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Leslie Gulch Emergency Stabilization and Rehabilitation Environmental Assessment

Vale District
100 Oregon Street
Vale, OR 97918
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BLM
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1.0 Introduction

The Vale District Bureau of Land Management (BLM) is proposing to implement emergency stabilization and burned area rehabilitation (ESR) actions on the Leslie Gulch Fire (See Map 1). Stabilization and rehabilitation actions would include treatments of invasive species, seeding of native grass species, construction of temporary fences, repair of management fences, repair of a wildlife guzzler, and placement of Wilderness Study Area signs on key portions of the Leslie Gulch burned area. An Emergency Stabilization and Rehabilitation plan has been prepared for the Leslie Gulch Fire (JU3L). This EA addresses actions identified within the BLM plan and analyzes their potential impacts on the human environment.

The Leslie Gulch fire was ignited by lightning on the evening of June 28, 2015. Moderate winds and very dry fuels allowed the fire to escape initial attack. The fire was contained on July 3, 2015 after burning 8,680 acres. Of the total acres burned, 7,851 acres are BLM lands, 634 acres are private land, and 195 acres are Bureau of Reclamation lands. The project boundary for this EA is one mile outside the fire perimeter (See Map 2). This boundary incorporates land adjacent to the fire perimeter that has been identified for treatment that will benefit resources within the fire boundary.

The Leslie Gulch fire burned portions of:

- One livestock grazing allotment -Three Fingers Allotment (2% burned): Spring Creek FFR pasture (13%).
- Two Wilderness Study Areas (WSA)
    - Honeycombs WSA (4%)
    - Slocum Creek WSA (87%);
- One Area of Critical Environmental Concern (ACEC)
    - Leslie Gulch ACEC (38%)

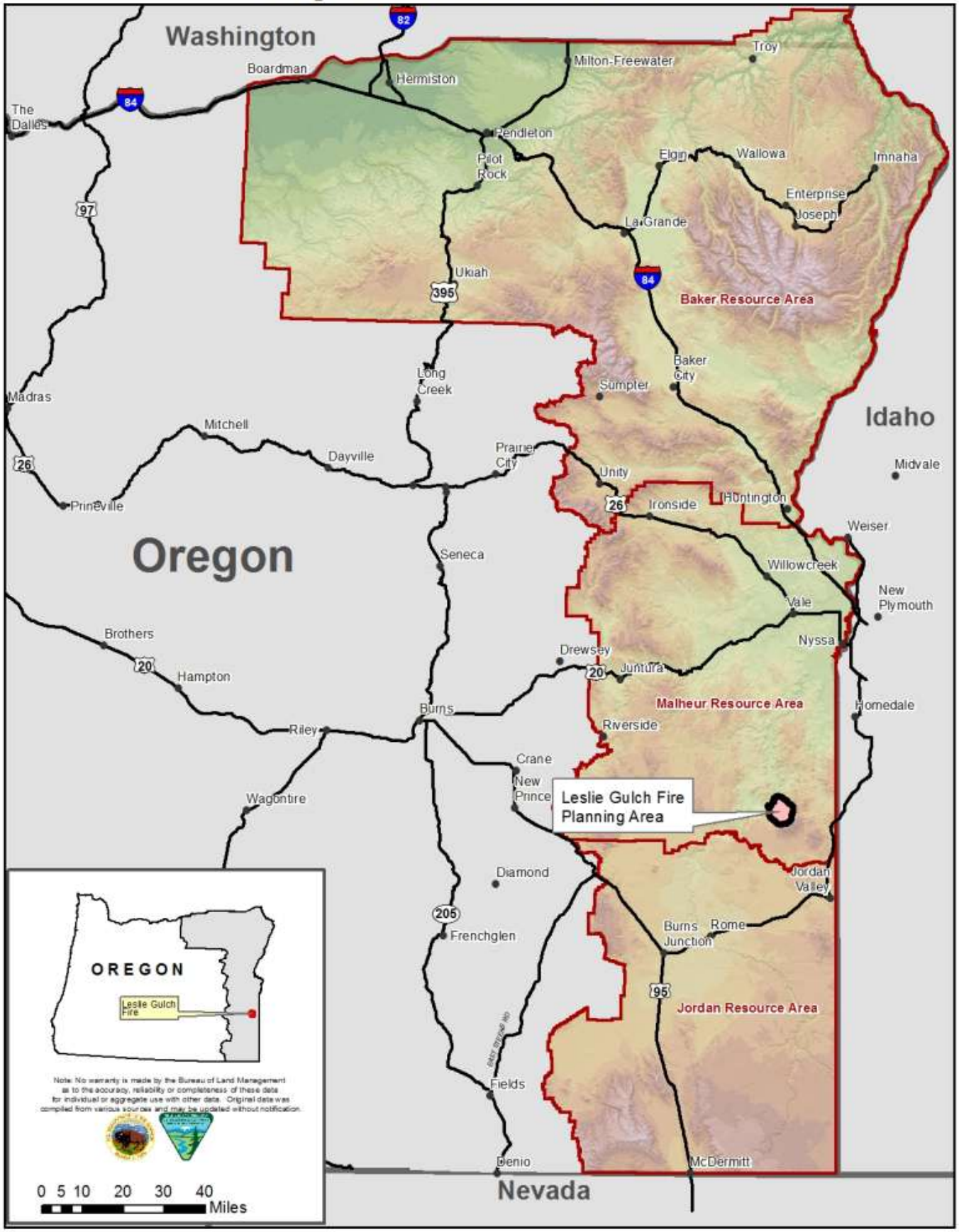
The fire perimeter contains 882 acres of sage-grouse Priority Habitat Management Area (PHMA) and 7,569 acres of General Habitat Management Area (GHMA) (See Appendix A - Map 3). There are no known sage-grouse leks present within the burn perimeter. Bighorn sheep habitat and designated deer winter range also burned in the Leslie Gulch fire.

The Owyhee Uplift, of which Leslie Gulch is part of, was formed by a series of volcanic eruptions in the Middle Miocene period. The exposed rocks include rhyolite and basalt flows, air-fall and ash flow tuffs, and tuffaceous sedimentary rocks. The Leslie Gulch Ash-Flow Tuff Member is part of the Sucker Creek Formation and can be found exposed in Leslie Gulch. Spectacular cliffs and spires are due to the great thickness and uniformity of the tuff and its relative resistance to weathering. At the lower end of Leslie Gulch, and in some localized surrounding areas, including Spring Creek, a greenish yellow ash-tuff composes large talus tuff slopes.

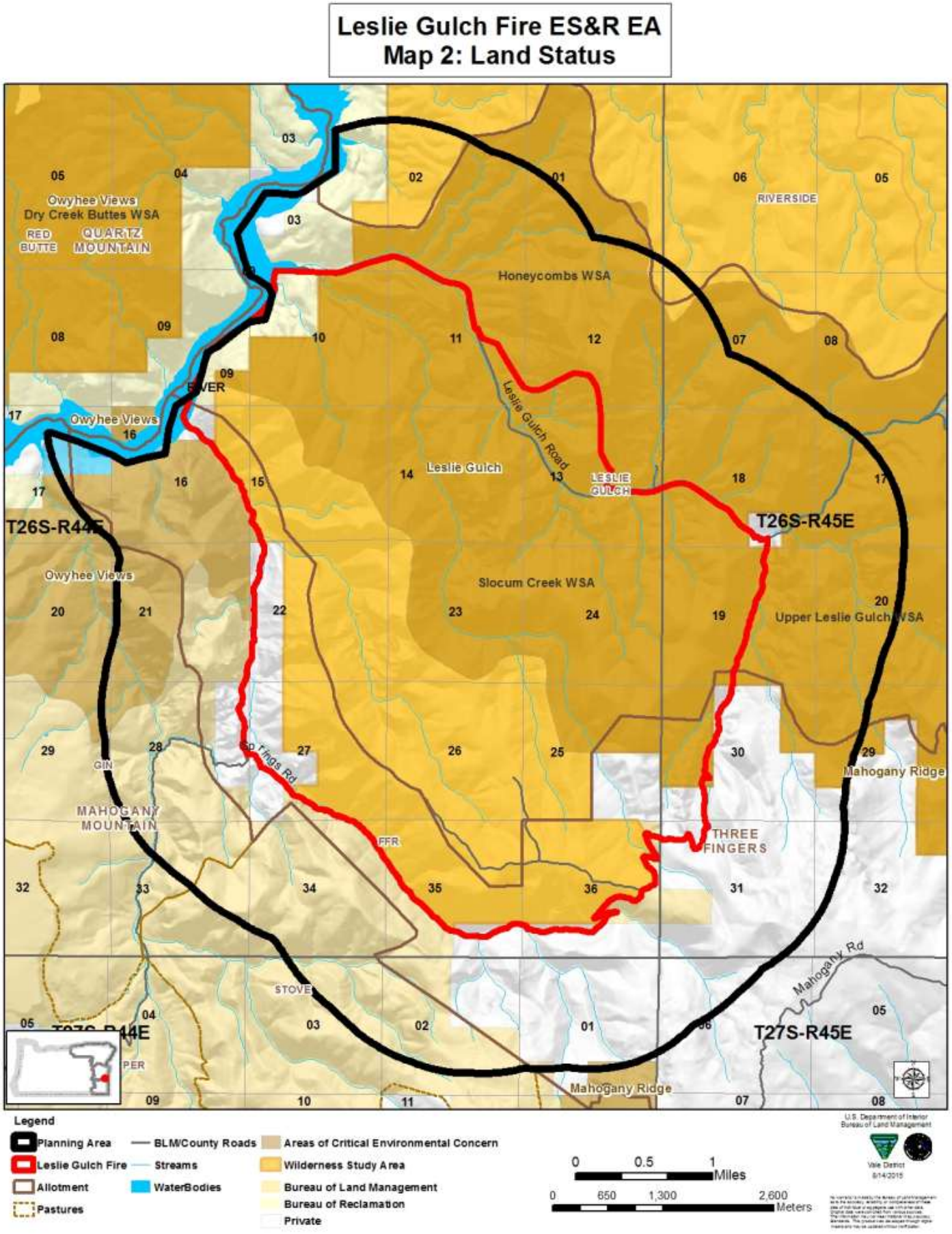
The Leslie Gulch fire burned in the western end of Leslie Gulch and adjacent lands. The elevations range from under 2700 feet at the lower elevations - at the mouths of Spring Creek, Slocum Creek and Leslie Gulch as they flow into the Owyhee River - to over 5000 feet at the highest peak that burned.

Map 1 - Leslie Gulch Fire ESR - Overview

Map 1: Leslie Gulch Fire ESR EA



Map 2 - Leslie Gulch ESR Land Status



The landscape is dominated by very steep hills and valleys or breaks that dissect the uplands east of the Owyhee River. Aspects vary considerably with the main drainages flowing westward. Due to the varied soil parent material, over 2300 feet elevation change, and multiple aspects, abrupt vegetation changes are common.

Leslie Gulch is dominated by three major vegetation types, the most prominent being the Wyoming big sagebrush – bluebunch wheatgrass community. The second most prominent vegetation community is an association of Wyoming big sagebrush mixed with low sagebrush. The third major community is found along the floodplains of the major drainages. A more detailed description of the upland vegetation can be found in Section 3.7.

Numerous forbs are present including the endemic species Ertter's groundsel (*Senecio ertterae*), Packard's blazing star (*Mentzelia packardiae*), steril milkvetch (*Astragalus sterilis*), Owyhee Clover (*Trifolium owyheense*), and the newly described *Monardella angustifolia*.

The fire perimeter spans portions of two sub-watersheds: Leslie Gulch (Hydrologic Unit Code [HUC] No. 170501100603 and Willow Creek-Owyhee (HUC No. 170501100602). The two watersheds total 48,568 acres; the burned area in the watersheds encompasses 18% of the total. Within the fire perimeter, approximately 23 miles of drainages are considered intermittent flow regimes and 3.2 miles as perennial (See Appendix A - Map 4). Riparian vegetation can be found along Spring Creek which is a perennial stream and along some of the larger drainages where the streams are considered intermittent including Slocum Creek, Leslie Gulch, Schoolhouse Gulch, Timber Gulch and Dago Gulch. These stream reaches are dominated with shrub species including numerous willows, western chokecherry, elderberry, golden current and aspen with various sedge, rush, and upland grass species found in the understory. The obligate riparian vegetation community found along Spring Creek is denser than along the intermittent drainages.

1.1 Purpose and Need

The purpose of the actions is to stabilize and rehabilitate the area burned by the Leslie Gulch Fire. The need is to analyze the actions necessary to accomplish stabilization and rehabilitation as identified in the Southeastern Oregon Resource Management Plan (2002) for impacts from wildfire, and specifically proposed in the Leslie Gulch Emergency Stabilization and Rehabilitation plan.

There are numerous resources present in the area burned by the Leslie Gulch fire. The need for the action is based upon the following resource concerns:

Special Status Plants – Ertter's groundsel, Packard's blazing star, Owyhee clover, and sterile milkvetch are special status plant species endemic to Leslie Gulch and the surrounding area and into Owyhee County, Idaho. Within the fire perimeter there are 63 known sites of these species. Many of these sites are on highly erosive soils and are at risk of infestation from the invasive annual grass, cheatgrass.

Soil Erosion – Soils in the project boundary are rated high for erosion hazard and water run-off occurs rapidly. Recovery of burned native vegetation is critical to slow run-off and reduce the amount of soil erosion in the burned area.

Noxious and Invasive weeds – Noxious weeds and invasive annual grasses are present in and adjacent to the burned area. Bare soils created by the fire are prime locations for these species to establish and take over.

Bighorn Sheep – Bighorn sheep and their habitat are a relevant and important value of the Leslie Gulch ACEC. The fire impacted a wildlife guzzler within the ACEC.

Greater Sage-Grouse- Habitat for sagebrush obligate species, including sage-grouse, was adversely modified by the fire. The fire area is currently occupied sage-grouse habitat and is designated as Priority (PHMA) and General Habitat Management Areas (GHMA) for sage-grouse. These areas have been identified as having the highest value to maintaining the species and its habitat. The majority of the Leslie Gulch fire is also located within the Owyhee North Fire and Invasive Assessment Tool (FIAT) Project Planning Area which has been identified as among the highest priority areas for sagebrush landscape protection and restoration in the Vale District due to its high lek densities, large amount of intact sagebrush, and high susceptibility to invasive annual grasses. The fire has put native plant communities at risk for invasive annual grass infestation.

These resource concerns led to the development of the following actions. These actions are described in more detail in section 2.0 Alternatives.

- Stabilize soils and reduce offsite soil loss by establishing ground cover of native vegetation in order to compete with invasive annual grasses and noxious weeds and reduce the likelihood of new weed establishment.
- Reduce the risk of noxious weed and annual grass infestation through Early Detection/Rapid Response (EDRR);
- Protect burned areas from livestock grazing until objectives are met;
- Repair or replace damaged facilities needed for management of livestock, including fences;
- Repair bighorn sheep water source;
- Inform public of limited access in Wilderness Study Areas through sign placement.

1.2 Conformance

Actions considered in this Environmental Assessment are in conformance with the following NEPA Documents:

The Southeastern Oregon Resource Management Plan and Record of Decision (RMP/ROD, 2002), including:

- Special Status Plants Objective: Manage public lands to maintain, restore, or enhance populations and habitats of special status plant species. (p.43, ROD)

- Wildlife and Wildlife Habitat Objective 1: Maintain, restore, or enhance riparian areas and wetlands so they provide diverse and healthy habitat conditions for wildlife. (p.50, ROD)

- Wildlife and Wildlife Habitat Objective 2: 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, ROD)

- Area of Critical Environmental Concern Management: maintain or enhance (the) relevant and important values (for which the ACEC was designated) (p. 276, PRMP/FEIS, 2000)

- Rangeland Vegetation Objective 1: 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, ROD)

- Rangeland Vegetation Objective 3: 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, ROD)

- Rangeland/Grazing Objective: Provide for a sustained level of livestock grazing consistent with other resource objectives and public land use allocations. (p.56, ROD)

Oregon Greater Sage-Grouse Proposed Resource Management Plan Amendment and Final Environmental Impact Statement (June, 2015)

- Goal SSS 1: Conserve, enhance, and restore the sagebrush ecosystem upon which Greater Sage-Grouse populations depend in an effort to maintain and/or increase their abundance and distribution, in cooperation with other conservation partners (p 2-14, FEIS).

- Goal VG 2: Within Greater Sage-Grouse habitat, re-establish sagebrush cover, native grasses, and forbs in areas where they have been reduced below desired levels or lost. Use ecological site descriptions to determine appropriate levels of sagebrush cover and appropriate native grasses and forbs (p 2-15, FEIS).

- Goal VG 3: Use integrated vegetation management to control, suppress, and eradicate invasive plant species per BLM Handbook H-1740-2. Apply ecologically based invasive plant management principles in developing responses to invasive plant species (p 2-15, FEIS).

- Objective VG 6: Conduct vegetation treatments within four miles of occupied and pending leks, using results of the fire and invasives assessment tool (FIAT; Fire and Invasive Assessment Team 2014) to establish the priority PACs and treatments within PACs (p 2-16, FEIS).

Leslie Gulch ACEC Management Plan (1995)

- Livestock Grazing Objective C: Ensure compliance with closure of Leslie Gulch pasture to grazing (p. 13, Summary of Management Actions)
- Noxious Weed Objective A: Control infestations of noxious weeds found within the Leslie Gulch ACEC while protecting the special status plant populations from inadvertent impacts from weed control practices (p. 13, Summary of Management Actions)
- Noxious Weed Objective C: Reduce the potential sites for new infestation of weeds by reducing the amount of bare ground within the ACEC (p. 13, Summary of Management Actions)
- Special Status Plants Objective A: Maintain viable populations of the five special status plant species found in the Leslie Gulch ACEC on all suitable habitat (p. 14, Summary of Management Actions)
- Wildlife Objective A: Protect relevant and important ACEC values while allowing management of California bighorn sheep (p. 15, Summary of Management Actions)
- Recreation Objective E: Maintain the suitability of the wilderness study areas for inclusion in the National Wilderness Preservation System (p. 22, Summary of Management Actions)

Vale BLM District Five Year Integrated Weed Control Plan EA (OR-030-89-19)

2010 Vegetation Treatments Using Herbicides on BLM land in Oregon Record of Decision (Oregon Veg. FEIS)

1.3 Scoping

On July 30, 2015 the Vale District BLM mailed a scoping letter to Tribal leaders, State and local agencies, and interested publics, seeking comments concerning potential issues to consider in the development of BLM's Emergency Stabilization and Rehabilitation effort for the burned areas impacted by the Leslie Gulch fire. BLM received several comments from individuals and organizations. Publicly identified substantive issues and concerns are summarized in Table 1. Copies of submitted comments are retained at the Vale BLM.

Table 1 - Scoping Comment Summary

Scoping Issue Received	BLM Response
Protection of special status plants and habitat	Known special status plant sites and habitat are expressly avoided in the alternatives. Treatments are designed to protect these locations from invasion of non-desirable vegetation.
Consult with U.S. Fish and Wildlife Service for threatened or endangered plant species	There are no federally listed threatened or endangered plant species in the project boundary.
Effect of mechanical treatments on special status plant and wildlife habitat	Mechanical treatments are not proposed in sensitive areas.
Competition of invasive or introduced species with native vegetation, including sensitive and special status plants.	Critical consideration of seed mixes included species that could out-compete native, including sensitive species, vegetation. Treatments were designed to limit spread of invasive annual grasses.
Grazing and potential reductions of grazing during recovery	Grazing closures are considered in both alternatives. Reintroduction of livestock will be made after monitoring indicates that recovery of the burned area is adequate.
Construction of temporary livestock management fences	Selection of temporary fencing locations was based on protection of sensitive species and recovery of the burned area before reintroduction of livestock grazing. All of the Leslie Gulch ACEC is currently excluded from grazing.
Seed sources and mixes considered	Native, locally sourced species are considered in the Action Alternative.
The use of non-native species for stabilization.	Native, locally sourced species are considered in the Action Alternative.
Protection of Wilderness Study Area and other wilderness values	Minimum impact design features are incorporated into the Action Alternative. No management actions are considered which would permanently impact wilderness characteristics or preclude Congress' ability to consider the area for Wilderness designation.
Management of the Leslie Gulch Area of Critical Environmental Concern	All management actions within the ACEC are designed to protect and restore the Relevant and Important values for which the ACEC was designated.

The BLM has critically considered all comments and recommendations received. Vale BLM interdisciplinary team members and managers have consolidated substantive public recommendations and internally-generated management actions into this Environmental Assessment.

1.4 Issues

The following concerns have been identified by BLM and from public input.

