Programmatic Emergency Stabilization and Rehabilitation Plan and Environmental Assessment

October 2013

Twin Falls District

Bureau of Land Management

Department of Interior

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INTRODUCTION

A Programmatic Emergency Stabilization and Rehabilitation Plan (PESRP) will expedite the timely development of site-specific Emergency Stabilization and Rehabilitation (ESR) plans, actions, and procedures. The PESRP includes resource value information, post-fire recovery treatment descriptions, and documentation of the potential impacts from implementing these treatments.

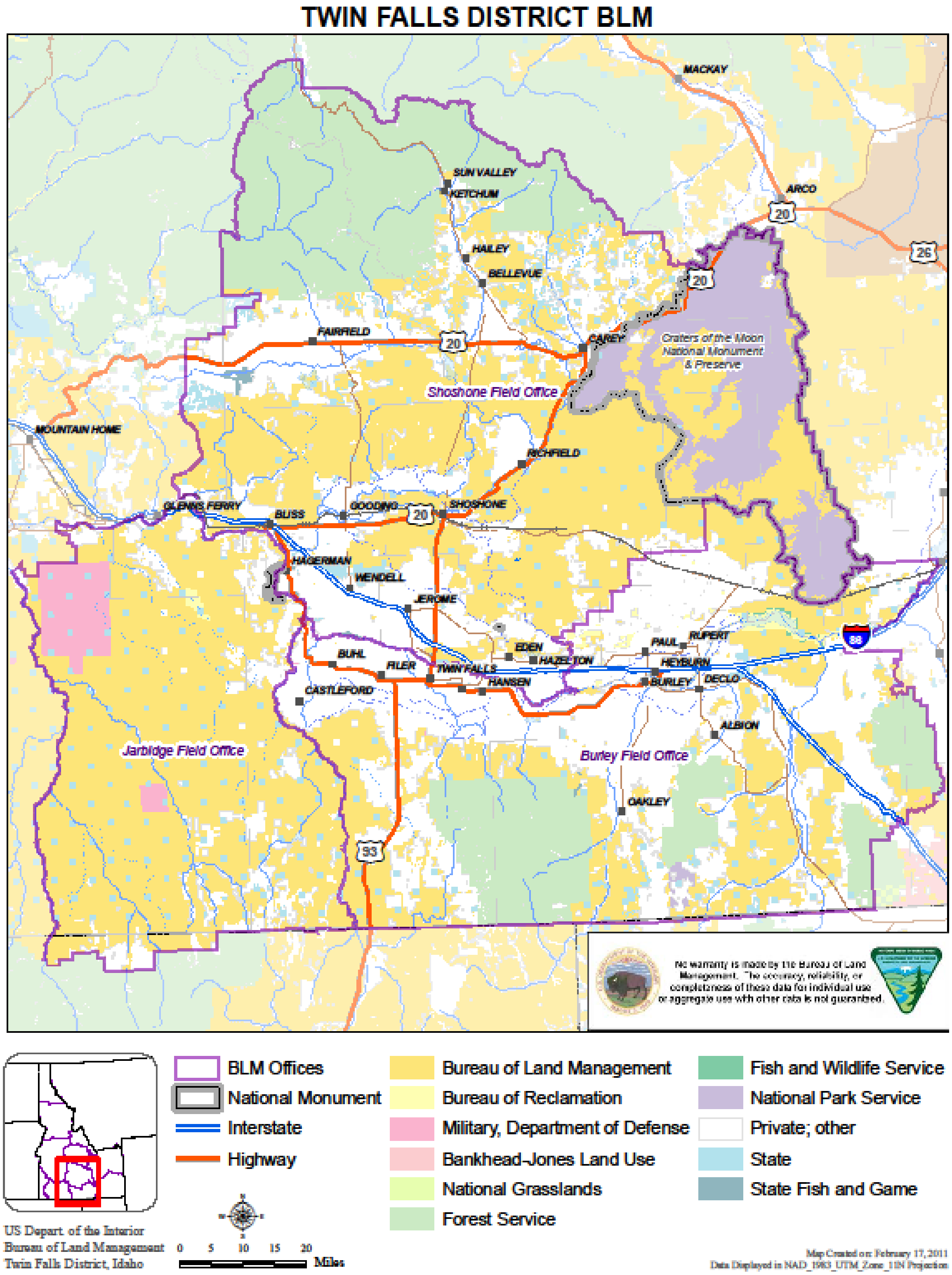
The Twin Falls District currently operates under two Normal Fire Rehabilitation Plans. Normal Fire Rehabilitation Plan - Environmental Assessment #ID-077-2004-008 guides ESR activities in the Shoshone and Burley Field Offices. ESR actions in the Jarbidge Field Office are guided by the Boise District Normal Fire Rehabilitation Plan - Environmental Assessment #ID-090-2004-050. In 2005, the Twin Falls District was created and the Jarbidge Field Office was moved administratively from the Boise District to the Twin Falls District. This PESRP includes recent management direction (Fire, Fuels, and Related Vegetation Management Direction Plan Amendment, 2008 and the Bureau of Land Management (BLM) Vegetation Treatments Using Herbicides Final Programmatic EIS, 2007) and provides consistent guidance for post-fire recovery actions on public lands within the Twin Falls District. (See Figure 1: Project Area Map.)

Purpose and Need

A PESRP is a programmatic ESR plan, with an associated Environmental Assessment or Environmental Impact Statement, which is developed at the landscape level prior to wildfire occurrence. The PERSP contains a description of ESR treatments that would be implemented under normal conditions in the event of a wildfire and documents the potential treatment impacts. Post-fire recovery treatments are typically needed to prevent immediate degradation to natural and cultural resources, including traditional tribal resources and to restore areas that cannot recover naturally from wildfire damage. ESR treatments stabilize soils, repair or construct physical improvements, improve lands damaged by wildfire, and restore healthy ecosystems. A PESRP promotes timely and cost-effective implementation of post-fire recovery treatments within time frames that are consistent with the urgent recovery of important resources. A programmatic approach reduces the repetitive preparation of individual EAs, saving both time and money.

The PESRP contains information about those areas where wildfires are most likely to occur, where and what type of ESR treatments could be used, and a National Environmental Policy Act (NEPA) document disclosing the potential impacts of the proposed ESR treatments. These treatments meet the intent of the Federal Land Policy and Management Act of 1976 to protect the quality of resource values (i.e. scientific, historical, scenic, ecological, environmental, air, water, and archeological), preserve certain public lands (e.g. National Landscape Conservation System units) in their natural condition, protect Areas of Critical Environmental Concern, provide habitat for fish and wildlife, food for domestic animals, and provide for recreation opportunities and other human uses.

Figure 1: Project Area Map



ESR treatments would also further the implementation of Idaho BLM's Rangeland Health Standards and Guidelines by preventing resource damage and restoring desirable vegetation to burned areas.

Post-Fire Recovery Objectives, Priorities, and Process

Post-fire recovery objectives are defined for both emergency stabilization and rehabilitation actions. The objective of emergency stabilization is: "to determine the need for and to prescribe and implement emergency treatments to minimize threats to life or property or to stabilize and prevent unacceptable degradation to natural and cultural resources resulting from the effect of a fire." (620 DM 3.4A) Protection priorities of emergency stabilization are: 1) human life and safety, 2) property and unique biological resources (designated Critical Habitat for Federal and State listed, proposed or candidate threatened and endangered species) and significant heritage sites (620 DM 3.7A).

Rehabilitation objectives are: 1) to evaluate actual and potential long-term post-fire impacts to critical cultural and natural resources and identify those areas unlikely to recover naturally from severe wildland fire damage; 2) to develop and implement cost-effective plans to emulate historical or pre-fire ecosystem structure, function, diversity, and dynamics consistent with approved land management plans, or if this is infeasible, then to restore or establish a healthy, stable ecosystem in which native species are well represented, and 3) to repair or replace minor facilities damaged by wildland fire (620 DM 3.4B). The protection priorities of rehabilitation are: 1) to repair or improve lands damaged directly by a wildland fire; and 2) to rehabilitate or establish healthy, stable ecosystems in the burned area (620 DM 3.8 A).

Developing post-fire NEPA compliant site-specific ESR plans follows a standard process. After a wildfire, an interdisciplinary team, comprising (at a minimum) a team leader (usually a fire ecologist), rangeland management specialist, wildlife biologist, and operations specialist is formed. The interdisciplinary team field checks the burned area to ascertain if ESR actions are needed. If action is needed, the team develops a site-specific ESR plan. The ESR plan includes a description of the fire, resources affected by the fire, proposed treatments, ESR objectives, applicable project stipulations, and financial requirements. Site-specific ESR plans respond to post-fire recovery issues as they relate to resource problems caused by the wildfire and address both the immediate effects as well as effects predicted to occur as a result of the wildfire. Other specialties that may be added to the interdisciplinary team include a Geographic Information System (GIS) specialist, archaeologist, outdoor recreation planner, and botanist. The field offices' interdisciplinary teams will coordinate their planning efforts with their appropriate counterparts in adjoining BLM Districts when a wildfire crosses District administrative boundaries. A coordinated effort will better ensure ESR program objectives are efficiently and timely achieved. Each District is responsible for completing their individual ESR plans using their PERSP for guidance, submitting ESR plans for funding, and plan implementation. However, one ESR plan may be completed for multiple Districts if appropriate.

The site-specific ESR plan is completed within a 21-day period following containment of the fire. Once the ESR plan is developed, a Determination of NEPA Adequacy (DNA) is completed to decide if the post-fire recovery actions described in the ESR plan comply with the PESRP. If aspects of the proposed post-fire recovery actions are not adequately analyzed in the PESRP, the BLM will complete a separate NEPA analysis for those actions. A signed Decision Record implements the ESR plan after the DNA and any necessary additional NEPA is completed.

The interdisciplinary team remains active for 3 years following the wildfire. During the first year the team establishes monitoring sites to survey treatment effectiveness. This monitoring will guide the BLM's decision regarding the re-introduction of land uses such as livestock grazing and recreation. Other monitoring may also be done by the field office staff to support post-fire land and resource use management decisions. Data collected are included in an ESR monitoring report. Data collection and the annual monitoring report are completed each year of the 3-year period. The team would use the monitoring data to make recommendations regarding ESR treatments to the manager. Such recommendations may include future treatment proposals and re-authorizing land uses. ESR treatments are normally funded for 3 years. Once ESR funding is no longer available, the monitoring and maintenance of ESR treatments will be transitioned to the appropriate field office resource staff and budget (BLM Instruction Memorandum #2010-195).

Land Use Plan Conformance

The following land use plans govern management of public land in the Twin Falls District:

- Magic Management Framework Plan, 1975
- Bennett Hills/Timmerman Hills Management Framework Plan, 1980
- Sun Valley Management Framework Plan, 1981
- Sun Valley Management Framework Plan Amendment, 1991
- Twin Falls Management Framework Plan, 1982
- Twin Falls Management Framework Plan Amendment, 1987
- Twin Falls Management Framework Plan Amendment, 1989
- Cassia Resource Management Plan, 1985
- Cassia Resource Management Plan Amendment, 1987
- Monument Resource Management Plan, 1985
- Jarbidge Resource Management Plan, 1987 (updated 1993)
- Jarbidge Resource Management Plan Amendment, 1989
- Amendments to Shoshone Field Office Land Use Plans, 2003
- Craters of the Moon National Monument and Preserve Management Plan, 2006
- Fire, Fuels, and Related Vegetation Management Direction Plan Amendment, 2008 (Only amended land use plans in the Burley and Shoshone Field Offices.).

ESR treatments and actions are not specifically described in the land use plans; however, the proposed ESR activities are consistent with the intent of land use plan goals, objectives, and decisions. For example, a common objective to all land use plans is the reduction of accelerated erosion, particularly in susceptible areas having steep slopes, erodible soils, and recurrent high winds. All of the land use plans address the protection and enhancement of water quality (reduction of sediment) and special status plant and animal species. The land use plans do not prohibit any of the proposed activities described in the proposed action and alternatives in this document. Therefore, the ESR actions identified in the PESRP are consistent with the applicable land use plans and amendments.

The Craters of the Moon National Monument and Preserve Management Plan (referred to as Craters Management Plan) and the Fire, Fuels, and Related Vegetation Management Direction Plan identified specific objectives and management guidance for vegetation treatments and ESR actions. These objectives and guidance are used to develop treatments and design features described in the proposed action.

The 2008 Fire, Fuels, and Related Vegetation Management Direction Plan amended all of the land use plans in the Twin Falls District except for the 1987 Jarbidge Resource Management Plan and the Craters Management Plan. The amendment serves as the guiding management strategy for fire, fuels, and related vegetation treatments in the Shoshone and Burley Field Offices by providing a framework for proactive decision making including decisions regarding implementation and site-specific project activities.

Relationship to Statutes, Regulations, or Other Plans

Section 7 of the Endangered Species Act (ESA) of 1973 outlines the procedures for Federal agencies to conserve Federally-listed species and their designated habitats. Section 7(a)(2) of the Act states that each Federal agency shall, in consultation with Secretary, insure that any action they authorize, fund, carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of their habitats. To comply with this requirement, the Threatened and Endangered species list was reviewed and it was concluded Threatened and Endangered species occur in the project area. The BLM further completed a Biological Assessment and determined that the listed Bull Trout or its designated critical habitat, Bliss Rapids snail, Snake River physa, Banbury Springs lanx and Bruneau hot springsnail may be affected but not likely to be adversely affected. Furthermore, the Biological Assessment determined that the proposed slickspot peppergrass or its proposed critical habitat also may be affected but not likely to be adversely affected. On May 10, 2013 the U.S. Fish and Wildlife Service (FWS) provided a memorandum concurring with the BLM findings. Therefore, the BLM is in compliance with the ESA.

All laws and regulations will be followed when completing ESR treatments. ESR actions will also conform to the guidance and direction given in the following BLM handbooks and guidance, Department of Interior manuals, agreements, activity plans, and associated implementation decisions:

- Departmental Manual 620 DM 3 Burned Area Emergency Stabilization and Rehabilitation (2004, Department of the Interior)
- BLM Burned Area Emergency Stabilization and Rehabilitation Handbook 1742-1, 2007
- South Central Idaho Fire Planning Unit, Fire Management Plan, 2005
- BLM Vegetation Treatments Using Herbicides Final Programmatic Environmental Impact Statement, 2007
- Shoshone District-wide Weed Treatment Environmental Assessment, 1992

- Burley District Weed Treatment Environmental Assessment, 1989
- Lower Snake River (Boise) District Noxious Weed Control Program Environmental Assessment, 2007 (Applies only to the Jarbidge Field Office)
- The Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management, 1997
- Executive Order 13112, Invasive Species February 3, 1999
- Boise District Oregon Trail Management Plan, 1984
- U.S. Fish and Wildlife Service Biological Opinion for Existing Land Use Plans in the Boise and Twin Falls Districts Related to Slickspot Peppergrass Conservation, 2009
- Conservation Agreement between BLM and FWS for Slickspot Peppergrass, 2009.
- A Report on National Sage-grouse Conservation Measures, 2011.

The PESRP tiers to the Record of Decision for the *Final Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement* (PEIS) (U.S. Department of the Interior [USDI] BLM 2007a) that was released to the public on June 29, 2007. The Record of Decision was signed September 29, 2007. The PEIS was developed to guide the BLM's actions through its proposed treatment of vegetation, specifically noxious weeds and invasive plants, in 17 western states in the United States using 18 approved herbicide active ingredients.

Scoping and Public Involvement and Issues

A scoping letter, dated March 21, 2007 was sent to interested publics, other federal agencies, and state and local governments. The letter requested input into the development of a PESRP. Comments were received from three environmental groups, one grazing association, one private citizen, Idaho Department of Agriculture, and the Owyhee County Commissioners.

The EA was also made available to the public for review and comment on August 24, 2011. Comments were received from one environmental group, one private citizen, and the Idaho Department of Fish and Game (IDFG).

Several comments were not brought forward into this analysis because they were outside the scope of developing a PESRP. Some of these comments were directed at current policies or regulations. Others were associated with past ESR treatments and future treatments outside of ESR projects.

Issues relevant to the PESRP were brought forward into this analysis and are summarized below:

> ***Comment:*** One comment stated that an Environmental Impact Statement must be prepared.
>
> ***Response:*** The type of NEPA document used for an environmental analysis depends on issues identified through public scoping and whether or not significant impacts are identified through the analysis of the proposed action and alternatives. One purpose of an EA is to set out sufficient evidence and analysis for determining whether to prepare an

Environmental Impact Statement (p. 25, 36a. Environmental Assessments, CEQ 40 Most Asked Questions). The Finding of No Significance Impact (FONSI) has been prepared. The FONSI considers the 10 significance factors listed in CEQ regulations, and concludes that there are no significant impacts that justify an EIS. Further, the PESRP contains direction and design features consistent with the applicable resource objectives in land use plans and current consultation to stabilize and rehabilitate burned areas.

Comment: As livestock grazing is the major resource use within the district, post-fire livestock grazing and range improvement were the subjects of several comments. Many of the comments suggested a longer rest period (>2 growing seasons) from livestock grazing is needed to allow seeded species to establish. One comment suggested a shorter period of time is needed. Several comments recommended monitoring criteria which could be used to determine when livestock grazing can resume on burned areas. Other comments addressed the need for quantitative data for determining when livestock grazing could resume and in determining if seeding efforts had failed. One commenter was concerned with the spatial extent of a closure and post-grazing management.

Response: Current BLM policy does not identify a mandatory time frame for restricting or prohibiting livestock grazing in a burned area. Rather, BLM policy, as defined in the BLM Handbook H-1742-1 provides:

> "Livestock are to be excluded from burned areas until monitoring results, documented in writing, show emergency stabilization and rehabilitation objectives have been met. Objectives must be clearly defined in the Emergency Stabilization and Burned Area Rehabilitation Plans. Before livestock grazing can resume, monitoring must show that objectives have been met. In the case of treatment failure, other factors may need to be considered."

The PESRP provides guidance regarding the development of parameters to be used to define ESR objectives for natural recovery, seeding establishment, and grazing resumption. The spatial and temporal extent of a closure depends on the area burned and associated resource issues. Post-fire livestock management would meet land use plan objectives, rangeland health standards, and activity plan objectives. Any long-term adjustments needed to meet these objectives and standards would be addressed by the appropriate field office manager in consultation with his or her resource management staff.

The PESRP identifies general objectives and monitoring techniques that will be used to develop site-specific objectives and monitoring strategies in ESR plans. Site-specific ESR objectives will address the sustainability and health of vegetation and soil resources. Both quantitative and qualitative data collection is encouraged for measuring site-specific resource objectives that will be used to determine when livestock grazing can resume in a burned area.

Comment: One comment discouraged the use of ESR funds to construct post-fire livestock facilities such as temporary fences, and recommended using existing fences to restrict livestock from burned or treated lands. It was also commented that if temporary fences are built, they should be electric fences and dates should be identified for removing them. Another comment speculated that BLM's reason for fencing is to make large amounts of fence materials available as "surplus" for ranchers later benefit.

Response: BLM policy (BLM Handbook H-1742-1) allows for the use of ESR funds to implement temporary livestock closures when needed to protect recovering vegetation or new seedings. Specifically, the handbook states:

> "Protective fences may be constructed using emergency stabilization funds to protect burned areas (from impacts by wildlife, domestic livestock, wild horses/burros, or humans and for the health and safety of agency personnel and the public) during the recovery period for burned vegetation or the establishment period for new seedings."

Types of facilities that may be constructed include fences, cattleguards, and gates. Existing fences are used in areas where they meet the purpose and need of a protection fence.

Electric fences are an option, but are not normally used due to the intense maintenance needed to keep them functional on rangelands. Fences are removed once ESR objectives have been met and a decision has been made to allow excluded activities (e.g. livestock grazing, recreation) to resume. An exception to removing a protective fence is when a seeding or recovered area requires separate management to maintain the ESR investment. A NEPA analysis and decision record would be completed prior to keeping a protective fence in place for long-term management purposes.

Recovered fence materials are owned by the BLM and are used for new fencing projects which have been analyzed in a NEPA document and a decision issued to implement the project. Materials are also used to complete routine maintenance of existing BLM fences.

Comment: A comment recommended using "wildlife friendly" fence designs when constructing post-fire fences. For example, one consideration is to increase the height of the bottom wire from 16" to 18" in sheep or cattle pastures under normal conditions. Also, another comment encourages BLM to continue with guidelines identified in BLM Information Memorandum No. 2010-022, Managing Structures for the Safety of Sage-grouse, Sharp-tailed grouse, and Lesser Prairie-chicken.

Response: Construction and repair of fences after a wildfire would conform to BLM Manual Handbook H-1741-1 and recent BLM policies regarding sage-grouse and fence construction. The handbook does not restrict BLM from designing fences to allow for wildlife movement. Therefore, wire height and spacing can be adjusted to meet site specific needs of wildlife while still meeting the purpose for the fence. Information Memorandum No. 2010-022 specifically addresses the need to carefully evaluate the risk for sage-grouse collision and to site fences in a manner consistent with conservation measures in the Conservation Plan for the Greater Sage-Grouse in Idaho (IDFG, 2006).

Information Memorandum No. 2011-043 provides interim conservation measures for sage-grouse and its habitat until BLM's National Greater Sage-grouse Land Use Planning Strategy is completed (2014). This IM also addresses the potential for sage-grouse collisions and fence placement. Design features are included in the PERSP which address the risk of sage-grouse colliding with fences.

Comment: A comment suggested the construction of permanent exclosures for every square mile treated in an ESR plan.

Response: Exclosures are a useful tool for documenting long term establishment success and are constructed with ESR funds depending on size of the treated areas, resource values, and funding availability.

Comment: Several comments recommend the use of native plants when seeding burned areas, one comment specifically recommended seeding smaller stature native plants. A couple of comments advised against using crested wheatgrass in seed mixes. Another asserted that forage (prostrate) kochia (*Bassia prostrata*) should not be used under any circumstances.

Response: The use of native plants in ESR seed mixtures is preferred to non-native plants. However, a mixture of native and non-native species is preferable to using only non-natives if the desired natives are not available, and if the use of non-natives is consistent with approved land use plans (BLM Handbook H-1742-1). Other considerations prior to using non-native plants in a seed mix are whether: 1) the natural biological diversity of the treatment area will not be diminished; 2) exotic and naturalized species can be confined within the proposed management area; 3) analysis of ecological site inventory information indicates that a site will not support reestablishment of a species that historically was part of the natural environment; and/or 4) resource management objectives cannot be met with native species (BLM Manual 1745).

In recent years, smaller statured native plants have been included in seed mixtures to provide structural and species diversity. Such plants include Sandberg bluegrass (*Poa secunda*), bottlebrush squirreltail (*Elymus elymoides*), and western yarrow (*Achillea millefolium*).

Removal of existing, good condition seedings is contrary to the stabilization goal of the ESR program. However, areas with seedings in poor condition may be treated to meet ESR goals of stabilizing soils, controlling invasive and noxious weeds, and diversifying vegetation to meet resource objectives and rangeland health.

Prostrate kochia is not typically included in ESR seed mixtures. Prostrate kochia is infrequently used, primarily to establish greenstrips to protect other treatments (e.g. sagebrush plantings or seedings) or adjacent, unburned habitats. As such, it is typically not used in a mix with other species, as the goal is to reduce the potential for wildfire spreading into sensitive areas and not to promote plan community structural or biological diversity. However, the PESRP does not eliminate the use of prostrate kochia if needed to stabilize a site and control the movement or infestation of invasive or noxious weeds. Design features are included in the PESRP that address the use of potentially invasive non-native plants in sensitive plants habitats and slickspot peppergrass habitat.

Comment: Not to consider an alternative to only use native seed in seed mixtures is a "stretch" and that such an alternative could have said to use only native seed to the limits of its availability was submitted by one commenter.

Response: An alternative to use only native seed was considered, but was not studied in detail because the exclusive use of native seed will not always achieve ESR goals and, depending on supply and demand, native seed is not always available in sufficient Quantities. The proposed action emphasizes the use of native plant species. BLM Handbook H-1742-1 states "a mixture of native and non-native species is preferable to using only non-natives if the desired natives are not available and if the use of non-natives is consistent with approved land use plans."

Comment: A comment was made that sagebrush must be seeded on all burned lands. Another comment did not support planting sagebrush in seeded areas.

