesting habitat that would be directly destroyed by the fuel breaks and does not quantify the amount of nesting habitat that would fall within the 5 km (3.1 mi) buffer.	Design features developed to minimize or eliminate adverse impacts to resources, including required buffer distances are identified in Section 2.4.3. The EA addresses the impacts of the fuel breaks on sagebrush habitats and species in Sections 3.3, 3.4 and 3.5. The analysis includes acres of sage-grouse nesting habitat.
8/16	The EA mentions that new fencing and other infrastructure would be required for management of targeted grazing, and for grazing management of fuel breaks proposed in the plan yet, the BLM fails to adequately analyze or quantify the impacts of such fencing and infrastructure on Greater Sage-grouse. The EA states that “fences in the proximity of sage-grouse leks would be marked according to current policy to reduce collision potential”, however, markers do not eliminate collision potential (Christiansen 20096). New fencing in the proximity of sage-grouse leks would increase collision potential. The EA fails to quantify and analyze the fencing and other infrastructure that would be required for management of targeted grazing, and for grazing management of fuel breaks that would fall within the 5 km (3.1 mi) buffer.	Design features developed to minimize or eliminate adverse impacts to resources, including required buffer distances are identified in Section 2.4.3. As stated in Section 3.0 all treatments, including implementation and maintenance, are subject to federal budgets. At this time, the amount of fencing that will be needed for management of targeted grazing is unknown.
8/17	The EA states that the Approved Resource Management Plan Amendment (ARMPA) for Greater sage-grouse was incorporated into the action alternatives of the project. EA at 7. It claims that the project’s anthropogenic disturbance is well below the 3 percent cap and that a more exact calculation will be forthcoming. Id. However, the ARMPA doesn’t consider livestock grazing or its infrastructure to be a disturbance for the purposes of the cap. The forthcoming EIS should provide a spatial analysis of livestock disturbance that gets considered to be a cumulative impact in the planning area, and provide the public with a disturbance area calculation for the project area. Additionally, the BLM must describe how it is calculating disturbance here; is it just the footprint of the fuel breaks or is the agency using any buffer that factors in the potential spread of invasive species from the fuel break to the surrounding areas?	An EA has been prepared. If through the process of analysis a FONSI cannot be reached, the field manager may decide to prepare an EIS. An analysis of the project on livestock grazing is in 3.10. As described in Section 2.4, maintenance and monitoring of the seeded fuel breaks will occur to prevent the spread of treatments outside the fuel break.
8/18	The EA claims that BLM will protect GRSG and other sensitive species by adding bird escape ladders to water haul developments. EA at 16. But the EA makes no mention of incorporating design features that would limit the spread of mosquito-borne West Nile virus. Conformance with the Required Design Features (RDFs) from the ARMPAs should be incorporated into the action alternatives. These include maintaining functional float valves, cleaning and draining tanks and troughs to remove debris, draining tanks after use, and using hardened tank pads to limit hoof prints that could hold water and breed mosquitos. ARMPA at C-11. The ARMPA also required avoiding trailing and watering in GRSG habitat within 1 km of occupied leks, something that the fuel breaks project’s targeted	As stated in Section 1.3, management decisions and RDFs contained in the ARMPA were incorporated into the action alternatives. The action alternatives have been reviewed for conformance with the ARMPAs by the BLM Idaho State Office and Oregon. RDFs from the ARMPAs will be adhered to, but do not warrant repetition in this EA. Design features developed to minimize or eliminate adverse impacts to resources,

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	grazing regime doesn't mention. ARMPA at C-10.	including required buffer distances are identified in Section 2.4.3.
8/19	Additionally, the EA states, "Riparian areas within pastures with targeted grazing treatments will have permanent exclosures constructed." EA at 22. The targeted grazing is slated to occur within PHMA. EA at 74, Figure 3.5-1. The EA does not disclose the locations or extent of these riparian areas or the fencing that will be required, but this would entail significant amounts of new permanent fencing, and the EA currently lacks an analysis of whether temporary fencing could be used "where feasible and appropriate to meet management objectives." ARMPA at c-10, RDF at 107.	Further discussion was provided in the EA (Section 3.5.2) regarding the use and amount of livestock exlosures along riparian areas. As stated in Section 1.3, management decisions and RDFs contained in the ARMPA were incorporated into the action alternatives. The action alternatives have been reviewed for conformance with the ARMPAs by the BLM Idaho State Office and Oregon.
8/20	The EA also doesn't discuss how these fences will conform to GRSG habitat needs and whether they will be consistent with the ARMPAs direction regarding prioritizing "removal, modification, or marking of fences." ARMPA at 2-25. It is also not clear how the construction of new permanent fences for riparian areas would be managed, in contrast to the EA's statement that "Temporary fences would not be constructed within 1.25 miles of occupied sage-grouse leks." EA at 83. What is the spatial limit for permanent fences within pastures with targeted grazing? Which pastures are they? The forthcoming EIS must assess whether this proposed action is viable under the letter and spirit of the ARMPA regarding reducing fence strike mortality for GRSG, or whether the BLM will waive away spatial concerns by using "collision diverter devices" (EA at 21) which reduce but do not remove the threat of GRSG mortality.	As stated in Section 1.3, management decisions and RDFs contained in the ARMPA were incorporated into the action alternatives. The action alternatives have been reviewed for conformance with the ARMPAs by the BLM Idaho State Office and Oregon. RDFs from the ARMPAs will be adhered to, but do not warrant repetition in this EA.
8/21	The proposed action conforms to the ARMPA for parts, but not all, of the management directions regarding the use of prescribed fire in GRSG habitat. MD-FIRE-31 from the ARMPA (page 2-22) has specific restrictions of prescribed fire in winter range, but the EA does not incorporate these stipulations. EA at 12. There is a substantial amount of winter habitat within the analysis area (EA at 75) but the EA doesn't mention the need to have the plan "designed to protect winter range habitat quality." ARMPA at 2-22. MD-FIRE-19 has more explicit instructions: "Allow no treatments in known winter range unless the treatments are designed to strategically reduce wildfire risk around and/or in winter range and will protect, maintain, increase, or enhance winter range habitat quality." ARMPA at 2-21. This is where a finer scale analysis is warranted; rather than simply assume that everything within the fire perimeter was burned, the BLM could be looking at the integrity of winter quality habitat and making decisions about creating fuel breaks based on that. A full EIS would provide this opportunity.	As stated in Section 1.3, management decisions and RDFs contained in the ARMPA were incorporated into the action alternatives. The action alternatives have been reviewed for conformance with the ARMPAs by the BLM Idaho State Office and Oregon. An EA has been prepared. If through the process of analysis a FONSI cannot be reached, the field manager may decide to prepare an EIS.
8/22	There is very little science that shows that targeted grazing is effective at influencing fire behavior. One recent study, conducted in Arizona, only found benefits of targeted grazing using modeling under conditions where wind speeds were only 8 km/hr (~5 mph)7, conditions which wouldn't generally lead to large out of control fires. What little information is available indicates that the level of grazing required to influence fire results in unacceptable impacts to habitat (Launchbaugh et al 20088). Reisner et al9 "found strong evidence that increasing cattle grazing intensity indirectly promotes an increase in the magnitude of B. tectorum dominance." This method would require miles of new fencing, intense herding, and	As stated in Section 2.4.1, targeted grazing is only one of the methods that may be used and is analyzed as such in the EA. Targeted grazing is proposed in the Wildland Urban Interface to help meet the goals and objectives of the proposed project. Both Section 2.4.1 and Section 2.5 describe that grazing will be focused in areas already dominated by annual grass and/or non-native perennial grass and result in a residual annual

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	new water sources. This level of grazing is often not economically viable for the ranchers and would likely require payments to livestock interests who originated the cycle of cheatgrass and medusahead expansion in the first place. This level of grazing is likely to eliminate the potential for the recovery of perennial vegetation, biological soil crusts, and other native vegetation. It would also likely perpetuate annual grasses and would not be compatible with Standards for Rangeland Health.	grass height (or "stubble height") of two inches or less (≤2 inches). Targeted grazing may utilize features for implementation such as temporary water haul sites, temporary salt or mineral supplementation, and temporary and permanent fencing (i.e., more than one treatment period); though the intent is minimize the use of fencing.
8/23	The proposed action entails a plan to use targeted grazing for certain sections of the fuel breaks, but not much is said about how the grazing will be managed to affect just target areas and target species. Despite being specifically raised by Connelly and others in their January 2016 letter, the BLM's targeted grazing monitoring plan simply measures vegetation attributes (EA at 25), rather than considering soil surface trampling that could be more of a problem than herbivory in this ecosystem. Monitoring using photo points and line point intercept studies would not suffice to measure the much more complex effects of targeted grazing on the soil structure and integrity.	Section 2.4 in the EA outlines how targeted grazing will be managed to affect the target areas, as well as stipulations and adaptive management to limit impacts to sensitive resources. The Record of Decision provides a full description of how targeted grazing will be implemented.
8/24	Additionally, the draft EA is rather vague on how livestock will be managed to effectively stay within the target zone. EA at 15. The EA says that it could occur in any season and would be established by June 30 to ensure effectiveness during fire season. Id. But this contradicts the wildlife mitigation measures pledged elsewhere that restricts disturbance during critical wildlife seasons, and fails to describe the mitigation measures that would be in place on the temporary and permanent fencing. Id.	Section 2.4 outlines the methods that would be employed to keep livestock in targeted grazing treatment areas. Design features presented in the EA are requirements of the proposed action.
8/25	Based upon the statement that "targeted grazing may be implemented as a stand-alone treatment or in concert with other treatments such as green strips or crested wheatgrass seedings and may occur more than once a year for the life of the project" (EA at 15), it is unclear whether the EA is proposing to allow grazing in green strips and crested wheatgrass seedings. Additionally, the map on page 2 indicates that targeted grazing would be allowed on fuel breaks. This needs to be clarified and examined in the forthcoming EIS.	As indicated in Section 2.4 and on Figure 2.1, targeted grazing is focused in the WUI along prostrate kochia fuel breaks. An EA has been prepared. If through the process of analysis a FONSI cannot be reached, the field manager may decide to prepare an EIS.
8/26	Because domestic sheep and goats pose a disease threat to bighorn sheep which occupy the project area the BLM has wisely decided not to allow their use in the targeted grazing proposal. However, there is little literature that addresses the effectiveness of cattle for use in targeted grazing. Most of the literature regarding targeted grazing examines the impacts using sheep and goats (Launchbaugh et al 2006). This is a major gap in the EA and should be analyzed in detail.	Available literature on targeted grazing was used during the preparation of the EA.
8/27	As mentioned earlier, the EA mentions that new fencing and other infrastructure would be required for management of targeted grazing, and for grazing management of fuel breaks proposed in the plan yet, the BLM fails to adequately analyze or quantify the impacts of such fencing and infrastructure on Greater Sage-grouse. The EA states that "fences in the proximity of sage-grouse leks would be marked according to current policy to reduce collision potential", however, markers do not eliminate collision potential. New fencing in the proximity of sage-grouse leks would increase collision potential.	Impacts to wildlife from fencing is addressed in Section 3.5.2. The EA states that fencing *may* be required; the intent is to use herding and mineral and water placement to implement the treatment. We anticipate fencing may be necessary to protect riparian areas, for example, but all fencing would be temporary. The statement that the analysis is inadequate is an opinion. Design features developed to minimize or eliminate adverse impacts to resources,

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		including required buffer distances are identified in Section 2.4.3.
8/28	The EA proposes to establish 68.6 (3,896 acres) miles of vegetated fuel breaks below 4,000 feet in elevation that would be prostrate/forage kochia (EA at 26). However, forage kochia has been shown to spread in areas of disturbed and bare soils (Gray and Muir 2013,10 McArthur et al. 199011, Clements et al. 199712, Harrison et al. 200013, Sullivan et al. 201314).	As described in Section 2.4.5, monitoring and control of the kochia fuel breaks will be conducted to assess spread from treatment areas.
8/29	Spread of forage kochia can be accelerated by vehicle use in seeded areas. Prostrate kochia also can change the ecology of the areas it becomes established and form monocultures. Nearby areas in Idaho, such as the I-84 area near Mountain Home, have been drastically impacted by forage kochia seedings where biodiversity has been severely diminished. Because of the deep taproot, forage kochia is known to change the hydrology of an area as well as carry salts to the soil surface15. Forage kochia also has significant impact on wildlife habitat by reducing hiding cover, effectively causing fragmentation to habitats for many species. The EA fails to examine these impacts and fails to examine the impacts forage kochia seedings have cause outside of the project area.	As described in Section 2.4.5, monitoring and control of the kochia fuel breaks will be conducted to assess spread from treatment areas. Examining the impacts forage kochia seeding have caused outside the project area is not within the scope of this analysis.
8/30	Crested wheatgrass, Siberian wheatgrass and other non-native species have been seeded on large tracts of the Soda Fire area. While these non-native species may compete with annual grasses such as cheatgrass and medusahead grass, they can also form monocultures with little sagebrush cover and low diversity understory vegetation (Heidinga and Wilson 200216 ,Henderson and Naeth 200517). Additionally, "[t]he cheatgrass-wildfire cycle has indirectly resulted in additional loss of native plant diversity as a result of the common practice of planting introduced wheatgrasses, primarily crested wheatgrass (Agropyron cristatum), after wildfires" (Pellant 199618). Bakker and Wilson 19 found that crested wheatgrass “hindered colonization by native species while planted native grasses did not.” Shinneman and Baker 200920 “recommend proactive strategies to improve chances for effective control of post-fire cheatgrass invasion, including long-term restoration of biological soil crust and native species diversity and cover.”	This is an opinion on actions that occurred under the Soda Fire ESR Plan. This comment does not identify any issues to be responded to regarding the proposed project.
8/31	BLM’s Soda EA does not adequately examine the potential impacts of its proposed road and fuel break construction on slickspot peppergrass (Lepidium papilliferum), an imperiled plant species that is currently proposed for Threatened status under the Endangered Species Act. 79 Fed. Reg. 22076 (April 21, 2014) (discussing status). According to the 2003 Candidate Conservation Agreement for Slickspot Peppergrass, this species occurs adjacent to the Soda project area. See Candidate Conservation Agreement for Slickspot peppergrass (December 5, 2003), p. 145 (2003 CCA). Yet, the Soda EA mentions this imperiled species only once in passing, and the Soda EA delineates an unreasonably limited “analysis area” for purposes of determining impact of the Soda Project on sensitive plant species – i.e., as the project area plus a 200-foot buffer. Soda EA at 9, 56-59. This “analysis area” does not take into account the full potential for the impacts of the Soda project to be felt outside the 200-foot buffer, including through the spread of little salt cedar, (*Brassia prostrata*) and other reasonably foreseeable impacts of the project. BLM also makes no mention of botanical surveys for slickspot peppergrass, and the Soda project is inconsistent with the	Slickspot peppergrass (*Lepidium papilliferum*) is not within or near the analysis area; as such slickspot peppergrass is outside the scope of analysis in this EA. As described in Section 2.4, maintenance and monitoring of the seeded fuel breaks would occur to prevent the spread of treatments outside the fuel break. Further, design features for special status plants in the proposed prostrate kochia fuel break call for an avoidance buffer of up to 0.5 mile where soils or a given plant’s rarity (e.g., smooth stickleaf, BLM Type 2 SSP) would be cause for concern. The 200-foot general buffer was for analysis purposes; however, there were several cases where the design features call for larger avoidance areas (See Section 2.4.3 in the EA). The USFWS is a cooperating agency on this