1.4.1 Issues Considered in Detail

- *Issue 1:* What are the impacts of treating invasive annual grasses, seeding and harrowing on Bureau Sensitive plant species?

- *Issue 2:* How would the actions impact the Relevant and Important values of the Area of Critical Environmental Concern?

- *Issue 3:* How would the actions impact post-fire recovery of the native vegetation community?

- *Issue 4:* How would the proposed action impact the introduction and spread of invasive annual grasses and noxious weeds?

- *Issue 5:* What are the impacts of seeding, harrowing and treatment of invasive annual grasses on soil stability and erosion?

- *Issue 6:* How would a temporary livestock closure impact the authorization of livestock grazing?

- *Issue 7:* How would seedings, harrowing, temporary fence construction and guzzler repair impact the wilderness values of the Slocum Creek and Honeycombs WSAs?

- *Issue 8:* How would the actions impact local economies and social values?

1.4.2 Issues Considered but Not Analyzed in Detail

The following additional concerns were considered for analysis in this document. After initial analyses, the BLM determined that these concerns were not issues and therefore did not need to be included for further analysis.

- *Issue:* How would the proposed actions affect wildlife species, including migratory birds, sage-grouse, and bighorn sheep?

The wildfire reduced wildlife populations, as well as their habitat, in the burned area. The proposed actions would assist in mitigating some of the detrimental effects of the fire on habitat for wildlife. Seeding would increase the rate of establishment and recovery of perennial vegetation as well as help limit the spread of invasive species. Application of the proposed herbicides using Standard Operating Procedures (SOPs) would effectively control invasive annual grasses, limit their spread, and help protect native plants and seed that survived the fire. These native plants provide a valuable seed source adapted to the local environment, which further enhances the ability of the native plant community to recover

and provide a more diverse habitat for wildlife. Without treatment, the risk of invasive species establishment and spread would be very high, potentially converting the habitat from sagebrush-grass co-dominance to an herbaceous dominance with the main component being cheatgrass. The native plant community would not be expected to recover naturally, and would require additional, extensive restoration effort before supporting suitable habitat for wildlife species.

Fence maintenance and temporary construction would exclude livestock from the burned area until vegetation objectives are met. Fences create a collision hazard to wildlife, but most wildlife species can avoid the fences and either jump/fly over or go under the fences. In addition, the sections of temporary fence are very short, not within 1.25 miles of any sage-grouse leks, and the fence density across the project area is very low. Protection from livestock grazing through fencing and rest would help allow for faster recovery of affected vegetative communities.

Repair of the Schoolhouse guzzler enables wildlife, including bighorn sheep and sage-grouse, to thrive where water is a limiting factor for survival. Without these crucial water sources, wildlife populations would not exist within otherwise suitable habitats.

Effects of the proposed actions may result in some potential direct effects (e.g. displacement) to wildlife, but effects would be temporary and implementation of the proposed actions would occur outside of vulnerable time periods for wildlife such as breeding and wintering. Effects from the proposed actions would be negligible and discountable on wildlife populations due to the relatively small amount of area being treated, and the brief (few hours) amount of time required for the treatment. Most wildlife species would return to the area or resume activity once treatments are complete.

- *Issue:* How will management actions impact cultural resources?

All ground disturbing activities proposed in this analysis (harrowing 260 acres for post-seeding and the temporary fence construction) shall have a level III cultural resource survey prior to implementation. All eligible and potentially eligible identified sites will be buffered.

- *Issue:* How would the spraying of Imazapic Impact WSA Values?

According to BLM Manual, Sections D.2.b.iv and 1.6.D.8; the spraying of Imazapic would promote the re-establishment of native plant species and help prevent the spread of exotic vegetation. Native plant species align with the WSA values of naturalness where the appearance of native vegetation adds to the natural biophysical environment of the landscape.

- *Issue:* How would seeding, harrowing, temporary fence construction and guzzler repair impact Recreation and Off-Highway Vehicle activities?

The closure of the road would not occur any longer than necessary to safely conduct roadway maintenance. The roads are not affected and the temporary nature would not detour

recreation use in the general area. Off-highway use is not permitted in the ACEC. Other treatment actions would have no impact on recreation use in the area.

2.0 Alternatives

This section describes the alternatives analyzed and considered through this project. Table 2 identifies the Actions for all alternatives. Project design features associated to the action alternative are presented in section 2.5.

Table 2 - Proposed Actions by Alternative

Proposed Action	No Action Alternative	Action Alternative
Herbicide Application for Annual Grass		X
Competitive Ground Seeding		X
Noxious Weed Herbicide Treatment	X	X
Temporary Livestock Closure	X	X
Management Fence Repair	X*	X*
Temporary Fence Construction		X
Guzzler Repair	X*	X*
WSA Signs	X*	X*

* Action is the same for both alternatives

2.1 Actions Common to Both Alternatives

Several actions considered in this Environmental Assessment are common to both alternatives and have been analyzed in previous NEPA documents. The common actions are described below and would be implemented in the same manner for each alternative.

2.1.1 Repair of Management Fence

The Leslie Gulch Fire burned through the Three Fingers allotment (#10503) Spring Creek FFR pasture boundary fence. This fence is located near the west boundary of the Slocum Creek WSA and serves to exclude grazing in the ACEC. The fence is necessary to continue the exclusion of livestock from Leslie Gulch (See Appendix A - Map 5). Approximately three miles of permanent three-wire fence would be repaired. All fence repairs will be conducted using metal pipe at braces, corners and gates.

2.1.2 Guzzler Repair and Fence Removal

The Vale District BLM and Oregon Department of Fish and Wildlife have constructed several bighorn sheep guzzlers on the Malheur and Jordan Resource Areas. These wildlife guzzlers provide water and enhance habitat for bighorn sheep and other wildlife species.

Schoolhouse guzzler and the associated exclosure was built in 1988 and was partially burned in the Leslie Gulch fire. The guzzler is located in the Slocum Creek WSA at T26 S, R44E, Sec. 26 SENE (See Map 5). The guzzler is just south of the Leslie Gulch ACEC and is in a sage-grouse priority habitat management area (PHMA). The guzzler has a wood apron that catches water and funnels it into a tank and drinker. This wooden apron foundation was partially burned in the Leslie Gulch fire. The wood apron would be replaced with steel purlins (which are fire resistant). The corner fence braces of the wildlife exclosure were burned making the fence non-functioning. Since cows and horses are no longer in the area, the fence will be dismantled and materials hauled out. Additionally, the plumbing needs to be updated by installing a self-leveling drinker which will replace the old drinker.

Material for the repair would be flown in and out by helicopter. A hand crew of six or more would access the site by a road that goes partially to the guzzler. Trucks and/or Utility Terrain Vehicles (UTVs) will park at the end of the road and crews will walk ¾ mile to the guzzler site. This would minimize surface disturbance within the WSA and limit the use of motorized vehicles to designated routes. No off-road or cross-country travel would be permitted. No heavy equipment will be used for this project. The apron to be built is approximately 10ft x 20ft and will be made out of steel purlins. Metal poles would be placed into the ground two feet and cemented. The purlins would be attached to the metal poles and roofing tin would be placed on top of the steel purlins to collect water. Water is then made accessible to wildlife in a type of trough called a "drinker" which is placed approximately 40 feet from the tank and apron. The tank and drinker are connected with a pipe and would need to be dug up just around the drinker to install the new drinker and plumbing. A four (L) x two (W) x two (D) foot hole would be dug up to remove the old drinker and install the new drinker. All excavation would be done using hand tools. All disturbed soil would be reseeded with a mix of native seed in the first fall following construction. The project is scheduled to occur as early as summer of 2017, depending on the availability of the helicopter and funding.

2.1.3 Wilderness Study Area Signs

The Leslie Gulch road is the main access route into Leslie Gulch, a popular recreation area on the Vale District. Outside this road prism, both sides are designated Wilderness Study Area (WSA) and are closed to cross-country vehicle travel. This closure maintains the wilderness characteristics and reduces the likelihood of noxious weed introduction and spread. The recovery of these lands depends on the restoration of perennial grasses and forbs to limit erosion and reduce the risk of noxious weed introduction and spread. The existing limited motorized vehicle access would help with the recovery of the perennial vegetation. The Leslie Gulch fire burned vegetation that restricted motorized vehicle access across the landscape. BLM is proposing to place up to 30 additional informational carsonite signs along the edge of the road and at other appropriate locations to inform visitors of the limited access in WSAs. Signs are intended to inform the public and ensure their safety while protecting the recovering resources. Additionally, an interpretive sign may be placed along Leslie Gulch road to inform the public of the fire and the recovery process of the landscape.

The carsonite signs would be placed manually with a sign pounder. The interpretive sign would consist of two four by four inch posts. Post holes would be dug manually or with a gas powered auger.

2.2 No Action Alternative

Under the no action alternative the use of the herbicides Imazapic, Chlorsulfron, and Clopyralid, competitive seeding, and temporary fence construction would not occur. The following actions could occur under this alternative because existing NEPA would allow for the implementation. Note these actions are also included in the Proposed Action but the design is different.

2.2.1 Noxious Weed Herbicide Treatments with Four Herbicides

During the first year post-fire, the Leslie Gulch fire would be inventoried to determine the extent of noxious weed expansion and small areas would be spot treated with the appropriate approved herbicide or effective mechanical or manual treatment to prevent expansion when possible. The majority of this inventory would be in the portion of the burned areas along the major roads and dozer lines where weeds are known to proliferate most readily. During suppression activities, Resource Advisors observed and reported new weed sites and those areas will need broader surveys.

During the second and third year following the fire, the entire burn areas would be monitored and re-inventoried, with focus along roads, fire suppression disturbance areas, and seeding locations. Primarily through an assistance agreement, the BLM would conduct Early Detection and Rapid Response (EDRR) for control of noxious weeds. This inventory would focus on identifying areas of noxious weeds, as well as areas where it appears that undesirable annual grasses are becoming dominant. Large areas of noxious or invasive weeds and annual grasses, if found, would be identified and treated in subsequent years. Noxious weed specialists from BLM would work with crews to inventory and treat identified weed infestations. Small infestations would be spot treated using the best available methods, including the use of herbicides. Larger areas would be mapped for future ground or aerial treatments.

Where herbicide application is determined to be the most appropriate treatment for noxious weeds, only the herbicides glyphosate, 2-4D, picloram, and dicamba would be used. Use of herbicides would be in conformance with label instructions. Only treatments allowable on Oregon BLM lands in conformance with standard operating procedures and mitigation measures (Appendix B) would be used. Herbicides would be applied aerially or using ground-based sprayers.

Throughout the BLM administered lands in the Leslie Gulch Fire, standard operating procedure is that any areas burned by wildfire are monitored for at least two years post-fire. All BLM-managed lands within and adjacent to the burn perimeter of the Leslie Gulch Fire would be surveyed for noxious weeds. Any weeds found would be treated using the most appropriate methods.

Noxious weed inventory and treatment would help to control existing populations, help discover new populations, and reduce the risk of further establishment of noxious weeds. Initial treatments would begin in the fall of 2015 and continue through 2017. Chemical treatment of noxious weed populations and closing the area to livestock would reduce the likelihood of their spread to new unoccupied areas and help to re-establish higher quality vegetation.

2.2.2 Livestock Closure

BLM allotments managed by the Vale District that burn "will be rested from grazing for one full year and through a second growing season at a minimum, or until monitoring data or professional judgment indicate that health and vigor of desired vegetation has recovered to levels adequate to support and protect upland vegetation" (SEORMP/ROD, p.40).

The temporary closure would be accomplished by closing public lands within the Spring Creek FFR Pasture of the Three Fingers Allotment (#10503). Approximately 7,798 acres of public land administered by BLM would be closed until objectives are met.

2.3 Proposed Action

The Proposed Action was developed by the BLM ID Team in order to address identified resource concerns following the Leslie Gulch fire and treatments identified in the subsequent ESR plan.

2.3.1 Herbicide Application for Annual Grass Treatment

Approximately 800 acres of invasive annual grasses would be treated. The objective of this treatment in combination with the competitive ground seeding is to establish a native plant community that is resilient to invasion of noxious weeds and invasive annual plants, stabilizes soils, and provides habitat for sage-grouse. The treatments would occur within and adjacent to the fire perimeter (See Appendix A - Map 6). Treating invasive annual grass adjacent to the fire perimeter is proposed to reduce the risk of the species infesting the burned area. The pre-emergent herbicide, Imazapic, would be applied aerially or by ground methods at a rate of six ounces per acre along with appropriate adjuvants to achieve the most effective control at the time of application. Treatments may need to occur on the same areas in consecutive years to achieve the desired objectives.

Aerial Imazapic treatments would be completed by commercially contracted helicopter or fixed wing aircraft. The type of aircraft used for specific portions of the work would depend on topography and availability of landing and reloading locations. Helicopter treatments would be necessary for areas with rough topography and other hazards that prevent the use of fixed wing application. Fixed wing aircraft would provide the broadcast application on areas with less topographic variation. Where aerial application of herbicides is to be done by contract, the contractor would determine which type of aerial application is most appropriate for the site conditions. Application of Imazapic would occur from late summer to early fall

to reduce potential impacts to the establishment and survival of seeded species, as well as desirable species currently present on the site.

The narrow, steep topography in Leslie Gulch may limit aerial access to some treatment areas. In those cases Imazapic may need to be applied with ground methods using an all-terrain vehicle with a boom sprayer or hand gun or with a backpack sprayer. If ground methods are used it would occur on the same 260 acres that would be seeded and harrowed. No additional acres would be disturbed by ATV.

Where Imazapic applications are determined to be the most appropriate treatment for the control of invasive annual grasses, its use would be in conformance with label instructions and the 2010 Vegetation Treatments Using Herbicides on BLM Lands in Oregon Record of Decision. All design elements, mitigations, and SOPs (Appendix E) described in the ROD would be used.

If subsequent monitoring shows that large areas are becoming dominated by invasive annual grasses such as cheatgrass or medusahead, they would be treated by broadcasting (on the ground or aerially) an application of Imazapic, using the same rates and project designs referred to in section 2.3.3.

2.3.2 Competitive Ground Seeding

Proposed Imazapic treatment areas were assessed to identify locations that would benefit from competitive ground seeding. The objective of competitive ground seeding is to establish native vegetation to compete with annual grasses and noxious weeds. This treatment would be implemented the fall after the final Imazapic treatment when the effects of the herbicide spray have diminished to a level that no longer impacts germination success.

The interdisciplinary team has identified 260 acres within the proposed Imazapic treatment that have little to no native vegetation (See Appendix A - Map 6). These sites would be seeded with a native grass seed mix to establish a community of desirable species that make it difficult for invasive annual grasses and noxious weeds to establish.

Areas that would be seeded are relatively flat with rock outcrops. An ATV or UTV would be used to broadcast the seed from a centrifugal force seeder. Seed contact with the soil is critical for germination success. To improve seed/soil contact a blanket harrow pulled by an ATV/UTV would be used. The harrow contains numerous metal prongs which drag along the soil surface to cover the seed.

The seed mix would contain three or more native perennial grasses as well as big sagebrush species. If available, locally sourced seed would be used. If locally sourced seed is not available, a variety adapted to the ecology of Leslie Gulch would be used. The proposed seed mix consists of bluebunch wheatgrass/Sheepshead; Great Basin wildrye/Succor Creek; Sandberg bluegrass/Jordan Valley; Thurber's needlegrass/no local source; and Indian Ricegrass/no local source.

2.3.3 Noxious Weed Herbicide Treatments

Noxious weed herbicide treatments in this alternative would be the same as described in the No Action Alternative 2.2.1, but with the addition of these herbicides:

a. Imazapic (Plateau) at six oz/acre (0.09375 pounds/acre of active ingredient imazapic) applied in the fall to treat invasive annual grasses. Application method would be by either low boom or aerial spray. Aerial spray treatments for invasive annual grasses would be used on infestations of 50 acres or greater and/or on smaller infestations where ground equipment cannot access.

b. Chlorsulfuron (Telar XP) at 1.3 oz. /acre (0.061 pounds/acre of active ingredient Chlorsulfuron) applied during the growing season to treat mustards and thistles. Application method would use ground equipment with either low boom or spot sprayed.

c. Clopyralid (Transline) at 1.3 pt./acre (0.5 pounds/acre of active ingredient Clopyralid), mixed with either:

- 2,4D at 1qt/acre (0.95 pounds/acre of active ingredient 2,4D) to treat Canada thistle and knapweed during the bud to bloom stage, or
- Chlorsulfuron at 1 oz./acre applied during the growing season to treat Canada thistle and knapweeds.
- Application method would use ground-based equipment with either low boom or spot sprayed

Table 3 - Herbicide Rates, Application Methods, and Weed Species

Herbicide & Rate	Season/Method of Application	Examples of Weed Species
Chlorsulphuron: Telar XP (1 oz./ acre; 0.047 lbs./acre of active ingredient Chlorsulphuron) + *2,4-D* (1 qt./acre; 0.95 lbs./acre of active ingredient 2,4D)	Typical application window is during rosette to early flower stage. Sometimes apply in fall on fall rosettes. Application method would be low-boom or spot spray.	Mediterranean Sage Biennial thistles
Chlorsulphuron: Telar XP (1 oz./ acre; 0.047 lbs./acre of active ingredient Chlorsulphuron) + *2,4-D* (1 qt./acre; 0.95 lbs./acre of active ingredient 2,4D)	Typical application window is full flower stage. Application method would be low-boom or spot spray.	White top
Chlorsulphuron: Telar XP (1 oz./ acre; 0.047 lbs./acre of active ingredient Chlorsulphuron) + *2,4-D* (1 qt./acre; 0.95 lbs./acre of active ingredient 2,4D)	Typical application window is full flower stage. Application method would be low-boom or spot spray.	Perennial pepperweed
Chlorsulphuron: Telar XP (1 oz./ acre; 0.047 lbs./acre of active ingredient Chlorsulphuron) + *2,4-D* (1 qt./acre; 0.95 lbs./acre of active ingredient 2,4D)	Typical application window is during rosette to early flower stage. Sometimes apply in fall on fall rosettes. Application method would be low-boom or spot spray.	Canada thistle

Herbicide & Rate	Season/Method of Application	Examples of Weed Species
Clopyralid: Transline (1 pt./acre; 0.37 lbs./acre of active ingredient Clopyralid); may add *2,4-D* (1 qt./acre; 0.95 lbs./acre of active ingredient 2,4D); may add *Chlorsulphuron:* Telar	Typical application window for this type of treatment would be fall (late season) when desirable vegetation is least susceptible to damage. Application method would be low-boom or spot spray.	Canada Thistle Russian Knapweed
Imazapic: Plateau (6 oz/acre; .09375 lbs/acre of active ingredient) Could be used at 2-12 oz/acre, depending on the location and associated species at the treatment site.	Typical application window is as a pre-emergent in late summer/early fall.	Medusahead rye, cheatgrass, ventenata, and other annual invasive species

2.3.4 Livestock Closure

Approximately 2,163 acres (1,538 acres of public land administered by BLM and 625 acres of private land) burned within the Spring Creek FFR pasture of the Three Fingers allotment. Under the proposed action, the public land would be temporarily closed to livestock grazing.

BLM allotments managed by the Vale District that burn "will be rested from grazing for one full year and through a second growing season at a minimum, or until monitoring data or professional judgment indicate that health and vigor of desired vegetation has recovered to levels adequate to support and protect upland vegetation" (SEORMP/ROD, p.40).

Closures would be accomplished by constructing temporary fence and repairing fences as previously described. Closures would be for a minimum of two years or until appropriate recovery has been achieved as stated above.

For areas closed to livestock grazing, areas of intact unburned vegetation would be examined and used as bench marks for comparison with the recovering burned site. Vegetation cover and densities would be measured to determine when objectives are met and livestock grazing would resume.

2.3.5 Temporary Fence Construction

Approximately one mile of three-strand temporary protective fence would be constructed to separate the burn area from unburned portions of the Spring Creek FFR pasture which would be closed to livestock grazing (See Appendix A - Map 5). Removal of the temporary protection fence would occur once resource objectives are met and the fence is no longer needed to protect rehabilitated areas from livestock grazing. The fence would be built to BLM standards which include modifications to allow for the passage of bighorn sheep and special marking which would be applied if deemed necessary for sage-grouse avoidance.