Response: Sagebrush is a component of most ESR seedings. However, there are times when it is not appropriate to plant sagebrush (e.g. fire intensity was low and sufficient sagebrush plants or pockets of plants are left in the burned area to naturally reproduce, not all range sites support sagebrush). Considerations of feasibility and the likelihood of success of planting sagebrush, as well as economic realities, must be considered at the site-specific analysis level.

Comment: A few comments addressed the need to reseed if initial attempts to establish perennial vegetation fail.

Response: BLM Handbook H-1742 allows the use of ESR funds to retreat a failed ESR treatment and reseeding an area is addressed in this plan. The handbook specifically says "Emergency stabilization funding may be used for up to 3 years to repair or replace structures or treatment … where failure to do would imperil watershed functionality or result in serious loss of downstream values…." It also states "When a seeding or planting is determined to be a failure through documented monitoring, funding from the Burned Area Rehabilitation account may be requested to re-treat the area."

Comment: One comment referred to a previous appeal to a decision to implement the Long Butte ESR plan in the Jarbidge Field Office. (The decision was upheld.) However, the commenter did not specifically identify what issues in the appeal were applicable to the PESRP. Therefore, BLM staff identified issues in the appeal that they believed to be pertinent to the PESRP. Issues not previously addressed in the comments and responses, above, include:

a) Failure to learn from past fire and ESR outcomes and failure to use best available science to address ecological problems.

Response: Monitoring data, professional experience, and current literature (including Restoring Western Ranges and Wildlands, General Technical Report RMRS-GRT-136, Rocky Mountain Research Station, USDA Forest Service, 2004) were considered when determining the suite of treatments and materials to be included in the proposed action and analyzed in the PESRP EA. In addition, both the ESR Handbook and the proposed action direct consideration of local history, ecological condition, and management objectives in applying appropriate post-fire treatments.

b) Failure to address the needs of special status species, including sage-grouse, slickspot peppergrass, and pygmy rabbit in treatment design and application.

Response: The PESRP contains design features for special status species based on current consultations and conservation agreements, land use plans, and scientific literature. Incorporation of these design features into applicable ESR project plans is the basis for Section 7 consultation on the PESRP and individual projects. The EA discloses potential impacts of proposed ESR activities, including design features, on special status species. This analysis has been incorporated into the Biological Assessment for the PESRP.

c) Several comments in the appeal addressed the issues of climate change and desertification relative to seeding establishment and grazing resumption.

Response: Secretarial Order 3289 (September 14, 2009) acknowledges the potential impacts of climate change and directs each Bureau and Department to consider and analyze potential climate change impacts when undertaking long range planning exercises, setting priorities for scientific research and investigations, developing multi-year management plans, and making major decisions regarding potential use of resources under the Department's purview. Because climate change is long-term and global in scale, it is difficult to quantify this change on a local level. The PESRP indirectly addresses climate change through direction to consider local conditions for project planning.

d) Several comments in the appeal addressed herbicides and claimed that BLM does not adequately address non-target vegetation or special status species.

Response: Herbicide use and associated restrictions are addressed in the PESRP. Design features contained in the PESRP specifically address herbicide use as it relates to sensitive resources.

ALTERNATIVES

The following information was considered and used in the development of the no action and proposed action alternatives:

- An estimated 2,115,603 acres have burned during the years 2000 through 2012 in the Twin Falls District. Although the number of acres burned each year varied, the total acres burned over a 13-year time span averages 162,739 acres per year.
- ESR treatments were completed on 1,568,197 acres from the year 2000 to 2012 in the Twin Falls District.
- The Twin Falls District has the capability to treat a finite number of acres annually. In 2007, a record high of 527,119 acres were treated in the Twin Falls District. However, 2007 was an extreme fire year and completing ESR treatments on this number of acres cannot be maintained annually.
- Between 2000 and 2012 the Twin Falls District completed 140 site-specific ESR plans.
- The Twin Falls District intends to use seed mixes containing native plant species. However, seed availability can decline between ESR plan approval and when the seed is purchased. The availability of plant seed depends largely on seed demand and competition for seed amongst other government agencies, private entities, and within BLM. When a particular plant seed becomes unavailable or its availability is reduced, the Twin Falls District adjusts the seed mix by replacing the seed with a similar species or reducing the amount of a particular seed used in the mix.
- A substantial positive response from burned perennial vegetation may influence the need to complete ESR seeding treatments.
- There are physical limitations to completing ESR treatments. For example, treatments are not typically done in or near lava flows or in steep canyons (e.g. Bruneau Canyon) as many of these areas are rocky and have shallow soils. If annual grasses become established in these areas, these sites will remain in this state until new technology becomes available to treat them. These sites would likely be treated for noxious weed control.

No Action Alternative

No ESR treatments or actions would be implemented following a wildfire. A few exceptions include OHV and livestock closures, removal of wildhorses if needed for resource protection, temporary fences implementing closures, and some noxious weed control. These actions would be implemented under other BLM programs with the appropriate NEPA documentation completed. All areas burned in a wildfire would be allowed to recover naturally. Although this alternative is inconsistent with BLM policy and does not fully meet the purpose and need, it will be analyzed to compare environmental effects, and to demonstrate the consequences of not meeting the need for the action.

Proposed Action

The proposed action is a district-wide PESRP that provides for the timely and cost efficient implementation of post-fire treatments in the Twin Falls District. The proposed action includes post-fire treatments and design features that minimize or eliminate potential effects caused by wildfire to a variety of resources. ESR funds are the primary source for funding post-fire treatments. However, funding from other sources (e.g. Healthy Rangelands, Hazardous Fuels Reduction) may be used to supplement ESR funds. Multiple funds would be used when ESR funds are insufficient to pay for all post-fire treatments during a fire year and when there is a need to complete treatments past the 3-year timeframe for spending ESR funds (e.g. a failed treatment that needs to be redone).

Treatments are defined as actions that occur on the land to meet ESR/resource objectives. Some burned areas may not require treatment or closures (e.g. livestock, recreation, OHV vehicles) because of size (small acreages), topography, and low burn severity and therefore are not within the scope of the PESRP. However, if temporary closures from livestock grazing and recreational use are needed to promote natural recovery, the burned area would fall under the guidance of the PESRP.

The proposed action describes treatments that have been historically implemented through normal fire rehabilitation programmatic plans in the three field offices. The proposed action also provides details on when and why a specific treatment would be used. Design features that apply to sensitive resources are included and are used to minimize potential effects on sensitive resources. Broad resource objectives and suggested monitoring protocols are also described. Treatments are discussed independently of each other, but they could be combined and implemented together depending on treatment design and/or site-specific resource conditions. For a more in depth discussion of the treatments and equipment used in ESR actions under the proposed action see Restoring Western Ranges and Wildlands, General Technical Report RMRS-GTR-136, Rocky Mountain Research Station (USDA Forest Service, 2004).

Post-Fire Recovery Treatments

Seeding

The treatments outlined below describe seedbed preparation (includes treatment of invasive plants), seed application, seed cover methods, and seed selection that can be used in post-fire recovery.

Seedbed Preparation

Some burned sites may need seedbed preparation prior to seeding in order to reduce competition from invasive plants such as cheatgrass (*Bromus tectorum*), medusahead (*Taeniatherum caput-medusae*), and bulbous bluegrass (*Poa bulbosa*) and also condition the soil to increase the germination and survival rates of planted species. Treatment methods that may be used include herbicide applications to treat invasive plants and mechanical treatments that condition the soil.

Large scale (typically >100 acres) herbicide applications would be used to control invasive plants infestations prior to seeding, specifically where these plants are expected to increase after a wildfire, lowering the probability of seeding success or when seeding treatments are delayed in areas where these plants are dominant. Events that may cause a delay of seeding treatments or in some cases, result in no treatment, include:

- Late season fire
- Weather constraints
- Large fire year
- Lack of seed or funding
- A disturbed site that needs additional seedbed preparation for improved seeding success.

The BLM uses only U.S. Environmental Protection Agency-registered herbicides that have been properly evaluated under NEPA, and carefully follows label directions and additional BLM requirements (USDI BLM, 2007b). Herbicides analyzed under NEPA and approved for use on public lands in the Final Vegetation Treatment Using Herbicides Programmatic Environmental Impact Statement (USDI BLM, 2007b) would be considered for use in treating invasive plants.

Herbicides not approved in the Final Vegetation Treatment Using Herbicides Programmatic Environmental Impact Statement may be considered for use if: 1) they are registered by the U.S. Environmental Protection Agency under the Federal Insecticide, Fungicide and Rodenticide Act for use on one or more land types managed by the BLM; 2) the BLM determines that the benefits of use on public lands outweigh the risks to human health and the environment; 3) they meet evaluation criteria to ensure that the decision to use the active ingredient is supported by scientific evaluation and NEPA documentation. Evaluation criteria are outlined in Appendix A of the 2007 Final Vegetation Treatment Using Herbicides Programmatic Environmental Impact Statement Record of Decision. If Idaho law prohibits the use of a particular herbicide the herbicide would not be used on public lands in the Twin Falls District.

Herbicides such as Glyphosate would be used on large scale treatments to control cheatgrass and medusahead. All product labels and environmental restrictions will be followed. Use restrictions on the herbicide label will be applied in treatment areas supporting domestic livestock and wild horses.

Aerial herbicide applications would be applied to invasive plants while they are growing and prior to seed head emergence. Future applications may be done if further germination and growth of the targeted vegetation occurs. Vegetation monitoring of the treatment area would determine if multiple applications are needed.

Mechanical seedbed preparation and seeding often occur simultaneously. Seedbed preparation and seeding would usually occur in the fall. Care would be taken not to work soils where the risk of compaction and hardening of the soil surface exists because of excessive soil moisture. Depending on site-specific conditions such as soil types and soil moisture, mechanical seed bed preparation would typically be done using a harrow, masticator, or by chaining.

A harrow (pulled by a tractor) would be used to break up the soil or remove plants from the soil surface. A harrow (e.g. spiked tooth harrow, field harrow) has numerous teeth which drag along the soil surface to disturb the upper 1 to 2 inches. Harrows can be used on most soil types and are easily adjusted to suit planting conditions.

A masticator may be used to grind large woody skeletons into mulch on areas where such trees would inhibit drill seeding. A masticator is a toothed drum implement which can be attached to a variety of machines (i.e. excavators, front end loaders, or trackhoes). The masticator grinds the trees to the ground and disperses the mulch in all directions.

Chaining may be used to turn the soil in rocky conditions, uproot invasive plants and noxious weeds, or break-up remnant large woody skeletons. It scarifies the soil creating numerous microsites (pits and small depressions) where seed is planted at varying depths. Moisture is also collected in the depressions, aiding seedling establishment. Chaining can be used on even or irregular terrain during the fall or spring. An anchor chain (40-120 pounds/link) is pulled behind two crawler tractors in a “U” or “J” pattern. The chain may be of various sizes (generally 100-350 feet long) and may weigh up to 32,000 pounds. The width of each swath varies from 50-120 feet.

Seed Applications

A variety of planting methods may be used when seeding burned areas. However, rangeland drills are the primary method used by BLM to plant seed and have been since the early 1950s. Other planting methods described in this section are not typically used in the Twin Falls District, but the option to use them is available. To be successful, seeding must be done during the appropriate season. Fall seedings generally provide more favorable stands of most seeded herbaceous plant species, particularly under arid conditions. Many native shrub species do better when seeded in the winter. Shrub seedlings and tree saplings are typically planted in the late fall and early spring to take advantage of spring precipitation.

Rangeland drill seeding can be used in a broad range of applications. The furrows created by drill seeding vary considerably depending on soil texture, soil moisture, and existing grass sod but usually average about 1-2 inches deep with rows spaced at approximately 6-12 inch intervals. Seeds are dropped into these furrows from a seed dispersal tube placed directly above each furrow. Rangeland drills can be equipped with depth bands to control depth of furrow openings. This seeding method is typically used in open, relatively flat topography, which is fairly absent of larger rocks (8-10 inches in diameter).

The no-till drill is used to minimize soil surface disturbance, effectively planting small seed at appropriate depth levels, and optimizing seed to soil contact. No-till drills are well adapted to planting seed in burned areas with few rocks and can be used to plant both small and large acreage. These drills are equipped with up to three boxes from which to disperse seeds allowing for a variety of rangeland plant species to be seeded. When practical, the no-till drill or other low impact drills would be used in areas where sizable amounts of remnant biological crusts remain after a wildfire. No-till drills are primarily used in non-rocky soils, are usually unsuccessful in untreated weed infested areas, and are not readily available.

Ground broadcast seeding is done using a motor vehicle, all-terrain vehicle, or hand mounted "whirly-bird" seeder. These methods would generally be utilized in areas with small acreages (<10 acres). A tractor mounted broadcast seeder would generally be used on larger acreages (>10 acres) that are impractical for aerial seeding application. When broadcasting, seeds are dispersed by centrifugal force out of the seeder into small paths 10-20 feet wide. Broadcast seeders can be used alone or in conjunction with seedbed preparation. Surface broadcasting of this nature would be used in areas too rocky for drill seeding and on fire lines (e.g. dozer lines, hand lines).

Aerial broadcast seeding includes the use of a fixed winged aircraft or helicopter and is primarily used to distribute sagebrush seed. Aerial broadcast seeding is done on large areas where ground machines cannot operate efficiently (e.g. rugged topography, steep slopes), in wilderness study areas with management restrictions, in Wilderness, or to plant seed types that do not tolerate soil covering. It can also be accomplished on wet soils and applied at a quicker rate than can be done using ground equipment.

A land imprint seeder consists of a large drum with numerous V-shaped protrusions arranged around the circumference. The drum is filled with water to provide weight and is then rolled on an axle over the ground to "imprint" small (approximately 4 inches x 18 inches) impressions in the soil surface. Seed is dispersed in front of the imprinter and pressed into the soil by the drum. The impressions trap additional moisture. This seeding method is best used in arid to semi-arid environments and can be used on most soils. It is also well suited for seeding on loose, unstable soils and barren areas following a wildfire. Clary (1989) found "the land imprinter to be most effective when competing plants are not present and when the seedbed is light textured or loose from disking or plowing." The imprinter can firm the soil prior to or during planting thus improving seed to soil contact. Limitations of land imprint seeders include equipment availability and poor design of imprint seeders (i.e. wide shallow imprints) which may result in thin and uneven stands of vegetation.

Brillion type seeders use two cultipacker rollers. The leading roller crushes clods and forms a smooth seedbed in front of the seed drop. The trailing roller presses the seed into the soil. The rollers are notched to create little pockets to trap moisture. Seed is dispersed uniformly eliminating the row effect, resulting in a more natural effect. The Brillion type seeder is used in open ground with flat topography that is devoid of rocks. The Brillion seeder requires a well-prepared seedbed with a loose surface soil to plant the seed properly.

Shrub seed may be planted with a seed dribbler. This technique involves dribbling seed from a container attached to the crawler tractor above the tracks. The seed is pressed into the soil as the tractor treads roll over it.

Seed Cover Methods

Treatments to cover seed increases the seed-to-soil contact promoting germination and survival rates of desirable species and limits the amount of seed available for rodents to harvest. Cover treatments would primarily be used when it is not feasible to use rangeland drills to plant the seed.

Chaining or mastication can be used to cover seed that is broadcasted in areas where remnant large woody skeletons prevent other cover treatments. Chaining is also used in rocky terrain or in steep terrain not accessible to drills. The type of chains or masticators and the methods used are the same as when using chaining or masticating as a seedbed preparation tool.

Harrowing is used following a broadcast seeding on relatively flat terrain. The harrow pulls soil over the aerial or ground broadcasted seed to improve soil contact. The types of harrows that could be used include the spring toothed or Dixie harrow. The Dixie harrow is best suited where there is remnant woody vegetation or rocky conditions. A drawback to using a harrow is that only a limited number of acres can be treated in a day.

A cultipacker consists of a heavy roller, or sets of wheels that roll across the ground to provide soil compaction and to improve seed to soil contact. Raking or similar methods may be used on small seeding projects to improve seed to soil contact. Cultipackers are not generally used for ESR treatments in the Twin Falls District, since they are poorly adapted to rough, rocky, steep, and/or brushy terrain.

Seed Selection

Plant materials would be selected and seed mixtures designed to best meet the objectives identified in the site-specific post-fire recovery plans, land use plans, and/or activity plans. Local native plant seed sources are recommended and seed collected from local native ecotypes is preferred (BLM Instruction Memorandum WO-2007-206, and future updates to policy). Plant species that may be used in seed mixes for ESR actions and guidance for selecting plant materials is provided in Appendix 1. This plant list will be updated as new plant materials are released and made available for use, including those that best meet land use plan and/or activity plan objectives. The plant species listed are intended as a guide and would be applied at rates applicable to site conditions, other resource/environmental considerations, and management objectives. Parameters such as soil properties, erosion potential, aspect, elevation, precipitation zones, invasive plants and noxious weeds competition, human use, potential plant community, watershed stability, seed availability, and cost would be evaluated in developing seed mixtures. Seed mixes would be stratified by elevation and site potential.

The planting of native plant species is preferred to that of non-natives for ESR treatments. However, a mixture of native plant species and non-native plant species may be used when the desired native plant materials are not available in sufficient quantities, and if the use of non-native plants is consistent with approved land use plans. Shortages of native seed can occur at any time, even after the site-specific ESR plans and decision records have been signed. Again, this is due to insufficient amounts of seed needed during a large fire year and unexpected increase costs of seed. In these cases, a similar variety or cultivar would be used and the change noted in the ESR plan. When competitive non-native grasses (e.g. crested wheatgrass) are used in a mixture with native grasses, the total amount of non-native grasses in the seed mix should be limited to $\leq$2.0 lbs./acre pure live seed (Ogle, St. John, & Jensen, 2001).

In addition, greenstrips (fuel breaks) that utilize fire resistant plant species may be incorporated into ESR plans. Greenstrips would be used to reduce the spread of wildfire and protect seedlings, especially shrub species, and other ESR treatment investments from the threat of reoccurring wildfire.

The use of non-native seed is appropriate if:

- Suitable native plant species are not available and there is a need to provide perennial plant cover.
- The natural biological diversity of the proposed management area will not be diminished.
- Non-native or naturalized plant species can be confined within the proposed management area.
- Analysis of ecological site inventory information indicates that a site will not support reestablishment of a species that historically was part of the natural environment.
- Resource management objectives cannot be met with native species.

Important factors that would be considered in selecting a seed mixture that includes native plants are:

- Availability at a reasonable cost per acre.
- Plant species adaptability to the area proposed for treatment.
- Impacts of competition (from invasive plants, noxious weeds, other plants in the seed mixture, land uses) on native plant establishment and persistence.
- Approved land use planning decisions.
- Approved Idaho BLM policy.

Plantings

Hand planting is used only in specialized situations (e.g. planting trees and shrubs) because of high labor costs and limited success rates when compared to other seeding methods. Bare-root stock or containerized stock tree or shrub species are normally used when it is desirable to establish them quickly within defined landscape boundaries. Planting methods include bars, hodads, augers, and mechanical tree planters. Planting tree and shrub seedlings may be done where excessive soil erosion may precipitate mass soil wasting and/or there are potential source areas for debris flows due to root rot of dead, burned trees. Plantings may also be utilized in habitats for big game, sage-grouse (*Centrocercus urophasianus*), slickspot peppergrass (*Lepidium papilliferum*), and other habitats where shrubs or trees provide a critical forage or habitat component.

Noxious Weed Treatments

Noxious weeds are managed through annual inventories, treatments, and monitoring. Noxious weed control work may include integrated chemical, biological, mechanical, and/or hand treatment methods, as well as post-fire detection and monitoring. Vehicles and equipment operating in areas of noxious weed infestations would typically be cleaned and inspected prior to entering or leaving a project site. Spot treatments on burned areas would be in accordance with the field offices' current noxious weed treatment environmental assessments or subsequent district/field office environmental assessments.

Herbicides analyzed under NEPA and approved for use on public lands in the Final Vegetation Treatment Using Herbicides Programmatic Environmental Impact Statement (USDI BLM, 2007b) would be considered for use in treating invasive plants. Additional herbicides may also be considered for use if they meet the criteria described above in "Seedbed Preparation" and in the Final Vegetation Treatment Using Herbicides Programmatic Environmental Impact Statement.

Selection of an herbicide and the application rate for site-specific applications would depend on its chemical effectiveness on a targeted plant species, success in previous similar applications, habitat types, soil types, and proximity of the noxious weed infestation to water and/or private property. Combinations of herbicides may be an appropriate treatment where several species of noxious weeds occur together. All herbicide use would follow product labels and may also include more restrictive measures as determined by BLM.

Ground-based herbicide application of noxious weeds may include broadcast "block" spraying or spot spraying with backpack pumps, spraying from a pump unit on a motorized vehicle, an all-terrain vehicle, or pack animals to transport and apply herbicides in more rugged terrain. Ground-based application would occur in smaller, fragmented patches of noxious weeds and along trails and roads where herbicide treatment may be the most effective means of controlling or eradicating noxious weeds.

Aerial herbicide application would be used where it is a more feasible method to control or eradicate large infestations of noxious weeds (> 100 acres), or for areas that have steep slopes, rocky soils, or difficult access.

Mechanical treatments can also be used to physically destroy, disrupt growth, or interfere with the life cycle of noxious weeds and would typically be used to control individual plants or small, isolated infestations. This can be accomplished by hand, hand tools, or power tools and may include pulling, grubbing, digging, hoeing, tilling, cutting, mowing, mulching, and burning with a propane torch. Noxious weeds that have seeds may be bagged and destroyed.

Biological methods would employ living organisms to selectively suppress, inhibit, or control noxious weeds. Insects, pathogens, mites, and nematodes are the primary entities that may be used. This treatment method would not eradicate the target plant species but reduce it to more tolerable levels. Biological control may be used independently or as a supplement to other methods of noxious weed control.

Watershed Stabilization/Erosion Control Treatments

The following treatments may be used as needed to reduce surface erosion potential, increase infiltration rates, control overland runoff, protect water quality, and stabilize roads and burned slopes in immediate proximity above and below a constructed trail.

Log Erosion Barriers, Contour Log Felling, Straw Wattles

Log erosion barriers such as FlowcheckTM Wooden Erosion Control Structures, contour log felling (contour log terrace), or straw wattles placed perpendicular to slopes that are >30% and <60%. These treatments may be used to reduce soil erosion by trapping sediment, improving infiltration, preventing slope rilling, and replacing woody material consumed by fire.

Lop and Scatter (Slash Distribution)

Spreading the limbs and branches of trees and shrubs (slash) on a slope would be used to provide protection from raindrop impact. If the branches and limbs are crushed or worked into contact with the soil surface, the slash will also break up concentrated surface runoff and reduce erosion.

Contour Trenches

Hand contour trenches may be installed on slopes ≥ 20% and ≤ 40%. Trenches can trap sediments, improve infiltration, and prevent slope rills.

Mulching

Mulch material may be used to reduce soil erosion, retard overland flow, protect soil from rain drop impact, and increase soil moisture holding capacity. Only certified noxious weed-free material will be used.

Geotextures, Erosion Cloth/Soil Netting

Biodegradable erosion cloth/soil may be used to stabilize slopes above high-risk areas such as campgrounds and highly traveled roads.

Water Bars

Water bars may be installed along fire lines and trails to control or eliminate soil erosion. Construction of soil, rock, or log water bars would direct water off of trails and fire lines, discharging it to adjacent channels or vegetated areas. In short, water bars break up runoff into small enough units and/or spread the water so it doesn't have enough energy to erode soils.

Road Stabilization

Properly spaced rolling dips, water bars, and culverts may be used to move water past the road prism (cross-section) and to more effectively route water and sediment to prevent erosion, road damage, slope failures, and delivery to streams. Culverts would be inspected and if needed, maintained, repaired, or replaced to prevent road damage, subsequent accelerated erosion, and poor water quality.

The following treatments are designed to provide effective means to trap and stabilize in-channel sediments, control down-cutting, maintain the integrity of channel morphology, and minimize flash flooding.

Straw Bale, Rock, and Straw Wattle Check Dams

Check dams are used to stabilize in-channel sediments, trap suspended sediments, and control down-cutting for 1 to 3 years, then slowly release stored sediments as the check-dam material deteriorates. Rock check dams should be limited to use in open channels that drain 50 acres or less. Only certified noxious weed-free straw will be used in straw bales and to construct straw wattles.