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	conservation measures BLM adopted through the Candidate Conservation Agreement. As noted, the Soda EA lacks any discussion or analysis of botanical surveys, and, indeed, BLM never even discusses the potential impact on Slickspot peppergrass from the project area. 2003 CCA, p. 25, Conservation Measure .18. Similarly, in the 2003 CCA BLM agreed to use only native plant material and seeds during fire restoration and rehabilitation activities, unless "use of non-native, non-invasive species would contribute beneficially to maintenance and protection of Slickspot habitat." 2003 CCA, p. 25, Conservation Measure .10. In the Soda project, BLM has approved the use of non-native little salt cedar, (Brassia prostrata) near suitable habitat for Slickspot peppergrass without first making the required finding that use of this invasive would somehow benefit Slickspot peppergrass populations and habitat. BLM's use of little salt cedar, (Brassia prostrata) near suitable Slickspot peppergrass habitat – and BLM's associated refusal to consider the impacts of its Soda fuel break project on Slickspot peppergrass - is particularly troubling here because the U.S. Fish and Wildlife Service and others have recognized that Brassia prostrata competes with Slickspot peppergrass, and is considered a threat to Slickspot peppergrass persistence and survival. See. e.g., 2003 CCA, p. 19 (listing nonnative plants as a primary threat to Slickspot peppergrass persistence). See also Biological Opinion on the Effects of Bureau of Land Management Ongoing Livestock Grazing Actions in Idaho on the Slickspot Peppergrass (Lepidium Papilliferum), 14420-2010-F-0025 (Jan. 25, 2010), p. 167, 295 (BLM may only use forage kochia as a "last resort"). Large scale use of little salt cedar, (Brassia prostrata) along near roads that connect directly to slickspot pepper grass habitat, is a major threat to slickspot peppergrass. Vehicles are very likely to disperse little salt cedar into adjacent road systems and then to the nearby occupied slickspot peppergrass habitat. Little salt cedar thrives in slickspots and it is known to displace slickspot peppergrass (See USFWS Biological Opinion). Moreover, the Soda project also runs afoul of the 2014 Conservation Agreement between the BLM, U.S. Fish and Wildlife Service, and the Idaho Department of Fish and Game. 2014 Conservation Agreement (September 2014) (2014 CA). For example, under the 2014 CA, BLM is required to ensure that any new agency action supports Slickspot peppergrass conservation, and BLM is required to "avoid or minimize negative impacts" on Slickspot peppergrass. Id. At 4. The Soda EA contains no discussion on the steps BLM will take to avoid negative impacts to Slickspot peppergrass, and other measures BLM will require to ensure that the Soda fuel breaks project will avoid all harm to Slickspot peppergrass and its occupied, unoccupied, and suitable habitat. The Soda EA simply fails to examine the potential impacts of the proposed fuel breaks, together with increased road densities, habitat fragmentation and associated increases in weed vectors on Slickspot peppergrass, and we encourage BLM to revisit and expand its analysis to ensure, first, that it has prepared an adequate examination of these potential impacts. Planting little salt cedar along roads without other vegetation for buffers will lead to vehicles pulling off to the side of the road and picking up seeds of little salt cedar that can be transported to adjacent occupied slickspot habitat.	project and has not objected to the analysis nor raised concerns regarding slickspot peppergrass. Additionally, the entire treatment area (footprint) will be surveyed for sensitive plants prior to implementation in any given area to ensure that the appropriate design features are applied to mitigate potential impacts.

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9/1	BLM proposes to construct 452.6 miles of fuel breaks along improved roads, existing two-track trails, and other unidentified trails that "would produce the greatest benefit for protecting [Emergency Stabilization and Restoration] treatments and habitat" (see Soda EA, pp. 12, 26, Fig. 1- 1.) These activities will include building or rebuilding many miles of road using heavy equipment to blade or grade existing roadways to remove vegetation, and turning hundreds of miles of existing two-track trails into improved roads with an average width of 35 feet and installing culverts, sediment barriers, and cattle guards, constructing rolling dip gravel stream crossings, road resurfacing, and surfacing areas with gravel. One of the likely unintended results from these efforts is vastly improved access to sagebrush habitats. Fuel breaks would total 400 feet in width, extending 200 feet on both sides of new and improved roads resulting in > 21,000 acres of disturbance. It appears that the EA does not identify where the improved roads, two-track trails, and other trails are located within the project area; how many miles of proposed fuel breaks will follow trails versus improved roads; and the associated impacts of this construction and reconstruction of roads and fuel breaks. Recent scientific evidence has established that roads increase habitat fragmentation, facilitate spread of invasive weeds, increase wildlife mortality from vehicle collisions, modify animal behavior due to habitat and noise disturbance, and increase fire ignitions (Connelly et al. 2004, Lyon and Anderson 2003). Moreover, the Soda EA does not discuss or examine the need for a 400-foot break, and also fails to discuss the ecological impacts of a fuel-break of this magnitude on sagebrush habitats and sagebrush-dependent species. Other BLM field offices in Idaho use far more limited fuel breaks, in some cases totaling only 40 feet. Given the apparent variation in fuel break width within BLM, additional justification is necessary for the use of a 400-foot wide break.	Figure 2-1 in the EA identifies the location of existing roads proposed for fuel breaks. Impacts from maintenance of roads are discussed in the EA under each resource. Section 1.2 Purpose and Need for Action has been expanded in the Final EA to present the need for fuel breaks to limit the potential for future wildland fires. Additional information regarding fuel break requirements and size has been provided in Section 3.2.1. The EA addresses the impacts of the fuel breaks on sagebrush habitats and species in Sections 3.3, 3.4 and 3.5.
9/2	The Soda EA indicates the BLM intends to plant forage kochia and crested wheatgrass within nearly 70 miles of fuel breaks below 4,000 feet elevation, primarily across the base of the Owyhee Front in an effort to use fire resistant species within the fuel break program. Forage kochia (also known as little salt cedar) is a non-native, semi-evergreen sub-shrub introduced from central Eurasia. Use of forage kochia in vegetated fuel breaks is a risky endeavor in this landscape because peer-reviewed literature as well as unpublished reviews suggest that forage kochia does not necessarily stay where it was seeded, but instead can spread away from the seeding area (Gray and Muir 2013). Moreover, forage kochia has a deep taproot that removes ground water, changes the hydrology of an area, and simplifies the plant community. BLM planted forage kochia in the Morley Nelson Snake River Birds of Prey National Conservation Area (Birds of Prey NCA), and the resulting plant communities now generally have only two plant species: forage kochia and bur buttercup. The result is a precipitous decline in biological diversity.	As described in Section 2.4, maintenance and monitoring of the seeded fuel breaks will occur to prevent the spread of treatments outside the fuel break.
9/3	BLM's Soda EA contains no analysis of these potential effects of seeding forage kochia in corridors along the Owyhee Front, and the EA similarly fails to discuss any of BLM's past efforts at using forage kochia as a fuel break, including within the Birds of Prey NCA. Based on our collective experience, BLM's use of forage kochia in this manner has a potential to significantly impact wildlife habitat. Thus, BLM must more fully examine the potential impacts	As described in Section 2.4, maintenance and monitoring of seeded fuel breaks will occur to prevent the spread of treatments outside the fuel break. As indicated in this EA, maintenance of the fuel breaks would occur over the life of the project, at least until greater sage-grouse objectives are met. Monitoring of

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	of planting forage kochia before moving forward with this project. Indeed, BLM only need to review its past efforts at creating firebreaks (or "greenstrips") in Owyhee and Elmore counties in the 1980s and 1990s to better grasp the significance of the proposed project. Between 1985 and 1993, Idaho BLM's Greenstrip Program created 451 miles of fuel breaks in southern Idaho, and often seeded forage kochia in these fuel breaks (Gray 2011). Recent research has located forage kochia outside the seeded areas, leading one researcher to caution against its use. Our review and experience shows that over time, many "greenstrips" have become weed corridors contributing to a reduction in native plant communities and the spread of cheatgrass and other invasive and noxious weeds.	prostrate kochia fuel breaks would continue for five years. This is longer than the projects mentioned in the comment. The impacts of planting prostrate kochia are included in this EA.
9/4	There is little evidence that native plants are capable of establishing in stands of little salt cedar. If little salt cedar turns out to be invasive, how does BLM plan to eliminate it from the fuel breaks—and our rangelands? Do they have a proven protocol for its eradication in place? Will they be able to get funding for eradication?	BLM does not plan to eliminate prostrate kochia from the fuel breaks. Monitoring of prostrate kochia fuel breaks would occur to prevent spread outside of the fuel breaks and is discussed in Section 2.4.5. As stated in Section 3.0, all treatments, including implementation and maintenance, are subject to federal budgets. At this time the amount of future funding is unknown.
9/5	For years, BLM has also seeded crested wheatgrass in rangeland rehabilitation projects, and the stands tend to be relatively stable. This is partly because crested wheatgrass prevents or greatly retards the establishment of a diverse plant community. "Seeding disturbed areas of shrub-steppe with crested wheatgrass usually retards the development of a diverse plant community. If an increase in species diversity is desired, existing crested wheatgrass plants and their propagules in the soil must be destroyed and other species deliberately introduced" (Marlette and Anderson 1986:161).	BLM is not seeking plant diversity in fuel breaks. Section 2.4.1 provides information on seeded fuel break criteria and effective characteristics for fuel break vegetation.
9/6	We request BLM complete a more robust analysis of their past efforts at creating fuel breaks or green strips - using forage kochia, crested wheatgrass, and other species – across the sagebrush landscape in southern and eastern Idaho, including examining the purpose of creating these fuel breaks and green strips, costs of the fuel breaks and green strips, and the results of these actions. At present, the Soda EA does not adequately review these issues, which are necessary before BLM can make an informed judgment.	Section 1.1.1, Appendix A, and Appendix B provide information on past and current use of fuel breaks and their applied use to modify fire behavior.
9/7	BLM's Soda project also identifies use of "targeted-grazing" by cows within portions of the fuel breaks, including, it appears, in the fuel breaks seeded with forage kochia along the Owyhee Front. See Soda EA, p. 74, Fig. 3.5-1. According to BLM, "targeted grazing requires the use of livestock at a high intensity over a short duration to remove fine fuels," and targeted grazing "may be implemented as a standalone treatment or in concert with other treatments such as green strips or crested wheatgrass seedings and may occur more than once a year for the life of the project." However, BLM provides no information or analysis supporting this experimental use of livestock to reduce fuel loads. The only literature on targeted grazing we are aware of recommends goats and sheep, not cattle, as the livestock class to use (Launchbaugh and Walker 2006). Moreover, the literature of which we are aware on the success or failure of targeted grazing merely measures grass cover and not soil compaction, biological soil crusts, diversity of forbs, soil aggregates, or other	The intent is to use targeted grazing as the initial treatment method to establish a fuel break along the Owyhee front. Should BLM determine that targeted grazing is ultimately not meeting fuel break and/or management objectives or is not feasible, etc., the adaptive management response will be to seed prostrate kochia within the same 200-foot fuel treatment area (Section 2.4.3 Design Features - Livestock Grazing and Section 2.4.5 Monitoring).