2.4 Alternatives Considered but Not Analyzed in Detail

Including Forbs in Seed Mix - Vale BLM considered adding forb species to the seed mix for ground seeding. Due to the high concentration of special status species in the area, it would be desirable to include species in the mix that already occur in the area. Ideally seed would be collected from Leslie Gulch to be used in the seeding. Due to the unique environmental conditions of Leslie Gulch, forb species appropriate for the seed mix are not of adequate abundance enough to collect wild seed. A search was performed for commercial forb seed available that would be successful and narrowed potential species for the seed mix to yarrow (*Achellia millefolium).* This species has been very successful on the Vale District when used in seedings. However, adding this species to the seeding mix was rejected, as there is a concern that yarrow might be too successful and invade and out-compete the special status plant sites. This is not a desirable outcome; thus forb seed was dropped from the proposed seed mix.

Aerial Application of Seed Mix - During public scoping for this project it was suggested BLM apply the seed mix aerially to reduce the impacts to treatment areas, particularly the talus slopes in the project area. Talus slopes are not proposed for seeding. It is impractical to aerial seed the limited (260 acres) areas identified in the Proposed Action for seeding.

2.5 Project Design Features

Project Design Features (PDFs) were developed to aid in meeting project goals and objectives. These features are nonexclusive and are subject to change based on site-specific terrain characteristics (topography and vegetation). Changes, additions, or deletions would be made through coordination with appropriate BLM specialists and approved by the Jordan/Malheur Resource Area Manager. The Industrial Fire Precaution Levels (IFPLs) would be followed during construction, where appropriate.

1. Protect cultural resource values throughout the life of the project. Archaeological sites would be avoided within the ground seeding units. Class III surveys would be completed in these areas prior to activity implementation. Inventories would be in accordance with the State Protocol Agreement between the Oregon BLM and the Oregon State Historic Preservation Office (SHPO). All cultural resources would be recorded on agency approved site forms and plotted on maps. Resources, except those previously determined *Not Eligible* by the agency and SHPO, would be flagged for avoidance during stabilization and rehabilitation activities. Flagged sites would be either hand seeded or seeded via All-Terrain Vehicle (ATV) during stabilization and rehabilitation activities. Flagging would be removed as soon as possible after stabilization and rehabilitation treatments to minimize the potential for looting and vandalism.

2. Should noxious weeds be found, appropriate control treatments would be performed in conformance with the Vale District Five Year Integrated Weed Control Plan EA/DR OR-030-89-19, and subsequent decision. Herbicide use would conform to federally approved manufacturers' herbicide labels as well as the streamside, wetland,

and riparian habitat herbicide restrictions. Appropriate mitigation measures contained in the ROD and FEIS for Vegetation Treatments Using Herbicides on BLM Lands in Oregon (2010) and in Table 2 of the Final Vegetation Management EIS Environmental Report (ROD, October 2007), or its successor, would be utilized as a part of the project design.

The risk of noxious weed introduction would be minimized by ensuring all equipment (including all machinery, ATVs, and pickup trucks) is cleaned prior to entry to the sites, minimizing disturbance activities, and completing follow-up monitoring, to ensure no new noxious weed establishment occurs. Herbicide use would conform to federally approved manufacturers' herbicide labels as well as the streamside, wetland, and riparian habitat herbicide restrictions. Appropriate mitigation measures contained in Table 2 of the Final Vegetation Management EIS Environmental Report (ROD, October 2007), or its successor, would be utilized as a part of the project design. Herbicide use would conform to federally approved manufacturers' herbicide labels as well as the streamside, wetland, and riparian habitat herbicide restrictions. The Burns Paiute and Fort McDermitt Paiute-Shoshone Tribal Councils would be notified in advance of any herbicide spraying so individuals gathering roots in the area where the spraying had occurred would know they should stay clear of the area. Herbicide would not be used on any special status plant populations.

Consultation with the Burns Paiute and Fort McDermitt Paiute-Shoshone Tribal Councils was generated on July 30, 2015. As a result, any planned herbicide applications that are identified by the tribes as Traditional Cultural Properties would be avoided.

3. All existing livestock management fences would be repaired to BLM specifications. Metal posts would be used to replace wood posts as needed.

4. New temporary fences would be constructed to BLM specifications, which allow for safe wildlife passage.

5. All seed would meet BLM standards for weeds, germination, and purity.

6. Monitoring to determine effectiveness of treatments, natural recovery, needs for additional stabilization and rehabilitation, and to determine if grazing can resume would occur for at least three years from the date of containment.

7. Special status plant sites would be excluded from application of herbicides. When herbicides would be applied aerially a 50 foot no spray buffer would be used to eliminate the affects from herbicide drift. A 25 foot buffer would be applied if ground methods with boom are used.

8. A BLM botanist or weed specialist would be present at time of aerial or ground boom application of herbicides.

9. Ground seeding and harrowing would not occur within 25 feet of special status plant sites.

10. Ground seeding and harrowing activities will be conducted to minimize visual and surface impacts.

11. WSA signs would not be placed in special status plant sites.

12. Fence repair and reconstruction and temporary fence placement activities will also be conducted to minimize surface impacts. The BLM has determined the fence repair activities meet the temporary criteria of the non-impairment standard.

13. For petroleum products or other Hazardous Material handling, the operator would be required to comply with all applicable State and Federal laws and regulations concerning the storage, use and disposal of industrial chemicals and other hazardous materials. Accidental spills or discovery of the dumping of any hazardous materials would be reported to the Authorized Officer and the procedures outlined in the *Vale District BLM Environmental Contingency Plan for Emergency Preparedness and response to Oil and Hazardous Materials Incidents* (2012) would be followed.

    Hazardous materials (particularly petroleum products) would be stored in appropriate and compliant UL-Listed containers and located so that any accidental spill would be fully contained and would not escape to ground surfaces or drain into watercourses. Other hazardous materials, such as corrosives and/or those incompatible with flammable storage would be kept in appropriate separated containment. All construction materials and waste would be removed from the project area.

3.0 Affected Environment and Environmental Effects

This chapter describes the affected environment and environmental effects of the alternatives. This presents the existing condition and anticipated effects of the resources related to the issues identified to be presented in detail. Therefore the presentation of this section is organized by issue.

The reasonably foreseeable future actions (RFF) which may be considered in the analysis of effects of management decisions on resources are those actions which are highly probable or for which there is an existing proposal or commitment of resources. For this analysis, these include: continued hunting, fishing and recreation activities, suppression rehabilitation activities related to control of the Leslie Gulch fire, and potential rehabilitation and invasive weed control activities on adjacent land ownerships.

The BLM Vale District IDT has reviewed and identified issues through internal and external scoping affected by the alternatives. The following Affected Environment Table 4 summarizes the results of that review. The resources with no issues identified and listed as either not affected or not present will not be discussed further in this document. Resources

with an issue(s) have questions that will be analyzed in detail in this Chapter are in **bold** in the table below.

Table 4 - Affected Environment

Identified Resource with Issue Question for Analysis	**Status**	**Explanation or Issue Question**
	Affected; Not Affected; Not Present.	**If Affected (BOLD); Reference Applicable EA Chapter and Section; and State the Issue in a Question.** If Not Affected, explanation required. If Not Present, explanation required.
Air Quality (Clean Air Act)	Not Affected	Department of Environmental Quality (DEQ) is responsible for air quality permit requirements at facilities and for operations in Oregon. DEQ currently requires no air quality permit for existing operations in the project area. The dust produced from animal movement, drill seeding, range improvement construction, and vehicle use would be intermittent and not measurable.
American Indian Traditional Practices	Not Affected	Consultation with the Burns Paiute and McDermitt Tribal Councils was generated on July 30, 2015. As a result, any planned herbicide applications that are identified by the tribes as Traditional Cultural Properties would be avoided.
Areas of Critical Environmental Concern (ACECs)	**Affected**	See Section 3.2
Cultural Resources	Not Affected	Section 106 Compliance shall occur on a site-specific individual basis for ground disturbing activities. All eligible cultural sites will be avoided.
Environmental Justice (Executive Order 12898)	Not Affected	The Proposed Action and No Action alternatives would not have disproportionately high and adverse human health or environmental effects on minority populations and low-income populations; as such populations do not exist within the project area.
Fire Management	Not Affected	Proposed projects would not impact fire management activities.
Fisheries	Not Affected	The Owhyee River and Spring Creek border the project area. Proposed projects would not impact fish or their habitat.
Flood Plains (Executive Order 11988)	Not Present	

Identified Resource with Issue Question for Analysis		**Status**	**Explanation or Issue Question**
		Affected; Not Affected; Not Present.	**If Affected (BOLD); Reference Applicable EA Chapter and Section; and State the Issue in a Question.** If Not Affected, explanation required. If Not Present, explanation required.
Forestry and Woodlands		Not Affected	No actions proposed in the project area would impact any forest or woodland resources
Grazing Management		**Affected**	See Section3.6
Hazardous Materials or Solid Waste		Not Affected	No existing concerns have been identified in the project area. All mechanized treatment activities will conform to the *Vale District BLM Environmental Contingency Plan for Emergency Preparedness and Response to Oild and Hazardous Materials Incidents (July, 2012)*
Migratory Birds (Executive Order 13186)		Not Affected	See 1.4.2 Issues Considered but Not Analyzed in Detail.
Minerals		Not Affected	No actions considered in the alternatives will impact mineral resources or their use.
Noxious Weeds (Executive Order 13112)		**Affected**	See Section 3.4
Paleontological Resources		Not Affected	Level II survey was completed and no paleontological resources were identified.
Prime or Unique Farmlands		Not Present	
Realty and Lands		Not Affected	Management actions considered will not impact land tenure or existing encumbrances.
Recreation and Off Highway Vehicles (OHV)		Not Affected	See 1.4.2 Issues Considered but Not Analyzed in Detail.
Social and Economic Values		**Affected**	See Section 3.8
Soils and Biological Crusts		**Affected**	See Section 3.5
Special Status Species (SSS) and Habitat for BLM	Fish	Not Present	
	Wildlife	Not Affected	See 1.4.2 Issues Considered but Not Analyzed in Detail
	Plants	**Affected**	See Section 3.1
Threatened or Endangered (T/E) Species or Habitat	Fish	Not Present	
	Wildlife	Not Present	
	Plants	Not Present	

Identified Resource with Issue Question for Analysis	**Status**	**Explanation or Issue Question**
	Affected; Not Affected; Not Present.	**If Affected (BOLD); Reference Applicable EA Chapter and Section; and State the Issue in a Question.** If Not Affected, explanation required. If Not Present, explanation required.
Transportation and Roads	Not Affected	No access restrictions are proposed except temporarily during herbicide applications. Current maintenance schedules will be continued.
Upland Vegetation	**Affected**	See Section 3.3
Visual Resources	Not Affected	Proposed actions are designed to enhance visual resources. The burned area is within Visual Resource Management class I. The VRM objective for Class I is to preserve the existing character of the landscape by providing for natural ecological changes, and it allows limited management activity. The level of change should be very low and must not attract attention. Class I is assigned to those areas where a management decision has been made to preserve a natural landscape. All actions under the proposed action would be within the allowable management activities.
Water Quality (Surface and Ground)	Not Affected	Water quality will not be affected by the proposed actions. Elevated levels of erosion and sedimentation naturally occur post-fire. Proposed actions are designed to reduce erosion and stabilize soils. Spring Creek, a perennial stream, will be temporarily excluded from livestock to allow natural recovery of riparian vegetation species
Wetlands and Riparian Zones (Executive Order 11990)	Not Affected	Spring Creek FFR will be temporarily excluded from livestock on BLM managed lands to allow natural recovery of riparian vegetation species. Spring Creek is a perennial stream with obligate riparian plant species such as carex, juncus, and multiple species of salix present.
Wild Horse and Burro	Not Present	
Wild and Scenic Rivers (W&SR)	Not Present	
Wilderness/Wilderness Study Areas (WSA)/ Wilderness Inventory Characteristics Units	**Affected**	See Section 3.7
Wildlife	Not Affected	See 1.4.2 Issues Considered but Not Analyzed in Detail.

3.1 Issue 1: What are the impacts of treating invasive annual grasses, seeding and harrowing on Bureau special status plant species?

3.1.1 Affected Environment

Five special status plant species are located within the project area: Packard's mentzelia, sterile milkvetch, Ertter's groundsel, grimy ivesia and Owyhee clover. No activities are proposed within or adjacent to populations of grimy ivesia, thus the proposed actions would have no effect on this species and it will not be discussed further in this section. See Table 5 for number of sites located within the fire boundary and the project boundary.

Table 5 - Species located in the Project boundary

Species Name	Species Status	Number of Sites in Fire Boundary	Number of Sites in Project Boundary	Number of Sites in Vale District	Average Size (acres) of Site in Fire Boundary	Average Number of Plants per Acre in Fire Boundary
Ertter's groundsel *Senecio ertterae*	Bureau Sensitive State Candidate	30	50	57	6.4 (77% are larger than 1 acre)	1,448
Owyhee clover *Trifolium owyheense*	Bureau Sensitive State Endangered	15	28	81	3.3 (64% are larger than 1 acre)	446
Packard's mentzelia *Mentzelia packardiae*	Bureau Sensitive State Threatened	14	17	17	2.5 (57% are larger than 1 acre)	4,028
Sterile milkvetch *Astragalus cusickii* var. *sterilis*	Bureau Sensitive State Threatened	4	16	101	2.6 (75% are larger than 1 acre)	1,295

*Data from BLM Geographic Biologic and Botanical Observations (GeoBOB) database 7/20/2015

Ertter's groundsel is an annual plant in the aster family. It grows on dry clay ash deposits, sand, gravel, and talus derived from the Leslie Gulch ash flow tuff formation. The substrate is susceptible to erosion and disturbance, which the plants depend on. This habitat is sparsely vegetated. The species are found at an elevation of approximately 3950 feet and flowers from July through September, with September being the best time to observe the species. This plant is endemic to the Owyhee Uplands in Malheur County, Oregon, occupying less than 40 square miles within Leslie Gulch and its side canyons.

Owyhee clover is a perennial plant in the pea family. It grows on loose talus or volcanic ash slopes and flowers from May to June. This plant is endemic to the Owyhee Upland in Malheur County, Oregon and Owyhee County, Idaho.

Packard's mentzelia is an annual plant in the Loasa family. It grows exclusively on greenish volcanic ash slopes at about 3,000 to 4,000 feet elevation. The sites are mostly barren of other vegetation. Ertter's groundsel and Owyhee clover also grow in this habitat. Packard's mentzelia flowers from May to June. This plant is endemic to Malheur County, Oregon and is only found in the Leslie Gulch ACEC.

Sterile milkvetch is a perennial plant in the pea family. It grows on dry ash areas on gravelly bluffs between 2600 and 4900 feet in elevation. It blooms from May to late June. This plant is endemic to Malheur County, Oregon and adjacent Owyhee County, Idaho.

3.1.2 Environmental Effects

No special status plant sites are located along or directly adjacent to the proposed temporary fence. This treatment would have no effect on special status plant and will not be discussed further in this section.

3.1.2.1 Effects Common to Both Alternatives

The guzzler maintenance and WSA sign placement would have no impact on special status plants because there are no populations located where these activities would occur. These actions will not be discussed further in this analysis.

The fence maintenance, that would occur in both alternatives, would have no direct impacts to special status plants because there are no populations located along or directly adjacent to the maintenance area. The livestock closure would enhance the post fire recovery of the special status plants.

Noxious weeds treatments would also occur in both alternatives. Regardless of herbicides used, PDFs and SOPs that exclude herbicide treatments within special status plant populations would reduce the impacts to those populations to negligible. There may be loss of one or two plants that are scattered and isolated from the larger populations. Because the populations of special status species in Leslie Gulch are large and dense (number of plants per acre, see Table 4) loss of one or two plants would not impact the health and viability of the population and would not trend the species toward listing. The noxious weed treatments indirectly benefit special status plants by controlling noxious weeds that could invade the population and out complete special status species.

3.1.2.2 No Action

If the herbicide application for annual grass treatment with Imazapic was not to occur, annual invasive grasses would grow uninhibited. Special status plant sites adjacent to invasive annual grasses would be at risk of infestation from these undesirable species that could invade populations. This could impact the special status plants. Additionally, if the ground seeding treatment was not to occur there would be no native competition for the invasive annual grasses and the special status plants could be impacted.

3.1.2.3 Proposed Action

The application of the herbicide Imazapic would have a beneficial indirect effect to special status plants. The purpose of the application is to control invasive annual grasses. These invasive grasses pose a risk to special status species if they invade their habitat. Invasive annual grasses can out-compete native vegetation and create a monoculture of non-desirable species. Direct effects to special status species are reduced to negligible with the PDF that does not allow aerial application with 50 feet or boom application within 25 feet of a site. One or two plants may grow scattered and isolated from the populations and outside of the no spray buffer. Similar to the analysis for noxious weed treatments, loss of those few plants would not impact the health or viability of the population and would not trend the species toward listing.

The ground seeding is an additive treatment to the Imazapic application. The intent of the seeding is to establish a desirable native plant community that makes it difficult for invasive annual grasses and noxious weeds to establish. The project design feature that excludes seeding from within 25 feet of special status plant sites would protect them from direct impacts. The seed mix to be applied would be composed of native species. The majority of the seed would be locally sourced from the Vale District to reduce the introduction of aggressive varieties. (See seed mix in section 2.3.2). Currently there is no local seed source for Thurber's needle grass or Indian rice grass. Vale BLM is hoping to develop a local source for these species by 2018, when the seeding would occur. If a local source for these species has not been developed and an acceptable nonaggressive variety is not available, they will not be included in the seed mix. Given the seed mix and the PDFs, this treatment would be beneficial to the special status plants.

3.1.2.4 Cumulative Effects

The analysis area for special status plant cumulative affects is the project area. A reasonably foreseeable future action within the project area is completing fire suppression rehabilitation. This action includes rehabilitation of fire breaks or fuel breaks. Fuel breaks were created in attempts to put the fire out. They were created by a bull dozer which scraped the vegetation

off the ground surface to expose the mineral soil. Rehabilitation includes; putting these fuel breaks to bed by pulling back berms, ground seeding with a native seed mix to establish vegetation on the breaks; and water-barring where needed to control erosion.

During fire suppression activities, a safety zone needed to be created to provide a safe location for firefighters during an erratic burn period. This safety zone was created within a population of Owyhee clover. Due to the amount of soil removed, the BLM assumes a portion of the population has been extirpated. The safety zone impacted approximately 0.5 acre of the approximately 20 acre population. Pulling back the berms of the safety zone would cause no further harm to the already disturbed area. Rehabilitation actions plus the effects of the no action or the proposed action alternatives would not increase the cumulative effects on special status plants.

3.2 Issue 2: How would the actions impact the Relevant and Important values of the Area of Critical Environmental Concern?

3.2.1 Affected Environment

Areas of Critical Environmental Concern (ACEC) are areas within public lands where special management attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards. The Leslie Gulch ACEC is within the project area and 4478 acres burned in the Leslie Gulch fire. The relevant and important values of the Leslie Gulch ACEC are high scenic values associated with the colorful ash talus cliffs, big horn sheep and their habitat, and five special status plant species which include Packard's mentzelia, grimy ivesia, sterile milkvetch, Ertter's groundsel, and Owyhee clover. The scenic values, bighorn sheep, and grimy ivesia are not affected by the action proposed in this Environmental Assessment and will not be discussed further.

A more detailed description of the four special status plant species, Packard's mentzelia, sterile milkvetch, Ertter's groundsel, and Owyhee clover, located within the project area, can be found in Section 3.1.1.

3.2.2 Environmental Effects

The temporary fence construction, wildlife guzzler, and livestock closure are not located within the ACEC and would have no effect on the special status plant relevant and important values. The WSA sign placement is located within the ACEC but would not affect the special status plant relevant and important values. These actions will not be discussed further in this analysis.

3.2.2.1 Effects Common to Both Alternatives

The noxious weed treatment would have the same effects as described in section 3.1.2.1. The treatment would maintain the special status plants identified as the relevant and important values of the ACEC.

3.2.2.2 No Action

The effects of herbicide application for annual grass and ground seeding would be the same as described in section 3.1.2.2. If the treatments were not to occur, special status plant populations may be impacted and the relevant and important values of the ACEC may be degraded.

3.2.2.3 Proposed Action

The effect of the aerial herbicide and ground seeding would be the same as described in section 3.1.2.3. Implementation of the proposed treatments would impact the relevant and important values of the ACEC.

3.2.2.4 Cumulative Effects

The analysis area for cumulative effects is the ACEC within the project boundary. The cumulative effects would be the same as described in section 3.1.2.4. The rehabilitation actions plus the effects of the no action or the proposed action alternatives would not increase the cumulative effects on the special status plant relevant and important value of the ACEC.