Armoring

The armoring of crossings and culverts would be used to protect water quality by providing mechanical strength and protection to sites within a channel system. Typically, armoring would be installed as some form of riprap at locations where bridges or culverts require protection from flood level flows.

Silt Fences

Silt fences would be used in channels to stabilize in-channel sediments, trap suspended sediments, and control down-cutting. Silt fences generally have a longer lifespan than straw bale check dams.

Log dams and in-channel felling

Log dams and in-channel felling (preferably whole trees) may be used to slow flow and trap sediment.

Willow wattles and woody riparian cuttings

Willow wattles and woody riparian cuttings (i.e. bioengineering techniques) may be used instream for channel stabilization and grade control.

Gabions

Gabions may be used to trap sediment and control down cutting of severely eroded drainages.

Closures

General Closures and/or Limited Closure Areas

Areas burned by a wildfire may be temporarily closed to the public by excluding vehicle, bicycle, horse, and foot use if there is a probability of unacceptable resource damage occurring.

Access within the ESR project area may be temporarily limited during the recovery period (i.e. access limited to existing or limited to specific or designated roads and trails). Public notices or signs necessary to close a trail would be posted or installed. BLM staff would inspect the area to monitor compliance with closures and, if needed, may have BLM Law Enforcement Officers assist in enforcing closures.

Public use facilities, structures, roads, and/or trails that pose a health or safety risk may be closed to public use until they are stabilized. Closures may be implemented for public safety or to temporarily close the burned or seeded areas to uses (e.g. recreation, livestock, Off Highway Vehicles (OHV)) or access (e.g. motorized, non-motorized, horse, foot) to allow recovery and prevent unacceptable resource damage (43 Code of Federal Regulations [CFR] 8364). Closures will follow the appropriate NEPA process, issuing a Federal Register Notice where required, and sufficient public notices.

Livestock Closures

BLM Handbook H-1742-1 states that livestock are to be excluded from burned areas until monitoring results, documented in writing, show that ESR objectives have been met. Livestock would typically be excluded from a burned area to promote site stabilization, seeding treatment establishment, and natural vegetation recovery. There are circumstances when livestock grazing closure may not be needed. Such exceptions include areas that do not receive post-fire treatments because of small size or inaccessible, steep terrain that limits livestock access to the burned area.

Livestock permittees would be informed of the proposed temporary closures early in the post-fire recovery planning process. Temporary livestock closures would be a condition or term on the grazing license or permit through issuance of a grazing decision or agreement (43 CFR 4110.3-3). Grazing decisions or agreements will specify the terms and conditions of closures including the temporary loss of animal unit months (AUMs) and ESR objectives and associated criteria for re-authorizing livestock grazing on the burned area. If it is determined through monitoring that ESR objectives have not been met (normally after 2 years), a new proposed decision or agreement would be issued addressing additional rest and/or other livestock management direction needed to help meet ESR objectives. Similarily, livestock trailing would not be allowed in a burned area until ESR objectives and criteria in the ESR plans have been met, unless otherwise addressed in the three field offices' grazing decisions authorizing livestock trailing.

BLM staff would complete an evaluation to determine seeding success and/or natural vegetation recovery prior to resumption of livestock grazing. This includes plant establishment as well as litter accumulation for soil and watershed protection.

Livestock grazing would resume once treatment and/or natural recovery objectives in a site-specific ESR plan are met. Livestock grazing may resume if a seeding is determined to be a failure and there are no immediate plans to reseed the area. Details regarding monitoring methods and an example of livestock closure objectives relative to seeding treatments and natural vegetation recovery are given in the Monitoring Section of this plan.

Several factors influence the length of time needed to meet treatment objectives. Factors such as pre-fire resource conditions, fire severity and continuity, ESR treatment type, and post-fire weather will influence the length of the rest period. BLM may determine that a treatment has failed or more rest is needed if objectives identified in the site-specific ESR plan are not achieved within defined monitoring timeframes.

Livestock grazing closure would be accomplished through closure of an entire pasture or portion of a pasture, depending on the area burned. Livestock may be temporarily excluded from a burned area using existing fences or constructing new fences. New fences may either be temporary or permanent. A fence may become permanent if a seeding or recovered area requires separate management to sustain the rehabilitated area. For example, a native seeding fenced in the same pasture as an established crested wheatgrass seeding may require different management to meet wildlife habitat objectives. Additional NEPA analysis in the form of a separate environmental assessment would be needed to establish a temporary fence as a permanent.

The proportion of burned versus unburned area in a pasture, difficulty in fence construction (e.g. topography, land ownership), special status species habitat protection, the temporary loss of AUMs, and the economic impact to livestock permittees would be considered prior to determining if a protection fence is required. Protection fences would be placed around the perimeter of a burned area to the minimum degree required. When constructing fences such factors as topography, rocky outcrops, soils, and existing fences would be considered. If necessary, cattleguards, gates, and caution signs may also be installed on county, agency, or state roads, highways, and areas of high recreation use where protection fences are built. Existing interior management fences damaged by fire may be reconstructed. Fence construction and reconstruction will conform to BLM Handbook H-1741-1. In general, all fence posts, braces, and gates would be constructed of steel or wood.

Wild Horses

Wild horses may or may not be excluded from burned areas, depending on factors such as the size of the fire, fire severity, type of treatment, and location of the fire. An alternative to removing wild horses from a burned area may be adjusting herd management numbers until the burned area has recovered. If exclusion is necessary, wild horses would typically be relocated to suitable unburned areas within the herd management area or transferred to temporary holding areas until the burned area can support them or they are adopted. The total number of wild horses may be reduced temporarily as needed to sustain soil and vegetation resources. BLM policy and regulations will be followed when temporarily or permanently removing wild horses from the herd management area. Fences constructed in wild horse herd management areas would be flagged along the wires between line posts to protect the health of the animals by reducing the chance for collision and entanglement.

Facility Repair/Replacement and Safety Actions

Replacement or repair of minor improvements and facilities damaged by wildfire (i.e. structural damage to recreational facilities, fences, gates, water developments, and livestock handling facilities) may be done. Actions that address health and safety would also be implemented. Examples of minor facility repair and actions to improve public safety include:

- Wildlife and livestock water developments such as guzzlers and troughs may be repaired or replaced.
- Foot bridges on trails may be repaired or replaced.
- Campgrounds, kiosks, signs, and recreation buildings may be repaired or replaced.
- Public notices or signs necessary to warn of pending floods, promote public safety, or otherwise assist with stabilization actions may be posted.
- Downed trees that pose a threat to the public by creating obstructions along rivers used for recreational boating could be removed.
- Trees along trails or roads that pose a human health hazard and/or obstruct movement may be cut down.
- Hazardous waste that may be discovered during ESR activities will be reported to the appropriate officials immediately.
- Adjoining landowners would be notified of herbicide treatments prior to implementation by the appropriate field office staff (USDI BLM, 2007b).
- All instream activities would either comply with the guidelines in the Biological Assessment prepared for the Twin Falls District PESRP or other current ESA consultations (e.g. Programmatic Stream Crossing Maintenance BA).

Cultural Resource Protection/Stabilization

Cultural and paleontological sites would be assessed to determine appropriate and immediate protective measures. These assessments would be completed prior to implementing ESR actions. Fire damage to site elements and features on treated areas would be recorded. Soil stabilization is the most effective method to prevent damage to cultural and paleontological resources following a wildfire. Soil erosion treatments, seeding treatments to reestablish vegetation cover, and temporary closures to enhance vegetation and litter cover would be used to stabilize soil movement. This may entail hand treatments such as the careful return of an earthen berm on a fire line over the site, contouring a slope to reduce soil erosion, seeding, or covering the site with protective mesh. Temporary access closures may be required to protect resources from OHV use and unauthorized human activities such as looting, vandalism, etc.

Native American Tribes

Due to the short time-frames associated with developing and approving site-specific ESR plans and the reoccurring nature of ESR actions, consultation with the Shoshone-Paiute and Shoshone-Bannock Tribes was completed in the development of this programmatic EA. Twin Falls District staff met with the Shoshone-Bannock Tribes in November, 2011 and with the Shoshone-Paiute Tribes on two occasions, April, 2007 and December, 2011. Both Tribes would be kept apprised of ESR activities and cultural resource findings such as with inventory reports. Further, consultation with the Shoshone-Paiute Tribes will be done in accordance with the "Communication Protocol for Tribal Communications" plan (USDI BLM and Shoshone-Paiute Tribes, 2007).

Design Features for Sensitive Resources

The purpose of a design feature is to reduce or eliminate potential impacts that may be caused by ESR actions. Land use plan objectives and guidance were used to develop design features. Recommendations from conservation plans, such as the 2006 Conservation Plan for the Greater Sage-Grouse in Idaho, were also used. Design features were determined by selecting the most restrictive conservation measures identified in applicable land use plans, conservation plans and agreements, current NEPA documentation, and FWS biological concurrence letters or opinions. Further, conservation measures may be modified consistent with updated BLM policy. Where appropriate, design features would apply throughout the Twin Falls District. A list of the design features is in Appendix 2.

Soils

The following design features may be used to stabilize soils as needed.

- Where practical, methods that reduce soil surface disturbance would be used on soils with high to very high wind erosion susceptibility.
- Wet soils at field capacity would be minimally disturbed.
- Drill rows and all seed covering projects would run along the contours of the land, where possible, to reduce erosion.

Special Status Species

The presence of special status plants and animals and their habitats in an area prior to a wildfire will be based on existing data and information. Populations, especially undocumented special status plant populations, could be difficult to detect or undetectable in the post-burn environment. If special status plant and/or animal populations and their habitats are known to occur in a burned area, the area would be assessed for post-fire habitat quality and the need for treatment. Population ecology (including disturbance and reproductive ecology), biology, status, seasonal sensitivities (e.g. breeding, growing, or dormant seasons), and current habitat quality would be considered when planning treatments. A list of special status species and their presence in each of the field offices is found in Appendix 3. This list will be updated as needed to reflect the most current FWS Threatened, Endangered, and Candidate species list and BLM sensitive species list.

Management guidance and conservation measures for ESA-listed species are derived through consultation with FWS. These requirements allow for activities to occur at levels that should not result in a decline in ESA-listed species or their habitats. Conservation measures are found in Biological Opinions as well as Biological Assessments with letters of concurrence. FWS Biological Opinion for Existing BLM Land Use Plans (USDI FWS 2008, 2009) includes conservation measures and interagency direction for managing ESA-listed species on public land in Idaho. Conservation measures are also found in the Land Use Plan Biological Assessments (USDI BLM 2008a, 2009). These conservation measures are incorporated into the PESRP by reference. All ESA consultation documents remain in effect until they are superseded through future consultation or are modified through the consultation streamlining process with FWS.

Treatments near or adjacent to special status species habitat (unburned or if burned, species may still occupy the site as is the case with sage-grouse/Columbian sharp-tail grouse leks) would typically be designed to occur outside the sensitive periods of a species life cycle or habitat (i.e. breeding season, winter habitat). However, there may be situations where completing the project during the sensitive period may be more beneficial to the species over time than if the project was not done at all. Treatments occurring during sensitive periods would be designed to minimize potential impacts to special status species and their habitats. Specific mitigation/guidelines such as avoidance of occupied areas, distances from occupied habitat, etc. would be outlined in the individual site-specific ESR plans.

Native plant seed mixes would be used in BLM sensitive plant habitats, unless native plant materials and seed are not available. Another exception (depending on the plant species and its special status designation, e.g. threatened, endangered, BLM sensitive) is when the use of non-native plant species contributes beneficially to maintaining and protecting habitat (e.g. preventing the spread of noxious weeds into habitat) and reducing fire frequency. Due to the number of reoccurring wildfires in some areas of the Twin Falls District where special status plants are present, the most viable option to protecting these habitats may be the use of non-native plant materials or seed.

Special Status Plants

Type 1, Federally Threatened, Endangered, Candidate Plant Species

Goose Creek Milkvetch (*Astragalus anserinus*), Candidate Species

- Ground-disturbing activities would not occur, unless it is clearly beneficial for Goose Creek Milkvetch. Only aerial seedings or hand plantings would occur in Goose Creek Milkvetch habitat.
- Potentially invasive non-native plant materials would not be used in Goose Creek Milkvetch habitat. An exception may be in areas where such plants are needed to stabilize the site following a wildfire. If competitive non-native plants are used, their presence would be monitored to determine if adverse effects are occurring and removed as needed to conserve Goose Creek Milkvetch and its habitat.
- Only hand treatment methods would be used to control invasive plants or noxious weeds in occupied Goose Creek Milkvetch habitat.

Slickspot Peppergrass (*Lepidium papilliferum*)

Slickspot peppergrass was listed in 2009 as an ESA threatened species (74 FR 52014, October 8, 2009). Following the listing the State of Idaho and others filed a suit in Federal Court challenging the listing. On August 8, 2012 the court issued a decision vacating the listing and remanded the matter back to the FWS for further consideration. Until the matter is resolved by the FWS, Idaho BLM will continue to manage slickspot peppergrass under existing conservation agreements and ESA Section 7 documents.

Planning and implementation of ESR activities will comply with the *Conservation Agreement between BLM and FWS for Slickspot Peppergrass* (2009) and the *FWS Biological Opinion for Existing Land Use Plans in the Boise and Twin Falls Districts Related to Slickspot Peppergrass Conservation* (2009). Conservation measures and implementation actions from the Conservation Agreement and Biological Opinion are presented below. Additional conservation measures, implementation actions, and design features from other plans and agreements would be incorporated as necessary. Until a Stage 1 inventory is completed, any area currently identified as potential habitat would be treated as if it contains slickspot peppergrass and its habitat.

(i) Implement ESR activities to consider slickspot peppergrass in and adjacent to slickspot peppergrass habitat. The following design features are taken from the 2009 *FWS Biological Opinion for Existing Land Use Plans in the Boise And Twin Falls Districts Related to Slickspot Peppergrass Conservation and Appendix A, Conservation Agreement for Idaho Bureau of Land Management Existing Land Use Plans and On-going Actions Affecting Slickspot Peppergrass*. These design features would be applied in the Jarbidge Field Office.

- All wildfires within slickspot peppergrass habitat would be evaluated for ESR treatments, regardless of size. (Appendix A, Conservation Agreement for Idaho Bureau of Land Management Existing Land Use Plans and On-going Actions Affecting Slickspot Peppergrass, 2009, p. 84.)
- BLM would avoid or minimize activities that could be ground disturbing within element occurrences when soils are saturated and/or when slickspot peppergrass is flowering. (FWS Biological Opinion for Existing Land Use Plans in the Boise and Twin Falls Districts Related to Slickspot Peppergrass Conservation, 2009, p. 49.)
- As needed, protect disturbed and recovering areas using temporary closures or other measures. BLM would continue to rest areas from land use activities to meet post-fire recovery monitoring objectives, defined through the site-specific ESR plans. (Appendix A, Conservation Agreement for Idaho Bureau of Land Management Existing Land Use Plans and On-going Actions Affecting Slickspot Peppergrass, 2009, p. 84.)
- BLM would initiate and complete ESR efforts for slickspot peppergrass, such as planting shrubs and forbs, within slickspot peppergrass habitat. (Appendix A, Conservation Agreement for Idaho Bureau of Land Management Existing Land Use Plans and On-going Actions Affecting Slickspot Peppergrass, 2009, p. 84.)
- BLM would implement the following measures during post-fire ESR efforts (Appendix A, Conservation Agreement for Idaho Bureau of Land Management Existing Land Use Plans and On-going Actions Affecting Slickspot Peppergrass, 2009, pp. 84, 85):

    - BLM would use seeding techniques that minimize soil disturbance such as no-till drills and rangeland drills equipped with depth bands when ESR projects have the potential to impact potential and occupied slickspot peppergrass habitat.
    - BLM would use native plant materials and seed during ESR activities, including native forbs that benefit slickspot peppergrass insect pollinators.

  - If native plant materials and seed are not available, non-invasive, non-native species may be used for stabilization activities in slickspot peppergrass habitat.
  - In areas adjacent to slickspot peppergrass habitat, if natives are not available, non-invasive, non-native species are acceptable for stabilization activities.
  - Potentially invasive non-native plant materials such as prostrate kochia may be used as a last resort for stabilization activities in areas adjacent to slickspot peppergrass habitat provided the benefits of their use are demonstrated to outweigh the risks to slickspot peppergrass and its habitat.
  - Seeding of potentially invasive non-native species such as prostrate kochia within the known range of slickspot peppergrass would require additional site-specific ESA Section 7 conference.

  (ii) Although non-chemical methods are preferred in occupied habitat, projects involving the application of pesticides (including herbicides, fungicides, and other related chemicals) in slickspot peppergrass habitat and potential habitat that may affect the species would be analyzed at the project level and designed such that pesticide applications would support conservation and minimize risks of exposure. (Appendix A, Conservation Agreement for Idaho Bureau of Land Management Existing Land Use Plans and On-going Actions Affecting Slickspot Peppergrass, 2009, pp. 70, 85.)

- Site-specific stipulations for pesticide application would be developed locally using the following criteria (Appendix A, Conservation Agreement for Idaho Bureau of Land Management Existing Land Use Plans and On-going Actions Affecting Slickspot Peppergrass, 2009, pp. 70, 71):

  - Evaluate the benefits and risks of vegetation treatment including the following: pesticides, carriers, and surfactants used; application methods; needed treatment buffers; and use of non-chemical weed control (for example, bio-controls, hand pulling).
  - Apply appropriate spatial and temporal buffers to avoid exposure of slickspot peppergrass to harmful chemicals.
  - Explore opportunities to eradicate competing non-native invasive plants in occupied habitat where slickspots are being invaded by such plants.
  - Implement appropriate revegetation and weed control measures to reduce the risks of non-native invasive plant infestations following ground/soil disturbing actions in slickspot peppergrass habitat.

Additional conservation measures for weed control:

- Avoid pesticide contact with slickspot peppergrass plants or insect pollinators near element occurrences. (FWS Biological Opinion for Existing Land Use Plans in the Boise and Twin Falls Districts Related to Slickspot Peppergrass Conservation, 2009, p. 49.)
- Projects proposed in areas with known threatened or endangered plants would give full consideration to protecting these species, including fencing if necessary. If a proposed action is predicted, through a NEPA analysis, to have an adverse effect on threatened or

endangered plants, the action would either be foregone or redesigned to eliminate such adverse effects. (Jarbidge RMP, 1987.)

- Herbicide application within slickspot peppergrass element occurrence boundaries would be done only with hand sprayers. A 10-foot no-herbicide treatment buffer would be established around slickspots located in element occurrences. Weeds would be treated by hand within the buffer zone. (FWS Concurrence Letter for the Boise District Normal Fire Emergency and Rehabilitation and Noxious and Invasive Weed Treatment Actions, 2009.)
- Ground-based herbicide application within management area boundaries using large droplet spray only, with reduced pump pressure, and spot spraying techniques to prevent drift of herbicide into slickspot peppergrass habitat. (FWS Concurrence Letter for the Boise District Normal Fire Emergency and Rehabilitation and Noxious and Invasive Weed Treatment Actions, 2009.)
- No persistent herbicides would be used for noxious weed treatments within 150 feet of slickspot peppergrass element occurrences. (FWS Concurrence Letter for the Boise District Normal Fire Emergency and Rehabilitation and Noxious and Invasive Weed Treatment Actions, 2009.)
- Aerial application of herbicides in areas that are un-surveyed or inadequately surveyed would require additional site-specific ESA Section 7 conference.

Site-specific ESR plans will use “A Framework to Assist in Making Endangered Species Act Determinations of Effect for Slickspot Peppergrass” to analyze potential effects of proposed treatments on slickspot peppergrass or its habitat.

Rangewide/Globally Imperiled Plant Species, Types 2 (High Endangerment) and 3 (Moderate Endangerment)

The following design features would apply to areas containing plants designated as BLM sensitive species and their habitats.

- Requirements of individual BLM sensitive plants would be considered when designing ground-disturbing activities in BLM sensitive plant habitats.
- Potentially invasive non-native plant materials would not be used in BLM sensitive plant habitats unless native plant materials are unavailable or they are needed to stabilize a site.
- Seeding within occupied habitat would not be done, unless it is clearly beneficial for the BLM sensitive plants occupying the site. Only aerial seeding or hand plantings would occur in Idaho penstemon (*Penstemon idahoensis*) habitat. No seeding would occur in playas occupied by Davis peppergrass (*Lepidium davisii*). (Twin Falls Management Framework Plan, 1982, Watershed Objective 6-1.)
- The needs of BLM sensitive plants would be considered when selecting herbicides and application methods. Non-herbicide treatment is preferred over one that uses herbicides. Only hand treatment methods would be used to control invasive plants or noxious weeds in occupied Idaho Penstemon and Davis peppergrass habitats.
- The treatment of invasive annual plants and noxious weeds would be a priority in BLM sensitive plant habitats. Emphasis would be on hand spot spraying and mechanical

control in order to avoid or minimize risk to BLM sensitive plants. No chemical would be applied directly on BLM sensitive plants during spot applications.

- Projects proposed in areas with known sensitive plants would give full consideration to protecting these species, including fencing if necessary. If a proposed action is predicted, through a NEPA analysis, to have an adverse effect on sensitive plants, the action would either be foregone or redesigned to eliminate such adverse effects. (Jarbidge RMP, 1987.)

Special Status Wildlife Species

- Where federally threatened, endangered, proposed, or candidate species and their designated or proposed critical habitat occur, seed mixtures would be chosen that comply with the BLM Biological Assessment and concurrence letter received from the FWS on this environmental assessment.
- Seed mixtures would be formulated to benefit wildlife and special status species habitats as appropriate.

Type 1 Federally Threatened, Endangered, and Candidate Species

Aquatic Species: Bruneau Hot Springsnail (*Pyrgulopsos bruneauensis*), Endangered; Banbury Springs Limpet (*Lanx* spp.), Endangered; Snake River Physa Snail (*Physa natricina*), Endangered; Bliss Rapids Snail (*Taylorconcha serpenticola*), Threatened; Jarbidge River Bull Trout (*Salvelinus confluentus*), Threatened; and Columbia Spotted Frog (*Rana luteiventris*), Candidate Species

- Ground-disturbing activities other than tree and shrub planting would not occur within 300 feet of any water bodies and springs containing ESA-listed Snake River snails, Bruneau hot springsnail, Columbia spotted frog, and the Jarbidge River bull trout or bull trout designated critical habitat. (Fire, Fuels, and Related Vegetation Management Direction Plan Amendment, 2008, Appendix Q.)
- Walking or disturbances to Bruneau hot springsnail habitat will be avoided when planting riparian plant species adjacent to Bruneau hot springsnail habitat.
- Aerial seeding within riparian conservation areas containing ESA-listed Snake River snails, Bruneau hot springsnail, bull trout or their designated critical habitat, or Columbia spotted frog would be limited to seed mixtures with no added chemicals such as fertilizer. (FWS Concurrence Letter for the Boise Normal Fire Rehabilitation Plan, 2004, pp. 4, 7, 8; FWS Concurrence Letter for the Shoshone/Burley Normal Fire Rehabilitation Plan, 2004, p. 5.)
- Hydro-mulch would not be used within riparian conservation areas containing ESA-listed Snake River snails, Bruneau hot springsnail, bull trout or their designated critical habitat, or Columbia spotted frog to avoid impacts associated with decreased water quality. (FWS Concurrence Letter for the Boise Normal Fire Rehabilitation Plan, 2004, pp. 4, 7, 8; FWS Concurrence Letter for the Shoshone/Burley Normal Fire Rehabilitation Plan, 2004, p. 5.)
- Aerial applications of herbicides would not occur within 0.5 mile of riparian conservation areas containing ESA-listed Snake River snails, Bruneau hot springsnail, bull trout or their designated critical habitat, or Columbia spotted frog. (Fire, Fuels, and Related

Vegetation Management Direction Plan Amendment, 2008, Appendix Q; FWS Concurrence Letter for the Boise Normal Fire Rehabilitation Plan, 2004, pp. 4, 7, 8.)