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	ecosystem functions (Seefeldt and McCoy 2003). Under these circumstances, soil surface trampling may be a greater problem in the sagebrush steppe than herbivory. Yet, the Soda EA fails to discuss this issue at all. The Soda EA also never examines the financial costs of proposed targeted grazing in terms of costs of fencing, herding, providing water, and salt and mineral supplementation. BLM never examines the likely returns on this investment, especially through increased user fees for AUMs consumed in the forage kochia firebreaks. More importantly, as noted above, BLM never discusses the ecological risks of targeted grazing, including any discussion or analysis or potential implications of sage-grouse mortality related to fencing these areas (Stevens et al. 2012), soil compaction, biological soil crusts, diversity of forbs, soil aggregates, or other ecosystem functions.	
9/8	BLM's Soda EA does not adequately examine the potential impacts on sage-grouse from the Soda Project. The Soda EA provides scant information on sage-grouse populations and habitat. For example, BLM notes that 31 leks are located within the sage-grouse analysis area, but provides no information on the location of these leks with respect to fuel breaks or the relative size and importance of these leks and associated nesting habitat. Without this information, BLM cannot reasonably argue – as it does in the Soda EA – that "it is unlikely that implementation of fuel breaks would have a negative effect on sage-grouse lek persistence," and the existence and implementation of any design features (e.g., temporal limitations on construction near leks) does not alter this conclusion. Nevertheless, available information suggests that anthropomorphic disturbance within 3.1 miles of a sage-grouse lek is negatively associated with lek persistence (Manier et al. 2014). Thus, before BLM can make such a sweeping conclusion, BLM must first have and provide data on the relative location and size of leks with respect to roads and proposed fire breaks. Presently, the Soda EA lacks this information.	The impacts to sage-grouse from the project are analyzed in Section 3.5.3. Design features developed to minimize or eliminate adverse impacts to resources, including required buffer distances are identified in Section 2.4.3.
9/9	BLM's claim that its design features prohibiting construction activities from March 1- July 31 will adequately ensure lek persistence is problematic because the proposed activities will decrease nesting habitat and increase disturbance to breeding grouse to some degree. The EA should quantify how much breeding habitat is likely to be lost and what the impacts of improved roads will be on increased access and additional use of ORVs.	Currently, the primary mechanism utilized by the applicable wildlife agencies is to protect sage-grouse leks as these are the most restrictive and limited habitat component for sage-grouse. The USFWS (in conjunction with local, state, and other applicable federal agencies) has set disturbance buffers and timing restrictions on activities that could impact leks, and have determined that following these restrictions can be effective at minimizing impacts to sage-grouse. Note that the majority of nesting habitat occurs near leking habitat, and as such, the USFWS and applicable agencies have determined that restriction on impacts to leks can also indirectly minimize impacts to nesting habitat. However, the commenter is correct that these restrictions will not eliminate impacts to all potential nesting habitat or the impacts that increased roads or OHV use could have to sage-grouse. The EA acknowledges this and discloses the impacts that would occur to nesting habitats.
9/10	The Soda EA also lacks a full discussion of the impacts on sage-grouse of "eliminating" 22,883 acres of sage-grouse habitat. Soda	As stated in Section 1.3, management decisions and RDFs contained in the ARMPA were

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	EA at 87. Instead, BLM claims only that "the potential impact on sage-grouse habitat amount is relatively small compared to the available habitat within the sage-grouse analysis area." However, the focus should be on the available breeding (lek, nesting early brood-rearing) habitat. BLM just completed a multi-year planning-process designed to ensure that adequate protections were provided for the most important sage-grouse habitat, including PHMAs and IHMAs, so "eliminating" nearly 23,000 acres of important sage-grouse habitat is inconsistent with this process.	incorporated into the action alternatives. The action alternatives have been reviewed for conformance with the ARMPAs by the BLM Idaho State Office and Oregon. The Proposed Action has the potential to disturb up to 22,883 acres of sage-grouse habitat within the sage-grouse analysis area, approximately 3 percent of the total available sage-grouse habitat within the analysis area and is analyzed in Section 3.5.2.
9/11	In the Idaho and Southwestern Montana Greater Sage-Grouse Resource Management Plan Amendment (Idaho RMPA), BLM adopted a three percent disturbance cap within PHMAs and the subsequent project area for any project (see Idaho and Southwestern Montana Greater Sage-Grouse Resource Management Plan Amendment, Appx. E, Anthropogenic Disturbance and Adaptive Management, p. 4.) As part of the Idaho RMPA, prior to authorizing any ground disturbing activities in PHMA, BLM must first establish effective sage-grouse habitat within the project area and the relevant Biologically Significant Unit (BSU), and then determine whether the proposed action will exceed the three percent disturbance cap. The Soda EA does not address whether the Soda project will exceed the disturbance cap at the PHMA level or the project level, and, thus, BLM cannot be assured it is adhering to the Idaho RMPA. In short, given the above information, the direct, indirect, and cumulative impacts of this project on sage-grouse may be more expansive than BLM acknowledges and may violate the BLM's own RMPA.	As stated in Section 1.3, management decisions and RDFs contained in the ARMPA were incorporated into the action alternatives. The action alternatives have been reviewed for conformance with the ARMPAs by the BLM Idaho State Office and Oregon.
9/12	BLM should consider an alternative that avoids building and rebuilding roads and constructing new fuel breaks, in favor of using the existing network of roads as fuel breaks. Using the existing network of roads as fuel breaks – instead of rebuilding or expanding the road network in the project area – would avoid many of the harms additional roads impose.	As described in Section 2.5 and 2.6, both action alternatives considered proposed fuel breaks along existing roads.
9/13	Although the Soda EA fails to discuss in any detail the extant network of improved secondary roads in and around the project area, there have been some efforts to quantify the density of secondary roads in and around the project area. For example, the 2004 Conservation Assessment notes that this area already includes a secondary road density of 0.75-5.725 km/km2 (Connelly et al. 2004). Given this relatively high density of roads, BLM should explore an alternative that relies only on using areas around existing roads as fuel breaks, instead of constructing new 400-foot fuel breaks around improved roads and two-tracks.	As described in Section 2.5 and 2.6, both action alternatives considered proposed fuel breaks along existing roads.
9/14	The Soda EA proposes seeding Sandberg bluegrass, squirreltail, forage kochia (below 4000 feet elevation), and crested wheatgrass in the firebreaks. BLM should examine another alternative that replaces seeding of forage kochia and crested wheatgrass with stands of Sandberg bluegrass, squirreltail, bluebunch wheatgrass, Idaho fescue, and native forbs in the fire breaks. These native species do not risk adverse ecological impacts, provide better or equivalent nutritional value, and are consistent with BLM policies with regard to use of natives in preference to exotics. Irrespective of what species is reseeded, however, BLM should examine an alternative that prioritizes retaining or increasing biological soil crusts – and avoids the use of standard rangeland drills where biological soil crusts still exist – especially because biological soil crusts can	The options for seeded fuel breaks were chosen to enhance establishment potential specifically for fuel breaks. Forage kochia fuel breaks are proposed along 36 miles of existing roads as depicted in Figure 2-1 and are along the Owyhee Front in the wildland-urban-interface (WUI), focused in areas already dominated by annual grass and/or non-native perennial grass. The use of forage kochia as an effective species for fuel breaks is discussed in Section 2.4.1. Analyzing an alternative that prioritizes retaining or increasing biological soil crusts -

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	increase resilience to invasive exotic species, and soil crusts provide the main source of nitrogen fixation in sage-steppe ecosystems.	and avoids the use of standard rangeland drills where biological soil crusts still exist - would not meet the purpose and need of the project.
9/15	The Soda EA raises a substantial number of questions and concerns relating to the project's effects on existing wildlife and habitat. These questions and concerns should be resolved before project implementation. Thus, we recommend that BLM withdraw its proposed Soda Fuel Break Project and associated environmental assessment, and convene a ecological science advisory team – including leading public and private experts on these issues – to advise BLM how and whether to proceed with a fuel breaks project in this area. This science advisory team should include range ecologists, wildlife biologists, and natural resource professionals that have substantial experience with sagebrush steppe ecosystems. This panel must be composed of ecologists and resource specialists that could bring varied pertinent experience to rehabilitation efforts, instead of a team dominated by fire and operational personnel who lack scientific training and an ecosystem perspective. We suggest this group include federal, state, and university scientists and managers but that, for the sake of efficiency, the panel be confined to 6-10 qualified individuals. After this team convenes and decides on an appropriate path forward, BLM must then prepare a comprehensive analysis and review of the ecological costs of moving forward with a fuel break project in this high-desert landscape.	Concerns are noted that commenter would like BLM to involve scientists outside of the BLM with knowledge of these ecosystems. The Environmental Assessment process required by law provides opportunities for public involvement and comment. Comments have been received and incorporated by a wide variety of interested publics which include professors and scientists outside of the BLM organization. We will continue to follow the process which ensures public involvement of all interested parties.
10/1	In general, we support the need for fuel breaks in strategic locations to protect intact sagebrush habitat, private land, and other valuable resources within the area, as well as to prevent the ongoing threat of invasive plant expansion. The threat of fire, especially in areas with non-native grasses such as cheatgrass, has a marked increase in the fire return interval that limits the potential for sage-grouse recovery and expansion. At the same time, we have some suggestions to improve the project. We recognize that fuel breaks can be an important tool to fight fires safety and effectively. However, we are particularly concerned about creating new fuel breaks in high quality sage-grouse habitat and the use of non-native vegetation in proposed fuel breaks.	Support is noted of the project to protect intact sagebrush habitat, private land, and other valuable resources within the area, as well as to prevent the ongoing threat of invasive plant expansion. Concerns are noted about creating new fuel breaks in high quality sage-grouse habitat and the use of non-native vegetation in the proposed fuel breaks.
10/2	We appreciate that part of the intent of the project is to protect sensitive sage-grouse habitat from the effects of fire, but we are concerned that the placement of some fuel breaks could have negative impacts on core sage-brush habitat. Although fuel breaks are one important tool to fight fires, they must be placed strategically. Habitat fragmentation is a primary threat to sagebrush habitat and sage-grouse. Thus, fuel breaks should be approached differently in disturbed and undisturbed sagebrush habitat. The EA did not provide an alternative for fuel breaks within burned areas only. However, this option warrants further analysis. Shrubs adjacent to burned areas could be an important seed source for shrub recovery. We also recommend prohibiting disking, drilling, and hand cutting from undisturbed areas outside the fire perimeter and only using mowing and herbicides with discretion.	The EA analyzed fuel breaks both inside and outside the burned area. Analyzing an alternative for fuel breaks within the burned areas only, would not meet the purpose and need. Habitat fragmentation has already occurred within the project area due to the Soda Fire. The fuel breaks planned where the Soda Fire burned will not contribute to habitat fragmentation because there is no habitat in the post fire condition. Fuel breaks planned in habitats outside of the Soda Fire area have been analyzed in the EA and are a critical component to protecting the investment of the Soda Fire rehabilitation efforts and to protect the intact habitat that exists within the area. Furthermore, fragmentation is already occurring at a large scale due to the trend of

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		large catastrophic fires in and adjacent to the project area. Fuel breaks will provide fire suppression resources with more opportunities to safely engage large fires, protect areas of intact habitat, and prevent large scale habitat fragmentation.
10/3	We appreciate project limitations that prevent disturbances during sage-grouse breeding and brooding seasons and on winter habitat (p. 21). However, we question if potential fuel breaks could be placed in core sage-grouse habitat, leading to further habitat fragmentation and an increased risk of repeated, detrimental fires. We recommend prohibiting the placement of fuel breaks in Priority Habitat Managements Areas (PHMA). Intact sagebrush habitat with a high percentage of native species is more likely to recover with native species after a burn. Fuel breaks placed by BLM in the past have been converted the cheatgrass, actually increasing fire risk. High quality sagebrush habitat should be managed to reduce cheatgrass and increase the percentage of native plant species as part of long-term strategy.	As discussed in Section 1.2 there is a need to limit the potential for future wildland fires to burn intact native vegetation. Strategically placed fuel breaks within and outside the Soda Fire perimeter would meet the need of protecting the intact sagebrush habitat. Refer to comment response 10/2. Fuel breaks in high quality habitat will be treated to reduce vegetation height and maintain native understories. Where high quality habitat is not present, cultivars have been selected based on their ability to provide effective fuel breaks. Refer to Section 2.4 in the EA for information about design features and monitoring.
10/4	We also recommend expanding buffer zones for proposed treatments around leks. The EA indicates that "treatments that have the potential to disturb sage-grouse habitat would not occur within 4 miles of an occupied and active lek from March 1 through July 31 to reduce the likelihood of impacts to sage-grouse reproduction including lek attendance, nesting, and early brood rearing" (p. 21). The BLM should consider a 10k buffer zone for any proposed fuel breaks around occupied and active leks whenever possible.	The buffer zones and time restrictions established are compliant with the ARMPAs.
10/5	Neither action alternative considers the use of native plant species exclusively in potential vegetated fuel breaks. We recommend that the BLM reconsider the use of non-native plant species, particularly prostrate kochia. According to a January 5, 2016 letter to State Director Tim Murphy from notable biologists (attached – see page 5-6), current literature suggests that prostrate kochia can spread outside the area it's seeded, alter hydrology, decrease plant diversity, and potentially become the foundation for cheatgrass and weed encroachment in the future. We recommend that the BLM work with ecologists to determine appropriate native seed mixes for vegetated fuel breaks when possible.	As stated in Section 2.7 of the EA, an alternative using only native plants was considered but not analyzed in detail because it did not meet the purpose and need of the project because they do not meet the requirements of an effective fuel break. Refer to Section 2.4 in the EA for information about methods, design features, and monitoring. BLM keeps up to date on the most effective fuel break cultivars and uses the best resources available for selecting appropriate fuel break cultivars.
10/6	We support Alternative 3 (Modified Proposed Action) over the Proposed Action (Alternative 2) in that it limits land disturbance. Although we support the use of existing roads for fuel breaks, we are concerned that increased road maintenance and improvement may create more fire management challenges in the long-term. As the EA states, "road improvement and maintenance on public lands is likely to promote increased use by the public due to easier access" (p. 83). Consequently, increased traffic "would increase the potential spread of noxious weeds and other undesirable vegetation, increase the potential for human-caused wildfire, and increase the potential for	Support of Alternative 3 is noted.