3.3 Issue 3: How would the actions impact post-fire recovery of the native vegetation community?

3.3.1 Affected Environment

The Leslie Gulch Fire burned in the western end of Leslie Gulch and adjacent lands. Elevations range from under 2700 feet at the lower elevations at the mouths of Spring Creek, Slocum Creek and Leslie Gulch as they flow into the Owyhee River to over 5000 feet at the highest peak that burned. The landscape is dominated by very steep hills and valleys or breaks that dissect the uplands east of the Owyhee River. Aspects vary considerably with the main drainages flowing westward. Due to the varied soil parent material, over 2300 feet elevation change, and multiple aspects, abrupt vegetation changes are common.

Leslie Gulch is dominated by three major vegetation communities, the most prominent being the Wyoming big sagebrush – bluebunch wheatgrass community. The understory is

composed mostly of bluebunch wheatgrass with secondary bunchgrasses being Sandberg's bluegrass, Thurber's needlegrass, june grass and Great basin wildrye.

The second most prominent vegetation community is an association of Wyoming big sagebrush mixed with low sagebrush. This type in normally associated with shallow soils intermixed with areas of deeper soils and commonly found on the ridge tops. The understory vegetation is similar to the type discussed above but with lesser amounts of bluebunch wheatgrass and basin wildrye and greater amounts of Sandberg's bluegrass. On the higher elevations and on north aspects bluebunch wheatgrass can be replaced with Idaho fescue.

The third major community is found along the floodplains of the major drainages. Here the overstory species is basin big sagebrush with the dominant understory species being Great basin wildrye. This community also is the most likely to include the annual invasive cheatgrass.

Numerous forbs are present including the endemic species Ertter's groundsel (*Senecio ertterae*), Packard's blazing star (*Mentzelia packardiae*), sterile milkvetch (*Astragalus sterilis*), Owyhee Clover (*Trifolium owyheense*), and the newly described *Monardella angustifolia*.

Trees are sparse on the landscape with scattered patches of western juniper and a single, isolated population of ponderosa pine. Other upland shrub species in isolated areas and of lesser occurrence include antelope bitterbrush, mountain mahogany, shadscale, and greasewood.

Riparian vegetation can be found along Spring Creek which is a perennial stream and along some of the larger drainages where the streams are considered intermittent, including Slocum Creek, Schoolhouse Gulch, Timber Gulch and Dago Gulch. These stream reaches are dominated with shrub species including numerous willows, western chokecherry, elderberry, golden current and aspen with various sedges and rushes found in the understory. The obligate riparian vegetation community found along Spring Creek is denser than along the intermittent drainages.

3.3.2 Environmental Effects

3.3.2.1 No Action

The No Action alternative includes treating noxious weeds, closure of 7,798 acres to livestock grazing, three miles of fence repair, a guzzler repair and placement of WSA signs. Treatment of noxious weeds and closure of the burned area to livestock grazing would enhance the post-fire recovery of the native vegetation. Perennial grasses would respond favorably and dominate the area until sagebrush once again dominates. This natural process will take 20 plus years. Fence and guzzler repair and WSA sign installation could locally impact the vegetation through impacts of driving off road. Because off road driving would be very limited and conducted with low-impact UTVs, these impacts would be short term,

only during implementation of the treatment and are cumulatively less than an acre. After one year, the impacts would be negligible.

3.3.2.2 Proposed Action

The Proposed Action includes treating noxious weeds, closure of 1,538 acres to livestock grazing, three miles of fence repair, a guzzler repair, placement of WSA signs, construction of one mile of temporary fence, seeding and harrowing of 260 acres and 800 acres of herbicide application for invasive annual grasses.

See the discussion above under the No Action alternative to potential impacts to upland vegetation as a result of treating noxious weeds, repairing fences and a guzzler and placement of WSA signs. In addition to these actions, the proposed action includes a smaller livestock closure (1,538 vs acres 7,798), construction of one mile of temporary fence, 260 acres of seeding and harrowing, and treating with herbicide 800 acres of invasive annual grasses.

Both the herbicide treatment of invasive annual grasses and the seeding and harrowing would occur in areas that do not possess the density of perennial grasses to compete with invasive annual grasses. Left untreated, these areas would continue to be dominated by invasive annual grasses on 800 acres of the burned area. Once treated with herbicide, seeded and harrowed, these areas would be dominated by perennial grasses for 20 plus years until sagebrush once again becomes established and dominates the overstory.

The impacts of the Imazapic herbicide treatment on the upland vegetation would be limited to the target species, invasive annual grasses. The herbicide would eliminate these species from the areas sprayed. Non-target species should not be impacted at rates of six ounces or less per acre and when applied in the fall before any fall green-up occurs (pre-emergence). If there is any impact to non-target species, the impact would be a slight stand-thinning (BASF, 2008). There would be no treatment in areas known to possess sensitive species (see special status plant section 3.1).

Construction of the temporary fence could result in a short term, negligible impact to the upland vegetation caused by driving off-road. This impact would be negligible because off-road driving would be limited and the vehicles used for construction would have large under-inflated tires that limit disturbance; impacts would not be noticeable one year after the treatment was completed. Off-road vehicles would be used for construction and later removal of the temporary fences. Impacts to upland vegetation when included with fence repair, guzzler repair and WSA sign placement would continue to be less than one acre.

The impacts to upland vegetation by temporarily closing the area to livestock grazing would be very similar to the no action alternative. Although the proposed action limits closure to 1,538 acres, the remaining acreage (that would be closed under the no action alternative) has

not burned and therefore has not suffered from the impacts of the burn. Additionally, current livestock grazing management on the unburned portion of the Spring Creek FFR Pasture has maintained the upland vegetation in acceptable condition.

3.3.2.3 Cumulative Effects

A reasonably foreseeable future action within the project boundary is completing fire suppression rehabilitation. This action includes rehabilitation of fire breaks or fuel breaks. Fuel breaks were created in attempts to put the fire out. They were created by a bull dozer which scraped the vegetation off the ground surface to expose the mineral soil. Rehabilitation includes; putting these fuel breaks to bed by pulling back berms, ground seeding with a native seed mix to establish vegetation on the breaks; and water-barring where needed to control erosion. Rehabilitation actions plus the effects of the no action or the proposed action alternatives would not increase the cumulative effects on upland vegetation.

3.4 Issue 4: How would the proposed action impact the introduction and spread of invasive annual grasses and noxious weeds?

3.4.1 Affected Environment

There are scattered populations of noxious weeds within Leslie Gulch burned area fire boundary, and a one-mile buffer outside, including small sites of less than a tenth acre each of rush skeletonweed, St. John's wort, Russian knapweed, diffuse knapweed, poison hemlock, puncture vine and halogeton. Scotch thistle is scattered throughout the area, especially roadside, but only covers a total of less than five acres of infestation. Canada thistle, bull thistle, whitetop species, spotted knapweed, and perennial pepperweed are estimated to have total populations between one-half and one acre each. Approximately one and one-half acre of salt cedar is near the reservoir high water line, and mostly on Bureau of Reclamation lands. Medusahead rye is also listed as noxious. It is present in scattered, small sites on the uplands, but no accurate estimation has been made for the acreage.

Cheatgrass is the most prevalent invasive annual grass in the area, but other problematic annuals are present, including many mustards, chenopods, and Russian thistle which readily invade burned areas, especially those areas where there was intense heat and vegetation was removed to mineral soil.

The area is an extremely popular recreation and tourist attraction. Vehicle travel associated with those activities contributes to new weed infestations and often exacerbate existing populations which makes weed control challenging.

3.4.2 Environmental Effects

3.4.2.1 Effects Common to Both Alternatives

Livestock Closure

Livestock is but one of many ways weeds seeds/propagules spread. Closing the burned area to livestock until desired plants recover would lessen the threat of weed introduction and spread. It would also allow existing perennial vegetation to rebound from effects of fire without grazing pressure, which should create stronger vegetation that can better compete with noxious weeds.

Guzzler Repair

Vehicles used to haul the construction crew to repair the guzzler could introduce weed seeds/propagules, could spread existing weed populations along the two track road used to access the guzzler and the foot traffic could cause some soil disturbance. However, the effects would be similar to regular recreational activities in the area, including hiking and use of existing roads by motorized vehicles. Following PDFs would mitigate the majority of the risk for introduction and avoidance of known sites lessens the possibility of interior spreading of weeds.

WSA Signs

Vehicles and equipment used to haul in signs would be confined to existing, well-traveled roads. Foot traffic to pack and place signs at designated sites could spread existing weed populations and placement of signs could cause some soil disturbance and niches for weed invasion, but likelihood would be small. However, the effects would be similar to regular recreational activities in the area, including hiking and use of existing roads by motorized vehicles. Following PDFs would mitigate the majority of the risk for introduction and avoidance of known sites lessens the possibility of interior spreading of weeds.

3.4.2.2 No Action

Herbicide Application for Invasive Annual Grasses

Application with Imazapic would not occur; therefore, there would be no potential for introduction from application vehicles or support vehicles in the project area. No invasive annual grass treatments would take place and invasives would proliferate and out-compete perennial vegetation due to fire's effect of weakening those plants. Additionally, BLM's objectives through the ESR program to mitigate the adverse effects of fire on the local resources in a cost effective and expeditious manner would not be met under this alternative.

Noxious Weed Herbicide Treatments

Inventory and treatment would occur, however, only herbicides currently approved within the existing BLM noxious weed management plans would be used. Those products are not effective on many of the noxious weeds present, especially whitetop, perennial pepperweed, knapweeds and salt cedar.

Ground Seeding

Ground seeding would not occur, therefore, there would be no disturbance from blanket harrows and vehicles. Existing invasive grasses would proliferate and provide no protection against noxious weed invasion.

Temporary Fence Construction and repair of Management Fence

Effects would be similar as the Proposed Action, except there would be no disturbance from construction of one mile of temporary fence.

3.4.2.3 Proposed Action

Herbicide Application for invasive Annual Grasses

There could potentially be some danger of introduction of noxious weeds through the application process at staging areas where nurse vehicles/fuel vehicles could bring in new weed propagules/seeds. These same vehicles and foot traffic from applicator personnel could cause trampling and create minor soil disturbance thus providing new niches for weed invasion. The danger would be similar to that of recreational camping. Project design features (PDFs) that provide for cleaning of vehicles prior to entering BLM and cleaning prior to leaving infested sites, would lessen impacts.

Negative impacts from herbicide application activities are miniscule compared to the benefits achieved from removing invasive annuals. Shallow rooted, invasive annual grasses provide little to no competition against noxious weed introduction or spread. Healthy, deeper-rooted, perennial grasses, forbs and shrubs compete with noxious weeds and annual invasives and slow or stop their spread. Research has found that treating noxious weeds and invasive annual grasses, such as medusahead rye and cheatgrass, with the proposed herbicides and revegetating the area with desirable plant species, can significantly increase a plant community's diversity, resilience to disturbance, and resistance to noxious weed spread and establishment (Davies 2010; Davies and Sheley 2011)

Noxious Weed Herbicide Treatments

Noxious weed treatment activities are conducted from ground based equipment and therefore could introduce other noxious and/or invasive weeds during the process. PDFs would lessen the impact and, because treated sites or noxious weeds are monitored yearly, new infestations from inadvertent introductions by treatment equipment would likely be discovered and treated during survey/monitoring activities.

Noxious weeds compete with desired vegetation for water and nutrients and provide little to no forage value for wildlife. Research has found that treating noxious weeds and invasive annual grasses, such as medusahead rye and cheatgrass, with the proposed herbicides and revegetating the area with desirable plant species, can significantly increase a plant community's diversity, resilience to disturbance, and resistance to noxious weed spread and establishment (Davies 2010; Davies and Sheley 2011)

Ground Seeding

Blanket harrows and vehicles associated with ground seeding disturbs the soil and increases the potential for new weed sources to be introduced and establish into the newly created disturbance niches. Following PDFs for cleaning equipment prior to entering seeding sites, diminishes the potential for introduction.

Research has found that treating noxious weeds and invasive annual grasses, such as medusahead rye and cheatgrass, with the proposed herbicides and revegetating the area with desirable plant species, can significantly increase a plant community's diversity, resilience to disturbance, and resistance to noxious weed spread and establishment (Davies 2010; Davies and Sheley 2011) Benefits of desired vegetation establishing following ground seeding and replacing non-desirable invasive and/or noxious weeds are much greater than the risk of new introductions. The seeding equipment could also spread existing seed sources; however imazapic treatments would have greatly reduced the seedbank and establishment of beneficial native grasses from the ground seeding outweigh the negative impacts from moving remaining seed sources around.

Temporary Fence Construction and repair of Management Fence

Vehicles and equipment used to construct and repair fences provide chances to introduce weed seeds/propagules, could spread existing weed populations and the traffic could cause some soil disturbance. Actual fence construction would also cause some soil disturbance by fence/brace construction and placement. Following PDFs would mitigate the majority of the risk for introduction and avoidance of known sites lessens the possibility of interior

spreading of weeds. The actual footprint of the fence would be very small and unless noxious weeds are present at or near the disturbance sites, danger of weed spread would be minimal

3.5 Issue 5: What are the impacts of seeding, harrowing and treatment of invasive annual grasses on soil stability and erosion?

3.5.1 Affected Environment

Due to the loss of vegetation within the burned area, the risk of soil loss due to wind or water erosion for all soil units has increased. The increased risk of soil erosion is short term until desirable vegetation cover returns, specifically in areas where flow is concentrated due to topographic features.

Biological Soil Crust

Biological soil crusts (BSCs) such as mosses, lichens, micro fungi, cyanobacteria, and algae play a role in a functioning ecosystem and watershed function. In addition to providing biological diversity, BSCs contribute to soil stability through increased resistance to erosion and nutrient cycling (BLM Technical Reference 1730-2). Where native vegetation is dominant, BSCs are present and; conversely, where invasive, non-native species are present, especially mat forming annual grasses, BSCs are sparse or non-existent. Following wildfires, it has been documented that BSCs are reduced in abundance and occurrence (dependent on duration and intensity of the fire); however, when reseeded with native and/or desirable, non-native species, recovery and reestablishment would occur. When burned sites are invaded by invasive annual grass species such as cheatgrass and medusahead, BSCs have been shown not to recover and reestablish (Hilty et. al. 2004). No current inventory of BSCs exists for the burned area but they are known to be present.

Soils

The burn area consists of soils typical of the arid lands region. No detailed soil survey data are available through a Natural Resource Conservation Service (NRCS) Soil Survey: however soil data are available for the BLM through a forth order soil survey developed by the Oregon State Water Resources Board and the Soil Conservation Service in 1969. The following information comes from, Oregon's Long-Range Requirements for Water General Soil information (State Water Resources Board, Malheur Drainage Basin, and Owyhee Drainage Basin 1969). Map 4 provides general soil units in the burned area.

There are two primary general soil classification units within the burn area: Unit 98(99%-8645 acres), and Unit 96(96%-42 acres). Small inclusions of Unit 60 often occur within the Unit 98 classifications

Unit 98 is a miscellaneous land unit. It consists of highly eroded and dissected raw old lacustrine sediments occurring as "badlands" often on slopes steeper than 60 percent. These

soils are not suited for rangeland seeding as native vegetative cover is very sparse in this soil.

Unit 96 is a miscellaneous land unit called Rock Land. It consists of rough, steeply sloping areas that are predominantly shallow, very stony soils interspersed with rock outcroppings. Steep Rock land occurs mainly as canyons and escarpments along margins and dissected portions of lava plateaus. These areas are mainly used for wildlife and watershed purposes.

Unit 60 soils are moderately fine textured, well drained soils underlain by old lacustrine sediments. They occur on gently sloping to hilly uplands mainly in conjunction with Unit 98 soils. Native vegetation consists mostly of big sagebrush, rabbitbrush, bluebunch wheatgrass, and Sandberg bluegrass. Unit 60 soils occur as a minor component within soil Unit 96 and 98.

Slope ranges within the burn vary from 0 to +60 percent. Runoff occurs very rapidly and the erosion hazard is high for these soils. Average annual precipitation is between 10-12 inches, dependent of elevation and aspect. Precipitation occurs primarily as snowfall during the winter months with occasional summer thunderstorms which naturally lead to flash flooding events.

3.5.2 Environmental Effects

3.5.2.1 No Action

Under the No Action Alternative, the soil stabilizing measures of invasive annual grass treatments and seeding would not be performed which would contribute to increased levels of erosion and loss of top soil. The risk of impacts by invasive species, in particular mat-forming invasive annual grasses, would decrease recovery of BSCs and stabilization of soils through decreased establishment of desirable native plant species. When burned sites are invaded by invasive annual grass species such as cheatgrass and medusahead, BSCs have been shown not to recover and reestablish. In addition, invasive annual grasses do not have the same capability as desirable native vegetation, such as deep rooted perennial grasses, to stabilize soils, capture runoff, and prevent erosion. Under the no action alternative, an increase of invasive annual grasses is likely, leading to decreased soil stability, increased erosion, and reduced abundance and occurrence of BSCs within the burned area.

3.5.2.2 Proposed Action

Under the proposed action, up to 800 acres of invasive annual grasses would be treated with herbicide proceeded by seeding and harrowing with ATV on 260 acres. Treating invasive annual grasses with the herbicide Imazapic would provide a tool for soil stabilization by allowing native and desirable vegetation an opportunity to establish which would assist in stabilizing soils. Impacts to soils would be negligible from herbicides; however, there is very little information available which shows the impacts to biological soil crusts from use of herbicides. Any short term impacts to soils or biological soils crusts would be outweighed by the long term benefits of herbicides on noxious and invasive weeds by allowing native desirable vegetation to establish and stabilize soils.

Physical soil disturbance would occur from an ATV pulling a harrow across the soil to create good seed to soil contact. Short-term disturbance from these activities would temporarily increase exposure of the soil surface on 260 acres to wind and water erosion, however seedling establishment would increase soil stability and prevent soil from becoming susceptible to over land flow and wind events in the long term by establishing ground vegetation and root systems. Increased soil stability and vigorous native vegetation would enhance the opportunity for BSCs to reestablish by providing interspaces and allowing expansion from existing unburned sites within the fire perimeter. The short term losses are acceptable because the benefits resulting from the establishment of native vegetation on soil stability and BSC establishment and spread would be long term, greater than 10 years.

3.5.2.3 Cumulative Impacts

The ongoing and RFFA impacts to soils and crusts on the BLM-managed land are livestock grazing, hunting and other recreational activities. Impacts by livestock, where permitted use is allowed, would be temporarily mitigated by removal until objectives are met. Off-road travel is not permitted within the Slocum Creek WSA and additional WSA boundary signs will be placed along designated road ways to prevent cross-country travel. Impacts by invasive species, in particular mat- forming invasive annual grasses, would decrease recovery of BSCs and establishment of desirable native plant species. Emergency stabilization measures would increase establishment rates of native plant species which would stabilize soils and increase the opportunity for BSCs to establish and/or expand.

After disturbance, BSCs can take anywhere from one year to more than 50 years to recover depending on the species. Mosses and cyanobacteria are the first to recover and/or reestablish (approximately 1-5 years), while soil lichens take longer, sometimes more than 50 years and may not recover or reestablish at all.

3.6 Issue 6: How would a temporary livestock closure impact the authorization of livestock grazing?

3.6.1 Affected Environment

The Leslie Gulch Fire burned 1,538 acres of the 7,798 acres or 20 percent of the public land within the Spring Creek FFR Pasture of the Three Fingers Allotment. The total forage authorized for livestock grazing within this pasture is 381 AUMs. The Spring Creek FFR Pasture is 27,849 acres of which 28 percent or 7,798 acres is public land administered by BLM. The burn has resulted in a temporary yearly loss of approximately 76 AUMs.

3.6.2 Environmental Effects

3.6.2.1 No Action

Because no temporary fences would be built to separate the burned portion from the un-burned portion of the Spring Creek FFR Pasture the entire pasture or 7,798 acres of public

land would be temporarily closed to livestock grazing. This would result in the temporary loss of 381 AUMs of forage.

3.6.2.2 Proposed Action

Because temporary fences would be built to separate the burned portion from the un-burned portion of the Spring Creek FFR Pasture 1,538 acres of public land would be temporarily closed to livestock grazing. This would result in the loss of approximately 76 AUMs of forage. There would be no other losses of livestock forage due to implementation of the other proposed actions addressed in this EA. Also, grazing administration including the continuation of livestock closure to the Leslie Gulch ACEC would not be compromised due to the repair of three miles of fence.

3.6.2.3 Cumulative Effects

A reasonably foreseeable future action within the project area is completing fire suppression rehabilitation. This action includes rehabilitation of fire breaks or fuel breaks. These were created in attempts to put the fire out. They were created by a bull dozer which scraped the vegetation off the ground surface which exposes the mineral soil. Rehabilitation includes; putting these fuel breaks to bed by ground seeding with a mix of native species to establish vegetation on the breaks; water-barring where needed to control erosion; and removing berms. Rehabilitation would not increase the cumulative effects on livestock grazing administration.