- Herbicide methods used within 0.5 mile of riparian conservation areas containing ESA-listed Snake River snails, Bruneau hot springsnail, bull trout or their designated critical habitat, or Columbia spotted frog would be ground-based spot treatments of noxious weeds and would be implemented according to the herbicide use restrictions in Table 1. (FWS Concurrence Letter for the Boise Normal Fire Rehabilitation Plan, 2004, pp. 4, 7, 8; FWS Concurrence Letter for the Shoshone/Burley Normal Fire Rehabilitation Plan, 2004, p. 5.)
- Broadcast boom spraying would not occur within 100 feet from live waters or shallow water tables, or within riparian conservation areas containing ESA-listed Snake River snails, Bruneau hot springsnail, bull trout or their designated critical habitat, or Columbia spotted frog. (FWS Concurrence Letter for the Shoshone/Burley Normal Fire Rehabilitation Plan, 2004, p. 5.)
- Neither surfactant R-900 nor Picloram would be authorized for use within or adjacent to riparian conservation areas containing ESA-listed Snake River snails, Bruneau hot springsnail, bull trout or their designated critical habitat, or Columbia spotted frog. (FWS Concurrence Letter for the Boise Normal Fire Rehabilitation Plan, 2004, p. 4, 7, 8; FWS Concurrence Letter for the Shoshone/Burley Normal Fire Rehabilitation Plan, 2004, p. 5.)
- Avoid using the adjuvant R-11 in riparian conservation areas containing ESA-listed Snake River snails, Bruneau hot springsnail, bull trout or their designated critical habitat, or Columbia spotted frog. (BLM Vegetation Treatments Using Herbicides Final Programmatic Environmental Impact Statement, 2007, Record of Decision - Table 2, p. 2 – 4.)
- Helicopter service landings, fuel trucks, and fueling or storage of fuel would not occur within 300 feet of live waters containing threatened, endangered, or candidate species. (Fire, Fuels, and Related Vegetation Management Direction Plan Amendment, 2008, Appendix Q.)
- Section 7 consultation is required on all in-stream activities that may occur in areas known or suspected of supporting ESA-listed Snake River snails, Bruneau hot springsnail, bull trout or their critical habitat, or Columbia spotted frogs and in drainages that flow directly into waterways upstream of sites that have these species. (FWS Concurrence Letter for the Shoshone/Burley Normal Fire Rehabilitation Plan, 2004, p. 4; FWS Concurrence Letter for the Boise Normal Fire Rehabilitation Plan, 2004, p. 3.)
- Preventative procedures would be used to ensure that aquatic nuisance species are not spread through the implementation of ESR actions. Prior to use for Bureau-administered activities, all equipment to be used instream (i.e. during culvert repair or replacement) will be thoroughly rinsed to remove mud and debris and disinfected with a chloride solution (one part bleach to 32 parts water, or stronger) or other FWS approved disinfectant. Rinsing the equipment with disinfectant solutions would not occur within 100 feet of natural water sources (streams or springs).

Table 1: Streamside, Wetland, and Riparian Habitat Restrictions for Herbicide Use.

Herbicide Application Method	Max. Wind Speed	Riparian Area of Influence	Aquatic Level of Concern Category* for Authorized Herbicides
Aerial	5 mph	>0.5 mile from riparian conservation areas containing ESA-listed Snake River snails, Bruneau hot springsnail, bull trout and their critical habitat, or Columbia spotted frog[a,b].	Low and Moderate
Aerial	5 mph	>150 feet from outer edge of riparian areas associated with perennial water (includes both fish bearing or non-fish bearing streams) that contain or are upstream of reaches that contain redband trout, Snake River white sturgeon, Wood River sculpin, Yellowstone cutthroat, Shoshone sculpin, and other BLM special status aquatic species[a].	Low and Moderate
Aerial	5 mph	>150 feet from outer edge of riparian areas for intermittent streams that are upstream of reaches containing redband trout, Snake River white sturgeon, Wood River sculpin, Yellowstone cutthroat, Shoshone sculpin and other BLM special status aquatic species[a].	Low and Moderate
Ground/broadcast Spraying Methods	8 mph	<0.5 mile of riparian conservation areas that contain ESA-listed Snake River snails, Bruneau hot springsnail, bull trout and their critical habitat, and Columbia spotted frog, all herbicide applications will be ground-based spot treatments of noxious weeds.	Low and Moderate
Ground/broadcast spraying methods	8 mph	>100 feet from live waters within upland areas where ground-based herbicide applications may influence perennial waters, riparian conservation areas, and aquatic habitats containing ESA-listed and candidate species and other BLM special status species[b].	Low and Moderate
Ground/spot spraying, wicking, wiping, dipping, painting, injecting Selective spraying of target species only (e.g. spot treatment of individual plants)	8 mph	>15 feet from live waters or shallow water tables, or within riparian conservation areas and aquatic habitats containing ESA-listed and candidate aquatic species and other BLM special status species.	Low

Herbicide Application Method	Max. Wind Speed	Riparian Area of Influence	Aquatic Level of Concern Category* for Authorized Herbicides
Backpack sprayer, hand sprayer, wicking, wiping, dipping, painting, and injecting Selective spraying of target species only (e.g. spot treatment of individual plants)	5 mph	>10 feet from live water or shallow water tables[c].	Aquatic approved herbicides only. No use of surfactants will be authorized.

* Aquatic Level of Concern is a form of risk analysis used by the FWS based on procedures developed by the Environmental Protection Agency to identify a gradual "level of concern" scale based on how close the Estimated Environmental Concentration value is to a level greater than 1/20 LC 50 risk criteria (i.e. pesticide concentration is 1/20 of the Lethal Concentration that causes mortality in 50% of the test organisms within a specific period of time).
[a] Criteria consistent with 2004 Letters of Concurrence from FWS for Boise and the Shoshone/Burley Normal Fire Rehabilitation Plans.
[b] Criteria consistent with Fire, Fuels, and Related Vegetation Management Direction Plan Amendment, 2008, Appendix Q.
[c] Criteria consistent with the BLM Vegetation Treatments Using Herbicides Final Programmatic Environmental Impact Statement, 2007, Table 2-8, p. 2-31.

Yellow-billed Cuckoo (*Coccycus americanus*), Candidate Species

- When developing vegetation treatment projects, no ground-based application of herbicides would occur from May 1 to August 31 within 200 feet of occupied yellow-billed cuckoo habitat. (Fire, Fuels, and Related Vegetation Management Direction Plan Amendment, 2008, Appendix Q.)
- Aerial application of chemicals would not occur from May 1 to August 31 within 0.5-mile of occupied yellow-billed cuckoo habitat. (Fire, Fuels, and Related Vegetation Management Direction Plan Amendment, 2008, Appendix Q.)

Greater Sage-grouse (*Centrocercus urophasianus*), Candidate Species

Sage-grouse would be used as an umbrella species when planning ESR treatments in sagebrush steppe (Noss, 1990; Rich and Altman, 2001; Rowland, Wisdom, Suring, & Meinke, 2005). The assumption is habitat needs for other sagebrush-obligate sensitive species would benefit from protection, improvement, and restoration of sage-grouse habitat. Other sagebrush obligates include pygmy rabbit (*Brachylagus idahoensis),* sage thrasher (*Oreoscoptes montanus),* sage sparrow (*Amphispiza belli),* and Brewer's sparrow (*Spizella breweri).* In some cases, some species may have habitat needs in addition to what is outlined for sage-grouse. Where identified, the interdisciplinary team would address unique habitat needs of other sagebrush obligates. The following design features would apply to sagebrush steppe habitats:

- The Idaho Sage-grouse Preliminary Priority and Preliminary General Habitat maps (BLM, April 2012) or subsequently approved BLM planning map would be used when developing ESR activities that benefit sage-grouse and other sagebrush obligate species.
- When repairing existing fences where repeated sage-grouse collisions have been documented, the fence will be marked or flagged. (Conservation Plan for the Greater Sage-Grouse in Idaho, 2006, p. 4-63.)
- Fences would not be constructed within 400 yards of an occupied sage-grouse lek. If sage-grouse collisions are possible due to fence placement, marking or flagging would be done. (Conservation Plan for the Greater Sage-Grouse in Idaho, 2006, p. 4–63.)
- ESR treatments within 0.6 mile of occupied sage-grouse leks that results in or could likely result in disturbance to lekking birds would be avoided from approximately 6:00 pm to 9:00 am. This guideline would apply from March 15 through May 1 in lower elevation habitats and March 25 through May 15 in higher elevation habitats. (Craters Management Plan, 2006, p. 33; Fire, Fuels, and Related Vegetation Management Direction Plan Amendment, 2008, Appendix Q; Conservation Plan for the Greater Sage-Grouse in Idaho, 2006, p. 4–70.)
- Treatments in areas supporting sage-grouse nesting habitat would be limited from April 30 through June 15. (Craters Management Plan, 2006, Appendix J; Jarbidge Resource Management Plan, 1987, Table 1, p. II-85.)
- Treatments in close proximity to sage-grouse wintering habitats would be limited from December 1 through March 1. (Craters Management Plan, 2006, Appendix J; Jarbidge Resource Management Plan, 1987, Table 1, p. II-85.)
- Standing dead juniper trees that are potential raptor perches may be felled as needed to protect pygmy rabbits and sage-grouse from excessive predation. (Conservation Plan for the Greater Sage-Grouse in Idaho, 2006, p. 4-97.)
- Fences would be placed to avoid areas of high collision risk for sage-grouse using the Collision Risk model (Stevens and Naugle, 2012) or as new science dictates.

Gray Wolf (*Canis lupus*), Experimental Population

- ESR activities within 1 mile of an active gray wolf den or rendezvous site would be avoided from April 15 through June 30. (Fire, Fuels, and Related Vegetation Management Direction Plan Amendment, 2008, Appendix Q; FWS Concurrence Letter for the Boise Normal Fire Rehabilitation Plan, 2004, p. 9; FWS Concurrence Letter for the Shoshone/Burley Normal Fire Rehabilitation Plan, 2004, p. 6.)

Type 2 Rangewide/Globally Imperiled Species

Aquatic Species

Type 2 Aquatic species of concern include redband trout (*Oncorhynchus mykiss*), Utah Valvata snail (*Valvata utahensis*),Snake River white sturgeon (*Acipencer transmontanus*), Wood River sculpin (*Cottus leiopomus)*, Yellowstone cutthroat (*Oncorhynchus clarkia*), and the Shoshone sculpin (*Cottus greenei*). Conservation measures listed in Table 1, Herbicide Use Restrictions for Streamside, Wetland and Riparian Habitats and conservation measures identified for ESA-listed species also apply when completing ESR actions in Type 2 aquatic species habitats.

Migratory Bird Species of Conservation Concern

The presence of birds protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act would be determined on burned areas that are proposed for treatment. If migratory birds are known or suspected to occur in a site-specific project area, the area would be examined for habitat quality and the need for treatment. Treatments would be designed to minimize potential impacts to migratory birds and their habitats. Specific mitigation/guidelines such as avoidance of occupied areas, distances from occupied habitat, etc. would be outlined in the site-specific ESR plans. Many of the birds listed on the Migratory Birds Species of Conservation Concern (Appendix 5) are also designated as special status species, including Type 3 Regional/State Imperiled Species and Type 4 Peripheral Species in Idaho. Design features for those migratory birds that are not designated as special status species are listed below.

- Western burrowing owl (*Speotyto cunicularia)* nest sites would not be treated. (Monument Resource Management Plan, 1985, p. 36.)
- Active long-billed curlew (*Numenius americanus)* and burrowing owl nests would be avoided from treatment from April 1 and June 30. (Cassia Resource Management Plan, 1985, Appendix B, p. 67.)
- Aerial seeding treatments (i.e. sagebrush) within 1000 feet of active American bald (*Haliaeetus leucocephalus)* and golden eagle (*Aquila hrysaetos*) nests would be avoided between January 1 and January 31 (FWS 2010).
- Aerial seeding treatments and aerial application of herbicides would be avoided within 0.5 mile to one mile of active American bald and golden eagle nests between February 1 and July 31. Avoidance distances would be determined by the amount of screening provided by vegetation or topographic features. (Fire, Fuels, and Related Vegetation Management Direction Plan Amendment, 2008, Appendix Q; Jarbidge Resource Management Plan, 1987, Table 1, p. II-85; FWS Concurrence Letter for the Boise Normal Fire Rehabilitation Plan, 2004, p. 6; FWS Concurrence Letter for the Shoshone/Burley Normal Fire Rehabilitation Plan, 2004, p. 3.)
- Aerial seeding treatments and aerial application of herbicides within 0.5 mile of American bald eagle winter concentration sites during November 1 through March 1 would be avoided. (FWS Concurrence Letter for the Boise Normal Fire Rehabilitation Plan, 2004, p. 6; FWS Concurrence Letter for the Shoshone/Burley Normal Fire Rehabilitation Plan, 2004, p. 3.)
- On-the-ground ESR treatments would be avoided within 0.5 mile to one mile of an active American bald eagle nest during January 1 through July 31. Avoidance distances would be determined by the amount of screening provided by vegetation or topographic features. (Fire, Fuels, and Related Vegetation Management Direction Plan Amendment, 2008, Appendix Q; Jarbidge Resource Management Plan, 1987, Table 1, p. II-85; FWS Concurrence Letter for the Boise Normal Fire Rehabilitation Plan, 2004, p. 6; FWS Concurrence Letter for the Shoshone/Burley Normal Fire Rehabilitation Plan, 2004, p. 3.)
- On-the-ground ESR treatments will not occur within 0.75 mile of an active golden eagle nest from February 1 through July 31. (Jarbidge Resource Management Plan, 1987, Table 1, p. II-85.)
- On-the-ground ESR treatments would be avoided within 0.5 mile of direct line of sight or within 0.25 mile of bald eagle winter concentration sites during the winter roosting

season (November 1 through March 1). (Fire, Fuels, and Related Vegetation Management Direction Plan Amendment, 2008, Appendix Q.)

- If treatments are necessary to meet ESR objectives outside of the temporal and spatial restrictions for American bald or golden eagles, the BLM may apply for a Non-Purposeful Take Permit from the FWS. The BLM would not conduct such treatments until a permit is acquired. (FWS 2010)
- From February 1 through August 15, restrictions may be imposed on restoration treatments in areas supporting nesting raptors. (Craters Management Plan, 2006, Appendix J.)
- Restrict activity within visual range or 0.75-mile radius of known ferruginous hawk (*Buteo regalis)* nest sites from March 1 to July 15. (Twin Falls Management Framework Plan, 1982, Wildlife Objective 4-2; Jarbidge Resource Management Plan, 1987, Table 1, p. II-85; Cassia Resource Management Plan, 1985, Appendix B, p. 67.)

Other BLM Wildlife Species of Concern

- Treatments in California bighorn sheep (*Ovis canadensis californiana)* habitat would follow the Mountain Sheep Ecosystem Management Strategy in the 11 Western States and Alaska (USDI BLM, 1995).
- Stabilization projects and seeding treatments would not occur in Idaho Dunes Tiger beetle (*Cicindela arenicola*) habitat (i.e. sand dunes).
- ESR treatments within 0.6 mile of occupied Columbian sharp-tail grouse (*Tympanuchus phasianellus columbianus*) leks that result in or could likely result in disturbance to lekking birds would be avoided from approximately 6:00 pm to 9:00 am. This guideline would be applied from March 15 through May 1 in lower elevation habitats and March 25 through May 15 in higher elevation habitats. (Fire, Fuels, and Related Vegetation Management Direction Plan Amendment, 2008, Appendix Q.)

Riparian, Wetland, and Aquatic Habitats

Riparian is defined as an area of land directly influenced by permanent water. Excluded are such sites as ephemeral streams or washes that do not exhibit the presence of vegetation dependent on free water in the soil.

- Activities occurring in riparian areas, riparian conservation areas, wetlands, and aquatic habitats will be implemented in a manner that promotes the attainment of proper functioning condition.
- Limit the use of heavy equipment to actions necessary to repair facilities (e.g. culverts and bridges) or where needed to implement erosion control treatments (e.g. gabion placement).
- Areas with saturated soils or wetland vegetation would not be used as helicopter service landings, for equipment fueling, or storage of fuel or other petroleum products.
- Off-road vehicle use for treatments such as herbicide use would be limited to non-ground-disturbing actions and to designated water crossings or work areas.

- Fence construction would be strategically located to avoid concentration of livestock and/or wild horses in unburned riparian habitats. (FWS Concurrence Letter for the Boise Normal Fire Rehabilitation Plan, 2004, pp. 4, 7.)
- Riparian trees, shrubs, or herbaceous plant species would be planted as needed to prevent impairment of riparian and aquatic habitats for special status species, protect stream banks, and help to minimize threats to water quality.

Special Management Areas

National Landscape Conservation System

The National Landscape Conservation System includes National Conservation Areas, National Monuments, wilderness, wilderness study areas, wild and scenic rivers, and National Historic and Scenic Trails. One National Monument, two National Historic Trails, a wilderness, three wild and scenic rivers, and several wilderness study areas are in the Twin Falls District. Section 1503 of the Omnibus Public Land Management Act of 2009 (Public Law 111-11) established the Bruneau-Jarbidge Rivers Wilderness and Bruneau, Jarbidge, and West Fork Bruneau Wild and Scenic Rivers. The Wild and Scenic Rivers are fully contained within the Wilderness boundary.

Wilderness: ESR treatments and design features in the Bruneau-Jarbidge Rivers Wilderness would be consistent with management direction defined in the enabling legislation, Bureau policy, and the Owyhee Canyonlands Wilderness and Wild and Scenic Rivers Management Plan. A Minimum Requirements Decision (MRD) worksheet would be prepared for all proposed ESR treatments in wilderness.

Wilderness Study Area: ESR treatments and design features in wilderness study areas would be consistent with BLM Manual 6330 – Management of Wilderness Study Areas – and would meet requirements for non-impairment for wilderness suitability.

Wild and Scenic Rivers: ESR treatments and design features in the Bruneau, Jarbidge, and West Fork Bruneau Wild and Scenic Rivers would be consistent with management direction defined in the enabling legislation, Bureau policy, and the Owyhee Canyonlands Wilderness and Wild and Scenic Rivers Management Plan. A Minimum Requirements Decision (MRD) worksheet would be prepared for all proposed ESR treatments. Further, ESR treatments and design features in stream sections eligible or suitable for inclusion into the Wild and Scenic River System would be consistent with BLM Manual 6400 – Wild and Senic Rivers – Policy and Program Direction for Identification, Evaluation, Planning, and Management.

National Historic Trails: National Historic Trails passing through the Twin Falls District include the Oregon and California trails.

- Historic trails adjacent to proposed treatment areas would be marked and monitored by a cultural resource specialist to ensure intact ruts are not disturbed.
- Vegetation treatments should focus on maintaining or improving the visual setting of the Oregon National Historic Trail. Surface-disturbing activities should be kept to the minimum necessary within a 330-foot distance from the trail. Utilize broadcast seeding,

chains, or harrows as a feasible alternative to rangeland drills, or a combination of methods with drills that reduce the appearance of drill rows (Cassia Resource Management Plan, 1987, pp. 13, 42; Boise District Oregon Trail Management Plan, 1984, p. 31.)

- Seeding along the Oregon Trail would be done using native plant species and broadcasting methods. (Cassia Resource Management Plan, 1987, p. 44.)
- Visual Resource Management guidelines and specifications of the Oregon Trail and other scenic values would be protected within a 0.25-mile corridor on either side of the Oregon Trail. (Boise District Oregon Trail Management Plan.)

Craters of the Moon National Monument and Preserve:

Design features relevant to specific resources are identified in those sections of this plan. The following features are identified in the Craters Management Plan (2006) and only apply to ESR actions within the Craters of the Moon National Monument and Preserve.

- Use of native plants would be emphasized in rehabilitation and restoration projects, and only native plants would be used for rehabilitation or restoration projects within the Pristine Zone.
- Integrated noxious weed management principles would be used to: 1) detect and eradicate all new infestations of noxious weeds; 2) control existing infestations; and 3) prevent the establishment and spread of noxious weeds within and adjacent to the planning area.
- Plant materials used in vegetation treatments would be predominately native. However, non-native species may be used in vegetation treatments in the BLM portion of the Monument on harsh or degraded sites where they are needed to structurally mimic the natural plant community and prevent soil loss and invasion by invasive plants and noxious weeds. The species used would be those that have the highest probability of establishment on these sites without invading surrounding areas. These “placeholders” would maintain the area for future native restoration. Native seed would be used more frequently and at larger scales as species adapted to the local area become available.
- Activities in crucial big game winter range would be limited from November 15 through April 30. Treatments occurring on crucial winter range would be coordinated with the IDFG.
- Activities in elk calving areas would be limited from May 15 through June 30. Treatments occurring in elk calving areas would be coordinated with IDFG.
- Treatments occurring in pronghorn and mule deer fawning areas would be coordinated with IDFG with limited activities occurring from May 15 through June 30.

Areas of Critical Environmental Concern

Areas of critical environmental concern is a designation that highlights areas where special management attention is needed to protect and prevent irreparable damage to important historic, cultural and scenic values, fish, wildlife, or other natural systems or processes, or to protect human life and safety from natural hazards. The designation is a record of remarkable values that must be accommodated when BLM considers future management actions and land use proposals.

Areas of critical environmental concern designations would be updated as new or revised land use plans are completed.

Areas of critical environmental concern and their values are identified in Chapter 3, Description of the Affected Environment. Areas of critical environmental concern burned in a wildfire would be treated to protect the values for which the area was established and treatment would be in conformance with the applicable management direction contained in the following land use plans and activity plans: Jarbidge Resource Management Plan, 1987; Sun Valley Management Framework Plan Amendment, 1991; Amendments to Shoshone Field Office Land Use Plans, 2003; Cassia Resource Management Plan Amendment, 1987; Twin Falls Management Framework Plan Amendment, 1989; Sand Point Natural History Resource Management Plan, 1988.

Cultural Resources

A cultural resource inventory and consultation with the State Historic Preservation Officer and affected Native American tribes will be completed (Section 106 of the National Historic Preservation Act) according to the National Programmatic Agreement. Cultural resource sites identified during the inventory would be recorded, marked, and avoided during treatment implementation. Law enforcement patrols may be used to protect cultural resources from unauthorized human activities.

Monitoring

Objectives

Objectives establish criteria to evaluate success or failure of ESR treatments. Site-specific objectives are established for each treatment in individual plans. Treatment objectives in ESR plans should be specific, measurable, attainable, reasonable, and there must be adequate time available to accomplish them (USDI BLM, 2007a). Seeding treatment objectives are based on site potential. Monitoring is then designed to measure progress towards meeting objectives.

In some cases, seeding treatments may not be necessary and the only treatment may be temporary livestock grazing closure to allow for natural vegetation recovery. In this case, objectives would be established to determine when vegetation recovery is adequate to resume livestock use. Objectives addressing natural recovery would be included in ESR plans and/or grazing closure decisions or agreements.

Monitoring Strategies

Monitoring is required in all site-specific ESR plans. Monitoring strategies would be designed and implemented to measure progress in meeting ESR objectives. Monitoring methods may be qualitative or quantitative, and would be commensurate with the level of treatment complexity and extent.

The proper location of monitoring sites is critical to gauging the success or failure of a treatment and determining when livestock can be allowed back into wildfire a burned area. The monitoring site should be representative of the soils and topography of the area.

Monitoring sites should also be representative of areas burned by a wildfire that receive treatment or are left to recover naturally. Monitoring sites can be located using existing key areas, trend monitoring sites, fuels inventory data sites, Ecological Site Inventory locations, or utilization areas for range monitoring if they occur within the treated or natural recovery areas. Other factors, such as location of roads, trails, fences, natural barriers, water troughs, and salt areas, as well as grazing history should also be considered.

Number of Monitoring Plots

The number of monitoring plots depends on the size of the burn and number, size, and type of seeding treatments. If the soils and seeding treatments are homogenous, fewer monitoring plots may be needed. If the soils in the burn area are diverse, or if multiple treatments and/or multiple seed mixes are used then more plots would be needed. Monitoring plot establishment would be consistent with current guidance and monitoring would be implemented using standard protocols.

Evaluation of monitoring data should consider several factors. Seeding establishment or natural recovery time frames can be highly variable depending on burn severity, weather, pre-burn plant community, topography, and other factors. Rangeland health prior to the wildfire and burn severity could influence the time needed for seeding establishment or natural recovery. For example, rangelands in good ecological health are more resilient than ranges with pre-existing rangeland health issues but could take longer to recover because of high burn severity.