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	negative interactions with wildlife including the temporary disturbance of wildlife as well as vehicle collisions with wildlife" (p.83).	
10/7	We commend the proposed action's protection of riparian areas. We support guidelines in the proposed action that prohibit seeded fuel breaks, soil disturbance, herbicides, or vegetation removal in wetland or riparian zones is important (p. 17, p. 21-22) We agree that it is important to avoid heavy equipment use within 300 feet of the margins for all springs/seeps/riparian habitats (p. 22). Additionally, we support prohibiting targeted grazing in riparian habitats (p. 23).	Support of guidelines in the Proposed Action are noted.
10/8	Because of the serious ecological damage caused by noxious weeds, we support the judicious use of herbicides when careful analysis demonstrates its appropriateness on a site-specific basis. However, the environmental costs of herbicide use must always be carefully weighed against the benefits in light of alternative methods of fuel reduction. The burden rests on the BLM to demonstrate, via analyses of the characteristics of specific herbicides as well as site conditions and weather patterns, that proposed herbicide application treatments will not adversely impact non-target species or overall ecosystem integrity. Non-herbicide treatments and prevention techniques should be utilized in situations where herbicide application may result in unintended harm. We appreciate that only ground-based herbicides application methods would be employed. The BLM should find an herbicide that does not bio-accumulate and is biodegradable or employ a different treatment method. If herbicide is determined to be the best method of fuel reduction for a given area, the BLM should try to flush and scatter wildlife out of the project area before and during application. As noted above, we are specifically concerned about the potential impacts associated with herbicide application near live water resources and/or groundwater resources.	Concern over herbicide use is noted. As stated in Section 2.4.3 design features are proposed to protect resources from herbicides including, but not limited to, wildlife and water resources. The EA does not limit the use of Herbicide to only ground based methods. Herbicide application may employ both ground or aerial applications.
10/9	We agree with the BLM that there is a need to treat noxious weeds and invasive plants to achieve the desired condition. To the extent practical, we encourage the BLM to use integrated weed treatment methods. Herbicides should only be used as a last resort. Lands treated for noxious weeds should be restored to native plants species.	Agreement is noted and the BLM will implement integrated pest management within the project area.
10/10	We are concerned that soil disturbance can lead to the establishment of highly flammable annual grasses such as cheatgrass. The BLM needs to take great care to ensure that weed spread is minimized and that fuel breaks that are created have a stringent and permanent maintenance schedule to eliminate and reduce cheatgrass invasion and expansion.	Refer to Section 2.4 in the EA for information about design features and monitoring. As discussed in the EA, plants selected for seeding in lower elevations are competitive and able to resist cheatgrass or medusahead invasion while providing a patchy broken fuel bed that is resistant to fire spread. The fuel breaks proposed in this project will be maintained and monitored for the life of the project, which as identified in Section 1.2 is "for as long as it takes for the habitat to be restored to desired management levels."
10/11	We also appreciate that precautions will be taken to insure that noxious weeds are not introduced into the project area and that exotic and invasive species are not reintroduced following treatments. The BLM should describe and employ BMPs to insure	As stated in Section 2.4.3, design features are in place that would require power-washing of all vehicles and equipment involved in fuels management activities, prior to entering the

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	that this does not happen. These BMPs should include washing off all equipment before and after treatment and inspecting all equipment for weeds, non-natives, and their seeds prior to treatment.	area, to minimize the introduction of undesirable and/or invasive plant species.
10/12	We appreciate that monitoring considerations were included in the EA. However, we are unclear on how "information derived through implementation monitoring would be used to improve future fuel break project design" (p. 23). In particular, if additional treatments are considered that go beyond the scope of the EA, additional NEPA analysis would be required. Similarly, we feel strongly that monitoring should evaluate the effectiveness of the project in reducing the extent of fires in the project area. Other factors to analyze are the amount of personnel, equipment and other resources needed to control fires. If after several years of monitoring, the size of fires is constant or continues to grow, we urge the BLM to reassess whether the ongoing maintenance of fuel treatments is prudent.	Not all fuel breaks will be constructed at the same time, and will be dependent on federal budgets. Fuel breaks will be monitored and information will be applied to future fuel breaks within the project area.
10/13	Permanent programs that represent an irreversible and irretrievable commitment of resources warrant preparation of an EIS, pursuant to NEPA. In this case, fuel breaks are being proposed across hundreds of miles of the project area forever. Instead, we encourage the BLM to establish a timeframe for the project, and to revisit the issue within 10-15 years in the future. While we recognize that the BLM does not want to reanalyze the effects of this action into the future, we are concerned that changing situations, resource needs, available budgets, etc. are likely to change in the future and that the BLM and the public would be best served by setting a clear time horizon on this project. The BLM needs to analyze how the fuel breaks will be managed if this program is discontinued. Specifically, the EA needs to consider what would the effects if the fuel breaks are no longer maintained and are effectively abandoned, whether these areas could be restored to native vegetation, what the likelihood of success is, and the costs for each alternative. In the event that these areas are no longer maintained, the BLM may choose to utilize a different vegetation species composition and fuel break design.	An EA has been prepared. If through the process of analysis a FONSI cannot be reached, the field manager may decide to prepare an EIS. As stated in Section 3.0, all treatments, including implementation and maintenance, are subject to federal budgets. As such, a clear timeline on this project cannot be set. The fuel breaks proposed in this project will be maintained and monitored for the life of the project, which as identified in Section 1.2 is "for as long as it takes for the habitat to be restored to desired management levels."
10/14	Again, we recognize and support the need to protect homes, communities, habitat, firefighter safety and other resources in the project area and support the intent of the proposal. We are also encourage that the BLM has worked closely with NRCS and other partners and that the proposed actions may be matched by community preparedness and private landowners' actions to reduce fuel loads and establish fuel breaks to minimize the potential spread of fire.	Support of BLM working with cooperators and other partners is noted.
10/15	The final EA should delineate the location of streams and wetlands in the project area, and the proximity to any proposed treatments. Fish bearing streams should similarly be identified on maps in the final EA.	As noted in Section 2.4.3, design features are in place to protect riparian areas. Maps have been included in the Final EA indicating fish bearing streams.
11/1	I believe that the action proposed in the EA is quite significant and has the potential to have lasting and perhaps irreversible effects. The footprint will would be 11,771 acres under Alternative 3 and 25,517 acres under Alternative 2, and the vegetation in these footprints will be eliminated or greatly altered. I very much appreciate the motivation and need by the BLM to reduce the spread of wildfires and to provide access for firefighters. However, this need needs to be balanced with long-term preservation of the resource. Golden Eagles are protected by the Bald and Golden Eagle Act, and this should be	As stated in the purpose and need and in the objectives of the Proposed Action, the fuel breaks are being proposed to limit the potential for future wildland fires to burn into the Soda Fire restoration area from the outside and to limit the ability of wildfires from starting inside the fire restoration area to burn out into intact native vegetation.

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	considered in any management actions.	BLM understands that golden eagles are protected by the Bald and Golden Eagle Protection Act, and as such is required to be considered in any management actions. The Final EA addresses the effects to golden eagles under all alternatives. The EA has disclosed the impacts to golden eagles.
11/2	I believe that the EA should recommend that the BLM implement different approaches for fuel breaks in burned and unburned areas. Fuel break designs and strategies within intact shrub stands should differ from those in disturbed annual grass communities. Shrubs in the unburned parts of the project area are more sensitive to the effects fragmentation than the disturbed grasslands. Keeping large stands of unfragmented shrub habitat is recommended to maintain viable golden eagle nesting populations and population d of their major prey the BTJR (Knock and Dyer 1997; Marzluff et al. 1997). The concept of "compartmentalizing" (page 9) seems incongruous to a goal of retaining large stands of intact shrub habitat.	Fuel breaks are proposed that would be strategically placed to meet the need of the project as explained in Section 1.2 and protect the values at risk: human life and property, remaining habitat, and ESR investments by reducing the spread of future fires by providing tactical and logistic opportunities to fire personnel, compartmentalizing areas between fuel breaks to contain wildfires into more manageable units, and minimizing fire spread after ignition. As described in Section 3.5.2, establishment of fuel breaks as specified in the Proposed Action is expected to reduce large-scale fire size, protect remaining sage-grouse habitat and important habitats of other native wildlife, and allow for the recovery of natural and seeded plant communities that mostly consist of shrub-steppe habitats.
11/3	The proposed action should identify the order in which various segments will be treated to meet these goals. I believe that creation of fuel breaks outside the fire perimeter be the lowest priority and implemented after fuel breaks within the burn have been completed and shown to be effective.	As stated in Section 3.0, all treatments, including implementation and maintenance, are subject to federal budgets. As such, a clear timeline on this project cannot be set. The fuel breaks will be constructed based on where BLM personnel – biologists, ecologists, fire-management, and managers – determine the highest need for fuel breaks is at the time.
11/4	I my opinion Alternative 3 (the Modified Proposed Action) accommodates the needs of the resource better than Alternative 2 (the Proposed Action) because there will be fewer acres treated/disturbed and no improved access for the public. I very much agree with the statements on page 83 that road improvement and maintenance will likely to promote increased use by the public due to easier access. An increase in traffic volume on these roads would increase the potential spread of noxious weeds and other undesirable vegetation, increase the potential for human-caused wildfire, and increase the potential for negative interactions with wildlife including the temporary disturbance of wildlife as well as vehicle collisions with wildlife. These issues need a more thorough analysis than currently in the EA.	Support of Alternative 3 is noted. Indirect impacts of road maintenance is disclosed in the EA.
11/5	In my opinion Alternative 3 is the more feasible alternative because more miles of fuel break could be created in a timelier manner. If BLM implements fuel breaks on 2000 acres per year, it will take more than 12 years to implement Alternative 2 compared to less than 6 years to implement Alternative 3.	As stated in Section 3.0, assumptions made were necessary to provide a standard basis for comparison between alternatives. Section 3.0 also states that all treatments, including implementation and maintenance, are subject to federal budgets. At this time, the amount of time it will take to implement the fuel breaks is

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		unknown.
11/6	The analysis of the effects on Golden Eagle needs more work. The EA needs to assess the impacts on the number eagle pairs (or nesting territories) and not just nests. Instead of citing Kochert et al. 1999 on Page 71, the EA should cite Kochert and Steenhof (2012), which is the most recent paper that assesses eagle nest use. This paper reports that eagles used 1 – 18 nests within a nesting territory. The EA needs to report the number of nesting territories instead of the number of "nest locations" because number of occupied territories in more meaningful to a nesting population than just the number of nests. In discussing the effects of wildfire on nesting Golden Eagles, the EA should cited the primary reference (Kochert et al. 2012).	The Final EA has been revised to include golden eagle territories.
11/7	Although the EA addresses the effects of fire on Golden Eagles, it also needs to the assess the effects of the fuel breaks on the eagles. In my opinion, the effects of Alternative 2 and Alternative 3 on Golden Eagles differ greatly. The EA needs to address the possible effects of increased fragmentation of eagle foraging habitat. Opening up areas to increased access to recreationist could have negative effects on nesting eagles (Steenhof et al. 2014; Spaul 2015). It is intuitive that as motorized access to nesting areas expands, Golden Eagles will be increasingly susceptible to disturbance. I appreciate the fact that in the EA the BLM proposes temporal and seasonal restrictions around occupied nests on a case by case basis. However, it is my understanding that these Resource Design Features apply only to BLM activities. My main concern is the increased access and activity by the public which could have a negative effect on the nesting eagles.	The Final EA addresses the effects to golden eagles in Section 3.5.2 from the proposed fuel break project. The roads proposed to be maintained are existing and available for use.
12/1	These comments apply only to the Oregon portion of the project. Idaho Fish and Game may have different issues and may offer differing comments for the Idaho side. Of particular concern is the proposed fuel break width of 200 ft. on both sides of the road, as well as the modified proposed fuel break width of 100 ft. on both sides of the road. The Oregon Department of Fish and Wildlife (Department) is particularly concerned with these widths along the Mahogany Gap Road and the lower end of the Succor Creek Road. Sage-grouse are regularly seen using habitat adjacent to the Mahogany Gap road and likely use the area for nesting, brood rearing, and winter habitat. The Sage-Grouse Conservation Assessment and Strategy for Oregon states that "[e]stablishing strips no larger than 15 m (50ft) on either side of the road will provide foraging habitat for grouse and provide >30 m (100fr) of fuel breaks (Hagen 2011). Additionally, the Department recommends avoiding fuel break establishment in the Mahogany Gap area and southern portion of the Succor Creek road. Where fuel breaks are established, the Department recommends that the BLM identify dedicated resources to effectively treat annual grasses and weeds during fuel break establishment and for the life of fuel break.	A reduced routes selection, a subset of the proposed action (271 miles vs. 442 miles), is identified for fuel break development in the Record of Decision (ROD). Although the Mahogany Gap Road and lower end of the Succor Creek were analyzed in the EA but are not being proposed for fuel break development in the ROD.
12/2	Another concern is the proposed road improvements. Currently, the Mahogany Gap road is impassable during wet conditions. This limits human disturbance to sage-grouse as well as big game. Improvements made to this road will likely lead to year round use, increased weed dispersal and increased human disturbance to the local wildlife.	Concerns are noted about improvement of the Mahogany Gap road. See response to 12/1.
12/3	While not critical to this project, page 69, incorrectly states that "The analysis area includes the northeastern portion of the herd area which contains habitat that is less likely to be utilized by bighorn sheep,	Information provided has been included in the Final EA.