3.7 Issue 7: How would seedings, harrowing, temporary fence construction and guzzler repair impact the wilderness values of the Slocum Creek and Honeycombs WSAs?

3.7.1 Affected Environment

The Leslie Gulch Fire burned through a portion of two Wilderness Study Areas, Slocum Creek and Honeycombs. The following tables provide a summary of the Wilderness Study Areas that were burned.

Table 6 - Summary of WSA Units within Leslie Gulch Fire Perimeter

WSA Name	Total Size (Acres)	Wilderness Criteria Met?				
		Size	Naturalness	Recreation	Solitude	Supplemental Values?
Slocum Creek	7,600	Y	Y	Y	Y	Y

Honeycombs	39,000	Y	Y	Y	Y	Y

Table 7 - Summary of Acres Burned within WSAs

WSA NAME	Acres	Acres Burned	% Burned
Slocum Creek	7,600	311	4
Honeycombs	39,000	7520	87

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 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 WIU:

Naturalness — Lands and resources exhibit a high degree of naturalness when affected primarily by the forces of nature and where the imprint of human activity is substantially unnoticeable. An area's naturalness may be influenced by the presence or absence of roads and trails, fences or other developments; and the nature and extent of landscape modifications.

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 Study Area Units

Slocum Creek – OR 3-47

The Slocum Creek Wilderness Study Area is located in Malheur County, Oregon, approximately 47 miles southwest of Vale and east of Owyhee Reservoir. The WSA includes 7,600 acres of BLM lands. The WSA is pear-shaped, approximately 5.5 miles long and 3 miles wide. It is bounded by the high standard, gravel Leslie Gulch road on the north; by private land and maintained dirt roads on the east, south and west, and by Bureau of Reclamation-administered land on the northwest. It is adjacent to the Honeycombs (OR-3-77A) and Upper Leslie Gulch (OR-3-74) WSAs, and separated from them by high standard or maintained dirt roads.

The WSA contains rugged topography formed by intermittent streams cutting through thick, volcanic deposits. The resulting land pattern is composed of steep-sided drainages separated by high, north-south oriented ridges. Over 85 percent of the WSA has gradients exceeding 25 percent. Natural vegetation consists mostly of sagebrush and bunchgrass. Western junipers are scattered throughout the area. A small, relict stand of ponderosa pine is located in the Dago Gulch drainage of the WSA.

The recommendation (Wilderness Study Report 1991) is to designate the entire 7,600 acres as wilderness. As the Final EIS (Oregon Wilderness EIS Volume IV 1989) identified that the provision for protection and maintenance of the Leslie Gulch boundary road from the junction with Dago Gulch road to the Owyhee Reservoir (a distance of 4 miles) the designated wilderness boundary would be either the standard setback distance from the road, at a minimum, or the alluvial valley floor of Leslie Gulch (not to exceed 400 feet from the road), whichever is greater in width.

Honeycombs Wilderness Study Area (OR 3-77A)

The Honeycombs Wilderness Study Area in Malheur County, Oregon, approximately 31 miles southwest of Vale and east of Owyhee Reservoir. The WSA includes 39,000 acres of BLM land. The WSA has an oblong configuration and is bounded on the south, east, and north by high standard BLM roads. The west border abuts public land administered by the Bureau of Reclamation and the State of Oregon along the Owyhee Reservoir. A 40-acres plot of private land is located along the WSA's southern border. The Honeycombs WSA is adjacent to three other WSAs. It is south of Wild Horse Basin (3 77B), and north of Upper Leslie Gulch (3-74) and Slocum Creek (3-75) WSA. It is separated from these three other

WSAs by high standard dirt roads. Across from the Honeycombs WSA and located on the west side of the Owyhee Reservoir is Dry Creek Buttes WSA.

Topography in the WSA is rugged. A thick deposit of volcanic tuff is cut by numerous intermittent streams, resulting in a broken surface of ridges, hills and drainages, with frequent outcrops and pinnacles. Several areas of relatively level land are found in Shadscale Flat and Sheephead Basin, in the northern portion of the WSA is an area of approximately 12,000 acres called the Honeycombs. Sagebrush and grasses are the predominant plants in the WSA. Junipers are scattered on few slopes and in several of the drainages.

The recommendation for the Honeycombs WSA is to designate 36,555 acres as wilderness and release 2,445 acres for uses other than wilderness. These acreages vary from those in the final EIS due to a change in the boundary of the area recommended for wilderness. The area of the Leslie Gulch fire location is included in the area that was recommended for wilderness (see map -1, Honeycombs proposal, Wilderness Study Report Volume 1). As the Final EIS (Oregon Wilderness EIS Volume IV 1989) identified that the provision for protection and maintenance of the Leslie Gulch boundary road from the junction with Dago Gulch road to the Owyhee Reservoir (a distance of 4 miles) the designated wilderness boundary would be either the standard setback distance from the road, at a minimum, or the alluvial valley floor of Leslie Gulch (not to exceed 400 feet from the road), whichever is greater in width.

3.7.2 Environmental Effects

3.7.2.1 No Action

Not restoring the seedlings, not harrowing and not constructing fence or repairing the guzzler would have negative effects to the two WSAs. Effects of not seeding or harrowing would allow for establishment of invasive species and would degrade the natural biophysical elements of the landscape. The degradation would result in a departure from the natural composition, structure and density of native species, with impacts to habitat quality, soil stability and watershed function. Individually and collectively, these elements contribute to the natural appearance of the landscape. Without restoration the natural wilderness value would degrade over time. The temporary fence construction is designed to help manage uses in order to restore and maintain vegetation to natural range conditions.

The guzzler repair will occur in Section 26 of the Slocum Creek WSA is considered allowed per BLM Manual 6330 Section D.10.c.i.

3.7.2.2 Proposed Action

The effects of noxious weed and invasive annual grass herbicide treatments, ground seeding, harrowing, temporary fence construction and guzzler repair would have no negative effect to the two WSAs.

The guzzler repair will occur in Section 26 of the Slocum Creek WSA is considered allowed per BLM Manual 6330 Section D.10.c.i.

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; utilize native seed mixes to enhance the natural character of the area; and utilize methodologies that minimize the short term visual and aesthetic impacts.

Short term impacts could include diminished recreational and wilderness experience for users in the setting and introducing new access with limited or restricted admittance.

Indirect effects would include potential impacts on wilderness characteristics from unauthorized motorized vehicle use by recreationists and those used for rehabilitation efforts; however, monitoring of these routes will occur and if needed the placement of signs will be used to avoid long-term effects.

3.8 Issue 8: How would the actions impact local economies and social values?

3.8.1 Affected Environment

Livestock raising and associated feed production industries are major contributors to the economy of Malheur County. Livestock production accounts for 49% of total county agricultural commodity sales (Oregon State University [OSU] Extension Service, January 2011). Cattle and calf production in the County produced over $134 million in gross sales in 2012 (OSU, May 2013) an important percentage of which is at least partially generated through public land grazing. Malheur County led the state of Oregon in production of number of head of cattle/calves (200,000 or 16% of the total Oregon production, with over 62,000 beef cows which calved (ODA, 2013).

The Vale District BLM-managed Three Fingers Allotment was impacted by the Leslie Gulch fire. Within the allotment, one pasture – Spring Creek Fenced Federal Range (FFR; defined as a pasture or allotment which is mostly private but contains some public land fenced within) – was impacted by the fire. Approximately 13% (2,163 acres, 1,538 acres of which are BLM out of the total pasture acreage of 15,967) of the Spring Creek FFR pasture that is permitted for livestock grazing and was impacted by the fire. 381 AUMs are permitted for the FFR pasture. 2015 Federal fees are $1.69/AUM (subject to change on a grazing year basis).

"Quality of life" perceptions are dependent on the individual when determining what is valued in a lifestyle and what features make up that lifestyle. Lifestyle features can be determined by historical activities of the area, career opportunities and the general cultural features of the geographical area. Quality of life issues are subjective and can change over time with exposure to other ways of living. Recreation is a component of many people's lifestyles. Recreational opportunities in the project area were impacted both within and adjacent to the Leslie Gulch fire. These include driving for pleasure, camping, backpacking, fishing, boating, hunting, hiking, horseback riding, photography, wildlife viewing, and

sightseeing. These activities contribute to the overall quality of life for residents and visitors. Primary recreation activities in the area are deer and chukar hunting, hiking, boating, and camping. Other recreation activities are fishing, rock-hounding, photography, and wildlife viewing. The Leslie Gulch Area of Critical Environmental Concern, the unique geologic formation known as the Honeycombs, Owyhee Reservoir, and the nearby Succor Creek State Park are well known beyond the local area and are important draws for visitors.

It is estimated that visitation to the Leslie Gulch area for sightseeing, recreation and hunting exceeds 500 vehicles a year. Local residents and visitors utilize the area for on-site recreation as well as to access nearby resources, such as the Owyhee reservoir, for which boating access is provided by the BLM.

In addition to local recreation use, the undeveloped, open spaces in the county are themselves a tourist attraction and contribute a "sense of place" for many, as well as providing remote, undeveloped outdoor experiences. The attachment people feel to a setting, often through a repeated experience, provides them with this sense of place. Attachments can be spiritual, cultural, aesthetic, economic, social or recreational.

Tourism also contributes revenue to local business through use of service sector opportunities, both at the local community level and the broader region, including the relatively close services available throughout the Treasure Valley, shared by several counties in Idaho and Malheur County in Oregon. Travel and tourism related employment contributes over 1,000 jobs within Malheur County (EPS, 2015). Travel and tourism sectors provide services to both visitors and local residents and enhance opportunities to enjoy local amenities, including open spaces found on public lands including those found in and near the Leslie Gulch recreation area. Visitors to the region often utilize services including restaurants, fuel sources, and accommodation. Lodging related employment contributes over 12% of Malheur County's overall number of jobs (EPS, 2015).

The communities of Jordan Valley and Adrian are nearest to the Leslie Gulch project area. Both communities are centers for the local, rural ranch and farm families and other residents. Both provide postal service, service station(s), café and tavern and farm supply businesses. Both have K-12 school systems. Jordan Valley offers lodging. Both Adrian and Jordan Valley are common stops for travelers heading to local attractions in the area, including Leslie Gulch. Summer and fall hunting participants commonly make these two communities a destination.

The Oregon Parks and Recreation Department manages two well-known areas in the vicinity of the two nearby communities: Cow Lakes State Park and Succor Creek State Park.

3.8.2 Environmental Effects

The cumulative effects analysis area is east-central Malheur County. The Reasonably foreseeable future actions considered in this analysis include: grazing, Leslie Gulch recreation site maintenance and normal road maintenance of the main Leslie Gulch road, dispersed and developed recreation, weed treatments, juniper control, and restoration and fuels reduction treatments to protect and restore sagebrush habitat. These projects and

events would continue to occur under both alternatives. Implementation of either alternative, in combination with the above listed RFFs, is not expected to measurably contribute to cumulative effects.

3.8.2.1 No Action

ESR treatments under the no action alternative would allow the burned area to reclaim naturally. Grazing closure of the Spring Creek FFR pasture and treatment of noxious weeds with BLM's existing set of authorized herbicides would be implemented. However, the existing herbicides are shown to be less effective on certain species, increasing the opportunity for expansion of existing infestation, reducing native vegetation rehabilitation and productivity. Cheatgrass and known infestations of medusahead would not be treated, permitting additional niches for their increase and expansion in and into the burned area. Native range productivity and carrying capacity for all public land demands, including wildlife, would decline as desirable species are replaced with aggressive noxious weeds and invasive annual grasses. Livestock carrying capacity could be reduced by 35 to 90 percent from weed infestations, lowering yield and quality of forage (BLM, 2010, p. 321).

The affected permittee (s) would be required to find alternative forage for approximately 381 AUMs until the seeded and otherwise rested areas have met objectives and fence lines have been repaired. Fair market value for AUMs is between $17 and $25 (compared to BLM AUMs at $1.69/AUM), which would cost approximately $6,477 (using the lower AUM rate) to replace the existing AUMs. Hay to replace the AUMs would require approximately 95 ¼ tons (1 ton of hay per cow per 4 months or .25 ton per AUM). Current cost of hay is averaging $125 to $250/ton. The cost to feed hay to replace the AUMs would be approximately $11,900 to $ $23,800 plus labor on an annual basis.

Under this alternative, a lower level of contracting would be implemented for treatments. Only noxious weed treatments would be contracted, amounting to approximately $25,000. As a result of a shift in vegetative communities to more of an annual species component, the potential exists for rangelands to move toward a downward trend. Poorer range conditions could lead to lower weaning weights or a reduction in overall cattle numbers, affecting the economics of the affected ranchers, as well as the chance of the BLM permanently reducing permitted AUMs on the allotments.

Decreased range conditions and reductions of native plant communities, which could be displaced by invasive species, would impact certain recreational user opportunities. Declines in wildlife viewing or hunting opportunities may result, relative to the Proposed Action, due to additional deterioration of native range conditions.

Grazing would be excluded from all public lands in the Spring Creek FFR pasture until the existing vegetation recovered, resulting in a reduction of 381 AUMs. As a result of either reduced carrying capacity from declines in range conditions or the additional acreage closed to grazing, the Federal government would not collect grazing permit fees from the permittee until monitoring indicates livestock can resume grazing.

Reduced acquisition and purchase of construction supplies or other proposed action-related services would occur from local vendors under this alternative, relative to the Proposed Action.

Public lands in and around the burned area would continue to contribute to social amenities and use, such as open space and other recreation opportunities in the Leslie Gulch area. As the burned areas reclaim naturally, it is expected that an initial reduction in recreation use would increase to pre-burn levels. These amenities enhance local communities and tourism; the specific contribution to social and economic value of these amenities is not known.

3.8.2.2 Proposed Action

BLM employees and contractors executing the Proposed Action would be expected to contribute to the local economy during implementation.

Contractors would use services and facilities in the cumulative effects analysis area and adjacent Treasure Valley for supplies and lodging. Small economic increases during implementation of the proposed action are likely to occur for the more distant towns Nyssa/Vale/Ontario in Oregon and potentially in communities located in Idaho. Both areas provide a broader range of services and supplies, including airports, and are anticipated to benefit from the ESR activities.

Under the proposed action seeding of native species that help stabilize soils and control invasive weeds would be implemented to maintain good range condition, forage quality and carrying capacity for all demands.

This alternative could utilize contracts to rebuild existing fences and install temporary fencing, ground seed, and apply herbicide. To contract applicable stabilization and restoration treatments and rangeland improvements under this alternative the cost is estimated to be approximately $320,000 (ESR Plan, 2015). Contracting projects would provide economic opportunities for local contractors and suppliers.

The affected permittee (s) would be required to find alternative forage for approximately 76 AUMs until rested areas have met objectives and fence lines have been repaired. Fair market value for AUMs is between $17 and $25 (compared to BLM AUMs at $1.69/AUM), which would cost approximately $1,292 (using the lower AUM rate) to replace the existing AUMs. Hay to replace the AUMs would require approximately 19 tons (1 ton of hay per cow per 4 months or .25 ton per AUM). Current cost of hay is averaging $125 to $250/ton. The cost to feed hay to replace the AUMs would be approximately $2,375 to $ $4,750 plus labor on an annual basis.

Very short-term, temporary effects (during herbicide application operations) to a visitor's experience or opportunities are expected by implementing the Proposed Action. Management of invasive plants affects the goods, services and uses provided by BLM lands. The BLM would be perceived as a more equal partner with neighboring private landowners in weed control efforts with the means to use a wider range of herbicides. Wildland fire-related costs could be reduced because of the additional invasive annual grass treatments.

Continued management of resources and opportunities in and adjacent to the project area would allow for the social and economic activities. The cumulative effects of the proposed action are anticipated to benefit from the Proposed Action and would have a positive impact on future opportunities in the area.

3.9 Summary of cumulative effects

The cumulative effects of invasive annual grass and noxious weed treatments, blanket harrowing and seeding utilizing low impact UTV vehicles, resting the burned area currently allocated to grazing, guzzler replacement and sign installation would not have a discernable long-term impact on resources in the project or analysis area. Long term benefits are expected to include a reduction in undesirable species expansion and a reduction in fire intensity through reintroduction of native species and treatments to reduce reinvasion of invasive species. Local impacts from temporary grazing closures should be offset by the long term improvement of vegetative restoration and offer increasing forage productivity for domestic grazing and wildlife.

4.0 List of Interdisciplinary Reviewers

Susan Fritts:	Leslie Gulch ESR Project Lead and Jordan/Malheur Botanist (*ACEC/RNA, SSS Plants)*
Donald Rotell:	Natural Resource Specialist – (*Fire and Fuels*)
Cheryl Bradford:	Archaeologist *(American Indian Traditional Practices, Cultural Heritage)*
William Reimers:	Rangeland Management Specialist *(Grazing Management and Rangelands)*
Megan McGuire:	Wildlife Biologist (*Migratory Birds, SSS, Wildlife and Fisheries)*
Todd Allai:	Natural Resource Specialist *(Soils, Water Quality, Wetlands/Riparian Zones*)
Kari Points:	Outdoor Recreation Planner (*Wilderness Study Areas, OHV, Travel Management, Wilderness Characteristics, Visual Resource Management)*
Lynne Silva:	Weed Specialist (*Noxious Weeds*)
Marissa Russell:	Geographic Information Systems Specialist
Brent Grasty:	Planning and Environmental Coordinator (*Social and Economic Characteristics)*

5.0 Consultation

Agencies, Tribes and Individuals Consulted

Burns Paiute Tribe
Fort McDermitt Paiute-Shoshone Tribe
Eastern Oregon Weed Boards
Eastern Oregon Agricultural Research Center
Malheur County, Oregon
Malheur County Soil and Water Conservation District
Oregon Department of Fish and Wildlife
Oregon Department of Agriculture
Oregon State Historic Preservation Office
U.S. Department of Agriculture, Natural Resource Conservation Service
U.S. Department of Interior, Fish and Wildlife Service
U.S. Department of Agricultural Research Service
Vale District grazing permittees

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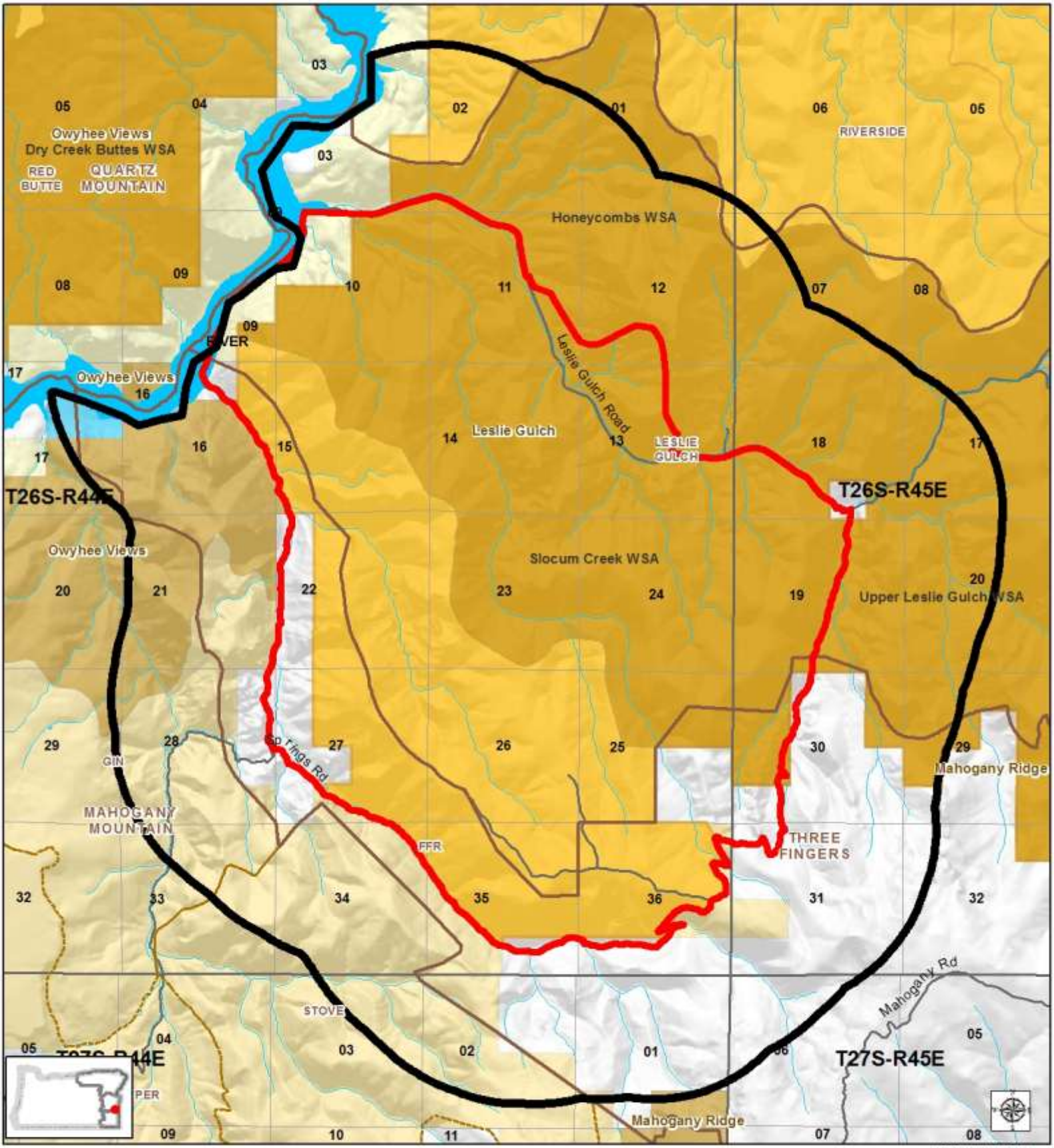
Appendix A - Maps