Monitoring Seeding Treatments and Natural Recovery

Monitoring Seeding Treatments

Quantitative monitoring techniques are described below. These techniques are considered the minimum required for determining success of treatments. Additional criteria may be used to meet local resource needs.

Quantitative monitoring methods would include density plots and cover transects utilizing the line–point intercept method. Photo plots would also be established at each monitoring plot. Standard monitoring methods that address seeding treatment objectives are as follows.

- The density plot method would be used to measure establishment of seeded species. Desired densities would be determined using reference areas or Ecological Site Descriptions.
- The line-point intercept or step point cover methods would be used to determine if the amount of bare mineral soil (lacking plant canopy cover) is within ranges of predetermined reference sites or Ecological Site Descriptions.

Qualitative methods would be used to supplement quantitative data. Qualitative methods typically involve taking photo and collecting descriptive information about the burn, vegetation, treatments implemented, seedling establishment, success of other treatments, and other factors (Appendix 6, Consideration Factors for Qualitative Monitoring).

Areas with large-scale chemical treatment for invasive plant control would be monitored by field observations and photo plots. Monitoring of chemical treatments would determine success in controlling invasive plants and/or noxious weeds and the need to follow-up with a second treatment.

Monitoring Natural Recovery Areas

Natural recovery areas are burned areas that are not treated and are left to recover naturally. Monitoring of these areas would document the recovery of the existing plant community and the return of adequate ground cover to support watershed stabilization and prevent invasive plants and noxious weed expansion.

The line-point intercept or step point cover methods and photo points would be used to determine if recovered herbaceous vegetation (i.e. native plant community, seeded plant community, or non-native annual plant community) is providing sufficient ground cover to protect the site from accelerated erosion and expansion/conversion to annual grasses and noxious weeds. A qualitative visual assessment of the area using Consideration Factors for Qualitative Monitoring (Appendix 6) would provide additional monitoring data.

Examples of Plan-Specific Monitoring Objectives

The following are examples of monitoring objectives that could be stated in a site-specific ESR plan. Plan-specific objectives will vary depending on local site conditions and land use plan guidance.

Example Objectives for Seeding Treatments

The objective of the seeding treatment is to establish perennial-dominated plant communities within 3 years. The following grass, forb, and shrub density objectives are based on ecological site potential.

The drill seed treatments would be considered successful if the seeded grass and forb species reach densities of:

- 3 plants per square meter for grasses.
- 0.25 plants per square meter for forbs.

The aerial grass seed treatment would be considered successful if the seeded grasses reach densities of:

- 3 plants per square meter; or

- In qualitative surveys plants are observed to be established in available microsites.

The aerial sagebrush seed treatment would be considered effective if:

- Sagebrush seedlings average 0.10 seedlings per square meter across all density plots; or
- In qualitative surveys sagebrush seedlings are found to be common.

Example Objectives for Livestock Closure on Seeding Treatments

Exclusion of livestock is important for the recovery of burned vegetation. The burned area would be closed to promote recovery of burned vegetation and to facilitate the establishment of seeded species until monitoring results, documented in writing, show that ES and BAR objective have been met, as specified in the BLM ES and BAR Handbook (H-1732-1). The monitoring for grazing availability and recommendations for opening the burned area to livestock would be the responsibility of an interdisciplinary team.

The drill and aerial seed treatment area would be considered recovered and available for grazing when:

- The amount of bare mineral soil (lacking plant canopy cover) is within 10% of what would be expected for early seral stages of the ecological sites found within the treated areas,
- Desirable herbaceous perennial plants are producing seed, and
- Desirable perennial vegetation have developed extensive root and shoot systems to provide for soil stabilization and are sustainable under livestock grazing.

Example Objectives for Natural Recovery and Livestock Closures

Natural recovery areas would be considered recovered and available for grazing when:

- Recovered herbaceous vegetation is providing sufficient ground cover to protect the site from accelerated erosion and expansion/conversion to annual grasses and noxious weeds. The amount of bare mineral soil (lacking plant canopy cover) is within 10% of what would be expected for early seral stages of the ecological sites found within the burned area.
- A qualitative visual assessment of the following would also be considered:
    - Plant vigor (perennial plants).
    - Precipitation information during the non–growing (winter) and growing (spring through early summer) seasons.
    - Competition with invasive annual plants and noxious weed species.
    - Seed production.
- An evaluation of collected monitoring data is completed documenting that reintroducing grazing to the area would not cause a downward trend in vegetation recovery.

Alternatives Considered but Eliminated from Detailed Study

The following alternatives were considered but eliminated from detailed study.

- An alternative to use only native seed was considered, but will not be studied in detail since the exclusive use of native seed would not always achieve ESR goals nor meet the Purpose and Need for the proposed action. Depending on supply and demand, native seed is not always available in sufficient quantities, making this alternative infeasible. Therefore, successfully implementing this alternative during the life of the PERSP is not expected to occur. The proposed action emphasizes the use of native plant species. Further, a mixture of native and non-native species is preferable to using only non-natives if the desired natives are not available, and if the use of non-natives is consistent with approved land use plans (BLM Handbook H-1742-1).
- An alternative which would prohibit the use of temporary fences to protect recovering areas from livestock was considered, but eliminated from detail study. The PESRP is a programmatic plan which provides a suite of tools (including temporary fences) that could be used in ESR treatments. The decision whether to construct a temporary fence is best made when site-specific ESR plans are being developed. Completely eliminating temporary fences from the suite of tools would limit post-fire options to properly manage livestock grazing. BLM policy (BLM Handbook H-1742-1) allows for the use of ESR funds to implement temporary livestock closures when needed to protect recovering vegetation or new seedings. Specifically, the handbook states "Protective fences may be constructed using emergency stabilization funds to protect burned areas (from impacts by wildlife, domestic livestock, wild horses/burros, or humans and for the health and safety of agency personnel and the public) during the recovery period for burned vegetation or the establishment period for new seedings." Further, the proposed action requires wildlife compatible fences and site-specific placement considerations to reduce potential impacts. All proposed temporary protection fences must be placed around the perimeter of the burned area to the minimum degree required. As with all treatments, cost effectiveness must be examined during the post-fire planning period.
- An alternative to continue using the existing NFRPs was considered. ESR actions described in the proposed action are substantially similar to those described in the existing NFRPs. Upon considering this alternative, the Interdisciplinary Team determined that it is substantially similar in design to an alternative that is analyzed (i.e. the proposed action) and that it would have substantially similar effects to the proposed action. For these reasons, an alternative that would continue use of the existing NFRPs was considered but eliminated from detailed study.

Affected Environment

The Twin Falls District manages approximately 4.1 million acres of public land in south-central Idaho. The District lies within 12 counties in Idaho (Lincoln, Jerome, Gooding, Camas, Minidoka, Elmore, Blaine, Twin Falls, Cassia, Oneida, Power, and Owyhee) and in Elko County in northern Nevada. The Twin Falls District can be described as having several basins and mountain ranges, separated by broad valleys and vast agricultural lands. Most of the area is in the Columbia Basin. The Snake River, which is a major tributary to the Columbia River, flows through the center of the Twin Falls District.

There are a variety of natural landscapes within the field offices, differing in elevation and precipitation. Elevation ranges from a low of 3,000 feet (average) on the Snake River to more than 9,000 feet on Blizzard Mountain, located northeast of Carey, Idaho. Average annual precipitation varies from 6 inches or less in the Raft River drainage to 22 inches or more annually in higher elevation areas. Most of the precipitation falls during the winter and spring months. Mean temperatures vary from 15 degrees Fahrenheit in January to 94 degrees Fahrenheit in July. Temperature extremes of -50 degrees Fahrenheit to greater than 100 degrees Fahrenheit can occur for short periods.

During the analysis process, the interdisciplinary team considered comments from the public and other entities, professional knowledge of resources and the effects of fire and post-ESR actions, and supplemental authorities. Based on this information the interdisciplinary team found that the resources discussed below would be affected by the proposed action.

Soils

Over the past 30 years, wildfires in the Twin Falls District have mostly occurred in low (<5,000 feet) to mid-elevation (5,000 to 7,000 feet) vegetation types. Soil orders predominantly found in these areas are Aridisols and Mollisols. Aridisols are semi-desert and desert soils. They tend to be coarse textured and are susceptible to wind erosion. Sandy and loamy soils, types of Aridisol soils, are susceptible to accelerated wind erosion when vegetation cover is removed. Sandy loam soils have a moderate to high wind erosion potential, but will usually not erode readily unless the surface is disturbed and the vegetation is sparse. Water erosion can occur on steeper slopes.

Mollisols are generally found in grasslands, shrub-steppe, mountain shrublands, and along riparian zones. They are finer grained than Aridisols and are subject to water erosion and soil compaction when wet. The finer textured soils on steeper slopes have a moderate to high water erosion potential when disturbed. They are also subject to wind erosion when their surfaces are exposed.

Water

The Snake River is the principle drainage in the Twin Falls District. Major tributaries of the Snake River within the project area include: Raft River, Salmon Falls Creek, Big and Little Wood Rivers, Camas Creek, Goose Creek, Clover Creek, Bruneau River, and Jarbidge River. Peak flows of the Snake River and its tributaries occur between mid-April and mid-July as a result of snowmelt and rainfall. Spring and early summer run off may be 20 to 50 times greater than base flow. Base flows are maintained during the remainder of the year by ground water and spring discharges. However, stream flows in the Snake River are managed by a series of hydroelectric dams within the District. During the summer, high intensity and widely dispersed thunderstorms produce sporadically high discharges of precipitation for short durations; however, overland flow and runoff are generally insufficient to sustain flows for an extended period of time.

The Twin Falls District contains a variety of stream types and floodplains, from very small spring-fed creeks to reaches of medium and large rivers. Streams and their floodplains occur in a wide variety of landscapes, from high elevation slow-moving meadow reaches to mid- and lower elevation fast-flowing basalt canyon reaches. Stream and river conditions vary from completely undisturbed river and vegetative communities in inaccessible rocky canyons to deep, erodible soil banks at lower elevations. Other surface waters include shoreline and open water habitat on lakes, reservoirs, ponds, and natural springs. Playas are also present and provide a water source to livestock and wildlife when present. Playas collect water from small basins and have no external drainage. They typically lack water from late June into December.

The Idaho Department of Environmental Quality (IDEQ) completed assessments on 10 hydrologic subbasins within the Twin Falls Region (Bruneau River, Camas Creek, Big Wood River, Little Wood River, Goose Creek, Raft River, Salmon Falls Creek, Middle Snake River, Middle Snake River-Upper Snake Rock, and Walcott Lake). These assessments summarized water quality impairments to 303d listed streams in the subbasins. The most common pollutants are sediment, nutrients, and temperature. Although not defined as a pollutant in the Clean Water Act, water flow alteration was also found to affect water quality. IDEQ 2010 Intergrated Report (2011) to the Environmental Protection Administration reports that of 1,228 miles of wadeable streams surveyed in the Twin Falls Region 1,163 miles are fully supporting cold water aquatic life and 65 miles are not. These data suggest most of the wadeable streams in the Twin Falls Region are in fair to good condition (IDEQ, 2011).

Riparian areas and wetlands are generally associated with streams, rivers, and springs/seeps and are broadly distributed across the Twin Falls District. Riparian areas provide cover and food for wildlife and fish as well as water quality benefits by filtering out nutrients from runoff, maintaining stream temperature by providing shade, and controlling erosion. Wetlands are commonly associated with riparian areas but are also found in upland areas in association with springs and seeps. Wetlands associated with springs/seeps often provide surface and subsurface water to downslope streams and rivers.

Air

Airborne particles such as dust, smoke, ash, soot, and dirt are defined as particulate matter. Particulate matter is a human health concern since it can enter a person's respiratory system and is associated with numerous health effects. Particulate matter is described as fine ($\leq$ .25 micrometers in diameter) and coarse (.25 to 10 micrometers) matter. The primary air quality pollutant of concern in Idaho is fine particulate matter which is the only pollutant monitored by the IDEQ in the Twin Falls District. Fine particulate matter generally comes from wood burning, agricultural burning, wildfires, vehicle exhausts, and some industrial processes. However, coarse particulate matter which includes dust particles is known to aggravate respiratory conditions such as asthma.

Nonattainment areas or areas of concern have not been identified within the Twin Falls District. IDEQ monitoring data taken at the Twin Falls monitoring site showed the average daily concentrations of fine particulate matter during 2001 – 2010 was well below the national ambient air quality standard of 35 micrograms/cubic meter. In 2010, the daily air quality index at the Twin Falls monitoring site was good except for 2 days when the air quality index was moderate and 1 day when it was classified as "unhealthy for sensitive groups." IDEQ attributed the cause of the high particulate matter on this day to smoke from wildfires and/or dust in the air (IDEQ, 2010). Moderate air quality index is defined by IDEQ as "air quality is acceptable; however, for some pollutants there may be moderate health concerns for a very small group of people who are unusually sensitive to air pollution." Unhealthy for sensitive groups is described as "members of sensitive groups may experience health effects; the general public is not likely to be affected."

Vegetation

Objectives of this plan are to emulate historic or pre-fire ecosystems and restore or establish healthy, stable ecosystems in which native species are well represented. Healthy rangeland ecosystems are those systems where the integrity of the soil and ecological processes (e.g. nutrient cycling, hydrologic cycling, and energy flow) are maintained over time (USDI BLM, 1997). Healthy rangelands experience fewer stand-replacement fires and are more resilient to the effects of wildfire resulting in a diverse mosaic of healthy vegetation cover types across the landscape. Further, fire behavior (measured in terms of intensity and severity) is dependent upon the vegetation (fuels type) and the conditions in which a wildfire burns. For example, higher wildfire intensities can lead to greater fire severity. However, most wildfires that have occurred in the Twin Falls District are mosaic, burning at different intensities depending on the vegetation (fuel type) present. Areas that can burn severely include heavily vegetated sites such as drainages with heavy shrub, timber, or woody cover.

General Vegetation

The 11 most common vegetation cover types found in the Twin Falls District and the acres burned over the past 30 years in each vegetation cover type are described in Table 2. The vegetation cover types were developed based on ecological site and similar fire regimes (USDI

BLM, 2008b). The lava, rock, barren cover type is also found in the Twin Falls District, but is not listed or discussed since there is little opportunity for ESR projects to occur on these sites.

These vegetation cover types were aggregated from 51 vegetation cover types originally classified by the GAP analysis program for southern Idaho (Scott et al., 1993 and 2001). GAP uses Landsat Thematic Mapper satellite images to generate digital maps from which land cover patterns are delineated at landscape level resolution. However, the mapping data may not be a true representation of vegetation on-the-ground since the data has not been field checked. Historically, most wildfires and associated ESR actions have occurred in areas currently occupied by the perennial grass, annual grass, and low-elevation shrub steppe cover types.

Table 2: Vegetation Cover Types Found in the Twin Falls District.

Vegetation cover type	Characterized By:	Acres in Twin Falls District	Acres of Cover Type burned in past 30 years*
Perennial Grass	Seeded areas (native and non-native) and native grasslands (bluebunch wheatgrass, needlegrass, Idaho fescue, etc.).	1,649,707	1,762,327
Annual Grass	Cheatgrass and medusahead wildrye, and to a lesser extent tumbleweed, tumble mustard, etc.	421,027	666,841
Low-Elevation Shrub Steppe	Wyoming big sagebrush, basin big sagebrush, low sagebrush, bitterbrush, gray and green rabbitbrush, with native grass, forb, and biological crust understory.	896,977	1,442,850
Mid-Elevation Shrub Steppe	Mountain big sagebrush, low sagebrush, black sagebrush, bitterbrush, and gray and green rabbitbrush with native grass and forb understory.	562,715	287.061
Mountain Shrub	Serviceberry, ceanothus, snowberry, mountain mahogany, big-tooth maple, chokecherry, currant, and antelope bitterbrush, etc., with native grass and forb understory.	149,417	128,848
Juniper Woodlands	Utah juniper, limber pine, and/or single leaf piñon pine. Natural juniper, piñon-juniper, and juniper encroachment in sagebrush steppe and riparian habitats.	60,330	31,345
Salt Desert Shrub	Four-wing saltbush, shadscale, spiny hopsage, winterfat, greasewood, etc., with native grass, forb, and biological crust understory.	15,936	81,126
Riparian/Wetland	Cottonwood, willow, rush and sedge species, as well as graminoid communities.	7,713	6,673
Aspen/Conifer	Aspen and stands of aspen with conifer.	8,391	7,609
Dry Conifer	Douglas-fir, limber pine, ponderosa pine.	19,200	16,276

Vegetation cover type	Characterized By:	Acres in Twin Falls District	Acres of Cover Type burned in past 30 years*
Wet/Cold Conifer	Lodgepole pine, sub-alpine fir, and Engelmann spruce.	10,011	18,854
Totals		3,801,424	4,449,901

*Acres burned include land that has burned more than once in the past 30 years (1983-2012).

Perennial Grass

Vegetation found on native perennial grasslands include Idaho fescue (*Festuca idahoensis*), bluebunch wheatgrass (*Pseudoroegneria spicata*), western wheatgrass (*Pascopyrum smithii*), thickspike wheatgrass (*Elymus macrourus*), Thurber's needlegrass (*Achnatherum thurberianum*), Sandberg bluegrass, needle-and-thread grass (*Hesperostipa comata*), Great Basin wildrye (*Leymus cinereus*), and Indian ricegrass (*Achnatherum hymenoides*). Historically, native perennial grasslands formed part of the seral mosaic of the sagebrush steppe, although it is unclear how widespread they were across the landscape. Perennial grassland is considered an early to intermediate seral stage. Perennial grasslands eventually develop into diverse sagebrush steppe habitat if undisturbed for 20 to 70 years.

Seeded perennial grasslands typically include cultivars such as crested wheatgrass (*Agropyron cristatum*), Siberian wheatgrass (*Agropyron fragile*), Snake River wheatgrass (*Elymus wawawaiensis*), bluebunch wheatgrass, thickspike wheatgrass, and Great Basin wildrye.

Perennial grasslands are stable communities that do not trend quickly toward recovery to sagebrush steppe habitat. Sagebrush does not re-sprout after a fire and its seed is short-lived; therefore, it does not build seedbanks (Young and Evans, 1989). Sagebrush seed availability is largely dependent on adjoining unburned areas with sagebrush; however, repeated fires can eliminate this seed source, making it necessary to plant sagebrush in order to reestablish it in many areas. Sagebrush is more likely to naturally reestablish itself in more mesic areas (e.g. mountain big sagebrush) than in arid areas (e.g. Wyoming big sagebrush sites).

Biological soil crusts with compositions similar to those found on low- and mid-elevation shrub steppe can occur in healthy perennial grasslands, depending on the number of years since the fire and seeding disturbances (Hilty, Eldridge, Rosentreter, Wicklow-Howard, & Pellant, 2004).

Annual Grass

Annual grasslands are not part of the historical vegetation found in the Twin Falls District. Cheatgrass and medusahead wildrye form a self-perpetuating, yet dysfunctional state in highly-disturbed sagebrush steppe (Laycock, 1991). Once annual grasslands and their associated fire regime become established, it is difficult to regain a perennial vegetation dominated community without aggressive intervention (i.e. chemical and seeding treatments). Because cheatgrass and medusahead wildrye mature earlier in the growing season than most native perennials, the presence of these species extends the time which the plant community is susceptible to wildfire ignitions. Both species are winter annuals that can germinate between autumn and spring when temperature and soil moisture conditions are suitable. Native grasses, on the other hand, are dormant through the winter and germinate later in the spring. This difference in phenology between invasive annual grasses and perennial grasses gives the invasive annual grasses a competitive edge over the native perennial seedlings.

The criteria for determining when annual plants such as cheatgrass and medusahead wildrye become an invasive or fire concern are not readily assigned. The BLM estimates about 5 percent cover as an invasive concern and 15 to 20 percent as a fire-fuel concern (both percentages are relative to associated species). As noted previously, degraded sites are most susceptible to invasive annual grass expansion and dominance after disturbance. An abundance of invasive annual grasses such as cheatgrass in the understory enhances the likelihood of fire spread and conversion of sagebrush steppe to annual grassland. Biological soil crusts tend to be fragmented or absent in annual grasslands due to the frequency of fire disturbance and the density of vegetation and litter (Hilty et al., 2004).

Annual ranges are also highly susceptible to noxious weeds such as diffuse knapweed (*Centaurea diffusa*), Russian knapweed (*Acroptilon repens*), spotted knapweed (*Centaurea maculosa*), Canada thistle (*Cirsium arvense*), leafy spurge (*Euphorbia esul*a), and rush skeletonweed (*Chondrilla juncea*).

Low-Elevation Shrub Steppe

The low-elevation shrub steppe vegetation cover type is dominated by Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) and basin big sagebrush (*Artemisia tridentata* ssp. *tridentata*). This vegetation type is found in areas with 8 to 12 inches average annual precipitation and warm soils.

Much of the low-elevation shrub steppe is comprised of rangelands that have been invaded by cheatgrass and medusahead. Basin big sagebrush occurs on deep and well drained sandy soils. Wyoming big sagebrush occurs on finer-textured, shallow soils with limited water infiltration. Gray rabbitbrush (*Ericameria nauseosus*) and green rabbitbrush (*Chrysothamnus viscidisflorus*) re-sprout following disturbance and may be co-dominant in sagebrush communities that have been influenced by fire. Three-tip sagebrush (*Artemisia tripartita*), a re-sprouting species, is locally abundant in areas north of the Snake River.

Understory vegetation associated with low-elevation shrub steppe is dominated by perennial grasses and a variety of forbs. Dominant grasses include bluebunch wheatgrass, western wheatgrass, thickspike wheatgrass, Thurber's needlegrass, Sandberg bluegrass, bottlebrush squirreltail, needle-and-thread grass, and Indian ricegrass. Common forbs include long-leaf phlox (*Phlox longifolia*), Hood's phlox (*Phlox hoodii*), Hooker's balsamroot (*Balsamorhiza hookeri*), taper-tip hawksbeard (*Crepis acuminata*), fern-leaved desert parsley (*Lomatium dissectum*), and woolly-pod milkvetch (*Astragalus purshii*).

Low-elevation shrub steppe communities may support biological soil crusts in the interspaces. The composition of biological crusts is dependent on soil texture and chemistry, but is usually dominated by lichens, mosses, and cyanobacteria. These crusts play an important role in stabilizing the soil and preventing erosion, fixing nitrogen and providing other nutrients in the soil, regulating water infiltration and evaporation levels (Johnston, 1997). In addition, biological soil crusts may restrict the establishment of invasive annual plants (Deines, Rosentreter, Elridge, & Serpe, 2007). Regardless, invasive annual plants occur in varying degrees in most of these communities, and as such these communities which can be susceptible to annual grass dominance following wildfire.

Mid-Elevation Shrub Steppe

The mid-elevation shrub steppe vegetation cover type occurs from about 5,000 to 7,500 feet elevation in precipitation zones that range from 12 to 20 inches annually. The mid-elevation shrub steppe vegetation type occurs on cooler soils and often has more intact native communities than the low-elevation shrub steppe type. Dominant shrubs are mountain big sagebrush (*Artemisia tridentata* ssp. *vasyana*), gray rabbitbrush, green rabbitbrush, low sagebrush (*Artemisia arbuscula*), black sagebrush (*Artemisia nova*), and antelope bitterbrush (*Purshia tridentata*). Early low sagebrush (*Artemisia longiloba*) and silver sagebrush (*Artemisia cana*) dominate minor plant communities.

Although less vulnerable to annual grass domination than the low-elevation shrub steppe vegetation type, these mid-elevation shrub steppe communities are still susceptible to cheatgrass and medusahead invasion, particularly on harsher and degraded sites. Juniper has invaded some mid-elevation shrub steppe communities as a result of fire suppression.

Perennial grasses such as Idaho fescue, bluebunch wheatgrass, prairie junegrass (*Koelaria cristata*), and Sandberg bluegrass dominate the understory of mid-elevation shrub steppe communities. Perennial forbs are also important understory components of this type and may include arrowleaf balsamroot (*Balsomorhiza sagittata*), Indian paintbrush (*Castilleja* spp.), owl clover (*Orthocarpus* spp.), beardtongue (*Penstemon* spp.), and buckwheat (*Eriogonum* spp.).