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	such as Three Fingers Gulch and Steamboat Ridge areas." Prior to the recent disease outbreak these areas were heavily used by bighorn sheep.	
13/1	The RS 2477 issue noted in the enclosure, is one in which the County has asserted Rights of Way on the roads proposed for action. As mentioned, we are proceeding with a process to validate our Assertions in Federal Court. While that process is ongoing, we expect that any action BLM proposes to take on Asserted roads will first be coordinated with the County. Doing so will be mutually beneficial to BLM and the County's citizens.	Owyhee County has and will be included as a coordinating agency on all BLM projects within Owyhee County.
13/2	We also realize that Law Enforcement will be an issue that will increase from the improved roads. At our meeting BLM indicated that the improved roads do not change the Travel Management designations of those roads and should not be considered as "opening" those roads to use not authorized. We also discussed, and agreed, that BLM lacks the enforcement capability to ensure that is the case. We welcome opportunities to work with BLM to cooperatively develop plans, obtain funding for, and implement needed increased presence of law enforcement, to ensure that sufficient law enforcement is available to manage the increased use that will result from this proposed action. Failing to do so, will put the investments BLM wishes to make on fuel breaks and post-fire rehab and recovery at risk.	Owyhee County has and will be included as a coordinating agency on all BLM projects within Owyhee County.
13/3	The EA needs to evaluate the impact or potential impact of the proposed action on the resolution of RS-24 77 assertions and the resolution process currently under way in Owyhee County. Owyhee County has asserted a ROW on all of lhe roads across public land that were in existence in 1976 and is engaged in an ongoing process for validalion of those ROWs.	Evaluation of impacts of the proposed action on the resolution of RS-2477 is outside the scope of this project.
13/4	The EA must analyze the potential impact of using public funds on private land relative to establishment of a public ROW per Idaho Statutes. The EA needs to note that any landowner choosing to participate in the fuel breaks project should seek legal assis lance before completing any agreement to allow BLM f'uel break road work on private land. At the least, the EA should clearly state that any BLM road work done on private land would be solely for the purpose of creating fuel breaks and allowing access by firefighting equipment only during an active fire suppression effort. BLM road work would not occur on private land without the express written consent of the landowner specifying the limits of the work, the purpose of the work, the frequency of potential maintenance work and advanced notice to and consent of the land owner as to the date and time of any work to be done on such roads.	Fuel break road work on existing roads will be coordinated closely and done in accordance to agreements with all land-ownerships. As described in Section 2.5: Road work would not occur on private land without the express written consent of the landowner specifying the limits of the work, the purpose of the work, the frequency of potential maintenance work and advanced notice to and consent of the land owner as to the date and time of any work to be done on such roads.
13/5	Map - Page 2 shows many roads targeted for fuel break treatments on private land. The EA map needs to reflect that fuel break treatments on these roads are not analyzed as treated but as pending treatments since the actions applicable to these roads arc yet unknown. In addition, all maps should show allotment boundaries in order for ranchers involved to evaluate the potential impact of the project on each affected ranch operations.	The EA analyzes the impact to resources from each of the alternatives, as impacts need to be disclosed in accordance with the National Environmental Policy Act. Maps are not required as part of the EA, however; maps for many of the resources have been added to the Final EA. Additionally a map with allotment boundaries and selected fuel breaks will be included in the Record of Decision.

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13/6	The EA should include maps depicting at least the following: Currently maintained roads and maintenance responsibilities for roads already meeting the fuel break standards. Currently maintained roads and maintenance responsibilities for roads that require additional maintenance of the roadside ditches to remove vegetation. Two track roads that require grading or dozer work to remove center vegetation and create suitable un-vegetated roadside ditches. Roads that will receive immediate and future maintenance vegetation mowing treatments to remove brush & shrubs Lo the 200' width. (Those roads through shrub lands outside of the Soda fire perimeter.) Roads that will be observed and receive future brush cutting treatments as necessary. (Those roads inside the Soda fire perimeter that currently do not have a roadside brush / shrub component.) Roads on private land where participation in the project and the treatments to be applied arc subject to landowner approval and consent. The maps should include all potential sites for seeding roadside areas that could result in grazing exclusion	A reduced routes selection, a subset of the proposed action (271 miles vs. 442 miles), is identified for fuel break development in the Record of Decision (ROD). Current road maintenance is adequate to meet fuel break objectives on 257 miles of roads selected for fuel break development in the ROD. Approximately 14 miles (only 5%) will need to be maintained as necessary to allow access for fire suppression equipment and to meet fuel break objectives. A map of these routes is included in the ROD. New seedings associated with fuel break establishment will be evaluated on a case by case basis to determine if any rest from normally scheduled livestock grazing may be required. The EA will allow for temporary fencing if necessary to protect new seedings from normal permitted grazing. As stated in Section 3.0 all treatments, including implementation and maintenance, are subject to federal budgets. At this time, the amount of temporary rest from grazing for fuel break development is unknown. BLM will continue to work with affected permittees to minimize impacts to permittees.
13/7	The fuel break road example provided by the emergency route gives observers the wrong impression of the total project. It would be useful to create some cross section drawings showing the road widths, roadside ditches and potential brush / shrub removal corridors. This would provide a visual example that is different from and less alarming than the emergency route example. It was indicated at the 5/31 County coordination meeting that Forage Kochia would not be seeded "if' the targeted grazing was successful. However, the EA description of Alternatives 2 and 3 includes some 68+ miles of Forage Kochia seeding in both Alternatives without regard to the effects of targeted grazing. This discrepancy needs to be clarified.	Providing road engineering drawings is not possible at this time, as the type of road work that would be done will be dependent on the condition of the existing road. The level of road maintenance on existing roads will be determined as funding is obtained to implement the project. Section 3.0 also states that all treatments, including implementation and maintenance, are subject to federal budgets. The intent is to use targeted grazing as the initial treatment method to establish a fuel break along the Owyhee front. Should BLM determine that targeted grazing is ultimately not meeting fuel break and/or management objectives or is not feasible, etc., the adaptive management response will be to seed prostrate kochia within the same 200-foot fuel treatment area (Section 2.4.3 Design Features - Livestock Grazing and Section 2.4.5 Monitoring).
13/8	The EA must examine the impact of the proposed action on VRM classifications of the area. Clearly the extent of the proposal would result in changes to the scenic values of the area. While the EA identifies acreages of various VRM classifications it does not assess the impact of the project on the specific VRM class characteristics.	Discussion of impacts to VRM classes and class characteristics in the project area has been expanded in Section 3.7 of the Final EA.
13/9	The EA indicates that the need for closing a pasture or allotment (such as where fencing, herding or other means is not considered feasible) will be somehow determined at a later date but does not	New seedings associated with fuel break establishment will be evaluated on a case by case basis to determine if any rest from

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	explain how such determination would be made. The EA needs to reveal all issue considerations and procedures for arriving at any proposed closure. Furthermore the EA should acknowledge that closure by decision is not applicable for those allotments where the Administrative Court retains jurisdiction.	normally scheduled livestock grazing may be required. The EA will allow for temporary fencing if necessary to protect new seedings from normal permitted grazing. As stated in Section 3.0 all treatments, including implementation and maintenance, are subject to federal budgets. At this time, the amount of temporary rest from grazing for fuel break development is unknown. BLM will continue to work with affected permittees to minimize impacts to permittees.
13/10	The EA needs to fully evaluate the potential for high levels of fine fuel build up under grazing exclusions particularly where fuel break project could or would result in multiple years of grazing exclusion beyond the ESR closures. The EA at page 13 indicates that fuel break seeding (i. e. green strips) could occur over multiple years. The degree of disruption to a ranch small business plan could thus be very significant if it results in multiple year closures of a pasture or allotment. This could occur either due to green stripping small areas over multiple years or by initiating a green strip project in a pasture or allotment that has already been withheld from grazing due to the Soda ESR. The EA needs to specify how the project would avoid these situations.	Evaluating the potential for high levels of fine fuel build up under grazing exclusions is not within the scope of this analysis. Please see response to comment 13/9.
13/11	The EA needs to identify the specific monitoring and assessment criteria and how it will be applied to seeded fuel break areas. The EA indicates that the "vegetation monitoring criteria" are considered the minimum required to determine success of treatments and the resumption of grazing. The implication is that some monitoring beyond the minimum may be utilized. If this is the case, the EA must fully disclose and explain such monitoring including its relationship to the ESR monitoring plan. The EA docs not differentiate monitoring within the Soda fire ESR and monitoring of seeding success outside of the ESR lands.	Section 2.4 describes the maintenance and monitoring and control of the seeded fuel breaks. Information derived through monitoring would be used to improve future fuel break project design. If additional monitoring is required, it would be conducted as described in the EA, and as such does not warrant further analysis. Monitoring will be conducted on all fuel breaks regardless of whether they are inside or outside of the Soda Fire burned area and are separate from the monitoring taking place under Soda ESR Plan.
13/12	If the intent is to utilize the general ESR Soda fire "vegetation monitoring criteria)" To evaluate fuel break success there are significant questions as to whether that information is directly applicable to the purpose on lands outside of the Soda fire perimeter. The general soda fire vegetation monitoring criteria is in reality an experimental effort to gather what may at some point be useful information. The EA needs to fully explain the monitoring techniques and the purpose of each relative to resumption of grazing where fuel break seeding is anticipated either inside or outside of the Soda fire perimeter. This would primarily apply to fuel break roads outside of the ESR area. In most cases lands covered by the Soda fire ESR have already been seeded or have been found not to need seeding.	Section 2.4 describes the monitoring techniques and the purpose of maintenance and monitoring and control of the seeded fuel breaks for the proposed project.
13/13	The EA needs to analyze the impact of increased recreational uses resulting from the fuel break road improvements and realignments. The increased recreational use will:	Indirect impacts of increased recreation are disclosed in various resource sections of the EA.

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	Raise the potential for accidental fire starts, Increase the problem of maintaining closed gates that segregate livestock use areas for implementing proper grazing management, Increase use will require increased maintenance needs that may or may not be carried out in a timely manner and Spill over to roads that are not within the fuel break system, thus widening the impact of such use. Increase demands on local law enforcement and emergency response agencies. Adversely impact quality of life for rural county residents. Adversely impact grazing operations.	A reduced routes selection, a subset of the proposed action (271 miles vs. 442 miles), is identified for fuel break development in the Record of Decision (ROD). Current road maintenance is adequate to meet fuel break objectives on 257 miles of roads selected for fuel break development in the ROD. Approximately 14 miles (only 5%) will need to be maintained as necessary to allow access for fire suppression equipment and to meet fuel break objectives.
13/14	The EA needs to acknowledge the risk of increased fire starts with increased recreational uses. The fuel breaks project is likely to be a significant net benefit to the landscape and associated uses. However, even a small repeat burn is likely to be more damaging than the original Soda fire and will be more difficult to restore.	Recreational use and human ignitions are addressed in the EA (Sections 3.2.3, 3.12.2).
13/15	The SA needs to analyze the effect of installation of cattle guards on all routes experiencing problems from increased recreational traffic, not just the fuel break system roads.	Analyzing the effects of the installation of cattle guards on all routes experiencing problems from increased recreational traffic is not within the scope of this analysis.
13/16	The increase in traffic on roads that are improved, widened or realigned is a major issue. The emergency effort along the Owyhee front has already raised significant concern by ranchers, farmers and area residents due to the dust created my recreational use of the main fuel break road. Heavy traffic can increase dust to the point of damaging crops, significantly hindering permittee administrative access and raise quality of life issues with local residents.	The concerns of increased traffic and dust are noted.
13/17	The EA needs to fully analyze the impact of dust and soil breakdown from both normal administrative use and increasing recreational use. This is particularly important to the private land owners, farmers and ranchers along the northern boundary of the fuel break program area. The final decision should include options to place gravel on the fuel break road that would reduce dust as well as ma king the route available in winter for water haul locations. The EA should also recognize that improving the route with gravel will likely further encourage recreational users to access unimproved side routes and potentially create new routes. Some avenue and implementation of restrictions on recreational use of the main fuel break road needs to be included in the EA.	Analysis of dust and soil breakdown from both normal administrative use and increasing recreational use is not within the scope of this analysis. Maintaining roads do not change the Travel Management designations of those roads and should not be considered as "opening" those roads to use not authorized. The roads proposed to be maintained are existing and available for use.
13/18	While the EA proposes "cattle guards" as one component of maintenance of fuel break routes, it does not specify when and where they would be utilized. Permittees have expressed significant concern for grazing management impacts from increased recreational traffic associated with road improvements. Increased traffic in the area will increase pressure on grazing management that is dependent on gates to implement proper grazing programs. This will be true for all roads not just those targeted for fuel breaks and many of these adjacent roads may by necessity require installation of a cattle guard even though they are not a fuel break route. The EA should include an option to evaluate future needs for, installation of and maintenance of cattle guards at new trouble spots created by increased recreational use.	Maintenance of existing roads under the Proposed Action is only proposed on existing roads. An option to evaluate future needs for installation of and maintenance of cattle guards in Owyhee County is not within the scope of this analysis.