Map 1: Leslie Gulch Fire ESR EA

Leslie Gulch Fire ES&R EA
Map 2: Land Status



Legend

- Planning Area
- Leslie Gulch Fire
- Allotment
- Pastures
- BLM/County Roads
- Streams
- WaterBodies
- Areas of Critical Environmental Concern
- Wilderness Study Area
- Bureau of Land Management
- Bureau of Reclamation
- Private

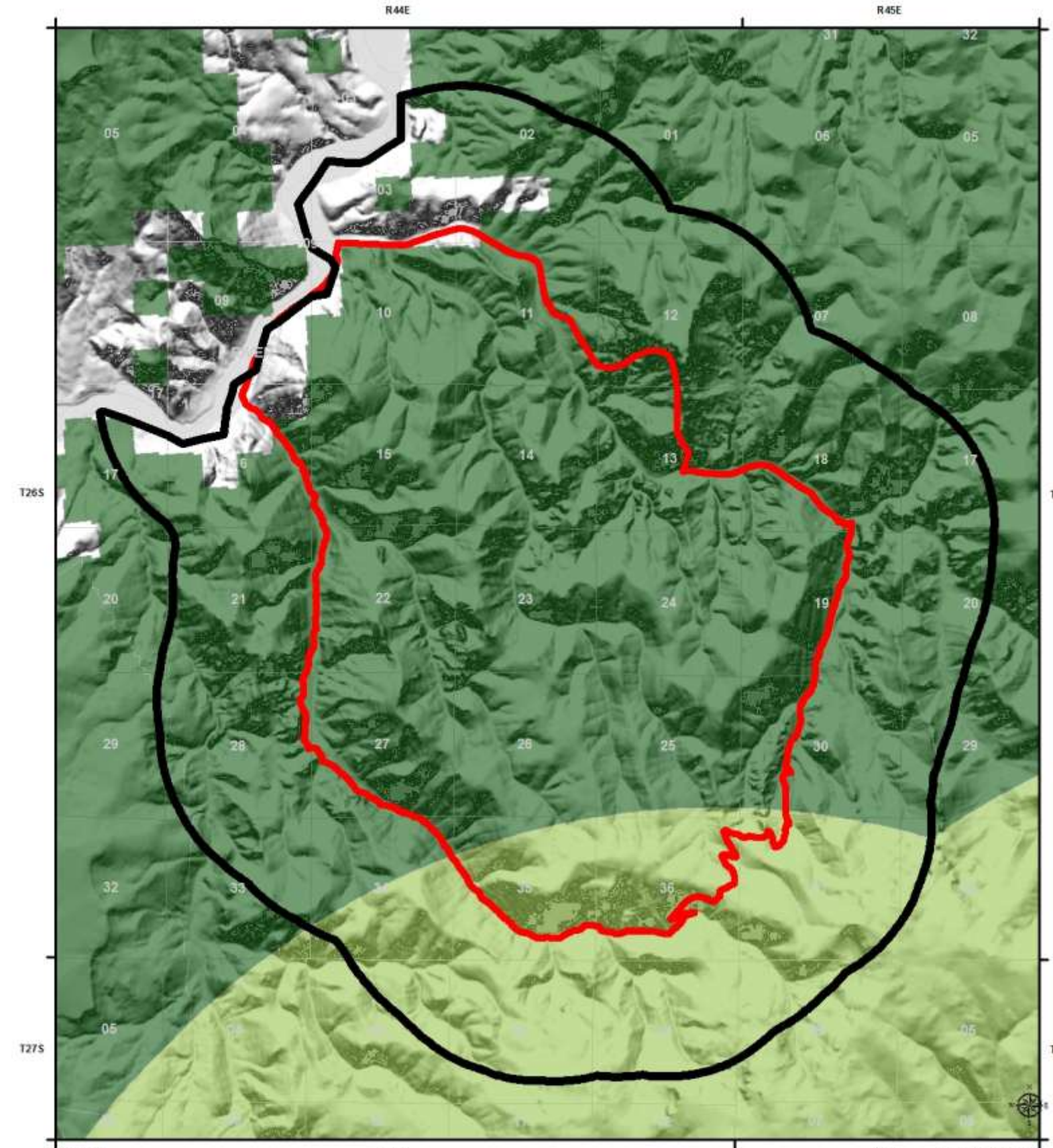
0 0.5 1 Miles

0 650 1,300 2,600 Meters

U.S. Department of Interior
Bureau of Land Management

Vale District
6/14/2015

Leslie Gulch Fire ESR EA
Map 3: Sage-Grouse Habitat



Legend

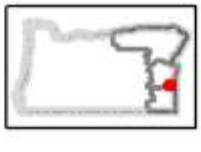
- Planning Area Leslie Gulch EA
- Leslie Gulch Fire
- General Habitat Managment Area (GHMA)
- Priority Habitat Management Area (PHMA)

R44E

0 0.5 1 2 Miles

0 1,050 2,100 4,200 Meters

R45E



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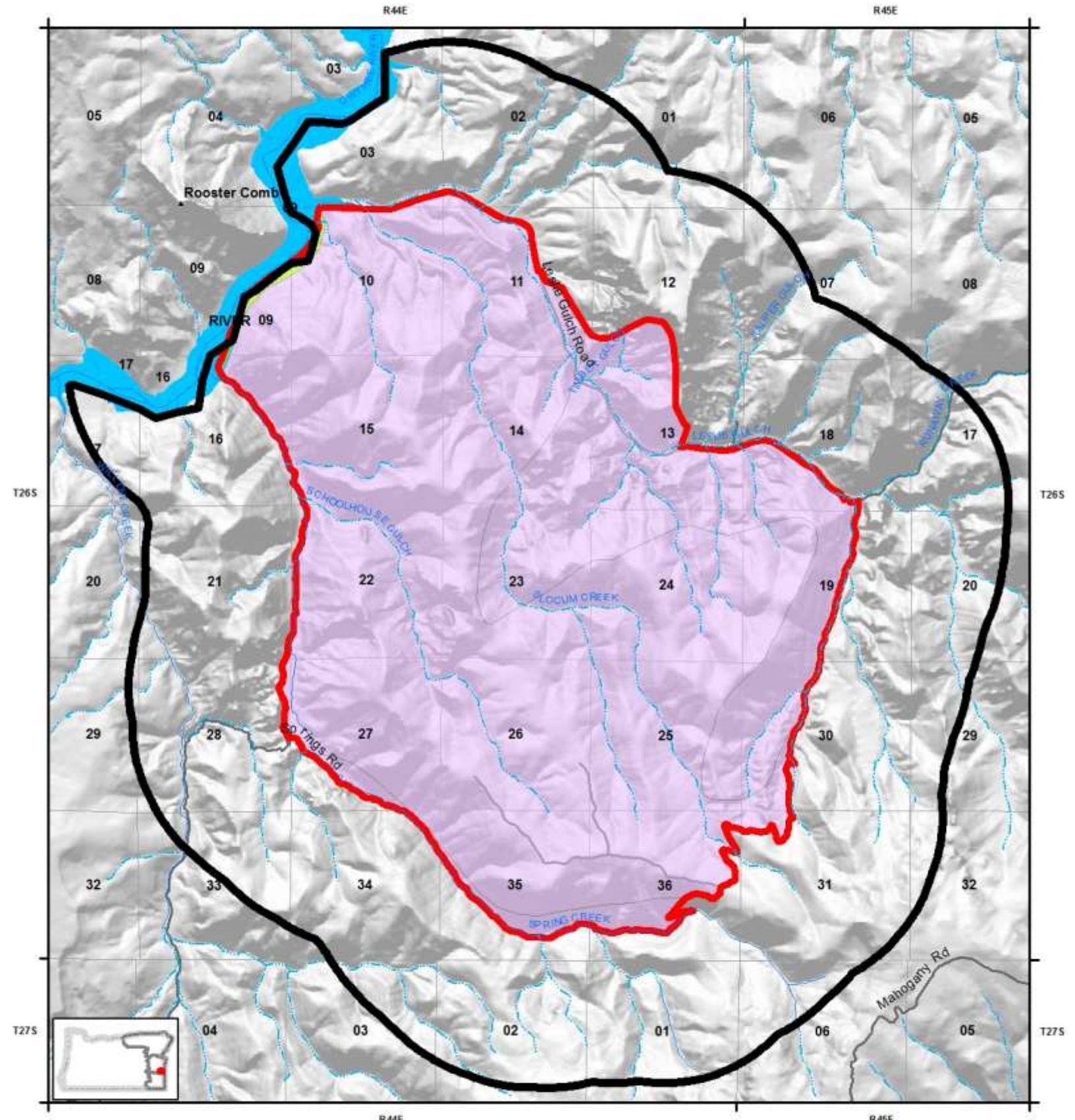
Vale District

5/14/2015

Leslie Gulch Fire ES&R EA
Map 4: General Soils



Legend

- Planning Area
- Leslie Gulch Fire

Soils

- 96
- 98

- WaterBodies
- Perennial Streams
- Intermittat Streams
- BLM/County Roads

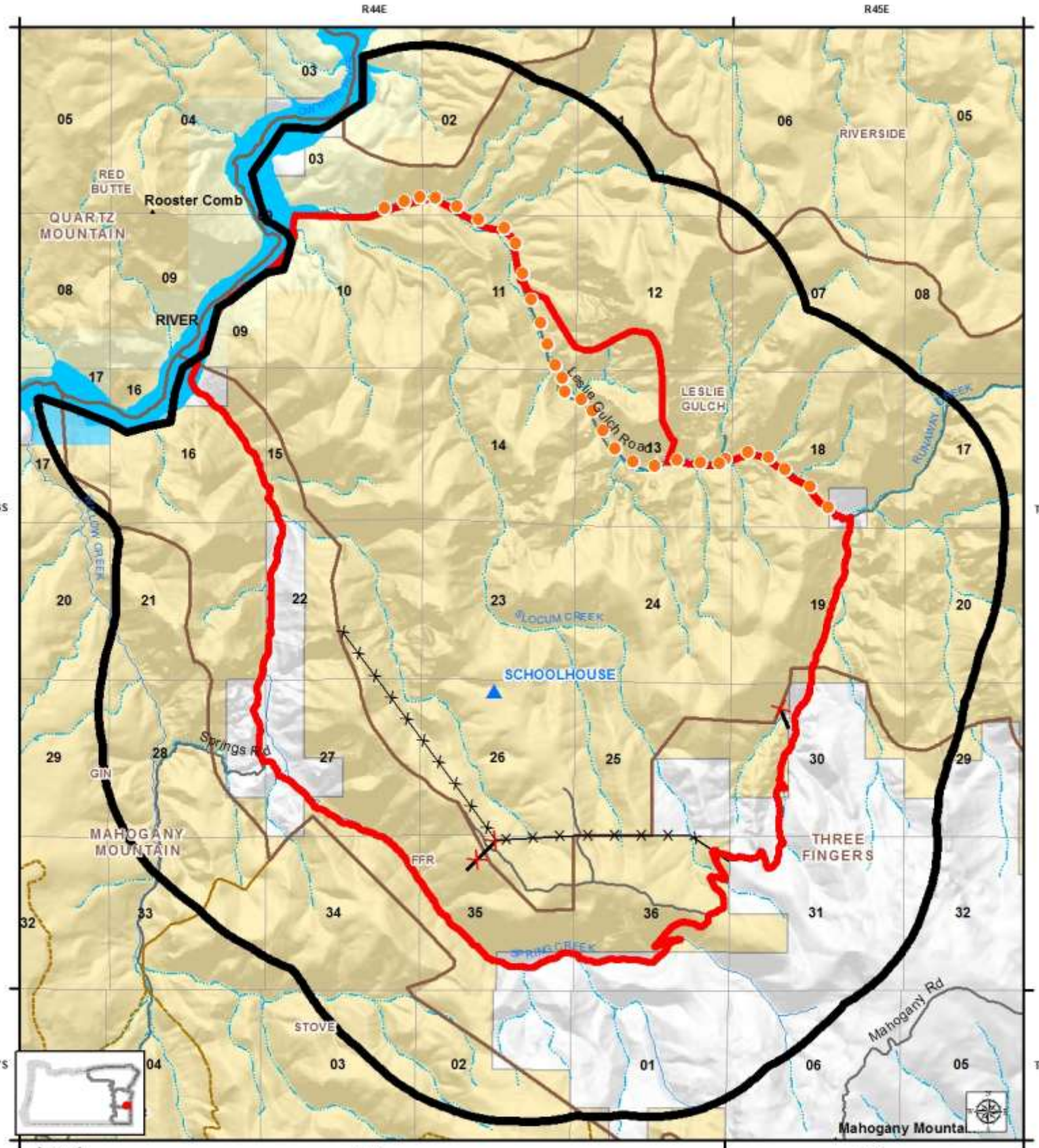
0 650 1,300 2,600 Meters

0 0.5 1 2 Miles

U.S. Department of Interior
Bureau of Land Management

Vale District
6/11/2015

Leslie Gulch Fire ES&R EA
Map 5: Improvements, Maintenance, and Repair



Legend

- Guzzlers
- Planning Area
- WSA Signs
- Leslie Gulch Fire
- Existing Fence Repair
- Fences Temporary
- Allotment
- Pastures
- WaterBodies
- BLM/County Roads
- Perennial Streams
- Intermittat Streams
- Bureau of Land Management
- Bureau of Reclamation
- Private

0 650 1,300 2,600 Meters

0 0.5 1 2 Miles

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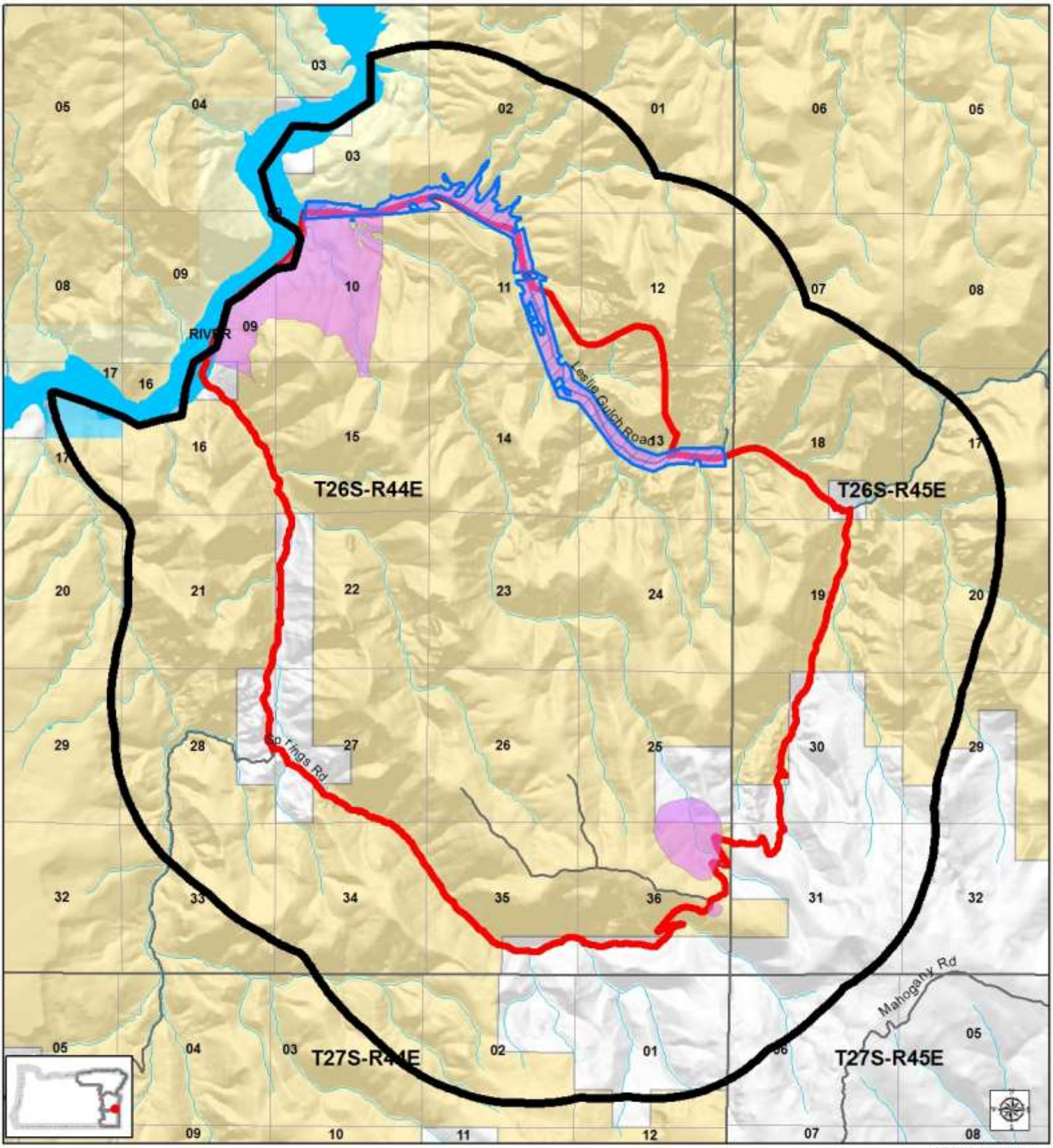
6/10/2015

Leslie Gulch Fire ES&R EA
Map 6: Vegetation Treatments



Legend

- Planning Area
- Leslie Gulch Fire
- Native Seeding
- Imazapic Treatment
- BLM/County Roads
- Streams
- WaterBodies
- Bureau of Land Management
- Bureau of Reclamation
- Private

0 0.5 1 2 Miles

0 650 1,300 2,600 Meters

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6/04/2015

Appendix B - Standard Operating Procedures and Mitigation Measures Herbicides (Excerpted from the *Vegetation Treatments Using Herbicides on LBM Lands in Oregon, FEIS/ROD* (2010; pp.457-467)

Standard Operating Procedures and Mitigation Measures
Excerpted from the Vegetation Treatments Using Herbicides on BLM Lands in Oregon FEIS/ROD (2010) (pp. 457-467)

Introduction

The following Standard Operating Procedures and Mitigation Measures have been adopted from the Record of Decision for the PEIS. Minor edits have been made to some Standard Operating Procedures and Mitigation Measures to clarify intent.

Standard Operating Procedures (identified below with SOP) have been identified to reduce adverse effects to environmental and human resources from vegetation treatment activities based on guidance in BLM manuals and handbooks, regulations, and standard BLM and industry practices.1 The list is not all encompassing, but is designed to give an overview of practices that would be considered when designing and implementing a vegetation treatment project on public lands (PER: 2-29)2. Effects described in the EIS are predicated on application of the Standard Operating Procedures, that a site-specific determination is made that their application is unnecessary to achieve their intended purpose or protection, or that if the parent handbook or policy direction evolves, the new direction would continue to provide the appropriate environmental protections.

For example, the Standard Operating Procedure to "complete vegetation treatments seasonally before pollinator foraging plants bloom" would not be applied to treatments not likely to have a significant effect on pollinators.

PEIS Mitigation Measures (identified below with MM) were identified for all potential adverse effects identified in the PEIS. They are included in, and adopted by, the Record of Decision for the PEIS. Like the SOPs, application of the mitigation measures is assumed in this EIS. However, for PEIS Mitigation Measures, site-specific analysis and/or the use of Individual Risk Assessments Tools (see Chapter 3), or evolution of the PEIS Mitigation Measures into handbook direction at the national level, would be permitted to identify alternative ways to achieve the expected protections (PEIS:4-4).