Biological soil crusts may be present in mid-elevation shrub steppe communities on drier sites which have a lower density of understory vegetation. Low sagebrush, black sagebrush, and early low sagebrush communities often have well-developed biological crusts occupying the soil between rocks. Biological crusts tend to be abundant on sites supporting these shrubs and are dominated by a diversity of lichens and mosses. Areas with juniper encroachments often have a mat of twisted moss (*Tortula ruralis*) where there is no competition from herbaceous understory vegetation. Unlike many biological crust components, this moss is tolerant of shading and moisture from the juniper overstory.

Mountain Shrub

The mountain shrub vegetation cover type occurs between the sagebrush steppe and conifer types. The mountain shrub type is found at moderately high elevations on sites that are more mesic than sagebrush steppe (14 to 16 inch precipitation zones) but drier than aspen. This cover type is often in a mosaic with Douglas-fir and aspen communities. The mountain shrub type is usually found on north and east slopes that tend to be cooler and moister than south and west aspects.

Mountain shrub is a highly diverse vegetation type containing chokecherry (*Prunus virginiana*), serviceberry (*Amelanchier alnifolia*), ceanothus (*Ceanothus* spp.), currant (*Ribes* spp.), mountain snowberry (*Symphoricarpos oreophilus*), and elderberry (*Sambucus racemosa*). It is often intermingled with mountain big sagebrush. Mountain mahogany (*Cercocarpus ledifolius*) occurs on rocky, often fire-resistant inclusions. The mountain shrub type, with its high productivity and diverse herbaceous understory provides important biodiversity, wildlife habitat, and protective ground cover.

Most mountain shrubs re-sprout after fire; exceptions include mountain big sagebrush and mountain mahogany. Mountain shrub communities generally recover rapidly following wildfire and are considered to be fire tolerant.

Juniper Woodlands

The juniper vegetation type consists of historic juniper, as well as areas where juniper has encroached into riparian, mid-elevation shrub steppe, and mountain shrub vegetation types. Natural juniper stands occur in fire-safe habitats such as shallow soil, rocky areas, and lava flows.

Junipers primarily occur between 4,500 and 6,000 feet elevation on a wide variety of soils and in 10 to 15 inch precipitation zones. Two species occur in the Twin Falls District: Rocky Mountain juniper (*Juniperus scopulorium*), and Utah juniper (*Juniperus osteosperma*). Rocky Mountain juniper is uncommon and occurs in isolated locations, primarily in and adjacent to riparian areas above 5,500 feet. Utah juniper is common in the southern portion of the Burley Field Office, and has encroached into sagebrush steppe, mountain shrub, riparian, and aspen communities.

Biological soil crusts may be present in natural juniper and piñon pine/juniper communities depending on soil characteristic, precipitation, and density of the herbaceous understory. These crusts are dominated by lichens, mosses, and cyanobacteria.

Salt Desert Shrub

Salt desert shrub is one of the least extensive vegetation types found in the Twin Falls District and is found in the Burley and Jarbidge Field Offices. Halophytes and succulent shrubs (saline-tolerant) characterize the salt desert shrub vegetation type. Vegetation includes four-wing saltbush (*Atriplex canescens*), shadscale (*Atriplex confertifolia*), winterfat (*Krascheninnikovia lanata*), bud sage (*Artemisia spinescens*), and greasewood (*Sarcobatus vermiculatus*). Common grasses include inland saltgrass (*Distichlis stricta*), alkali sacaton (*Sporobolus airoides*), needle-and-thread grass, Indian ricegrass, and bottlebrush squirreltail. Productivity in this type is relatively low; understory vegetation is naturally sparse and fuels are generally light. Greasewood favors deeper soils with an accessible water table, as well as high pH and alkaline content. Fires in some salt desert shrub areas have resulted in conversion of this type to annual or perennial grass cover types. These areas have traditionally been difficult to rehabilitate due to low annual precipitation and lack of available plant materials adapted to the conditions that support this cover type.

Biological soil crusts are common in salt desert shrub communities due to sparse vegetative cover, large interspaces, and fine-textured soils with high calcium carbonate or saline content at the surface. These crusts are primarily dominated by lichens and cyanobacteria.

Riparian/Wetlands

Riparian and wetland communities are areas of land directly influenced by permanent water or seasonably high water tables. These areas have visible vegetation or physical characteristics reflective of permanent water influence. Riparian areas and wetlands generally can be identified by typical riparian vegetation such as cottonwoods (*Populus* spp.), willow (*Salix* spp.), sedges (*Carex* spp.), and rushes (*Juncus* spp.). Approximately 680 miles of streams in the Twin Falls District have been classified as follows: 232 miles are in properly functioning condition, 352 miles are in functioning at risk condition, and 96 miles are nonfunctioning (BLM, 2010a).

Riparian and wetland areas constitute only a fraction of the total land area, but they are the most productive in terms of plant and animal species. Both riparian areas and wetlands are scattered throughout the Twin Falls District and occur at all elevations. Ephemeral streams, washes, or playas are excluded from the riparian type.

Aspen/Conifer

The aspen/conifer vegetation cover type occurs between 5,500 to 8,000 feet elevation on a variety of soils, but is best supported in deep, moist, loamy soils in precipitation zones of 16 to 40 inches. Aspen occurs in pure stands or in association with various conifers such as Engelmann spruce (*Picea engelmannii*), lodgepole pine (*Pinus contorta*), ponderosa pine (*Pinus ponderosa* var. *scopulorum*), and Douglas-fir (*Pseudotsuga menziesii*). Aspen also occur as inclusions in the mid-elevation shrub steppe and mountain shrub vegetation types.

Aspen communities can be climax or seral with respect to conifer communities. Although conifer invasion is a natural pattern in many aspen stands, long-term fire suppression has resulted in an increased representation and dominance by conifers, thus reducing the extent of aspen-dominated stands and increasing fire hazard (i.e. diseased trees, insect infestations, canopy fires).

Dry Conifer

The dry conifer vegetation cover type includes Douglas-fir, limber pine (*Pinus flexilis*), and ponderosa pine. Douglas-fir occurs between 6,000 and 8,000 feet elevation in variable soils, but is best supported in deep, moist, loamy soils in 20 to 30 inch precipitation zones. Douglas-fir stands often occur between ponderosa pine and spruce/fir communities, and as isolated patches on cool north slopes. Limber pine occurs on vegetated lava. Ponderosa pine occurs between about 5,000 to 7,600 feet elevation on a variety of soils in 15 to 30 inch precipitation zones and occurs on warmer, drier sites compared to Douglas-fir.

Wet/Cold Conifer

The wet/cold conifer vegetation cover type occurs at high elevations in the colder, more humid environment above the Douglas-fir communities. The wet/cold conifer type is mainly dominated by lodgepole pine. Other localized dominants include Engelmann spruce and sub-alpine fir (*Abies lasiocarpa*). At low and mid-elevation sites, sub-alpine fir occupies areas that are too wet, too dry, or too low in nutrients for Engelmann spruce. At higher elevations it is not uncommon to find pure stands of Engelmann spruce.

Spruce/fir communities occur above 7,000 feet elevation on shallow soils in 30 to 40 inch precipitation zones. Lodgepole pine communities occur above 6,000 feet on a variety of soils in 15 to 30 inch precipitation zones. Lodgepole pine is often regarded as early seral for spruce/fir and Douglas-fir communities. The wet/cold conifer type is uncommon in the Twin Falls District and is limited in extent to small micro-sites.

Special Status Plants

Special status plants include plants that are listed as threatened or endangered under the ESA, species that are proposed or candidates for listing under the ESA, and BLM sensitive species. There is currently one plant proposed for listing under the ESA and one candidate plant in the Twin Falls District. Forty special status plants occur in a variety of vegetation cover types in the Twin Falls District. Appendix 3 contains the most recent special status plant list including conservation status and the field office where each species is known or suspected to occur.

Type 1 Federally Threatened, Endangered, and Candidate Plant Species

Slickspot peppergrass (Proposed species)

Slickspot peppergrass was listed in 2009 as an ESA threatened species (74 FR 52014, October 8, 2009). Following the listing the State of Idaho and others filed a suit in Federal Court challenging the listing. On August 8, 2012 the court issued a decision vacating the listing and remanded the matter back to the FWS for further consideration. Until the matter is resolved by the FWS, Idaho BLM will continue to manage slickspot peppergrass under existing conservation agreements and ESA Section 7 documents.

Slickspot peppergrass occurs in low-elevation shrub steppe communities and is endemic to the sagebrush-steppe ecosystem of southwestern Idaho (Mancuso, 2000). Menke and Kaye (2006) describe high-quality matrix habitat conditions for slickspot peppergrass as “sagebrush-steppe habitat in late seral condition.” Known populations in the Jarbidge Field Office occur in areas dominated by native plant communities, crested wheatgrass, and intermediate wheatgrass (*Agropyron intermedium*).

Primary factors threatening slickspot peppergrass are changes in wildfire regime and invasive plant expansion. Post-fire rehabilitation is not considered to pose a substantial threat to slickspot peppergrass and can protect existing habitat and promote reestablishment of appropriate native species following fires. However, some short-term impacts associated with ESR activities may occur (FWS Biological Opinion for Existing Land Use Plans, 2009). Slickspot peppergrass is currently managed using conservation measures specified in the 2009 Conservation Agreement (USDI BLM and FWS, 2009) and the 2009 FWS Biological Opinion for existing land use plans (FWS, 2009).

The Owyhee Plateau population of slickspot peppergrass is known to occur on about 90,000 acres in the Inside Desert area of the Jarbidge Field Office. Proposed critical habitat for the species is limited to portions of the occupied habitat in the Inside Desert. However, potential habitat occurs over about 40% of the field office area (Figure 2: Twin Falls District Slickspot Peppergrass Habitats). Potential habitat is rated as having high, medium, or low potential for slickspot peppergrass to occur based on soils, elevation, topography, and current vegetation. Surveys to identify slickspot peppergrass populations and habitats are ongoing and once completed will better define these habitats. Part of the area supporting the Owyhee Plateau population burned in the 2007 Murphy Complex and Inside Desert fires.

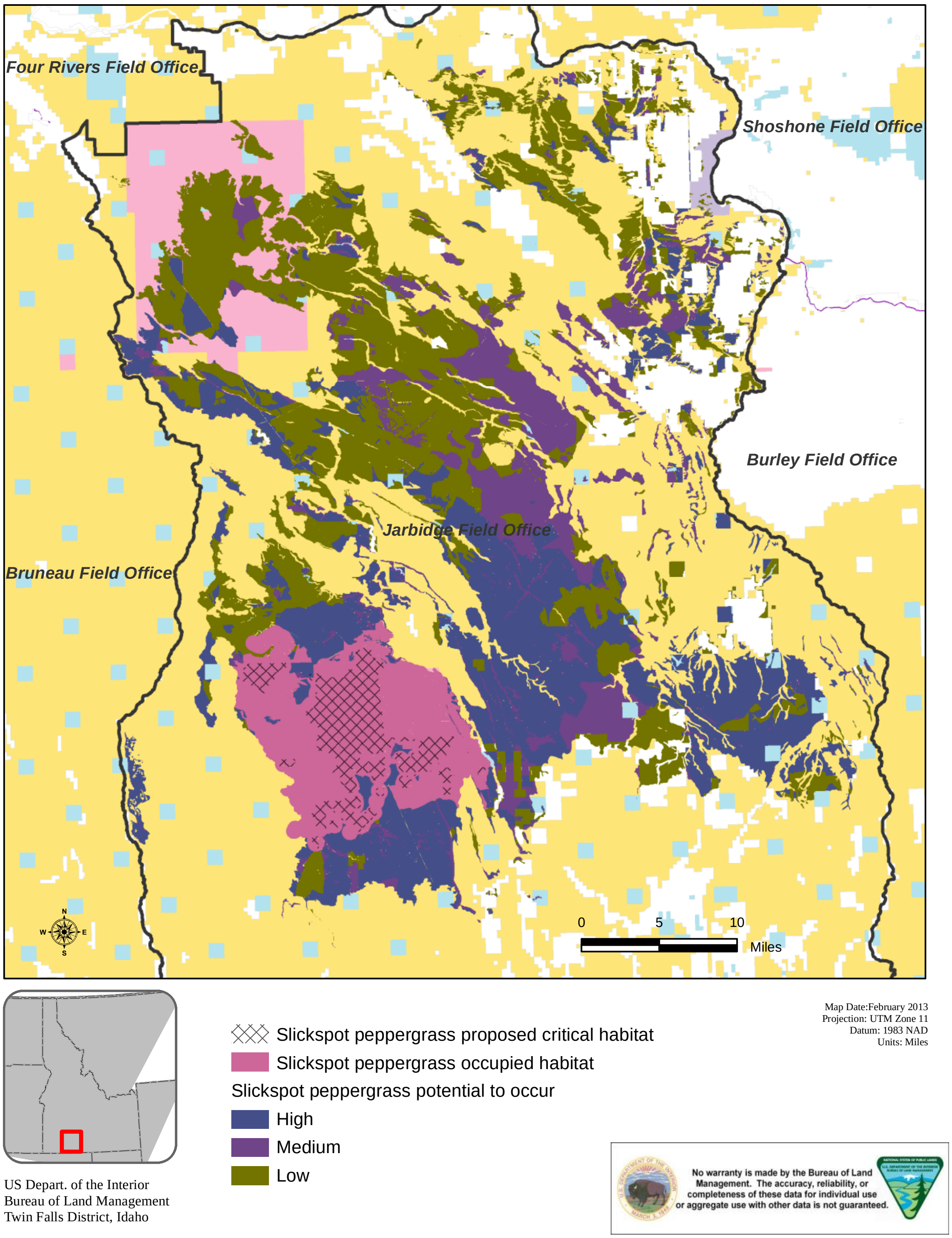
Slickspot peppergrass has two potential life-history strategies; it can be either an annual or biannual plant. Like many short-lived plants growing in arid environments, the number of slickspot peppergrass plants can widely fluctuate from one year to the next based on annual precipitation patterns (Mancuso, 2001; Meyer, Quinney, & Weaver, 2005; Mancuso, Murphy, & Moseley, 1998). Mancuso et al. (1998) note that sites with thousands of above-ground plants one year may have none the next, and vice versa. Above-ground plants represent only a portion of the population; the seed bank contributes the other portion and in many years, constitutes the majority of the population (Mancuso, et al., 1998). Maintaining a seed bank is important for long-term survival of annual plants (Baskin and Baskin, 1978).

Slickspot peppergrass grows in small, sparsely vegetated, visually distinct, edaphically determined openings within the sagebrush matrix. These small openings are called slickspots and are characterized by high levels of clay and salt as well as higher soil water retention than surrounding areas (Fisher, Eslick, & Seyfried,1996). Most occupied habitat occurs on flat to gently sloping terrain. (See glossary for specific definition used to describe slickspot peppergrass occupied habitat.)

The vast majority of slickspot peppergrass seeds in slickspots have been located near the soil surface (Meyer et al., 2005; Palazzo, Lichvar, Cary & Bayshore, 2005). Flowering usually occurs in late April and May, fruit set occurs in June, and the seeds are released in late June or early July. Seeds are dormant for at least a year before germinating. Following this year of dormancy, about 6 percent of the initially viable seeds produced in a given year germinate annually (Meyer et al., 2005).

Slickspot peppergrass is known to persist in grass-dominated sites following a wildfire. However, studies have shown that slickspot peppergrass abundance goes down as the number of wildfires in an area increase and with increased non-native invasive plant cover (i.e. cheatgrass) within and adjacent to slickspot microsites (Sullivan and Nations, 2009). For example, slickspot peppergrass plants still occupy an area burned in the 1983 Kuna Butte Fire located in the Boise District, but at much reduced numbers than were present before the fire (monitoring data on file in the Boise District). Much of the potential slickspot peppergrass habitat in the Twin Falls District has burned one or more times in past fires, further threatening the plant and its habitat. Efforts to restore sagebrush to the area are ongoing via post-fire rehabilitation and proactive projects.

Figure 2: Twin Falls District Slickspot Peppergrass Habitats



Goose Creek Milkvetch (Candidate species)

Goose Creek milkvetch was recently listed as a candidate for listing under the ESA (74 FR 46521). Goose Creek milkvetch is a low, tufted perennial forb with small pink-purple flowers and curved, brownish-red fruit pods. Goose Creek milkvetch is a narrow endemic found where Idaho, Utah, and Nevada share a common border. In Idaho it is located in the Goose Creek drainage within the Burley Field Office boundary. Seven of the approximately 20 known rangewide occurrences are located in Idaho. The others occur in the adjoining two states. In Idaho, occurrences range in size from less than ten to perhaps several hundred plants. Goose Creek milkvetch is restricted to relatively sparsely vegetated outcrops and openings within sagebrush or juniper habitats. Plants also grow in dry, sandy, light-colored tuffaceous sediments.

Type 3 Rangewide/Globally Imperiled Species Plant Species – Moderate Endangerment and Type 4 Species of Concern

Complete inventories do not exist for any of the Type 3 and Type 4 BLM sensitive plants, although some [e.g. Picabo milkvetch (*Astragalus oniciformis*), mourning milkvetch (*Astragalus atratus* var. *inseptus*), bug-leg goldenweed (*Pyrrocoma insecticruris*)] have been well inventoried in the past and general distributions and habitats are known. Annual species are difficult to inventory and detect since their numbers and reproductive success can vary widely from year to year and stature is typically small. Therefore, their population status and distributions are largely unknown.

Type 3 and 4 BLM sensitive plants were reviewed for potential effects due to the proposed action and no action alternatives based on general habitat and ecology. Species potentially affected are listed in Table 3.

Table 3: BLM Type 3 and 4 Sensitive Plants and General Habitat of Occurrence.

Scientific Name	Common Name	General Habitat
Annuals		
Calandrinia ciliata	Fringed redmaids	Mid-elevation shrub steppe
Chaenactis stevioides	Desert pincushion	Salt desert shrub Low-elevation shrub steppe
Eatonella nivea	White false tickhead	Salt desert shrub Low-elevation shrub steppe
Glyptopleura marginata	White-margined wax plant	Salt desert shrub Low elevation shrub steppe
Ipomopsis polycladon	Spreading gilia	Salt desert shrub Low elevation shrub steppe Mid-elevation shrub steppe
Mentzelia congesta	United blazingstar	Low-elevation shrub steppe Mid-elevation shrub steppe Juniper woodlands
Nemacladus rigidus	Rigid threadbush	Salt desert shrub Low-elevation shrub steppe

Scientific Name	Common Name	General Habitat
Perennials		
Allium anceps	Two-headed onion	Low-elevation shrub steppe Mid-elevation shrub steppe
Astragalus astratus var. *inseptus*	Mourning milkvetch	Low-elevation shrub steppe Mid-elevation shrub steppe
Astragalus newberry var. *castoreus*	Newberry's milkvetch	Low-elevation shrub steppe Mid-elevation shrub steppe
Astragalus oniciformis	Picabo milkvetch	Low elevation shrub steppe
Astragalus purshii var. *ophiogenes*	Snake River milkvetch	Low-elevation shrub steppe
Astragalus tetrapterus	Four-wing milkvetch	Low-elevation shrub steppe Mid-elevation shrub steppe
Cymopterus acaulis var. *greeleyorum*	Greeley's wavewing	Salt desrt shrub Low-elevation shrub steppe
Eriogonum shockleyi var. *packardiae*	Packard's buckwheat	Salt desert shrub Low-elevation shrub steppe
Eriogonum shockleyi var. *shockleyi*	Shockley's matted buckwheat	Salt desert shrub Low-elevation shrub steppe
Haplopappus insecticruris	Bug-leg goldenweed	Mid-elevation shrub steppe
Pediocactus simpsonii	Simpson's hedgehog cactus	Salt desert shrub Low-elevation shrub steppe Mid-elevation shrub steppe Juniper woodlands Mountain shrub
Penstemon idahoensis	Idaho penstemon	Mid-elevation shrub steppe Juniper woodlands
Penstemon janishiae	Janish's penstemon	Salt desert shrub Low-elevation shrub steppe
Sporobolus compositus var. *compositus*	Tall dropseed	Low-elevation shrub steppe
Non-vascular plants		
Catapyrenium congestum	Earth lichen	Low-elevation shrub steppe

Wildlife

General Wildlife

The Twin Falls District provides habitat for numerous wildlife species, including special status species. The area supports many small and medium sized mammals, reptiles, big game animals, non-game and game birds.

Big game populations in the Twin Falls District include black bear, moose, elk, mule deer, pronghorn antelope, and bighorn sheep. These species prefer habitats characterized by vegetation mosaics of timbered or brushy hiding cover and open sagebrush grassland foraging areas. Hiding and thermal cover is provided by timber and aspen stands, willow dominated riparian zones, and rugged terrain in all the vegetation cover types. Water is an important factor in spring, summer, and fall habitats and is provided by both natural and artificial sources throughout the Twin Falls District.

Over the past 30 years, large wildfires in the low-elevation shrub steppe have burned big game habitats. Large wildfires occurring on public lands in the Twin Falls District during 1981 (>331,000 acres), 1992 (201,000 acres), 1996 (241,000 acres), 2005 (299,700 acres), 2006 (184,696 acres), 2007 (543,460 acres), 2010 (312,372 acres) and 2012 (427,938 acres) consumed sizable amounts of established big game habitat and habitat recovering from previous wildfire events. The loss of sagebrush cover on native rangelands combined with the conversion of sagebrush steppe to annual grasslands in some areas has limited the amount of suitable winter range available for big game species. Further, not all of the acres burned in the Twin Falls District receive ESR treatments. This is due to the large amount of acres burned and operational constraints such as funding availability, limited availability of desired seed in some years such as sagebrush, and BLM’s capacity to complete ESR projects on large acreages (e.g., limited number of drills and time constraints due to weather). Fuel reduction and restoration projects have proactively begun to restore areas dominated by invasive plants in order to reduce fuels and restore winter range.

California bighorn sheep were released in the Jarbidge and Burley Field Offices in the 1980s. Since that time California bighorn sheep now inhabit the Jarbidge and Bruneau Rivers and Jack’s Creek canyon complexes in the Jarbidge Field Office and the northeast portion of the South Hills in the Burley Field Office. California bighorn sheep were also released on Jim Sage Mountain (Burley Field Office) in 2002.

Columbian sharp-tailed grouse, sage-grouse, blue grouse, ruffed grouse, gray partridge, wild turkey, ring-necked pheasant, mourning dove, sandhill crane, and chukar are the primary upland game species inhabiting the vegetation types found on the public lands in the Twin Falls District. Mourning doves nest throughout the project area in most vegetation types. Ring-necked pheasants exist in low numbers on BLM-administered lands primarily within the BLM-agriculture land interface. Wild turkeys have been re-introduced in the Cottonwood Canyon, City of Rocks, and Goose Creek area in the Burley Field Office. Chukar and gray partridge are present throughout the lower elevations of the Twin Falls District, occupying the low- and mid-elevation shrub steppe, riparian, annual grass, and perennial grass vegetation types. Sandhill cranes are found on meadows in the valleys.

Preferred blue grouse and ruffed grouse habitat is closely associated with dry conifer, aspen/conifer, and riparian vegetation types throughout the Twin Falls District. Blue grouse winter in high-elevation timber, both on BLM-administered lands and adjacent National Forests, where they feed on needles and buds of Douglas-fir. Riparian areas are important for blue grouse and ruffed grouse brood-rearing due to the presence of insects, preferred forbs, and berry producing shrub species. Additionally, herbaceous cover is an important component of brood-rearing habitat, directly affecting areas of use and brood survival.

Columbian sharp-tail grouse use stands of inter-mixed tree and shrub grasslands. Berry-producing deciduous shrubs (e.g., serviceberry, chokecherry) are critical for winter food and escape cover. Bunchgrasses and perennial forbs are important components of nesting and brood-rearing habitat.

A variety of bat species occur throughout the Twin Falls District. Bats of the northern latitudes such as in southern Idaho feed primarily on insects. Species use a variety of habitats including lava tubes, canyons, riparian areas, and open sagebrush. Bats tend to concentrate near riparian areas where insects are most abundant.