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13/19	The EA states that road improvements would be subject to periodic maintenance. However, it is unclear who, when or where the responsibility will rest. The maps discussed above would go far in explaining the situation with regard to road maintenance. The EA should expressly state that there will be no liability imposed on a permittee regarding grazing management failures due to inaction or untimely maintenance by the responsible party. The EA should acknowledge that BLM maintenance responsibility includes all cattle guards installed as a component of the fuel break project.	Fuel break road work on existing roads will be coordinated closely and done in accordance to agreements with all land-ownerships. The EA does not assign maintenance responsibilities. Roads currently being maintained will remain under the agency or entity conducting the maintenance. Road work would not occur on private land without the express written consent of the landowner specifying the limits of the work, the purpose of the work, the frequency of potential maintenance work and advanced notice to and consent of the land owner as to the date and time of any work to be done on such roads.
13/20	A significant concern is the potential impact on intermingled private land due to increased recreational traffic. The same issue is applicable to ARS research facilities that are continually experience more traffic to these research sites.	Concerns of increased traffic in and adjacent to the project are noted and addressed in the EA.
13/21	The mowing or clearing of brush along roads allows ATV users to travel parallel off road areas to avoid dust or other impediments. This brings up trespass issues when the road crosses onto private land and the ATV user continues to use the cleared area for travel. Progressively narrowing the cleared area as it approaches private land may help push ATV users back on to the designated route when crossing private land. It was stated at the 5/31 County coordination meeting that BLM does not have the capability for adequate enforcement and effective resolution to this problem. The issue has long been a concern for Owyhee County and has been a component of the Owyhee County Natural Resources Plan for a t least 20 years. The County continues to believe the best option to achieve adequate enforcement is to exercise BLM authority to contract with the county for the placement of a local deputy assigned to patrol trouble spots. The Fuel Break project and/ or the Soda Fire ESR should include a proposal to contract enforcement through the Owyhee County Sheriff. It is problematic for BLM to take action through a decision that will require some level of increased enforcement in order to be successful and to avoid other legal issues when it is known that no additional enforcement is available. The EA should address some method of obtaining adequate enforcement preferably by working with the local Sheriff. Increased recreational access will result in increased calls for assistance from local law enforcement (search and rescue vs enforcement duties) and EMS agencies in the County. The resulting increase will further burden the limited budgets and manpower of those agencies.	Trespass issues as a result of project implementation are not anticipated. If they occur, proper authorities should be notified. Concern regarding increased recreation use is noted. Contracting with the county for the placement of a local deputy assigned to patrol trouble spots or obtaining enforcement is not within the scope of this project.
13/22	Conformance with ARMPA, EA (appendices) Page 157: The above conformance review for the ARMPA is found in Appendix A. While the reference states that this project includes “pre-emergence” herbicide application, a word search reveals no other information on the subject. The reference to pre-emergence herbicide treatment should be removed.	Application of pre-emergent herbicides is discussed as part of the Proposed Action in Section 2.5. No changes to EA were made. As stated in Section 2.4, herbicide use is only one of the methods that may be used and is

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	As to the MD text the objective can be accomplished in part by resumption of grazing within the Soda fire perimeter and seeded fuel breaks at the earliest possible opportunity. There is no logic in exclusion of grazing livestock and then using herbicide treatments to reduce the standing and accumulated fine fuels.	analyzed as such in the EA. Multiple methods are proposed and analyzed to provide decision makers with options to choose from to help meet the goals and objectives of the proposed project.
13/23	The emergency fuel break decision has provided an example of effective targeted grazing to reduce standing and accumulated fuel loading. Expanding this approach under the Soda Fuel Breaks EA to the entire northern boundary fuel break road will prove to be more challenging. While the EA addresses Targeted Grazing (TG) in a generalized manner it does not provide information as to the protocols and procedures that will be utilized to accomplish effective treatments. Any future TG should be based on an agreement with the permittee of record setting forth the class of livestock, timing of u se, degree of use and flexibility necessary to alter the use in accordance with onsite conditions. An agreement is needed to assure that the terms of use will not disrupt or negatively impact the normal ranch small business operating plan.	As stated in Section 2.4, targeted grazing is only one of the methods that may be used and is analyzed as such in the EA. Targeted grazing is proposed in the Wildland Urban Interface to help meet the goals and objectives of the proposed project. The Record of Decision provides a full description of how targeted grazing will be implemented and how impacts to normal ranch small business operations will be avoided. In order to reduce conflicts and avoid infringement on permitted AUMs, the BLM will not authorize targeted grazing in pastures at the same time regular preference or term-permitted use is taking pace.
13/24	The EA needs to provide more distinction between the implementation of the fuel break project under the Soda fire burn ESR and the land outside of the burn area. It is unclear as to what seeding has already taken place along fuel break roads within the Soda ESR and whether seeding under the fuel break project would occur in addition to that completed under the ESR. There are also differences in whether and a rea was aerial or ground seeded and whether or not seeding under the fuel break project would defer to prior seeding efforts or would implement seedings in addition to the ESR efforts.	The Soda Fuel Breaks project analyzed in this EA is a treatment recommended under the Soda Fire ESR Plan and is analyzed as an individual project. The BLM recognizes the potential for fuel break and ESR treatments to overlap. Coordination between the Boise District's Fuels and ESR programs will be ongoing to minimize duplicate efforts. Seeding methods proposed under this project are identified in Section 2.4.
13/25	The Soda fire ESR essentially has a sun set date after 5 years but the Soda fuel break project is indefinite. While most of the fuel break roads within the ESR have already been seeded, there is no timeline for determining whether the fuel breaks project would at some future date (5+ yr) call for a new seeding program and associated pasture or allotment closures. This kind of uncertainty is highly disruptive to a normal small business ranch plan.	Re-treatments may be required to meet fuel break objectives over the life of the project and will be evaluated on a case by case basis to determine if any rest from normally scheduled livestock grazing may be required. BLM will continue to work with affected permittees to minimize impacts to permittees.
13/26	The EA should acknowledge that there will be significantly greater change to wildlife habitat outside of the burn where mowing and brush removal will initially take place. By contrast, mowing in the Soda burn will be delayed for a number of years because the Soda fire has already removed the shrub component adjacent to selected roads.	Effects to wildlife and wildlife habitat are analyzed in Section 3.5 of the EA.
13/27	The reductions in grazing use already occurring under the Soda Fire ESR could be significantly greater with the implementation of a green strip project within the fire perimeter. While the implementation of a green strip on fuel breaks outside of the Soda fire perimeter could be less onerous the implementation of green strips over multiple years could also be significantly damaging to a ranch small business plan.	New seedings associated with fuel break establishment will be evaluated on a case by case basis to determine if any rest from normally scheduled livestock grazing may be required. The EA will allow for temporary fencing if necessary to protect new seedings from normal permitted grazing. BLM will continue to work with affected permittees to minimize impacts to permittees.

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14/1	However, for the reasons that follow, ONDA once again urges BLM to prepare an environmental impact statement ("EIS") to more comprehensively study the effects of the proposed fuel breaks including cumulative effects following multiple years of extensive fires in southeastern Oregon."	An EA has been prepared. If through the process of analysis a FONSI cannot be reached, the field manager may decide to prepare an EIS.
14/2	While the Draft EA now includes a limited number of maps depicting the proposal and sage-grouse habitat areas it continues to lack critical spatial information about the proposed action, particularly for the Oregon portion of the proposal. Comprehensive analysis and disclosure of the impacts of this proposal requires including maps or other specific information regarding the Sage-grouse Leks, Wilderness Study Areas, LWCs, Areas of Critical Environmental Concern, Herd Management Areas, grazing allotments, transportation system use designations and maintenance levels, inventoried weed sites, areas previously burned by wildfire or prescribed fire, areas previously re-seeded or otherwise treated, or other important resource information. The Soda Fire's impacts and the potential impacts or efficacy of the proposed action can't be fully analyzed or shared with the public in the absence of more detailed map information. ONDA requests that the EIS for this project include comprehensive descriptions and maps of all potentially affected resources in the project area.	NEPA analysis does not require maps; however, additional maps have been included in the Final EA. An EA has been prepared. If through the process of analysis a FONSI cannot be reached, the field manager may decide to prepare an EIS.
14/3	In our scoping comments ONDA requested that the EIS for this proposed action analyze how various types of fuel breaks would impact vegetative communities, how the proposed action would impact sage-grouse seasonal habitats, how the proposed action would impact sage-grouse populations and linkages between populations, how disturbance factors such as livestock grazing can be controlled in the creation and maintenance of fuel breaks, and whether and how the proposed action is consistent with existing BLM policies and plans, including the Oregon Sage-Grouse Approved Resource Management Plan Amendment ("ARMPA") (BLM 2015). The Draft EA responds to these critical issues with incomplete analysis ignoring important concerns.	An EA has been prepared. If through the process of analysis a FONSI cannot be reached, the field manager may decide to prepare an EIS. The statement that the analysis is incomplete is an opinion.
14/4	The EA continues to lack a robust, credible and scientifically supportable explanation of how the 400 foot wide fuel breaks described in the proposed action will be effective and meet the purpose and need of the proposal, will enhance fire suppression efforts, will contain or minimize fire spread or will minimize impacts to other resources as compared to other fuel break and restoration options. The unsupported statement that "The effectiveness of mechanical or seeded fuel breaks would be based on their width" (EA at 36) begs the question of whether 200 foot wide, 400 foot wide or some much smaller width fuel break would be sufficiently effective to meet the purpose and need of the Draft EA. The Draft EA lacks any meaningful comparison of the efficacy of the alternative fuel breaks for minimizing fire spread and it is therefore impossible for the public to assess the impacts, or any potential benefits, of these alternatives.	The discussion of what makes an effective fuel break has been expanded in the Final EA.
14/5	Companion to our concerns about the efficacy of the proposed fuel breaks are our concerns about the impacts to other resources from fuel breaks of any width or construction method. Among these concerns is the impact the actions proposed in the Draft EA would have on sage-grouse habitats and populations. As stated in our scoping comments for this proposal one of the most important ecological restoration needs in sage-grouse habitat is to control	The EA discloses the impact to resources from each of the alternatives, in accordance with the National Environmental Policy Act. Impacts to sage-grouse and their habitats are disclosed in Section 3.5.

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	invasive species and restore the diversity and cover of native plants while retaining sagebrush cover. The Draft EA states clearly the extent of the issue with invasive species: "Observations also showed that both medusahead and cheatgrass where [sic] common in the area, especially in the southern area that burned west of Highway 95, along roads and other high livestock use areas such as near reservoirs." (EA at 43)	Monitoring and control of the fuel breaks is discussed in Section 2.4.5.
14/6	The Draft EA goes on to explain how the fuel breaks themselves would be along existing and newly improved roads and would become areas of high use and disturbance. What the EA fails to describe, however, is how the Proposed Action or Modified Proposed Action would prevent the fuel breaks from becoming corridors where high concentrations of invasive species result from these new, intensive and ongoing surface disturbances. The lack of analysis of the risk of further spread of invasive species is both troubling and further reason for a more comprehensive analysis of this proposal.	A reduced routes selection, a subset of the proposed action (271 miles vs. 442 miles), is identified for fuel break development in the Record of Decision (ROD). Current road maintenance is adequate to meet fuel break objectives on 257 miles of roads selected for fuel break development in the ROD. Approximately 14 miles (only 5%) will need to be maintained as necessary to allow access for fire suppression equipment and to meet fuel break objectives. Monitoring and control of the fuel breaks is discussed in Section 2.4.5. The EA discloses the impact to resources from each of the alternatives including the methods outlined in Section 2.4.1.
14/7	The Draft EA fails to provide detailed analysis of the location of leks or other sage-grouse habitat types relative to the proposed actions making broad statements about the acreage of the proposal within certain distances of the leks. The lack of specific information about the relationship of the proposed fuel breaks to leks and other sage-grouse habitat types leaves open serious questions about the degree of impacts these actions could have on sage-grouse and their habitat. The following statement from the Draft EA is wholly inadequate as a means of analyzing and disclosing the magnitude of impacts to sage-grouse from the proposed actions: "Given the timing restrictions and relatively low level of anthropogenic disturbance associated with the Proposed Action, it is unlikely that implementation of fuel breaks would have a negative effect on sage-grouse lek persistence." (EA at 86)	As stated in Section 1.3, management decisions and RDFs contained in the ARMPA were incorporated into the action alternatives. The action alternatives have been reviewed for conformance with the ARMPAs by the BLM Idaho State Office and Oregon. The statement that the analysis is inadequate is an opinion.
14/8	Little in the above statement from the Draft EA or the analysis of impacts to sage-grouse provides the public with an understanding of the site-specific design and impacts of the proposal. Could a proposed fuel break be located immediately on top of a highly attended sage-grouse lek resulting in significant impacts to habitat and the species? Nothing in this analysis addresses that type of more detailed question necessary to informed decision-making.	As stated in Section 1.3, management decisions and RDFs contained in the ARMPA were incorporated into the action alternatives. The action alternatives have been reviewed for conformance with the ARMPAs by the BLM Idaho State Office and Oregon. The statement that the analysis is inadequate is an opinion.
14/9	We also reiterate the concerns raised in our scoping comments on this proposal about conformance with the Southeastern Oregon Resource Management Plan ("SEORMP"), as amended by the ARMPA. A significant length of the proposed fuel breaks are within one to four miles of sage-grouse leks, leading to potential conflicts with provisions of the ARMPA (BLM 2015). The Draft EA states	As stated in Section 1.3, management decisions and RDFs contained in the ARMPA were incorporated into the action alternatives. The action alternatives have been reviewed for conformance with the ARMPAs by the BLM Idaho State Office and Oregon.