Although not displayed here, Standard Operating Procedures for non-herbicide treatments (from regulation, BLM policy, and BLM Handbook direction) also apply (PER: 2-31 to 44).

Standard Operating Procedures and Mitigation Measures for Applying Herbicides

Guidance Documents
BLM Handbook H-9011-1 (*Chemical Pest Control*); and manuals 1112 (*Safety*), 9011 (*Chemical Pest Control*), 9012 (*Expenditure of Rangeland Insect Pest Control Funds*), 9015 (*Integrated Weed Management)*, and 9220 (*Integrated Pest Management*).

1) Manual-directed standard operating procedures and other standing direction may be referred to as best management practices in resource management and other plans, particularly when they apply to water.

2) The PER includes Standard Operating Procedures for the full range of vegetation treatment methods. Only those applicable to herbicide application are included in this appendix.

General

- Prepare an operational and spill contingency plan in advance of treatment. *(SOP)*
- Conduct a pretreatment survey before applying herbicides. *(SOP)*
- Select the herbicide that is least damaging to the environment while providing the desired results. *(SOP)*
- Select herbicide products carefully to minimize additional impacts from degradates, adjuvants, other ingredients, and tank mixtures. *(SOP)*
- Apply the least amount of herbicide needed to achieve the desired result. *(SOP)*
- Follow herbicide product label for use and storage. *(SOP)*
- Have licensed or certified applicators or State-licensed "trainees" apply herbicides, or they can be applied by BLM employees under the direct supervision of a BLM-certified applicator. *(SOP)*
- Use only USEPA-approved herbicides and follow product label directions and "advisory" statements. *(SOP)*
- Review, understand, and conform to the "Environmental Hazards" section on the herbicide product label. This section warns of known herbicide risks to the environment and provides practical ways to avoid harm to organisms or to the environment. *(SOP)*
- Consider surrounding land use before assigning aerial spraying as a treatment method and avoid aerial spraying near agricultural or densely populated areas. *(SOP)*
- Minimize the size of application area, when feasible. *(SOP)*
- Comply with herbicide-free buffer zones to ensure that drift will not affect crops or nearby residents/ landowners. *(SOP)*
- Post treated areas and specify reentry or rest times, if appropriate. *(SOP)*
- Notify adjacent landowners prior to treatment, if appropriate. *(SOP)*
- Keep a copy of Material Safety Data Sheets (MSDSs) at work sites. MSDSs are available for review at http:// www.cdms.net/. *(SOP)*
- Keep records of each application, including the active ingredient, formulation, application rate, date, time, and location. *(SOP)*
- Avoid accidental direct spray and spill conditions to minimize risks to resources. *(SOP)*
- Avoid aerial spraying during periods of adverse weather conditions (snow or rain imminent, fog, or air turbulence). *(SOP)*
- Make helicopter applications at a target airspeed of 40 to 50 miles per hour (mph), and at about 30 to 45 feet above ground. *(SOP)*

- Take precautions to minimize drift by not applying herbicides when winds exceed >10 mph (>6 mph for aerial applications), or a serious rainfall event is imminent. *(SOP)*
- Use drift control agents and low volatile formulations. *(SOP)*
- Conduct pre-treatment surveys for sensitive habitat and SSS within or adjacent to proposed treatment areas. *(SOP)*
- Consider site characteristics, environmental conditions, and application equipment in order to minimize damage to non-target vegetation. *(SOP)*
- Use drift reduction agents, as appropriate, to reduce the drift hazard to non-target species. *(SOP)* Turn off application equipment at the completion of spray runs and during turns to start another spray run. *(SOP)*
- Refer to the herbicide product label when planning revegetation to ensure that subsequent vegetation would not be injured following application of the herbicide. (SOP)
- Clean OHVs to remove plant material. *(SOP)*

The BLM has suspended the use of the adjuvant R-11.

Air Quality

See Manual 7000 (*Soil, Water, and Air Management*)

- Consider the effects of wind, humidity, temperature inversions, and heavy rainfall on herbicide effectiveness and risks. *(SOP)*
- Apply herbicides in favorable weather conditions to minimize drift. For example, do not treat when winds exceed 10 mph (>6 mph for aerial applications) or rainfall is imminent. *(SOP)*
- Use drift reduction agents, as appropriate, to reduce the drift hazard. *(SOP)*
- Select proper application equipment (e.g., spray equipment that produces 200- to 800-micron diameter droplets [spray droplets of 100 microns and less are most prone to drift]). *(SOP)*
- Select proper application methods (e.g., set maximum spray heights, use appropriate buffer distances between spray sites and non-target resources). *(SOP)*

Soil

See Manual 7000 (*Soil, Water, and Air Management*)

- Minimize treatments in areas where herbicide runoff is likely, such as steep slopes when heavy rainfall is expected. *(SOP)*
- Minimize use of herbicides that have high soil mobility, particularly in areas where soil properties increase the potential for mobility. *(SOP)*
- Do not apply granular herbicides on slopes of more than 15 percent where there is the possibility of runoff carrying the granules into non-target areas. *(SOP)*

Water Resources

See Manual 7000 (*Soil, Water, and Air Management*)

- Consider climate, soil type, slope, and vegetation type when developing herbicide treatment programs. *(SOP)*
- Select herbicide products to minimize impacts to water. This is especially important for application scenarios that involve risk from active ingredients in a particular herbicide, as predicted by risk assessments. *(SOP)*

- Use local historical weather data to choose the month of treatment. (*SOP*)
- Considering the phenology of target aquatic species, schedule treatments based on the condition of the water body and existing water quality conditions. *(SOP)*
- Plan to treat between weather fronts (calms) and at appropriate time of day to avoid high winds that increase water movements, and to avoid potential stormwater runoff and water turbidity. *(SOP)*
- Review hydrogeologic maps of proposed treatment areas. Note depths to groundwater and areas of shallow groundwater and areas of surface water and groundwater interaction. Minimize treating areas with high risk for groundwater contamination. *(SOP)*
- Conduct mixing and loading operations in an area where an accidental spill would not contaminate an aquatic body. *(SOP)*
- Do not rinse spray tanks in or near water bodies. (*SOP*)
- Do not broadcast pellets where there is danger of contaminating water supplies. *(SOP)*
- Minimize the potential effects to surface water quality and quantity by stabilizing terrestrial areas as quickly as possible following treatment. *(SOP)*
- Establish appropriate (herbicide-specific) buffer zones for species/populations (Tables A2-1 and A2-2). (*MM*)
- Areas with potential for groundwater for domestic or municipal use shall be evaluated through the appropriate, validated model(s) to estimate vulnerability to potential groundwater contamination, and appropriate mitigation measures shall be developed if such an area requires the application of herbicides and cannot otherwise be treated with non-herbicide methods. (*MM*)
- Use appropriate herbicide-free buffer zones for herbicides not labeled for aquatic use based on risk assessment guidance, with minimum widths from water of 100 feet for aerial, 25 feet for vehicle, and 10 feet for hand spray applications. *(SOP)*
- Maintain buffers between treatment areas and water bodies. Buffer widths should be developed based on herbicide and site-specific conditions to minimize impacts to water bodies. *(SOP)*

<u>Wetlands and Riparian Areas</u>

- Use a selective herbicide and a wick or backpack sprayer. *(SOP)*
- Use appropriate herbicide-free buffer zones for herbicides not labeled for aquatic use based on risk assessment guidance, with minimum widths from water of 100 feet for aerial, 25 feet for vehicle, and 10 feet for hand spray applications. *(SOP)*
- See mitigation for Water Resources and Vegetation. (*MM*)

<u>Vegetation</u>

See Handbook H-4410-1 (*National Range Handbook*), and manuals 5000 (*Forest Management*) and 9015
(*Integrated Weed Management*)

- Refer to the herbicide label when planning revegetation to ensure that subsequent vegetation would not be injured following application of the herbicide. *(SOP)*
- Use native or sterile plants for revegetation and restoration projects to compete with invasive plants until desired vegetation establishes. *(SOP)*

- Use weed-free feed for horses and pack animals. Use weed-free straw and mulch for revegetation and other activities. *(SOP)*
- Identify and implement any temporary domestic livestock grazing and/or supplemental feeding restrictions needed to enhance desirable vegetation recovery following treatment. Consider adjustments in the existing grazing permit, to maintain desirable vegetation on the treatment site. *(SOP)*
- Minimize the use of terrestrial herbicides (especially bromacil, diuron, and sulfometuron methyl) in watersheds with downgradient ponds and streams if potential impacts to aquatic plants are identified. (*MM*)
- Establish appropriate (herbicide-specific) buffer zones (Tables A2-1 and 2) around downstream water bodies, habitats, and species/populations of interest. Consult the ecological risk assessments (ERAs) prepared for the PEIS for more specific information on appropriate buffer distances under different soil, moisture, vegetation, and application scenarios. (*MM*)
- Limit the aerial application of chlorsulfuron and metsulfuron methyl to areas with difficult land access, where no other means of application are possible. (*MM*)
- Do not apply sulfometuron methyl aerially. (*MM*)
- When necessary to protect Special Status plant species, implement all conservation measures for plants presented in the *Vegetation Treatments on Bureau of Land Management Lands in 17Western States Programmatic Biological Assessment* (see Appendix 5). (*MM*)

<u>Pollinators</u>

- Complete vegetation treatments seasonally before pollinator foraging plants bloom. *(SOP)*
- Time vegetation treatments to take place when foraging pollinators are least active both seasonally and daily. *(SOP)*
- Design vegetation treatment projects so that nectar and pollen sources for important pollinators and resources are treated in patches rather than in one single treatment. *(SOP)*
- Minimize herbicide application rates. Use typical rather than maximum rates where there are important pollinator resources. *(SOP)*
- Maintain herbicide free buffer zones around patches of important pollinator nectar and pollen sources. *(SOP)*
- Maintain herbicide free buffer zones around patches of important pollinator nesting habitat and hibernacula. *(SOP)*
- Make special note of pollinators that have single host plant species, and minimize herbicide spraying on those plants and in their habitats. *(SOP)*

<u>Fish and Other Aquatic Organisms</u>

See manuals 6500 (*Wildlife and Fisheries Management*) and 6780 (*Habitat Management Plans*)

- Use appropriate buffer zones based on label and risk assessment guidance. *(SOP)*

- Minimize treatments near fish-bearing water bodies during periods when fish are in life stages most sensitive to the herbicide(s) used, and use spot rather than broadcast or aerial treatments. *(SOP)*
- Use appropriate application equipment/method near water bodies if the potential for off-site drift exists. *(SOP)*
- For treatment of aquatic vegetation, 1) treat only that portion of the aquatic system necessary to meet vegetation management objectives, 2) use the appropriate application method to minimize the potential for injury to desirable vegetation and aquatic organisms, and 3) follow water use restrictions presented on the herbicide label. *(SOP)*
- Limit the use of diquat in water bodies that have native fish and aquatic resources. (*MM*)
- Limit the use of terrestrial herbicides (especially diuron) in watersheds with characteristics suitable for potential surface runoff that have fish-bearing streams during periods when fish are in life stages most sensitive to the herbicide(s) used. (*MM*)
- To protect Special Status fish and other aquatic organisms, implement all conservation measures for aquatic animals presented in the *Vegetation Treatments on Bureau of Land Management Lands in 17 Western States Programmatic Biological Assessment* (see Appendix 5). (*MM*)
- Establish appropriate herbicide-specific buffer zones for water bodies, habitats, or fish or other aquatic species of interest (Tables A2-3 and A2-4, and recommendations in individual ERAs). (*MM*)
- Consider the proximity of application areas to salmonid habitat and the possible effects of herbicides on riparian and aquatic vegetation. Maintain appropriate buffer zones around salmonid-bearing streams. (*MM*)
- At the local level, consider effects to Special Status fish and other aquatic organisms when designing treatment programs. (*MM*)

Wildlife

See manuals 6500 (*Wildlife and Fisheries Management*) and 6780 (*Habitat Management Plans*)

- Use herbicides of low toxicity to wildlife, where feasible. *(SOP)*
- Use spot applications or low-boom broadcast operations where possible to limit the probability of contaminating non-target food and water sources, especially non-target vegetation over areas larger than the treatment area. *(SOP)*
- Use timing restrictions (e.g., do not treat during critical wildlife breeding or staging periods) to minimize impacts to wildlife. *(SOP)*
- To minimize risks to terrestrial wildlife, do not exceed the typical application rate for applications of dicamba, diuron, glyphosate, hexazinone, tebuthiuron, or triclopyr, where feasible. (*MM*)
- Minimize the size of application areas, where practical, when applying 2,4-D, bromacil, diuron, and Overdrive® to limit impacts to wildlife, particularly through contamination of food items. (*MM*)
- Where practical, limit glyphosate and hexazinone to spot applications in grazing land and wildlife habitat areas to avoid contamination of wildlife food items. (*MM*)
- Do not use the adjuvant R-11 (*MM*)
- Either avoid using glyphosate formulations containing POEA, or seek to use formulations with the least amount of POEA, to reduce risks to amphibians. (*MM*)
- Do not apply bromacil or diuron in rangelands, and use appropriate buffer zones (Tables A2-1 and 2) to limit contamination of off-site vegetation, which may serve as forage for wildlife. (*MM*)

- Do not aerially apply diquat directly to wetlands or riparian areas. (*MM*)
- To protect Special Status wildlife species; implement conservation measures for terrestrial animals presented in the *Vegetation Treatments on Bureau of Land Management Lands in 17Western States Programmatic Biological Assessment* (See Appendix 5) (*MM*)

Threatened, Endangered, and Sensitive Species

See Manual 6840 (*SSS*)

- Provide clearances for SSS before treating an area as required by SSS Program policy. Consider effects to SSS when designing herbicide treatment programs. *(SOP)*
- Use a selective herbicide and a wick or backpack sprayer to minimize risks to Special Status plants. *(SOP)*
- Avoid treating vegetation during time-sensitive periods (e.g., nesting and migration, sensitive life stages) for SSS in area to be treated. *(SOP)*

Livestock

See Handbook H-4120-1 (*Grazing Management*)

- Whenever possible and whenever needed, schedule treatments when livestock are not present in the treatment area. Design treatments to take advantage of normal livestock grazing rest periods, when possible. *(SOP)*
- As directed by the herbicide product label, remove livestock from treatment sites prior to herbicide application, where applicable. *(SOP)*
- Use herbicides of low toxicity to livestock, where feasible. *(SOP)*
- Take into account the different types of application equipment and methods, where possible, to reduce the probability of contamination of non-target food and water sources. *(SOP)*
- Avoid use of diquat in riparian pasture while pasture is being used by livestock. *(SOP)*
- Notify permittees of the herbicide treatment project to improve coordination and avoid potential conflicts and safety concerns during implementation of the treatment. *(SOP)*
- Notify permittees of livestock grazing, feeding, or slaughter restrictions, if necessary. *(SOP)*
- Provide alternative forage sites for livestock, if possible. *(SOP)*
- Minimize potential risks to livestock by applying diuron, glyphosate, hexazinone, tebuthiuron, or triclopyr at the typical application rate where feasible. (*MM*)
- Do not apply 2,4-D, bromacil, dicamba, diuron, Overdrive®, picloram, or triclopyr across large application areas, where feasible, to limit impacts to livestock, particularly through contamination of food items. (*MM*)
- Where feasible, limit glyphosate and hexazinone to spot applications in rangeland. (*MM*)
- Do not apply bromacil or diuron in rangelands, and use appropriate buffer zones (Tables A2-1 and 2) to limit contamination of off-site vegetation, which may serve as forage for wildlife. (*MM*)

Wild Horses and Burros

- Minimize using herbicides in areas grazed by wild horses and burros. *(SOP)*
- Use herbicides of low toxicity to wild horses and burros, where feasible. *(SOP)*
- Remove wild horses and burros from identified treatment areas prior to herbicide application, in accordance with herbicide product label directions for livestock. *(SOP)*

- Take into account the different types of application equipment and methods, where possible, to reduce the probability of contaminating non-target food and water sources. *(SOP)*
- Minimize potential risks to wild horses and burros by applying diuron, glyphosate, hexazinone, tebuthiuron, and triclopyr at the typical application rate, where feasible, in areas associated with wild horse and burro use. (*MM*)
- Consider the size of the application area when making applications of 2,4-D, bromacil, dicamba, diuron, Overdrive®, picloram, and triclopyr in order to reduce potential impacts to wild horses and burros. (*MM*)
- Apply herbicide label grazing restrictions for livestock to herbicide treatment areas that support populations of wild horses and burros. (*MM*)
- Where practical, limit glyphosate and hexazinone to spot applications in rangeland. (*MM*)
- Do not apply bromacil or diuron in grazing lands within HMAs, and use appropriate buffer zones identified in Tables A2-1 and 2 to limit contamination of vegetation in off-site foraging areas. (*MM*)
- Do not apply 2,4-D, bromacil, or diuron in HMAs during the peak foaling season (March through June, and especially in May and June), and do not exceed the typical application rate of Overdrive® or hexazinone in HMAs during the peak foaling season in areas where foaling is known to take place. (*MM*)

Cultural Resources and Paleontological Resources

See handbooks H-8120-1 (*Guidelines for Conducting Tribal Consultation*) and H- 8270-1 (*General Procedural Guidance for Paleontological Resource Management*), and manuals 8100 (*The Foundations for Managing Cultural Resources*), 8120 (*Tribal Consultation Under Cultural Resource Authorities*). See also: *Programmatic Agreement among the Bureau of Land Management, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers Regarding the Manner in Which BLM Will Meet Its Responsibilities Under the National Historic Preservation Act.*

- Follow standard procedures for compliance with Section 106 of the National Historic Preservation Act as implemented through the *Programmatic Agreement among the Bureau of Land Management, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers Regarding the Manner in Which BLM Will Meet Its Responsibilities Under the National Historic Preservation Act* and State protocols or 36 Code of Federal Regulations Part 800, including necessary consultations with State Historic Preservation Officers and interested tribes. *(SOP)*
- Consult with tribes to locate any areas of vegetation that are of significance to the tribe and that might be affected by herbicide treatments; work with tribes to minimize impacts to these resources. *(SOP)*
- Follow guidance under Human Health and Safety in the PEIS in areas that may be visited by Native peoples after treatments. *(SOP)*
- Do not exceed the typical application rate when applying 2,4-D, bromacil, diquat, diuron, fluridone, hexazinone, tebuthiuron, and triclopyr in known traditional use areas. (*MM*)
- Avoid applying bromacil or tebuthiuron aerially in known traditional use areas. (*MM*)
- Limit diquat applications to areas away from high residential and traditional use areas to reduce risks to Native Americans. (*MM*)

Visual Resources

See handbooks H-8410-1 (*Visual Resource Inventory*) and H-8431-1 (*Visual Resource Contrast Rating*), and manual 8400 (*Visual Resource Management*)

- Minimize the use of broadcast foliar applications in sensitive watersheds to avoid creating large areas of browned vegetation. *(SOP)*
- Consider the surrounding land use before assigning aerial spraying as an application method. *(SOP)*
- Minimize off-site drift and mobility of herbicides (e.g., do not treat when winds exceed 10 mph; minimize treatment in areas where herbicide runoff is likely; establish appropriate buffer widths between treatment areas and residences) to contain visual changes to the intended treatment area. *(SOP)*
- If the area is a Class I or II visual resource, ensure that the change to the characteristic landscape is low and does not attract attention (Class I), or if seen, does not attract the attention of the casual viewer (Class II). *(SOP)*
- Lessen visual impacts by: 1) designing projects to blend in with topographic forms; 2) leaving some low-growing trees or planting some low-growing tree seedlings adjacent to the treatment area to screen short-term effects; and 3) revegetating the site following treatment. *(SOP)*
- When restoring treated areas, design activities to repeat the form, line, color, and texture of the natural landscape character conditions to meet established Visual Resource Management (VRM) objectives. *(SOP)*

Wilderness and Other Special Areas

See handbooks H-8550-1 (*Management of Wilderness Study Areas (WSAs)*), and H-8560-1 (*Management of Designated Wilderness Study Areas*), and Manual 8351 (*Wild and Scenic Rivers*)