General Fish

Fish species found in the Twin Falls District include a variety of both game and non-game fish which are broadly distributed throughout the streams, rivers, and reservoirs. Game fish populations are managed by IDFG and the Nevada Department of Wildlife (public land administered by the Jarbidge Field Office in Nevada) through angler harvest regulations and fish stocking programs. Non-game fish include the native fish not managed by angler harvest regulations due to their small size.

Native non-game fish habitat requirements include stream channels with low levels of instream fine sediments, cool water temperatures, streamflows suitable for successful spawning and passage, and water quality with minimal nutrient contamination. They are also found in lower elevation, warmer water stream habitats. Native non-game fish include four species of sculpin (Shoshone sculpin, mottled sculpin (*Cottus bairdii*), Paiute sculpin (*Cottus beldingii*), and shorthead sculpin (*Cottus confusus*)), four species of sucker (large-scale sucker (*Catostomus macrocheilus*)**,** mountain sucker (*Catostomus platyrhynchus*), bluehead sucker (Catostomus discobolus), and bridgelip sucker (*Catastomus columbianus*)), and numerous minnows. The minnow family represents the largest component of the native non-game fish resource in the Twin Falls District. These species include chiselmouth (*Acrocheilus alutaceus)*, redside shiner (*Richardsonius balteatus*), speckled dace (*Rhinichthys osculus*), longnose dace (*Rhinichthys cataractae*), peamouth chub (*Mylocheilus spp.*), leopard dace (*Rhinichthys falcatus*), northern pikeminnow (*Ptychocheilus oregonensis*), Utah chub (*Gila atraria*), and the Northern leatherside chub (*Lepidomeda copei*).

Game fish include walleye *(Sander vitreus)*, large-mouth bass (*Micropterus salmoides)*, small mouth bass (*Micropterus dolomieu)*, white crappie *(Pomoxis annularis)*, black crappie (*Pomoxis nigromaculatus*), yellow perch *(Perca flavescens)*, brook trout (*Salvelinus fontinalis*), rainbow trout (*Oncorhynchus mykiss gairdeneri*), redband trout (*O. mykiss gibsii*), and mountain whitefish (*Prosopium williamsoni*). Except for mountain whitefish and redband trout, these fish are not native to the planning area, but are present in water impoundments such as Salmon Falls Creek Reservoir and in the Snake River.

Special Status Wildlife and Fish

Appendix 3 contains the most recent list of special status animals known or suspected to occur in the Twin Falls District. This list of special status species is compiled from the FWS Endangered, Threatened, and Candidate species list and the BLM sensitive species list. Affected species that are either listed under the ESA or are being reviewed for listing are discussed further.

Type 1 Federally Threatened, Endangered, and Candidate Wildlife Species

Bruneau Hot Springsnail

The Bruneau hot springsnail was listed as endangered in 1993 (58 FR 5938). It is found in warm water springs and seeps along a 5.2-mile reach of the lower Bruneau River near Hot Creek. This snail is small (<0.25 inch) and reproduces best in water between 75 degrees Fahrenheit to 95 degrees Fahrenheit. On June 17, 1998 (63 FR 32981) the FWS affirmed its earlier determination that listing the Bruneau hot springsnail as an endangered species is warranted. In May 2007, the FWS completed a 5-year status review for the Bruneau hot springsnail and found that threats (declining water tables, invasive plants, and nonnative fish) to this species continue to result in a decline in its numbers and habitat.

Banbury Springs Lanx

The Banbury Springs lanx was listed as endangered in 1992 (57 FR 59257). This snail is found in spring-run habitats with well oxygenated, clear, cold waters on boulder or cobble-sized substrate. At the present time, the snail is only known to occur in four, minimally disturbed spring habitats at Banbury Springs, Box Canyon Springs, Thousand Springs, and Briggs Springs. There is limited information regarding the biological and life cycle requirements of this species. In September, 2006 the FWS completed a 5-year status review for the Banbury Springs Lanx and found the Lanx to be subjected to a high degree of threat (reduced water quality, the amount of water available due to reduced flows, invasive species, and habitat modification) and rated it low in terms of recovery potential.

Snake River Physa Snail

The Snake River Physa snail was listed as endangered in 1992 (57 FR 59244). In 1995, the FWS reported the known range of the Snake River Physa to be from Grandview, Idaho, to the Hagerman Reach of the Snake River. More recent investigations have shown this species to occur outside of this historic range to as far downstream as Ontario, Oregon, with another population known to occur downstream of the Minidoka Dam. While the Snake River physas' current range is estimated to be over 300 river miles, the snail has been recorded in only 5% of over 1,000 samples collected within this area, and it has never been found in high densities. Two specimens were recovered from the Bruneau River arm of C.J. Strike Reservoir (Keebaugh 2009) representing the only tributary of the Snake River from which the species has been recorded. Snake River physa snails are found on the underside of gravel to boulder-sized rock in swift currents at the margins of rapids. Other life cycle information (e.g. reproduction, food habits) are largely unknown for this species. The FWS initiated a 5-year status review for the Snake River Physa snail in March 2012 and has not yet post the results of the review.

Bliss Rapids Snail

The Bliss Rapids snail was listed as threatened in 1992 (57 FR 59244). Historically, the Bliss Rapids snail was present in the Snake River from the Indian Cove Bridge to an area east of American Falls. Currently, they are found in a few discontinuous areas in the tailwaters of the

Bliss Dam and the Lower Salmon Falls Dam and in a few spring habitats in the Hagerman Valley (Thousand Springs, Banbury Springs, Box Canyon Springs, and Niagara Springs). The Bliss Rapids snail prefers gravel to boulder-sized substrates and can be abundant on smooth rock surfaces covered with red algae (Hershler, Frest, Johannes, Bowler, & Thompson, 1994). This snail does not burrow and avoids fine depositional sediment and surfaces with attached macrophytes (FWS, 1995). However, it has been found in association with smaller, pebble- to gravel-sized substrates (Stephenson and Myers, 2003) and primarily resides on the lateral sides and undersides of rocks (Bowler 1990; Hershler et al., 1994). Recently, Bliss Rapids snails have been documented in slack water where previously they were not expected to occur.

On September 16, 2009 (74 FR 47536), the FWS completed a 12-month finding on a petition to remove the Bliss Rapids snail from the list of endangered and threatened wildlife. Based on a review of the best scientific information, the FWS found the species continued to meet the definition of a threatened species and removing the Bliss Rapids snail from the list was not warranted.

Jarbidge River Bull Trout

The Columbia River Basin bull trout (Jarbidge River) was listed as threatened in June 1998 (63 FR 31647), and is the only listed species of fish that occurs within the Twin Falls District. The Jarbidge River watershed contains migratory or fluvial bull trout and six local populations of resident bull trout that occupy the Jarbidge River and its East Fork. Bull trout are present in the headwaters of the East Fork Jarbidge River, Cougar, Fall, Slide, Dave, Pine, and Jack creeks. Although Cougar, Pine, and Jack Creeks are managed by the Forest Service, all of the listed streams are essential to the long-term conservation of Jarbidge River bull trout.

Bull trout spawning and rearing occurs primarily in the headwater streams in Nevada on lands administered by the Forest Service. A portion of one known spawning and rearing stream (Dave Creek) and the majority of migratory corridors and overwintering habitat occurs in the Twin Falls District. The Jarbidge River population boundary includes the entire Bruneau River Subbasin. Although historic distribution records of bull trout in the Bruneau River are limited, their occurrence in the headwater tributaries to the Jarbidge River indicate they were historically present, at least seasonally, in the Bruneau River. Migratory bull trout seasonally inhabit the Jarbidge River downstream of the confluence of the East and West Forks to the Bruneau River from October through late June.

In May 2004, the FWS released a Draft Recovery Plan for the Jarbidge River Distinct Population Segment of Bull Trout. This draft recovery plan included a comprehensive summary of the best scientific data available for Jarbidge River bull trout. Since that time, additional data regarding the distribution, genetic composition, and location of bull trout spawning and rearing areas have been collected by the U.S. Geological Survey (Allen, Mesa, Charrier, & Dixon, 2010). Preliminary data suggests that few bull trout migrate between the East Fork Jarbidge River and the West Fork Jarbidge River, and that bull trout generally do not use the Jarbidge River below the confluence of the East Fork and West Fork of the Jarbidge River. In April 2008, the FWS completed a 5-year status review for bull trout in the Columbia River Basin. The result of this review was a recommendation by the FWS to retain the Federal listing status for bull trout as threatened and to evaluate whether distinct population segments exist throughout the range of bull trout that merit protection under the ESA.

In 2005, critical habitat was designated under a single final rule for five distinct population segments of bull trout (70 FR 56211). This decision was appealed and the FWS completed a reassessment of the initial critical habitat designation. The revised critical habitat designation was published in the Federal Register on October 18, 2010 (75 FR 63898) and now includes most of the streams in the upper Jarbidge River Watershed as well as the Bruneau River from the confluence with the Jarbidge River downstream to the slackwater area for C.J. Strike Reservoir.

Gray Wolf

The gray wolf once occurred throughout much of Idaho. Due to population declines it was listed in Idaho and other states as endangered in 1978 in the continental United States. The species was re-introduced to central Idaho in 1994. Since that time, the gray wolf population has grown considerably. The 2011 Full-Year Continuing Appropriations Bill directed the FWS to issue a final rule published on April 2, 2009 delisting the gray wolf in Idaho (H. R. 1473). On May 5, 2011 the FWS implemented the Congressional direction by delisting the species in Idaho and Montana.

While the gray wolf is common in northern and eastern Idaho, they are relatively uncommon within the planning area. A wolf carcass was found about five miles east of King Hill Creek in the winter of 2002. There has also been recent documentation of wolves in the Fish Creek drainage north of the Craters of the Moon National Monument and Preserve and in Greenhorn Gulch northwest of Hailey. All of these sighting have occurred in the Shoshone Field Office. There are no documented sightings in the Burley or Jarbidge Field Offices.

Columbia Spotted Frog

The Great Basin population of the Columbia spotted frog is a candidate for ESA listing. Extensive surveys throughout Idaho since 1993 have led to increases in the number of known spotted frog sites. Columbia spotted frogs appear to be widely but sparsely distributed throughout southwestern Idaho, mainly in Owyhee County (USDI FWS, 2003) in the Bruneau and Owhyee Field Offices (Boise District) and are currently only found in the Jarbidge Field Office in the Twin Falls District as well as the Duck Valley Indian Reservation. They generally occur at mid- to higher elevations in low gradient streams that contain numerous oxbows and pools, and in lakes and ponds (including stock ponds) in close proximity to suitable stream habitats. Spotted frog habitat is vegetated primarily by sedges and rushes. Springs also provide important over-winter hibernacula.

Historically, spotted frogs were reported in the Jarbidge Field Office in Bear, Shack, Rocky Canyon, and Timber Canyon drainages in relatively close proximity. Habitat is marginal for spotted frogs due to diminished water flows and limited slack water habitat such as beaver ponds. Beaver ponds that were present in Bear and Shack Creeks and Timber Canyon have failed and no longer provide suitable spotted frog habitat. All three drainages have experienced down cutting, which has lowered the water table and reduced water permanence during the summer.

Although willows and aspen are present along substantial portions of the creeks, the reduced water permanence inhibits beaver re-colonizing the creeks.

Spotted frogs have been most frequently observed in Rocky Canyon, which has numerous stable beaver dams. Since the late 1990s, grazing use has been reduced along Rocky Canyon Creek through herding, contributing to an increase in sedges and rushes along the banks. Beaver have also increased the number of ponds. As a result of both improved management and increasing beaver activity, spotted frog numbers have increased in Rocky Canyon since 1998.

Yellow-billed Cuckoo

The yellow-billed cuckoo is listed as a candidate species under the ESA. Information regarding cuckoo populations within Idaho indicates this species is rare, and the breeding population is likely limited to a few breeding pairs, at most. Results of a 2005 survey (TREC, Inc., 2005) concluded that yellow-billed cuckoos have never been particularly abundant in Idaho, with only 64 recorded observations of the cuckoo for the state.

Historical observations of the yellow-billed cuckoo have been documented in the Twin Falls area, the Rupert area, and along the Big Wood River. Surveys conducted in 2003 documented yellow-billed cuckoo observations on two occasions along the Big Wood River, south and west of Stanton Crossing (TREC, Inc., 2005). A single bird was also observed during a 2005 survey at the Minidoka National Wildlife Refuge (TREC, Inc., 2005).

Yellow-billed cuckoos are low/shrub nesting birds that require at least 5 acres of prime riparian habitat (TREC, Inc., 2005) for nesting. Dense understory foliage appears to be an important factor in nest site selection and cottonwood trees are an important foraging habitat (Laymon, 1998).

Greater Sage-grouse

In March 2010, the FWS completed a status review to list the greater sage-grouse as a threatened or endangered species under the ESA. They found that listing the greater sage-grouse (rangewide) is warranted, but precluded by higher priority listing actions (50 CFR Part 17). Thus, the greater sage-grouse is a candidate species under the ESA. A final determination on listing the sage-grouse is scheduled for 2015.

The greater sage-grouse is North America's largest grouse species and is found primarily in habitats dominated by sagebrush, particularly big sagebrush. Sage-grouse require an extensive mosaic of sagebrush of varying densities and heights, high levels of native grass cover for nesting, and areas rich in high protein forbs and insects during nesting and brood rearing (NatureServe, 2009). Productive nesting habitat requirements include a sagebrush canopy cover of 15 – 25%, sagebrush heights of 12 – 32 inches, and minimum grass/forb height of 7 inches (Connelly, Schroeder, Sands, and Braun, 2000, p. 977). Summer brood rearing habitat also includes riparian areas and wet meadows. Sage-grouse depend entirely on sagebrush for food and cover during the winter. Stiver, Rinkes, and Naugle (2010) describe sage-grouse habitats further, based on literature, and characterize habitats as suitable, marginal, or unsuitable.

In Idaho, wildfire and annual grasslands are considered substantial threats to sage-grouse and their habitats (Idaho Sage-grouse Advisory Committee, 2006). Sage-grouse have been impacted over the last 30 years from the loss of sagebrush, particularly in the low-elevation shrub steppe. High wildfire frequency and expansion of annual grasslands have helped to perpetuate the loss of sagebrush, leading to a reduction in suitable habitat.

BLM, in cooperation with IDFG, identified Key and Restoration habitat areas for sage-grouse. These habitat areas are shown on the Idaho Sage-grouse Habitat Planning Map (USDI BLM, 2010b). The map is updated annually to reflect known changes in habitat. Key habitats contain areas of intact sagebrush that provide sage-grouse habitat during some portion of the year. Restoration habitats have the potential to provide sage-grouse habitat in the future. These habitats were sagebrush steppe that are now either perennial or annual grassland (generally due to wildfire) or are conifer-encroached sagebrush areas (mainly juniper). Data or professional judgement indicates that sage-grouse historically occupied these areas and still may utilize them locally to some degree or during seasonal movements or if conifer encroachment has not yet fully compromised habitat suitability. Restoration habitats may have a high likelihood of being re-occupied if habitat suitability improves.

More recently, Idaho BLM developed maps identifying preliminary priority and preliminary general sage-grouse habitats (PPH/PGH). Recent BLM guidance (BLM-WO Instruction Memorandum 2010-071 and WO Instruction Memorandum 2012 -043) directs field offices to implement appropriate conservation actions in priority sage-grouse habitat and provided guidance on interim conservation measures for use within PPH and PGH areas. Plan amendments across the west are anticipated to be completed during 2014. As new or updated BLM standards or guidelines describing sage-grouse habitats are developed, they will be incorporated into this plan.

Type 2 Rangewide/Globally Imperiled Species

Pygmy Rabbit

Pygmy rabbits are considered sagebrush obligates and prefer habitat that consists of dense tall sagebrush. They are the only known North American rabbits which dig their own burrows. Topography and soils may be important to pygmy rabbits in choosing where to dig a burrow. Pygmy rabbit populations are widely scattered and occur across the southern half of Idaho; reduced and fragmented sagebrush habitat is a primary threat to this species habitats (IDFG, 2005, Appendix F). On September 30, 2010 the FWS completed a status review of the pygmy rabbit and found that listing of pygmy rabbit as threatened or endangered under the ESA was not warranted (75 FR 60516). That decision is under appeal.

Redband Trout

Interior Columbia River redband trout, a subspecies of the rainbow trout, is native to most of Idaho. In the Twin Falls District, redband trout are found in the Bruneau River, Salmon Falls Creek, King Hill Creek, and Wood River watersheds and other suitable tributaries in the Snake River Watershed below Shoshone Falls. Redband trout are an inland native fish that are related to steelhead trout, but do not migrate to oceanic feeding grounds like steelhead trout. Redband trout habitats are diverse, ranging from low-desert streams to high-mountain streams in alpine settings. Like other species of trout, habitat needs include undercut banks, large woody debris, pool habitats with clean spawning gravels, and dense overhanging streamside vegetation. They have special adaptations to withstand high water temperatures and are known to survive daily cyclic temperatures up to 80 degrees Fahrenheit for a short period of time (Wydoski and Whitney, 2003).

In Idaho, resident populations of redband trout persist at some level in all major areas of historical distribution. Status reviews in Idaho, Oregon, and Montana report declines in redband trout populations (Thurow, Rieman, Lee, Howell, & Perkinson, 2007; Dambacher and Jones, 2007; Gerstung, 2007; Stuart, Grover, Nelson, & Thiesfeld, 2007). Population declines can be attributed to habitat degradation and fragmentation, and non-native fish introductions into redband trout occupied streams.

Yellowstone Cutthroat Trout

The Yellowstone cutthroat trout is one of ten subspecies of cutthroat trout native to the western U.S. (Behnke, 1992). In Idaho, Yellowstone cutthroat trout originally occurred in the Snake River watershed from the headwaters downstream to Shoshone Falls. The exact distribution of historically occupied streams is unknown but it is hypothesized that most streams in the upper Snake River and Yellowstone Rivers were occupied by Yellowstone cutthroat trout. The Yellowstone cutthroat trout evolved apart from the rainbow trout and redband trout and lack isolating mechanisms that would allow them to co-exist with other non-native trout species. Information on the current status of Yellowstone cutthroat trout indicates that populations have declined from historic levels largely due to influences of introduced non-native fish species and habitat degradation. Yellowstone cutthroat trout are present within the Twin Falls District in the Burley Field Office in portions of the Goose Creek, Big Cottonwood Creek, Dry Creek, and Raft River watersheds.

In April 2007, the IDFG finalized a management plan for conservation of Yellowstone cutthroat trout in Idaho. This plan compiled existing agency data for Yellowstone cutthroat, identified threats to the species, and outlined corrective actions for species recovery. In May 2009, a conservation agreement for Yellowstone cutthroat trout in the States of Idaho, Montana, Nevada, Utah, and Wyoming was finalized. This conservation agreement is expected to expedite the implementation of conservation measures for Yellowstone cutthroat trout and reduce threats to the species and its habitat.

Wood River Sculpin

The Wood River sculpin is a small native fish that only occurs within streams and rivers in the Wood River watershed in Idaho. It is a benthic (bottom-dwelling) species that inhabits flowing waters ranging in size from small streams to large rivers. Wood River sculpin are often found occupying the same habitats as redband trout which is likely due to similar habitat requirements of clean, cool water and coarse streambed substrates (gravel and larger) which stream dwelling sculpin typically select for spawning and rearing (Meyer, Cassinelli, & Elle, 2008). Little is known of this species' life history requirements and there are no known published accounts of the species' distribution, abundance, or population characteristics.

The Wood River sculpin are experiencing substantial declines throughout their range. Recent studies of Wood River sculpin have identified habitat loss and degradation, water quality issues, and floodplain encroachment as factors contributing to the declines of Wood River sculpin (Zaroban, 2008, *in press*).

Shoshone Sculpin

Shoshone sculpin are found in 52 locations within 26 springs and streams in the Hagerman Valley (USDI FWS, 1995). They are only found in association with groundwater outflows or upwelling from stream bottoms. The occurrence of these fish decreases when there is less influence of spring water on water quality (Wallace, Griffith, Connolly, Daley, & Beckham, 1982). They are normally associated with cover, either in the form of rocks, cobble, gravel, and/or submerged vegetation. Young sculpin less than 1.2 to 1.6 centimeters in total length are often found on sand or mud substrate as long as vegetation is present.

Snake River White Sturgeon

The white sturgeon is the largest freshwater fish in North America. White sturgeons inhabit the bottom of slow moving rivers. They move to clean, faster moving areas of rivers during their spawning season. White sturgeons occur in the Snake River upstream to the Shoshone Falls. They have also been released into the Snake River below the American Falls Dam.

Historically, sturgeon populations declined because of over-harvest, habitat loss, and fragmentation resulting from hydroelectric dam construction. However, populations of the Snake River white sturgeon have improved from the Bliss Dam to the C.J. Strike Reservoir since 1996 (IDFG, 2008).

Utah Valvata Snail

The Utah valvata snail is found in the Hagerman Valley and scattered locations from American Falls Reservoir to King Hill Creek. These snails inhabit mud, silt, and fine sand substrates in shallow shoreline water and in pools adjacent to rapids or perennial-flowing waters associated with large spring complexes. On July 16, 2009 (74 FR 34539), the FWS completed a 12-month finding on a petition to remove the Utah valvata snail from the list of endangered and threatened wildlife. Based on a review of the best scientific information, the FWS found this species is more wide spread and occurs in a greater number of habitats than was known at the time of listing in 1992. As a result, the FWS removed Utah valvata snail from the list of threatened and endangered species on August 25, 2010 (75 FR 52272).

Idaho Dunes Tiger Beetle (Cicindela arenicola) and Bruneau Dunes Tiger Beetle (Cicindela waynei)

Idaho Dunes tiger beetles live in areas of active sand dunes along portions of the Snake River Plain, generally north of the Snake River. Their habitat consists of a sand layer with a depth of 15 inches or greater to allow for proper drainage, temperature, and humidity. Tiger beetle larvae depend on a strip of relatively stable, plant-free, sandy habitat bordering the shifting dunes. Anderson (1989) found "the leeward areas of sand dunes with attendant grassy and flat areas are breeding sites of adults and the general location of successful larval burrows." The biggest threat to these insects is the encroachment of cheatgrass and other invasive plants onto the dunes where they lay their eggs. Previously seeded dunes may have reduced habitat; however, conservation measures are in place and the amount of available habitat appears to be stable.

The Bruneau Dunes tiger beetle occupies similar habitats in the Jarbidge Field Office and was previously grouped with the Idaho Dunes tiger beetle (Idaho State Conservation Effort, 1996). It has since been determined to be a separate taxon (Leffler, 2001) but faces threats similar to the Idaho Dunes Tiger Beetles.

Type 3 and 4 Sensitive Animals

Type 3 and 4 BLM sensitive animals were reviewed for potential effects due to the proposed action and no action alternatives based on general habitat and ecology. Species potentially affected are listed in Table 4.

Table 4: BLM Type 3 and 4 Sensitive Animals and General Habitat of Occurrence.

Scientific Name	Common Name	General Habitat
Mammals		
Euderma maculatum	Spotted bat	Low-elevation shrub steppe, riparian
Plecotus townsendii	Townsend's big-eared bat	Low-elevation shrub steppe
Spermophilus mollis artemisae	Piute ground squirrel	Low-elevation shrub steppe
Ovis canadensis californiana	*California bighorn sheep	Low-elevation shrub steppe, Mid-elevation shrub steppe
Tamias dorsalis	Cliff chipmunk	Mid-elevation shrub steppe, Juniper woodland
Spermophilus elegans nevadensis	Wyoming ground squirrel	Low-elevation shrub steppe
Perognathus longimembris	Little pocket mouse	Low-elevation shrub steppe, salt desert
Vulpes velox	Kit fox	Low-elevation shrub steppe, salt desert
Birds		
Falco mexicanus	Prairie falcon	Low-elevation shrub steppe
Accipiter gentilis	Northern goshawk	Riparian, mixed coniferous forest, mountain shrub

Scientific Name	Common Name	General Habitat
Buteo regalis	Ferruginous hawk	Low-elevation shrub steppe
Tympanuchus phasianellus columbianus	*Columbian sharp-tailed grouse	Low-elevation shrub steppe, mid-elevation shrub steppe, mountain shrub
Otus flammeolus	Flammulated owl	Riparian
Stellula calliope	Calliope hummingbird	Riparian, mixed coniferous forest
Melanerpes lewis	Lewis woodpecker	Riparian
Sphyrapicus throideus	Williamson's sapsucker	Riparian
Empidonax trailii	Willow flycatcher	Riparian
Empidonax hammondii	Hammond's flycatcher	Riparian
Lanius ludovicianus	Loggerhead shrike	Low-elevation shrub steppe, mid-elevation shrub steppe
Amphispiza belli	Sage sparrow	Low-elevation shrub steppe, mid-elevation shrub steppe
Spizella breweri	Brewer's sparrow	Low-elevation shrub steppe, mid-elevation shrub steppe
Vermivora virginae	Virginia's warbler	Low-elevation shrub steppe, mid-elevation shrub steppe, pinyon juniper woodland
Amphispiza bilineata	Black-throated sparrow	Low-elevation shrub steppe, mid-elevation shrub steppe

*****Effects to these species analyzed under general wildlife

Migratory Birds

Appendix 5 lists Migratory Birds Species of Conservation Concern in the Great Basin. Many of the birds listed are also designated as special status species or are on the Watch List in the Twin Falls District. These species include sagebrush obligates, grassland birds, birds of prey, and shorebirds. Many of the sagebrush obligates are also designated as BLM sensitive species.