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	that "Management decisions and required design features (RDF) contained in the ARMPA were incorporated into the action alternatives. The action alternatives are currently being reviewed for in [sic] conformance with the ARMPA." (EA at 7) (emphasis added)	The statement that the analysis is inadequate is an opinion.
14/10	Is the Draft EA in conformance with the Oregon Sage-grouse Plan or not? The Draft EA is unclear. In fact, Appendix 6.1.1 of the Draft EA fails to explain how any of the proposed actions conform with the decisions of the SEORMP/ARMPA instead simply listing provisions of the SEORMP/ARMPA that do apply to the Oregon portion of the proposed action without evaluating whether the proposed action is in conformance with that document. By contrast Appendix 6.1.2 of the Draft EA asks and evaluates whether the proposed actions are in conformance with the Idaho and Montana ARMPA. This inconsistent evaluation of critical sage-grouse plans must be remedied in an EIS for the project.	The Final EA has been updated to reflect that the project is in conformance with the OR ARMPA. An EA has been prepared. If through the process of analysis a FONSI cannot be reached, the field manager may decide to prepare an EIS.
14/11	We also, and again, note the emphasis the ARMPA places on the use of native plant materials (MD- VEG-8). The use of forage kochia is contradictory to this emphasis and undermines efforts to maintain and restore the diversity and cover of native plants. The documented potential for kochia to spread beyond the proposed vegetated fuel breaks (or "green strips") is a compelling reason to consider alternative techniques for creating the proposed fuel breaks.	As discussed in the EA, plants selected for seeding in lower elevations are competitive and able to resist cheatgrass or medusahead invasion while providing a patchy broken fuel bed that is resistant to fire spread. Cultivars have been selected based on their ability to provide effective fuel breaks, as such native plant materials are also proposed (see Section 2.4.1). BLM recognizes that the ARMPA places emphasis on the use of native plant materials but does not preclude the use of non-natives. "Non-native seeds may be used as long as they support GRSG habitat objectives (Pyke 2011) to increase probability of success, when adapted seed availability is low or to compete with invasive species especially on harsher sites" (Idaho and Southwestern Montana GRSG ARMPA pg. 2-17 – MD Veg 3)
14/12	In addition to sage-grouse concerns, ONDA continues to have significant concerns with the potential impacts of the proposed action on both LWCs and areas of citizen inventoried wilderness character. We are also concerned that the proposed actions in the Draft EA are not in compliance with an in-force settlement agreement between BLM and ONDA related to the SEORMP. Ore. Natural Desert Ass'n v. Bureau of Land Mgmt. ("ONDA"), No. 3:03-cv-1017- JE, Dkt ## 129–130 (D. Or. Sept. 28, 2010) (hereafter "Settlement Agreement"); see also ONDA, 625 F.3d 1092 (9th Cir. 2010). LWCs and areas of citizen-inventoried wilderness character are roadless areas primarily affected by the forces of nature and possessing wilderness character. These areas encompass a large portion of the project area with approximately half or more of the proposed fire breaks adjoining LWCs. In addition, an additional portion of the project area contains areas of citizen-inventoried wilderness character identified by ONDA in citizen inventory reports submitted to BLM on February 6, 2004 (ONDA 2004).	The proposed action is in compliance with the 9th Circuit Court Settlement Agreement, as the proposed action will not diminish the size or cause the entire BLM inventory unit to no longer meet wilderness character.
14/13	In the SEORMP Settlement Agreement, BLM agreed to study impacts of proposed actions to wilderness character on these lands through a NEPA process. Until BLM has completed the agreed-to RMP amendment, the agency shall not implement any project if its	The proposed action is in compliance with the 9th Circuit Court Settlement Agreement, as the proposed action will not diminish the size or cause the entire BLM inventory unit to no

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	analysis determines that the effects of the project would cause an area with BLM-identified wilderness character unit or a unit identified in ONDA's February 6, 2004 citizen inventory report as having wilderness character would be deemed by BLM to diminish the size or cause the inventory unit to no longer meet the criteria for wilderness character. Settlement Agreement ¶¶ 18–19.	longer meet wilderness character.
14/14	Under the Proposed Action (Alt. 2), BLM states that "direct, long-term impact" to the Spanish Charlie Basin WIU would occur with the improvement of 5.5 miles of primitive road across the center of the unit. "Impacts would be permanent, affecting the WIU's naturalness and solitude." Draft EA at 129. This is not permitted under the Settlement Agreement. Paragraphs 18-19 provide that until BLM completes the RMP amendment, "the BLM shall not implement any project if its analysis determines that the effects of the project would cause an area with BLM-identified wilderness character to no longer meet the minimum wilderness character criteria." Thus, BLM must modify the Draft EA to comply with the Settlement Agreement.	Language has been included in the Final EA that while this action is specifically analyzed in the EA, the action would not occur in these areas until the 9th Circuit Court Settlement Agreement requirement is fulfilled.
14/15	As an additional matter, under the Settlement Agreement BLM must in this EA consider at least one "alternative" that "analyzes both mitigation and protection of any BLM identified wilderness character that exists within the project area." Settlement Agreement at para. 19 (emphasis added). ONDA is unable to identify analysis of mitigation and protection for identified wilderness character complying with this provision of the Settlement Agreement. The Draft EA must therefore be modified to comply with this aspect of the Settlement Agreement.	The proposed action is in compliance with the 9th Circuit Court Settlement Agreement, as the BLM analyzed a no action alternative.
14/16	In summary, ONDA urges BLM to prepare a more detailed and comprehensive Environmental Impact Statement of the likely environmental impacts of the proposed fuel breaks and all post-fire rehabilitation plans for the Soda Fire remedying the deficiencies described above and disclosing the true impacts of the proposed actions to the public. ONDA appreciates BLM's effort to protect native vegetation, Greater sage-grouse habitat and wilderness values and looks forward to additional analysis of this proposal.	An EA has been prepared. If through the process of analysis a FONSI cannot be reached, the field manager may decide to prepare an EIS.
15/1	The Draft EA is general in nature and provides little specificity in both the alternative descriptions and the potential effects to resources, making meaningful comments difficult. Therefore, our comments reflect the broad, generalized approach in the Draft EA. We recommend that the Final EA provide a more detailed analysis as explained in our comments below.	This comment does not identify any issues to be responded to regarding the proposed project.
15/2	The Draft EA does not provide a clear rationale for the placement of fuel breaks with the exception of the wildlife urban interface (WUI) at the north end of the project. The Department requests that the decision criteria used to determine fuel break placement be explained in greater detail in the Final EA. We further suggest that this include an explanation of the specific resources at risk if that is part of the decision criteria (i.e. sage-grouse breeding habitat).	As stated in Section 1.2 Purpose and Need for Action, there is a need to limit the potential for future wildland fires to burn into the Soda Fire restoration area from the outside and to limit the ability of wildfires from starting inside the fire restoration area to burn out into intact native vegetation. Strategically placed fuel breaks within and outside the Soda Fire perimeter would meet this need. In addition, values at risk are identified in Section 1.1 of the EA.
15/3	Fuel breaks and associated road work are treated equally inside and outside the Soda Fire perimeter in the Draft EA. The Department believes that addressing the project in this manner has resulted in an	The effects of the Soda Fire are disclosed in the Soda Fire ESR Plan. The effects of the burn are considered part of the affected environment

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	incomplete characterization of effects to resources as a result of the project. Fuel breaks within the Soda Fire perimeter represent an additional disturbance, with the Soda Fire itself being the major disturbance event. However, fuel breaks outside the Soda Fire represent a new disturbance on the landscape. The Draft EA treats them equally, both in terms of effectiveness in fire suppression and in terms of effects to natural resources like wildlife habitat. This confuses the analysis and implies that habitats within the Soda Fire perimeter continue to function at the same level as those outside the perimeter. The Department suggests that the Final EA analyze the effects of fuel breaks inside and outside the Soda Fire perimeter separately.	as disclosed in Chapter 3 of the EA. As stated in Section 3.0, assumptions made were necessary to provide a standard basis for comparison between alternatives. As proposed, fuel breaks are designed the same both inside and outside of the burned area and do not warrant being analyzed separately.
15/4	Similarly, the Draft EA treats various habitats similarly and assumes effects to fish and wildlife are the same regardless of habitat type and location. Affected acres are provided, but the Draft EA lacks some important analyses of effects to wildlife and habitats resulting from project implementation, such as how the linear nature of habitat loss from fuel breaks might affect wildlife movements, or how increased motorized access may affect buck vulnerability to hunter harvest, two issues brought up in our scoping comments (letter dated April 4, 2016). Furthermore, using baseline acres of habitat as the metric against which to compare effects makes little sense when numbers are not adjusted for habitat lost in the Soda Fire. Regardless, the analysis of effects is largely built on the premise of "continued loss of sagebrush habitat" from wildfire, relying on the assumption that known disturbance from fuel breaks is a less damaging outcome than unknown disturbance from fire. While that assumption may be correct, it is limited in its scope and is not supported by the limited analysis in the Draft EA. Section 3.5 (Wildlife) makes several unsubstantiated conclusions about the benefits of the fuel breaks. The analysis in the Final EA should expand on the analysis of effects to resources resulting from implementation of the action alternatives and support conclusions with empirical evidence.	Fuel breaks would be adjacent to roads, which are a linear feature already present in the project area. BLM biologists do not believe that widening this linear feature would significantly impair movement of wildlife. A reduced routes selection, a subset of the proposed action (271 miles vs. 442 miles), is identified for fuel break development in the Record of Decision (ROD). Current road maintenance is adequate to meet fuel break objectives on 257 miles of roads selected for fuel break development in the ROD. Approximately 14 miles (only 5%) will need to be maintained as necessary to allow access for fire suppression equipment and to meet fuel break objectives. BLM biologists do not feel that this minimal amount of road maintenance would significantly increase buck vulnerability. While fuel breaks alter habitat structure, habitat and vegetation are still present.
15/5	An additional topic brought up in our scoping letter is that of ecological resistance and resilience. Secretarial Order No. 3336 identifies the emerging scientific knowledge on ecological resistance and resilience as a matter to be utilized and integrated into sage-grouse-related projects. The Department suggests that this project would benefit from an action alternative designed around resistant and resilient habitats, which is a tool that focuses specifically on habitat threats caused by invasive annual grasses and altered fire regimes (Chambers et al. 2014). Specifically, the Department suggests an alternative that eliminates or limits the amount of fuel breaks in Resistance and Resilience Category 1 (http://www.sagegrouseinitiative.com/sgi-map-description-andinstructions/# EcosystemResistance&Resilience) due to the decreased likelihood of these habitats burning and the increased likelihood that these habitats will return to native vegetation if they do burn (Chambers et al. 2014)(see attached map). Focusing efforts instead on existing sage-grouse habitat threatened by wildfire and invasive species are important considerations for the Department.	Analyzing an action alternative designed around resistant and resilient habitats that eliminates or limits the amount of fuel break in Resistance and Resilience Category 1 does not meet the purpose and need of this project.
16/1	The DEA outlines the purpose and need for action under section 1.2 on pages 3-4, and states that "the purpose or goal of the fuel break	The context of these two statements in the EA are different.

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	project is to protect the investment of ESR efforts, to protect surrounding intact sage-grouse habitat, to protect private land in the WUI area, and to stem the subsequent threat of invasive plant expansion within and adjacent to the fire. The DEA later includes on Page 4 that "This system of fuel breaks is also needed to restore and protect sagebrush cover within Idaho West Owyhee Conservation Area for the overall conservation of greater sage-grouse and this project is intended to be in place for as long as it takes for the habitat to be restored to desired management levels." Section 2.4.2 on page 16 states that "fuel breaks would be periodically maintained over the life of the project (at least until greater sage-grouse habitat objectives are met) to keep tall-statured shrubs from dominating treated areas." While sage-grouse habitat is an important consideration, sage-grouse "habitat objectives" should not be the sole determinate of meeting the objectives of the fuel break project or of the decision to continue the maintenance of fuel breaks. Maintaining the health of sage-steppe ecosystems and reducing the size of future fires is also an important goal. The area inside and outside the burn area will still be at risk of fire even after Emergency Stabilization and Rehabilitation objectives and/or sage-grouse habitat "objectives" are met. ISDA suggests that clarification be made to whether the sage-grouse habitat objectives mentioned on page 16 of the DEA reference the guidelines the respective "Habitat Objectives for GRSG" tables in the the 2015 Approved Resource Management Plan Amendments (ARMPA) for the Great Basin Region Sage-Grouse Sub-regions or if they are referenced the more broad, desired management levels for the conservation of sage-grouse as mentioned on page 4.	Section 1.2 identifies the need of the project to restore and protect sagebrush cover within Idaho West Owyhee Conservation Area for the overall conservation of greater sage-grouse and this project is intended to be in place for as long as it takes for the habitat to be restored to broad desired management levels.
16/2	The timeframe for this accomplishment of objectives is difficult to estimate, but will likely be a considerable length. The DEA makes it clear that implementation of this plan is subject to federal budgets. Sustainable funding and staffing for fuel break monitoring and maintenance is especially important and should be taken into consideration. Some breaks may fuel hazard if not properly maintained through mowing, targeted grazing, or other applicable method. Succession occurring in vegetated fuel breaks should also be taken into account. We strongly advocate for continued and proper maintenance of strategically-placed fuel breaks.	Support/advocation noted for continued and proper maintenance of strategically-placed fuel breaks.
16/3	The BLM's Planning Process for the Soda Fuel Breaks should employ a collaborative resource management approach and meaningful coordination with multiple stakeholders, including State agencies, local government, grazing permittees, private landowners, and academia. The ISDA encourages an increased effort by BLM in its consultation, cooperation, and coordination with stakeholders during the planning of the proposed Soda Fuel Breaks project. Stakeholders should be consulted and highly involved as treatment methods and proposed actions are further defined. Collaboration is critical to identifying the most effective locations for fuel breaks and the site specific treatment methods best employed to achieve the goals of this project. As stated on page 38 of Idaho's Sage-grouse Management Plan (Idaho's Plan), choosing the best possible network of strategic fuel breaks that are maintained into the future with input from State and local fire fighters, including Rangeland Fire Protection Association (RFPA) members and other local expertise is key to an effective end product. First response teams in the project area include local RFPAs. These RFPA members must be consulted so that proposed fuel breaks can be "located where firefighters want	BLM attempts at all levels on all projects on BLM-managed lands to employ a collaborative resource management approach and meaningful coordination with multiple stakeholders, including State agencies, local government, grazing permittees, private landowners, and academia and will continue this approach. BLM will continue to work closely with the RFPA associations during planning efforts.