- Encourage backcountry pack and saddle stock users to feed their livestock only weed-free feed for several days before entering a wilderness area, and to bring only weed-free hay and straw onto BLM lands. *(SOP)*
- Encourage stock users to tie and/or hold stock in such a way as to minimize soil disturbance and loss of native vegetation. *(SOP)*
- Revegetate disturbed sites with native species if there is no reasonable expectation of natural regeneration. *(SOP)*
- Provide educational materials at trailheads and other wilderness entry points to educate the public on the need to prevent the spread of weeds. *(SOP)*
- Use the "minimum tool" to treat noxious weeds and other invasive plants, relying primarily on the use of ground-based tools, including backpack pumps, hand sprayers, and pumps mounted on pack and saddle stock. *(SOP)*
- Use herbicides only when they are the minimum treatment method necessary to control weeds that are spreading within the wilderness or threaten lands outside the wilderness. *(SOP)*
- Give preference to herbicides that have the least impact on non-target species and the wilderness environment. *(SOP)*
- Implement herbicide treatments during periods of low human use, where feasible. *(SOP)*
- Address wilderness and special areas in management plans. *(SOP)*
- Control of weed infestations shall be carried out in a manner compatible with the intent of Wild and Scenic River management objectives. *(SOP)*

- Mitigation measures that may apply to wilderness and other special area resources are associated with human and ecological health and recreation (see mitigation measures for Vegetation, Fish and Other Aquatic Resources, Wildlife Resources, Recreation, and Human Health and Safety). (*MM*)

Recreation

See Handbook H-1601-1 (*Land Use Planning Handbook, Appendix C*)

- Schedule treatments to avoid peak recreational use times, while taking into account the optimum management period for the targeted species. *(SOP)*
- Notify the public of treatment methods, hazards, times, and nearby alternative recreation areas. *(SOP)*
- Adhere to entry restrictions identified on the herbicide product label for public and worker access. *(SOP)*
- Post signs noting exclusion areas and the duration of exclusion, if necessary. *(SOP)*
- Mitigation measures that may apply to recreational resources are associated with human and ecological health (see mitigation measures for Vegetation, Fish and Other Aquatic Resources, Wildlife Resources, and Human Health and Safety). (*MM*)

Social and Economic Values

- Consider surrounding land use before selecting aerial spraying as a treatment method, and avoid aerial spraying near agricultural or densely-populated areas. *(SOP)*
- Post treated areas and specify reentry or rest times, if appropriate. *(SOP)*
- Notify grazing permittees of livestock feeding restrictions in treated areas, if necessary, as per herbicide product label instructions. *(SOP)*
- Notify the public of the project to improve coordination and avoid potential conflicts and safety concerns during implementation of the treatment. *(SOP)*
- Control public access until potential treatment hazards no longer exist, per herbicide product label instructions. *(SOP)*
- Observe restricted entry intervals specified by the herbicide product label. *(SOP)*
- Notify local emergency personnel of proposed treatments. *(SOP)*□ Use spot applications or low-boom broadcast applications where possible to limit the probability of contaminating non-target food and water sources. *(SOP)*
- Consult with Native American tribes to locate any areas of vegetation that are of significance to the tribes and Native groups and that might be affected by herbicide treatments. *(SOP)*
- To the degree possible within the law, hire local contractors and workers to assist with herbicide application projects and purchase materials and supplies for herbicide treatment projects (including the herbicides) through local suppliers. *(SOP)*
- To minimize fears based on lack of information, provide public educational information on the need for vegetation treatments and the use of herbicides in an integrated vegetation management program for projects proposing local use of herbicides. *(SOP)*

Rights-of-way

- Coordinate vegetation treatment activities where joint or multiple use of a ROW exists. *(SOP)*
- Notify other public land users within or adjacent to the ROW proposed for treatment. *(SOP)*

- Use only herbicides that are approved for use in ROW areas. *(SOP)*

Human Health and Safety

- Establish a buffer between treatment areas and human residences based on guidance given in the HHRA, with a minimum buffer of ¼ mile for aerial applications and 100 feet for ground applications, unless a written waiver is granted. *(SOP)*
- Use protective equipment as directed by the herbicide product label. *(SOP)*
- Post treated areas with appropriate signs at common public access areas. *(SOP)*
- Observe restricted entry intervals specified by the herbicide product label. *(SOP)*
- Provide public notification in newspapers or other media where the potential exists for public exposure. *(SOP)*
- Store herbicides in secure, herbicide-approved storage. (*SOP*)
- Have a copy of MSDSs at work site. *(SOP)*
- Notify local emergency personnel of proposed treatments. *(SOP)*
- Contain and clean up spills and request help as needed. *(SOP)*
- Secure containers during transport. *(SOP)*
- Follow label directions for use and storage. *(SOP)*
- Dispose of unwanted herbicides promptly and correctly. *(SOP)*
- Use the typical application rate, where feasible, when applying 2,4-D, bromacil, diquat, diuron, fluridone, hexazinone, tebuthiuron, and triclopyr to reduce risk to workers and the public. (*MM*)
- Avoid applying bromacil and diuron aerially. Do not apply sulfometuron methyl aerially. (*MM*)
- Limit application of chlorsulfuron via ground broadcast applications at the maximum application rate. (*MM*)
- Limit diquat application to ATV, truck spraying, and boat applications to reduce risks to workers; limit diquat applications to areas away from high residential and subsistence use to reduce risks to the public. (*MM*)
- Evaluate diuron applications on a site-by-site basis to avoid risks to humans. There appear to be few scenarios where diuron can be applied without risk to workers. (*MM*)
- Do not apply hexazinone with an over-the-shoulder broadcast applicator (backpack sprayer). (*MM*)

Individual Herbicide Summaries

The following information about each of the 18 herbicides has been compiled for reference from information within the EIS. More information, including comparisons with other herbicides, can be found at the following locations:

- Examples of product names used on BLM lands can be found in this Appendix (Appendix 9);
- Species that an herbicide is effective on is contained in Appendix 7;
- Estimated Annual Treatment Acres is from Table 3-3 (Chapter 3);
- Selected Risk Categories includes data from Table 3-12 through 3-21 (Chapter 3), which summarizes the Risk Assessment information in (uncirculated) Appendix 8. H (High), M (Moderate), L (Low), and 0 (no risk) risk categories are defined in the Chapter 3 tables;
- Leaching, persistence and half-life information can be found in:
  - Table 3-1 (*The 18 Herbicides* section in Chapter 3)
  - Table 4-14 (*Soil Resources* section in Chapter 4)

- Table 4-17 (*Water Resources* section in Chapter 4)
- Table 4-20 (*Wetlands and Riparian Areas* section);

- PEIS Mitigation Measures and Standard Operating Procedures can be found in Appendix 2; and,
- All other information can be found in *The 18 Herbicides* section in Chapter 3.

Appendix C - Select Summaries of Environmental Effects of Proposed Herbicides

Table C.1: Summary of Environmental Effects of Use of Chlorsulfuron

Resource	Proposed Herbicide: Chlorsulfuron	Target Vegetation	Target Areas
Soils **(BLM 2010a, p. 182)**	*Chlorsulfuron* would be stable in neutral soils throughout the area. As with most biodegradation rates, the higher the pH, the slower the herbicide breaks down. The higher the temperature, soil moisture, organic matter content, and microbial biomass, the faster it breaks down. Chlorsulfuron is only mildly toxic to terrestrial microorganisms and effects are short term (transient) (SERA 2004a). Chlorsulfuron has high soil mobility (low soil adsorption), a 40 day half-life, and is moderately persistent in soil. Degradation is affected by soil pH (high pH translates to slower herbicide degradation) and has potential longevity on alkaline soils. The herbicide can remain active for more than a year, particularly on the slightly (pH 7.4-7.9) and moderately (pH 7.9- 9.4) alkaline soils within the Aridisols, Mollisols, Inceptisols, and Entisols soil orders (Sarmah *et al*. (1999)). Chlorsulfuron has a label advisory for wind erosion. It is registered for use on all land types except forest and where applications are applied directly to water, where surface water is present, or to intertidal areas below the mean high water mark.	Thistles, Mediterannean sage, black henbane, poison hemlock, Dalmatian toadflax, perennial pepperweed, puncturevine, whitetop, and invasive annual broadleaf plants.	Roadsides, Rangelands ROW, Reservoirs, meadows, riparian areas.
Water Quality, Riparian, and Wetlands (BLM 2010a, pp. 196 & 212)	*Chlorsulfuron* is persistent and mobile in some soils. In aquatic environments, the environmental fate of chlorsulfuron is related to pH and temperature. Hydrolysis rates are fastest in acidic waters and slower in more alkaline systems (Sarmah and Sabadie 2002). As hydrolysis rates drop, biodegradation becomes the mechanism affecting the breakdown of chlorsulfuron. Aquatic dissipation half-lives from 24 days to more than 365 days have been reported (ENSR 2005c), with a shorter time reported for flooded soil (47 to 86 days) than anaerobic aquatic systems (109 to 263 days; SERA 2004a). Chlorsulfuron is not known to be a groundwater contaminant, but has a high potential to leach into the groundwater. It is effective at low concentrations. Chlorsulfuron could be used to the water's edge in riparian and wetland areas. It will not be used where it could contact the water; therefore the adverse effect would be low to none on water quality. Chlorsulfuron would be an especially effective control for the noxious perennial mustards that are invading the area, such as perennial pepperweed and hoary cress.		

Resource	Proposed Herbicide: Chlorsulfuron	Target Vegetation	Target Areas
Fish and Other Aquatic Resources **(BLM 2010a, p. 224)**	Chlorsulfuron is a selective, ALS-inhibitor herbicide. It is not registered for use in aquatic systems. Chlorsulfuron's physical and chemical properties suggest that it is highly soluble in water, and is likely to remain dissolved in water and runoff from soils into water bodies. In addition, this herbicide has a long half-life inponds, but is not likely to bioconcentrate in aquatic wildlife. However, none of the evaluated scenarios, including accidental direct spray and spill of chlorsulfuron, poses any risk to fish in streams and ponds.		
Wildlife and Special Status Wildlife Species **(BLM 2010a, p. 248)**	*Chlorsulfuron* is an ALS-inhibitor; a group of herbicides that has the lowest risk to all groups of wildlife of the herbicides evaluated. All likely application scenarios are below the LOCs for wildlife groups under tested scenarios, even under spill or off-site drift scenarios. It is unlikely to cause any adverse effect on aquatic animals (Table 3-14). No studies on amphibians or reptiles were found (SERA 2004a).		
Grazing **(BLM 2010a, p. 261 & 269)**	*Chlorsulfuron* risk quotients for mammals for all modeled scenarios were below the conservative LOC of 0.1, indicating that direct spray and ingestion of sprayed vegetation is not likely to pose a risk to livestock (Table 3-14; ENSR 2005c). Based on label directions, there are no restrictions on livestock use of treated areas which is also applicable to wild horses.		
Special Status Plant Species and Upland Vegetation **(BLM 2010a, p. 145-146)**	*Chlorsulfuron*, an ALS-Inhibitor and sulfonylurea, works by inhibiting the activity of an enzyme called acetolactate synthase (ALS), which is necessary for plant growth. Chlorsulfuron is effective at very low dosages (half ounce to a few ounces per acre). Because of its high potency and longevity, this herbicide has potential to pose a particular risk to non-target plants. Off-site movement of even small concentrations of this herbicide could result in extensive damage to surrounding plants, and damage to non-target plants has potential to result in concentrations lower than those reportedly required to kill target invasive plants (Fletcher et al. 1996). ALS-inhibiting herbicides can quickly confer resistance to certain weed populations.		

Table C.2: Summary of Environmental Effects of Use of Clopyralid

Resource	Proposed Herbicide: Clopyralid	Target Vegetation	Target Areas
Soils **(BLM 2010a, p. 182-184)**	*Clopyralid* is unstable in soil and is considered moderately persistent based on its half-life. Leaching potential within the area would be low since the majority of the soils are loams and clay, although there are some coarser-textured pockets. Biodegradation would be rapid in soil and thus the potential for leaching or runoff is low. Clopyralid can persist in plants and therefore can be introduced into the soil when plants die.	Thistles knapweeds	Roadsides, ROWs, dry meadows, and rangelands
Water Quality, Riparian, and Wetlands (BLM 2010a, pp. 196 & 213)	*Clopyralid* does not appear to bind tightly to soil and will leach under favorable conditions. However, leaching and subsequent contamination of groundwater appear to be minimal (SERA 2004b), which is consistent with a short-term monitoring study of clopyralid in surface water after an aerial application (Rice et al. 1997a cited in SERA 2004b). Clopyralid is not known to be a common groundwater contaminant, and no major off-site movement has been documented. Clopyralid does not bind with suspended particles in water; biodegradation in aquatic sediments is the main pathway for dissipation. The average half-life of clopyralid in water has been measured at 9 and 22 days (Dow AgroSciences 1998). *Clopyralid* is relatively non-toxic to aquatic plants. Overall, effects to non-target wetland and riparian vegetation from normal application of clopyralid are likely to be limited to susceptible plant species in or very near the treatment area, and could be avoided by maintaining an adequate buffer between the treatment area and wetland and riparian areas (SERA 2004b). Clopyralid is not likely to affect aquatic plants via off-site drift or surface runoff pathways unless spilled. More effective noxious weed control would lead to better vegetation cover, which in the long term could assist with better water infiltration.		
Fish and Other Aquatic Resources **(BLM 2010a, p. 224)**	No effects would occur as no treatment will take place with this herbicide directly to water or areas where surface water is present within riparian areas or wetlands or where soils have rapid to very rapid permeability throughout the profile (such as loamy sand to sand) .		

Resource	Proposed Herbicide: Clopyralid	Target Vegetation	Target Areas
Wildlife and Special Status Wildlife Species **(BLM 2010a, p. 248)**	*Clopyralid* is useful in treating starthistle, thistles, and knapweeds, which are noted as damaging to wildlife habitat. Clopyralid is unlikely to pose risk to terrestrial mammals. All of the estimated mammalian acute exposures are below the acute NOEL; mammalian chronic exposures are below the chronic NOEL. It is relatively "harmless" to earthworms (Dow AgroSciences 1998) and 14 of 17 insect parasites and predatory mites (Hassan et al. 1994 cited in SERA 2004b). There was no mortality to bees at relatively high doses. Four of 18 direct spray scenarios resulted in exposure levels below the estimated NOEL. Large and small birds have some risk of ingestion of contaminated food but hazard quotients are below the level of concern for all exposure scenarios. No studies on amphibians/reptiles were found. Clopyralid is one of the herbicides with lower toxic risks (SERA 2004b).		
Grazing **(BLM 2010a, p. 262)**	*Clopyralid*: Large mammals face low acute risks from direct spray and from consumption of contaminated grass at the typical and maximum application rates. The maximum application rate also poses a low chronic risk to large mammals consuming on-site contaminated vegetation. All risks identified fall within the lowest risk category; adverse effects to livestock are unlikely with expected exposure scenarios. According to label directions, there are no restrictions on grazing or hay harvest following application at labeled rates, but livestock should not be transferred from treated grazing areas to susceptible broadleaf crop areas without first allowing for 7 days of grazing on untreated pasture. Clopyralid would allow for more effective weed control, which could increase the carrying capacity of the treated allotments.		
Special Status Plant Species and Upland Vegetation **(BLM 2010a, p. 145)**	*Clopyralid* is a selective herbicide that limits enzyme activity, and focuses on broadleaf weeds and grasses. Clopyralid is more selective and less persistent than picloram. Clopyralid is relatively non-toxic to aquatic plants; however, accidental spills have potential to result in temporary growth inhibition of aquatic plants. Many of our important, desirable tree and shrub species are tolerant of clopyralid. Clopyralid has little effect on grasses and members of the mustard family. Overall effects to non-target plants from normal application of clopyralid would likely be limited to susceptible plant species in or very near the treatment area. Removal of noxious weeds would improve the upland vegetation and allow for more habitats for special status plant species.		

Table C.3: Summary of Environmental Effects of Use of Imazapic

Resource	Proposed Herbicide: Imazapic	Target Vegetation	Target Areas
Soils (BLM 2010a, p. 182-184)	*Imazapic* is moderately persistent in soils and has not been found to move laterally with surface water. Most imazapic is lost through biodegradation. Sorption to soil increases with decreasing pH and increasing organic matter and clay content. The project area has relatively high pH and clay content.	Medusahead rye, Cheatgrass, African wiregrass (Ventenata)	Roadsides, Rangelands, ROWs
Water Quality, Riparian, and Wetlands (BLM 2010a, pp. 197 & 212, and 224)	Imazapic has low potential to leach into the groundwater. Imazapic would have very high water solubility and negligible to slight potential for transport in surface runoff, due to its adsorption potential with soil and organic matter. In addition, imazapic is rapidly degraded by sunlight in aqueous solution, with a half-life of one or two days. In aquatic systems, imazapic rapidly photodegrades with a half-life of 1 to 2 days (Tu et al. 2001). Aquatic dissipation half-lives have been reported from 30 days (water column) to 6.7 years in anaerobic sediments (SERA 2004c). Little is known about the occurrence, fate, or transport of imazapic in surface water or groundwater (Battaglin et al. 2000). However, according to the herbicide label for Plateau, in which imazapic is the active ingredient, it is believed to be a groundwater contaminant (BASF 2008). *Imazapic* risk to aquatic plants from accidental spills of imazapic is moderate to high at the maximum application rate and low to moderate at the typical application rate (there is no acute risk to aquatic plants in standing water at the typical application rate). Aquatic plants are generally not at risk from off-site drift of imazapic, except when applied aerially at the maximum application rate with a buffer of 100 feet or less. *Imazapic*, an ALS-inhibitor, is a selective, systemic herbicide. It would not be used for treatment of aquatic vegetation, but could be used in riparian areas. Due to these characteristics and the SOPs that would be employed, impacts to water resources impacts are not anticipated to be significant from proposed imazapic applications.		
Fish and Other Aquatic Resources (BLM 2010a, p. 225)	*Imazapic* would be moderately toxic to fish, but is not proposed for aquatic use. The average half-life for imazapic in a pond is 30 days, and this herbicide has little tendency to bioaccumulate in fish (Barker et al. 1998). According to the manufacturer's label, imazapic has a high runoff potential from soils for several months or more after application. Accidental direct spray and spill scenarios generally pose no risk to fish when imazapic is applied at either the typical or maximum application rate. Risk Assessments show fish are not at risk from off-site drift or surface runoff of imazapic. No treatment will take place directly to water, or to areas where surface water is present with this herbicide. Adjuvants will be used to minimize drift and help bind the herbicide to the site of application.		

Wildlife and Special Status Wildlife Species (BLM 2010a, p. 249)	*Imazapic* is an ALS-inhibitor that rapidly metabolizes and does not bioaccumulate. It is effective against medusahead, leafy spurge, and cheatgrass, which adversely affect wildlife habitat. Imazapic is not highly toxic to most terrestrial animals. Mammals are more susceptible during pregnancy and larger mammals are more susceptible than small mammals. Imazapic has low toxicity to honeybees. No adverse short-term exposure risks to birds were noted for imazapic, but some chronic growth reduction was noted. None of the risk categories for susceptible or non-susceptible shows any ratings that exceed the LOC. Imazapic is one of the lowest toxic risks to wildlife of herbicides evaluated in this EIS along with other ALS-Inhibitors (SERA 2004c). The use in rangeland and other wildlife habitat areas would benefit wildlife by controlling invasive plant species, especially annual grass species. And would promote the establishment and growth of native plant species that provide more suitable wildlife habitat and forage.		
Grazing (BLM 2010a, p. 261)	*Imazapic*: Risk quotients for terrestrial animals were all below the most conservative LOC of 0.1, indicating that direct spray or drift of imazapic would be unlikely to pose a risk to livestock (Table 3-14; ENSR 2005h). Based on label directions, there are no restrictions on livestock use of treated areas. Imazapic will typically be applied in the fall as a pre-emergent, minimizing potential ingestion and therefore effects to the livestock that use the allotment.		
Special Status Plant Species and Upland Vegetation (BLM 2010a, p. 145)	*Imazapic*, an ALS-Inhibitor and sulfonylurea, works by inhibiting the activity of an enzyme called acetolactate synthase (ALS), which is necessary for plant growth. Imazapic would be applied at a very low dose (6-8 ounces per acre). Because of the high potency and longevity, this herbicide can pose a particular risk to non-target plants. Off-site movement of even small concentration of this herbicide can result in extensive damage to surrounding plants. Since imazapic would be applied early fall most of the native vegetation would be dormant. The key grass species found in the project area are Blue-bunch wheatgrass (*Pseudoroegneria spicata)*, Thurbers needlegrass *(Achnatherum thurberianum)*, squirreltail *(Elymus elymodies)*, Sandberg's bluegrass *(Poa sandbergii)*, Idaho fescue *(Festuca idahoensis)*, crested wheatgrass (*Agropyron cristatum*), basin wildrye *(Elymus cinereus)*, and Inland saltgrass *(Distichlis stricta)*. These species would be tolerant to imazapic up to a rate of 12 ounces per acre (which is much higher than the rate we would be applying in the project area).		