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	them and are going to use them (DEA Page 5)."	
16/4	Coordination with state and county governments, as well as private landowners who maintain and use roads proposed in the fuel break is very important. The connectivity of fuel breaks treatments across various land ownerships is crucial for fuel breaks to be effective; meaningful planning and coordination with various land owners including state land management agencies is imperative in this effort.	Support for ongoing coordination, cooperation and consultation is noted.
16/5	Wildfire and invasive species are the primary threats to sage-grouse and their habitat in Idaho, as stated in Governor Otter's Executive Order 2015-04 and Idaho's Plan. Idaho's Plan focuses on prevention, suppression, and restoration in relation to wildfire in sage-grouse habitat on federal land. Management actions such as the development of fuel breaks ensure timely and effective initial attack on wildfires and give federal agencies, Rangeland Fire Protection Associations (RFPAs), and other firefighting entities the ability to deploy resources in remote sage-grouse habitat. Other wildfire-related objectives in the Idaho Plan include the reduction in the number and size of wildfires in habitat, implementation of actions necessary to manage fire within the normal range of fire activity, and the maintenance of healthy, native sage-steppe plant communities within Core and Important sage-grouse habitat. In combination with these wildfire related objectives, Idaho's Plan calls for the aggressive management of exotic undesirable plant species within Core and Important sage-grouse habitat. Fire management is a suitable activity in all sage-grouse management areas in Idaho's Plan, and the Plan puts a strong emphasis on wildfire suppression efforts and the development of fuel breaks. In Core Habitat, only human safety and structure protection takes precedence to sage-grouse habitat protection in wildfire situations. Idaho's Plan also calls for federal firefighters to ensure close coordination with State firefighters, local fire departments and local expertise to create the best possible network of strategic fuel breaks and access roads to minimize and reduce the size of a wildfire following ignition. Idaho's Plan defines specific criteria to consider in the development of these fuel breaks and access roads for wildfire suppression. In summary, the network should target establishment of these breaks along existing roads or other disturbances, identify higher-risk roads for fuel break construction and maintenance, and implement a strategic approach to using these roads for rapid fire response. These fire breaks should be properly maintained, monitored, and managed, with consideration of the management of weeds including invasive annual grasses. It is important the BLM assess its implementation and long-term maintenance capacity for the proposed project to meet these considerations. In Important Habitat, Idaho's Plan calls for conservation measures to develop more aggressive strategies to reduce fuel loads and in General Habitat the Plan states that aggressive fire suppression techniques should be utilized.	The fuel breaks in the proposed project are along existing roads. As stated in the EA, the strategically placed fuel breaks within and outside the Soda Fire perimeter would meet the need of the project.
16/6	Page 21 of the DEA states that "Treatments that have the potential to disturb sage-grouse habitat would not occur within 4 miles of an occupied and active lek from March 1 through July 31 to reduce the likelihood of impacts to sage-grouse reproduction including lek attendance, nesting, and early brood rearing." Table 2-2 on page 2-5 of the ARMPA states that lek habitat, nesting, and early brood rearing habitat are from March 1 – June 30th, not July 31st. Are the dates in the DEA bases on Table 2-2 or on other guidance or	The dates in the EA have been updated to the required design features of both the ID and OR ARMPAs. As stated in Section 1.3, management decisions and RDFs contained in the ARMPA were incorporated into the action alternatives. The action alternatives have been reviewed for

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	information such as actual habitat use of the local sage-grouse population? Also, how is disturbance potential identified? This unclear, broad stipulation may hamper the effective implementation and maintenance of treatments designed to protect existing and future sage-grouse habitat.	conformance with the ARMPAs by the BLM Idaho State Office and Oregon.
16/7	The ISDA supports the proposal to use targeted grazing as a tool to aid in the prevention and suppression of wildfire, and in turn benefit and protect Idaho's natural resources, wildlife, and citizens. As stated earlier, the greatest threats facing sage-grouse are wildfire and changes to natural fire frequencies associated with annual grass invasion (Idaho's Plan, NMVLWG 201, Idaho Sage-grouse Advisory Committee 2006, Connelly et al. 2000). Idaho's Plan identifies prescribed or targeted livestock grazing as a tool for reducing fuel loads where appropriate to reduce invasive species populations and maintain functional fire breaks. Livestock grazing can act to reduce fuel accumulations, continuity, and height which can lessen the impacts of wildfire within sagebrush ecosystems (Davies et al. 2009). Fuel accumulations such as those which can result from no grazing and reduced grazing levels have the potential to increase the severity of wildfires, opening native plant communities to exotic plant invasions. Because of the impacts fuels have on fire characteristics, even moderate levels of grazing can increase the efficiency of fire suppression activities (Davies et al. 2009). A targeted grazing case study in Nevada analyzed the effects of four years of fall cattle grazing in a cheatgrass dominated site. The treatment reduced standing cheatgrass crop by 43 to 80 percent each year, with no reduction in perennial grass cover (University of Nevada Cooperative Extension Special Publication 15-03 2015.) A study on the effects of spring grazing of cheatgrass near McDermitt, Nevada found that these treatments reduced flame length and rate of spread. These reductions coupled with an increase in bare soil resulted in reduced fuel continuity, and reduced litter depth, creating a patchy litter layer (Diamond et al. 2009). With the occurrence of large scale fires increasing throughout the west, it is imperative that the BLM take measures to use all available tools to proactively reduce the occurrence of these potentially catastrophic wildlife events and reoccurrences by reducing fuel accumulations. Targeted grazing represents an effective biological control method to sustainably reduce available fuel loads and wildfire occurrence, and utilizes an established multiple use of federal lands that is currently in place.	Support is noted of targeted grazing as a tool to aid in the prevention and suppression of wildfire.
16/8	Page 15 of the DEA states that "[l]ivestock class would be restricted to cattle to protect bighorn sheep from potential disease transmission." Though other factors not identified in the DEA may make cattle best suited for this treatment type, this statement alone is not a reason to solely consider cattle for these fuel breaks. The 2010 Idaho State Bighorn Sheep Management Plan (Idaho BHS Plan) recommends that best management practices including temporal separation of domestic sheep and goats and wild sheep be used as methods to achieve separation. The management actions identified for the Owyhee Front Desert Sheep Population Management Unit in the Idaho BHS Plan should be taken into consideration with consultation with the appropriate agencies and individuals identified in the State plan if sheep or goats would be better suited for portions of these treatments.	Recommendation noted to take into consideration the Idaho BHS Plan.

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16/9	Page 22 of the DEA states that "Riparian areas within pastures with targeted grazing treatments will have permanent exclosures constructed." It should not be a requirement to erect permanent riparian exclosures in these pastures. The proper design and placement of permanent exclosures is challenging, and these exclosures often result in removal of available habitat for native wildlife. There are alternative, effective methods to conduct targeted grazing in the desired locations within a pasture. These methods may include other options stated in the EA on page 16 and 17 for excluding livestock from seeding treatment areas such as fencing, herding, and placement of water haul sites and supplement/mineral sites.	The statement that it should not be a requirement to erect permanent riparian exclosures in these pastures is an opinion.
16/11	ISDA is encouraged to see treatment application and response monitoring for the targeted grazing fuel breaks on DEA page 25. Selecting appropriate site locations and determining the length of pace and line point intercept transects is important in obtaining meaningful information.	Support noted of treatment application and response monitoring for targeted grazing.
16/12	Wild horse management areas should also be mentioned in the list of cumulative actions on page 31. The cumulative effects of year-round wild horse grazing would also be appropriate to include in the Cumulative Effects portion of the EA.	Wild horse grazing has been included as a cumulative action in the EA.
16/13	The affected environment section for sage-grouse begins on page 71 of the DEA. The second paragraph on page 72 should exclude the term "livestock management", and rather clarify grazing management as a single cause of habitat alteration or deterioration. Wild horses have also grazed in the area, which requires the inclusion of all grazing management, not just grazing by livestock. It should be stressed in this section that wildfire and invasive species are the primary threats to sage-grouse and sage steppe habitat in the Great Basin. This paragraph is written vaguely. Is it speaking to the deterioration of sage-grouse habitat west-wide, or in the proposed project and sage-grouse analysis area?	The sage-grouse analysis area is described in Section 3.5.1. Wild horse grazing has been added to the list of forces causing deterioration of habitat conditions in Section 3.5.1 as suggested.
16/14	Page 118 of the DEA outlines the environmental consequences for livestock grazing management. There proposed fuel breaks cross portions of 40 allotments. The implementation and rest requirement including the potential for pasture or allotment closure may cause undue hardship on livestock producers. Consultation, cooperation, and coordination with affected permittees on the specific fuel break route through allotments and the most practical method to meet the objectives of the fuel break while continuing grazing at the permitted level is crucial. Closing allotments and pastures should be avoided, and should only occur if agreed upon by the permittee and other landowners including IDL. Priority consideration of alternate measures for protection of treatment should be given. These methods identified in the DEA on page 16 and 17 include herding, avoidance by trailing, shutting off water sources, removing salt or mineral sources, and fencing.	The affected permittees have been included as cooperating agencies on the Soda Fire ESR Plan and will continue to be coordinated with throughout implementation of the Plan on projects such as this fuel breaks project.
16/15	Required Design Feature (RDF) number 24 states: "Ensure proposed sagebrush treatments are planned with full interdisciplinary input pursuant to NEPA and coordination with state fish and wildlife agencies, and that treatment acreage is conservative in the context of surrounding sage-grouse seasonal habitats and landscape." The conformance statement on page 160 of the DEA does not seem to address the need for planning with ID input and the State to evaluate acreages and seasonal habitats. A more specific description or reference to that coordination in the EA would be beneficial.	Providing a more specific description of coordination of agencies within the EA is noted and will be incorporated where necessary.

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16/16	In closing, ISDA supports BLM's Soda Fuel Breaks proposal, and encourages meaningful collaboration in the planning, implementation, monitoring, and future maintenance of the project. This project will help protect, maintain, and improve remaining sage-steppe habitat while enhancing wildfire suppression efforts. Please contact me if you have any questions. We look forward to being actively engaged in project planning and to reviewing the final Soda Fuel Breaks EA.	Support of the project is noted.
17/1	The Owyhee Cattlemen's Association is generally in favor of this fuels break project. We commend the BLM for their desire and effort to implement fuel breaks in an effort to better protect firefighters, natural resources, and private property. We view the plan to maintain/improve roads as a positive benefit that will not only allow better and easier access for fire crews but will also allow Owyhee County deputies to respond better to emergencies associated with ATV riders and other general public uses of our rangelands.	Support of the project is noted.
17/2	We strongly support the targeted grazing aspects of this project. Utilizing livestock in strategic areas to reduce fuels is by far the most cost effective method to reduce fuel loads and fire risk. Recent research conducted by the University of Idaho showed significant reductions in flame height and rate of spread when targeted grazing is utilized to reduce fuel loads in areas with less than 30% brush cover.	Support of targeted grazing is noted.
17/3	Owyhee Cattlemen's Association members do have some areas of concern. The EA indicates potential closure/grazing restrictions in some areas/pastures where forage kochia will be seeded to allow for establishment. There is no time frame or much detail listed. Seeded areas should be managed in order to minimize the size of the any closed areas. This should be able to be accomplished with the use of fencing (temporary electric) or herding. Closing any area to grazing for any significant period of time will be counterproductive in the effort to reduce fuel loads and fire risk.	New seedings associated with fuel break establishment will be evaluated on a case by case basis to determine if any rest from normally scheduled livestock grazing may be required. The EA will allow for temporary fencing if necessary to protect new seedings from normal permitted grazing. As stated in Section 3.10, in the short-term, operators would need some means of restricting livestock use along the linear fuel breaks where they cross allotments, while seeded vegetation is establishing. This could be accomplished by limiting water sources adjacent to the seeded areas, to keep livestock off seedings while they establish. Other options that could be employed would be active herding to keep livestock away from newly seeded areas, temporary electric fencing, altering rest rotation schedules, or deferring use to late fall/winter. BLM will continue to work with affected permittees to minimize impacts to permittees.
17/4	We also have concerns over monitoring of the fuels breaks. How will the monitoring be conducted? What specifically will they be monitored for?	Monitoring of the fuel breaks is described in 2.4.5. Monitoring is described in detail according to the method applied to the fuel break.
17/5	We encourage the BLM to work closely and cooperatively with private landowners and livestock producers to address concerns over roads and any potential grazing restrictions.	BLM will continue to work closely and cooperatively with private landowners and livestock permittees throughout implementation of the project.