The American bald eagle was listed as endangered in 1978 and downgraded to threatened status in 1995. On June 28, 2007 the bald eagle was taken off the endangered species list. The bald eagle and the golden eagle are protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The bald eagle is a common winter visitor to the Twin Falls District, being associated primarily with the Snake River and, to lesser extent, some of the Snake River's principal tributaries such as the Raft River, Clover Creek, and Big Wood River drainages. There are no documented active bald eagle nest sites on public land in the Twin Falls District. Golden eagles are common throughout the Twin Falls District where there are canyons or rim rock cliffs suitable for nesting. Jackrabbits, which occupy lower sagebrush areas and foothills (Larrison and Johnson, 1981), serve as important prey for golden eagles.

Recreation

Public lands provide a setting for dispersed as well as developed recreational opportunities, which in the Twin Falls District include hunting, fishing, sightseeing, mountain biking, hang gliding, OHV and snowmobile use, cross country and alpine skiing, hiking, camping, caving, river running and boating, horseback riding, and picnicking. These activities are managed through special recreation permits, camping and picnic facilities, roads and trails, information sightseeing, and bulletin boards and kiosks. Some of the recreation attractions within the Twin Falls District include the Craters of the Moon National Monument and Preserve, City of Rocks National Reserve, Bald Mountain Recreation Area, Jarbidge and Bruneau Wild and Scenic Rivers, Oregon and California National Historic Trails, and the Snake River.

OHV use occurs throughout the Twin Falls District, with some areas receiving substantial more use than others. Motorized travel is managed according to the following designations, depending on location. Maps showing these designated areas are found in the various LUPs. Craters of the Moon National Monument and Preserve has adopted a transportation management plan that more specifically describes travel routes and uses. Portions of the Jarbidge Field Office will be subject to the Owyhee County Transportation Management Plan, which is currently being developed.

Open: Any type of motorized vehicle may be used anywhere within open areas. Cross country travel is allowed.

Limited: Motorized use is limited to existing roads and trails, limited to designated routes, or limited to use based on the season.

Closed: No motorized use is allowed anywhere at any time within closed areas.

Special Management Areas

National Landscape Conservation System

Wilderness

The 2009 Owyhee Public Land Management Act designated portions of the Bruneau-Sheep Creek and Jarbidge wilderness study areas as the Bruneau-Jarbidge Rivers Wilderness. However, not all of the acres in the two wilderness study areas were identified as wilderness in the Act. Consequently, the undesignated portions were released from the “wilderness study area” designation and may be designated as provided for in applicable LUPs. The Bruneau-Jarbidge Rivers Wilderness is cooperatively managed by the Twin Falls District (60,000 acres) and the Boise BLM District (30,000 acres). The designation of the Bruneau-Jarbidge Rivers Wilderness preserves the naturalness and the wildness of the deeply incised river canyons and provides habitat for bighorn sheep, bobcat, river otter, Jarbidge River bull trout, and redband trout.

Wilderness Study Areas

Bureau policy is to manage wilderness study areas in a manner so as not to impair their suitability for preservation as wilderness. Table 5 lists the 18 wilderness study areas found in the Twin Falls District. The Little Deer, Ravens Eye, Bear Den Butte, and Great Rift wilderness study areas fall within the Craters of the Moon National Monument and Preserve. The lava flow portions of these wilderness study areas are managed by the National Park Service (NPS) while the non-lava or vegetated portions are managed by the BLM.

Over the last 30 years Sand Butte, Ravens Eye, Little Deer, Shale Butte, Bear Den Butte, Lava, and the Great Rift wilderness study areas, which are located in the low-elevation shrub steppe of the Snake River Plain, have experienced high frequency wildfires and an associated loss of sagebrush steppe habitat and wilderness values. This high fire frequency can be correlated with the expansion of invasive plants, primarily cheatgrass, within low- and mid-elevation shrub steppe vegetation types. As a result, invasive plants have expanded in wilderness study areas and islands of invasive plants have been created within perennial dominated communities.

Table 5: Wilderness Study Areas in the Twin Falls District.

Field Office	Wilderness Study Areas	BLM Acres	NPS Acres	Primary Vegetation Cover Type
Burley – Jarbidge	Lower Salmon Falls Creek	1,800	0	Low-Elevation Shrub, Riparian
Shoshone	Shale Butte	15,968	0	Low-Elevation Shrub, Annual Grass
Shoshone	Little Deer	13,458	20,073	Low-Elevation Shrub, Annual Grass
Shoshone	Ravens Eye	29,899	37,211	Low-Elevation Shrub, Annual Grass
Shoshone	Sand Butte	20,792	0	Low-Elevation Shrub, Annual Grass
Shoshone	Bear Den Butte	5,411	4,289	Low-Elevation Shrub
Shoshone	Great Rift	45,077	335,123	Low-Elevation Shrub, Annual Grass
Shoshone	Shoshone	6,914	0	Low-Elevation Shrub, Annual Grass
Shoshone	Lava	23,680	0	Low-Elevation Shrub, Annual Grass
Shoshone	Black Butte	4,002	0	Low-Elevation Shrub, Annual Grass
Shoshone	Freidman Creek	9,773	0	Mountain Shrub, Dry Conifer, Aspen
Shoshone	Little Wood River	4,385	0	Mountain shrub, Dry Conifer, Aspen
Shoshone	King Hill Creek	4,500	0	Low-Elevation Shrub
Shoshone	Black Canyon	10,731	0	Low-Elevation Shrub, Mid-Elevation Shrub
Shoshone	Gooding City of Rocks West	6,287	0	Low-Elevation Shrub, Mid-Elevation Shrub
Shoshone	Deer Creek	7,487	0	Mid-Elevation Shrub
Shoshone	Gooding City of Rocks East	14,743	0	Low-Elevation Shrub, Mid-Elevation Shrub
Shoshone	Little City of Rocks	5,875	0	Low-Elevation Shrub, Mid-Elevation Shrub
Total		230,282	396,696	N/A

Wild and Scenic Rivers

Federal land management agencies are responsible for evaluating stream segments to determine suitability for inclusion in the National Wild and Scenic Rivers System. The National Wild and Scenic Rivers System designation protects stream segments in their free-flowing state and protect the land immediately surrounding qualifying rivers. During the designation process, the stream segments that are determined to be eligible or suitable are treated as though they were components of the National System until acted upon by Congress, and must be managed in a manner so as not to impair their qualifying outstanding remarkable values and tentative classifications. Table 6 lists river and stream segments currently eligible or suitable for National Wild and Scenic Rivers System designation in the Twin Falls District.

The 2009 Owyhee Public Land Management Act designated portions of the Bruneau (39.4 miles), Jarbidge (29.6 miles), and West Fork Bruneau (0.3 mile) rivers as Wild and Scenic Rivers. All segments are designated as Wild except 0.6 miles of the Bruneau River, which is designated as Recreational. The rivers were recognized for having outstanding and remarkable scenic, wildlife, vegetation, recreation, geologic, and archaeological values. The Bruneau and Jarbidge Rivers are part of the largest concentration of sheer-walled rhyolite/basalt canyon systems in the Western U.S. In some places, the canyon walls rise more than 1,200 feet above the rivers.

Table 6: River Segments Eligible and Suitable for Inclusion in the Wild and Scenic River System

River/Stream	Segment Description	Length (Miles)	Outstanding Remarkable Values	Tentative Classification	Current Status
Upper Bruneau River	Blackrock Crossing to 11 miles downstream	11	Cultural, Fish, Geological, Recreational, Scenic, Vegetation, Wildlife	Scenic	Suitable
Bruneau River	11 miles downstream from Blackrock Crossing to 0.3 miles above the confluence of the Jarbidge River	12	Cultural, Fish, Geological, Recreational, Scenic, Vegetation, Wildlife	Wild	Suitable
Upper Salmon Falls Creek	Nevada border to Salmon Falls Reservoir	9	Recreational	Recreational	Eligible
Lower Salmon Falls Creek	Salmon Falls Dam to Balanced Rock	30	Geological, Recreational, Scenic	Scenic	Eligible

River/Stream	Segment Description	Length (Miles)	Outstanding Remarkable Values	Tentative Classification	Current Status
Snake River, Hagerman Reach	Lower Salmon Falls Dam to Biss Dam Reservoir	8	Fish, Geological, Historical, Recreational, Wildlife	Recreational	Eligible
Snake River, King Hill Reach	Bliss Dam to King Hill Bridge	13	Fish, Geological, Recreational, Wildlife	Recreational	Eligible

National Historic Trails

National Historic Trails are extended trails that closely follow a historic trail or route of travel of national significance. Designation identifies and protects historic routes, historic remnants, and artifacts for public use and enjoyment.

The National Historic Oregon Trail traverses the Burley and Jarbidge field offices. The national historic trail follows the primary route of the Oregon Trail (1841-1848); however, numerous cutoffs, alternate routes, and connecting trails were associated with the trail. Some of these alternate routes and cutoffs are located in the Shoshone Field Office.

Twenty–two miles of the California National Historic Trail and about 17 miles of the California Trail - Salt Lake Alternate traverses the Burley Field Office. It followed most of the same trails as the Oregon Trail until immigrants turned off in Idaho, Wyoming, or Utah to follow trails leading to Nevada. Most travel along the California National Historic Trail took place between 1841 and 1869.

Craters of the Moon National Monument

Presidential Proclamation 7373 in 2000 expanded the Craters of the Moon National Monument to include many of the area’s volcanic features (53,400 acres to 737,700 acres) and took in lands administered by the BLM. In 2002, Federal legislation (PL 107-213. 166 Statute 1052) designated the expanded portion of the Craters of the Moon National Monument as a National Preserve. The Craters of the Moon National Monument and Preserve contains the youngest and most geologically diverse section of basaltic lava terrain found on the Eastern Snake River Plain. Young lava flows and other features cover about 450,000 acres of the Monument. The remaining 300,000 acres are volcanic in origin, but older in age and covered with a thicker mantle of soil. The older terrain supports a sagebrush steppe ecosystem consisting of diverse communities of grasses, sagebrush, and shrubs and provides habitats for a variety of wildlife (USDI BLM and NPS, 2006).

Areas of Critical Environmental Concern

Areas of critical environmental concern are areas where special management attention is required to: 1) protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, 2) protect human life and safety from natural hazards, 3) preserve natural processes that dominate the landscape for the primary purpose of research and education. Some areas of critical environmental concern are also referred to as Research Natural Areas. There are 21 designated areas of critical environmental concern in the Twin Falls District (Table 7).

Table 7: Areas of Critical Environmental Concern/Research Natural Areas in the Twin Falls District.

Field Office	Areas of Critical Environmental Concern/Research Natural Areas	Acres	Vegetation Cover Type	Resource Values
Jarbidge	Bruneau/Jarbidge River	84,000	Low-elevation shrub	Cultural, Geologic, Scenic and Natural Features (Big Horn Sheep Habitat)
Jarbidge/ Burley	Salmon Falls Creek Canyon	5,900	Low-elevation shrub	Pristine, Scenic and Natural Features
Jarbidge	Sand Point	815	Low-elevation shrub	Paleontologic, Geologic, and Cultural Features
Burley	Jim Sage Canyon	620	Mid-elevation shrub, Juniper	Natural Features (Vegetation)
Burley	City of Rocks	240	Mid-elevation shrub, Juniper	Natural Features (Vegetation)
Burley	Goose Creek Mesa	110	Mid-elevation shrub	Natural Features (Vegetation)
Burley	Sub-station Tract	440	Low-elevation shrub	Natural Features (Vegetation)
Burley	Oregon-California Trail	600	Low-elevation shrub	Historic and Cultural Features
Burley	Granite Pass	200	Mid-elevation shrub	Historic and Cultural Features
Burley	Playas	60	Low-elevation shrub	Natural Features (Davis Peppergrass)
Shoshone	Big Beaver/Little Beaver Elk Winter Range	6,540	Mountain shrub, Dry conifer, Aspen	Natural Features (Elk Habitat)
Shoshone	Elk Mountain Elk Winter Range	11,887	Mountain shrub, Dry conifer, Aspen	Natural Features (Elk Habitat)
Shoshone	Sun Peak	560	Mountain shrub, Aspen	Natural Features (Vegetation)
Shoshone	King Hill Creek	2,880	Low-elevation shrub	Scenic and Natural Features (Redband Trout and Riparian)

Field Office	Areas of Critical Environmental Concern/Research Natural Areas	Acres	Vegetation Cover Type	Resource Values
Shoshone	McKinney Butte	3,764	Low-elevation shrub	Geological, Scenic, and Natural Features (Wildlife)
Shoshone	Tee Maze	10,762	Low-elevation shrub	Geological, Scenic, and Natural Features (Wildlife)
Shoshone	Box Canyon/Blue Heart Springs	142	Low-elevation shrub	Scenic and Natural Features (Listed Snake River Snails' Habitats, and Shoshone Sculpin)
Shoshone	Vineyard Lake	110	Low-elevation shrub	Geological, Scenic, and Natural Features (Cutthroat/Rainbow Trout Hybrid and Bliss Rapid Snail Habitats)
Total Acres		129,630	N/A	N/A

Visual Resources

Twin Falls District public lands have a variety of visual values, which have been inventoried using the Visual Resource Management Inventory process (BLM Manual Section 8410). The primary objective of visual resource management inventory is to maintain the existing visual quality of an area and to protect unique and fragile resource values. Public lands in the Twin Falls District have been designated using Visual Resource Management Classes I-IV (maps delineating VRM designations are located in each of the field offices). Per BLM policy, all wilderness and wilderness study areas are managed in Visual Resource Management Class I (BLM Manual H-84110 – Visual Resource Inventory, BLM Instruction Memorandum No. 2000-096). Except for the wilderness study areas, all BLM lands in the Craters of the Moon National Monument and Preserve are in Visual Resource Management Class II. The following discussion describes management considerations of each visual resource management class.

Class I: Class I designation is the most restrictive category and applies to BLM special administration designations where public interest and BLM management call for the preservation of pristine landscapes such as wilderness study areas, wild and scenic rivers, wilderness, or a visual /scenic areas of critical environmental concern.

Class II: The objective of Class II is to retain the existing character of the landscape. Changes in the basic visual elements caused by management activity should not be evident in the landscape.

Class III: The objective of Class III is to partially retain the existing character of the landscape. Contrasts to the basic visual elements caused by a management activity may be evident and begin to attract attention in the landscape, but should not dominate the landscape.

Class IV: The objective of this class is to provide for management activities that require major modification of the existing character of the landscape. Contrasts may attract attention and be a dominant feature in the landscape; however, change should repeat the basic visual element of the landscape.

Cultural Resources

Cultural resources are those fragile and non-renewable remains of human activity, occupation, or endeavor reflected in districts, sites, structures, objects, artifacts, ruins, and works of art as well as natural features that are important reminders of human events. There are numerous recorded cultural resource sites in the Twin Falls District and probably many more that have not been recorded. These sites represent a variety of types and chronological periods, dating from at least 9,000 years old to the present. Identified prehistoric sites include lithic scatters, quarries, rock shelters, rock structures and piles, and pictographs/petroglyphs.

Historic sites within the project area include portions of the North Side Alternate and Goodale's Cutoff, both alternate routes of the Oregon National Historic Trail, the Hudspeth's Cutoff of the California National Historic Trail, the Kelton Stage Road, historic homesteads, abandoned railroad grades, irrigation developments, historic graves, sheepherder camps, cairns, and dumps.

Exposed artifacts and features on the ground surface can be disturbed by elements such as wind and water erosion, animal and human intrusion, and development and maintenance activities. Looting of archaeological sites has been occurring for some time, especially in the remote, hard to reach regions of the District, particularly following a wildfire. Vandalism and unauthorized collection at sites constitutes the main source of cultural resource degradation.

Paleontological sites are included under the cultural resources field. Paleontological sites are found throughout the Twin Falls District. These sites are associated with the Idaho Group which is composed of intercalated stream and lake deposits, basalt flows, and water-lain and air fall ash deposit of Lower Quaternary and Upper Tertiary Age. Idaho contains important fossil evidence for the evolution of species and continental drift. It is likely that many sites remain undiscovered or have not exhausted their research potential.

Grazing Management

Livestock

Livestock grazing in the Twin Falls District is composed of cattle, sheep and to a lesser extent, horses. There are 540 allotments in the District. Private and State of Idaho lands are scattered and intermingled with public land in many of these allotments. Most of these intermingled lands are cooperatively managed with public land.

Permitted active use in the District is 525,549 AUMs. Table 8 shows the statistics for each of the three field offices. Depending on the allotment, its location, and prescribed management, timing of grazing may occur during the spring, summer, fall, and winter or any combination of these seasons.

Table 8: Twin Falls District Permitted Active Use.

Field Office	# of Allotments	Permitted AUMs
Jarbidge	95	182,212
Burley	228	141,091
Shoshone	215	202,173
Total	538	525,476

Livestock trailing occurs throughout the Twin Falls District and is authorized through the issuance of a crossing permit. In 2012, the Jarbidge, Shoshone, and Burley field offices completed NEPA analyzing livestock trailing events. Each office subsequently issued decisions identifying routes and conditions for authorizing livestock trailing in the Twin Falls District.

Wild Horses

The Saylor Creek Wild Horse Herd Management Area is located in the Jarbidge Field Office. During two separate years in the last decade, wildfires burned enough acres within the Herd Management Area to require emergency gathers to maintain the health of the horses and allow for rehabilitation and recovery of the burned areas. In July, 2005, five fires occurred within the Herd Management Area, burning approximately 41,075 acres, or 40% of the area. An emergency gather was conducted resulting in 334 horses captured with 12 remaining in unburned portions of the Herd Management Area. In the spring of 2006, 93 horses were released into unburned portions of the Herd Management Area.

From June through August 2010, four wildfires burned 57,167 acres (56%) of the Herd Management Area. A total of 194 horses were gathered and removed from the Herd Management Area with an estimated five remaining in unburned portions of the area. Thirty horses were returned to the Herd Management Area in September, 2011. The July, 2012 Kinyon Road Fire burned 34,356 acres (34%) of the Herd Management Area; an emergency gather was not performed following this fire.

DIRECT AND INDIRECT ENVIRONMENTAL IMPACTS

This chapter describes the environmental consequences that would likely result from implementing the no action and the proposed action alternatives. All relevant issues identified during public scoping for the proposed project were considered in the impact analysis, and a brief summary of the scoping comments are included in the Scoping and Public Involvement section. This impact analysis addresses both the direct and indirect effects on those aspects of the human environment most likely to be affected. Resources that are minimally affected are discussed briefly, and resources that would have similar effects were combined.

The following assumptions were made in the analysis of environmental effects.

- The BLM will fully implement all aspects of the post-fire ESR plans.
- Most wildfires in the Twin Falls District burn relatively fast and are generally cool fires. Pockets of dense vegetation, such as is found in canyons and draws, typically burn hotter.
- Plant material and litter present before a fire will not be completely consumed in a typical wildfire, leaving areas of unburned or slightly burned patches. Total consumption of vegetation may occur on small fires that burn hot and on rangelands dominated by annual vegetation.
- Most wildfires do not burn uniformily since fire intensity and severity will vary depending on such factors as vegetation types, fuel loads, weather, time of year, and rate (speed) of the fire.
- Herbaceous vegetation will typically grow back soon after most fires depending on moisture availability.
- Natural recovery of sagebrush is dependent on fire size, fire severity, species, precipitation post fire, and proximity of the seed source to the burned area.
- Seeding and planting treatments would accelerate desirable vegetation recovery.
- Short term impacts are defined as <5 years and long-term impacts are defined as >5 years.
- Herbicides will be applied at typical application rates according to label.

Soils

No Action

Fire severity determines the degree that soils are affected by wildfire. The hotter and slower a fire burns, the higher the likelihood of impacts to the soils. Ground cover such as vegetation, litter, and biological crust would either be completely removed or largely reduced exposing much of the soil. Exposed soils may be prone to wind and water erosion. Erosion occurs when sediments are exposed to water or air and velocities are sufficient to detach and transport soil particles.

The chemical and physical properties of soils (e.g. hydrophobicity, reduced organic matter, pH, volatilization of nitrogen) can also be altered when a fire occurs. Vegetation removal, combined with changes in chemical and physical properties would typically result in erosion following a fire. However, these impacts usually lessen as vegetation is reestablished on the burned site. Erosion on burned areas typically declines in subsequent years as the site stabilizes, but the rate of recovery varies depending on burn or fire severity and vegetation (Neary, Ryan, & DeBano, 2005).

Seed banks stored in the soil can be affected by fire. Most seeds are stored in the litter and top layers of the soil. Medium to high-severity fires can heat the soil, destroying seeds that have been deposited. However, some seeds are fire-adapted and require intense heat to crack their hard kernels or seed cones to initiate germination.

A hot and slow burning fire can transfer enough heat into the ground to destroy plant roots. If sufficient vegetation does not reestablish after a wildfire, the possibility of accelerated soil erosion occurring in the long-term is increased (especially on soils that have a higher susceptibility to erosion). Coarse-textured soils such as sandy, loams, and sandy loams (Aridisols) are more vulnerable to wind erosion than other soils while finer grained soils are at a higher risk to water erosion, especially on steeper slopes. Wright and Bailey (1982) have reported that coarse-textured soils are more erodible than fine-textured soils. Soil erosion on burned soils can occur as raindrop splash, sheet and rill erosion, soil creep, and mass wasting.

Wind erosion is expected after wildfire has removed plant and litter cover. Sankey, Germin, and Glenn (2009) found that sediment loss from wind erosion was most likely to occur in the first months following a summer wildfire in southeastern Idaho. As vegetation established, the burned area’s susceptibility to wind erosion declined. The amount of soil movement likely to occur on a burned area is dependent on the physical properties of the soil, its geographic position, the amount of soil surface cover remaining, and the amount and intensity of wind.

Burned areas dominated by a cheatgrass understory could experience increased soil erosion after a wildfire resulting from exposed soil surfaces (Morrow and Stahlman, 1984). The amount of cheatgrass consumed by wildfire is often influenced by the amount of preburn woody vegetation on the site. A fire will typically burn hotter if shrubs such as sagebrush are present. Cheatgrass can decompose quickly due to its fine plant material both above and below ground and, therefore, may cause soil nutrients to cycle faster. Further, areas dominated by cheatgrass burn more frequently, releasing minerals rapidly (Olson, 1999).

Under the no action alternative, some amount of soil erosion is expected to occur immediately after a wildfire since the fire would remove or reduce vegetation cover and litter amounts. The length of time soils would be susceptible to erosion would likely be longer in areas with insufficient ground cover prior to the fire and in areas experiencing greater fire severity.

Proposed Action

Soils exposed by a wildfire may be prone to wind and water erosion, especially immediately after a wildfire and up to the first fall precipitation event. Depending on the pre-burn vegetation composition, fire severity, and growing conditions (e.g. precipitation, soil temperatures), burned vegetation may recover sufficiently the next growing season to stabilize soils. Generally, a burned area would require ESR actions to revegetate and stabilize soils if vegetation and seed banks are unable to recover. All seeding methods identified in the proposed action have a low probability of preventing soil erosion until vegetation growth occurs. Seed germination does not happen immediately and root development of seedlings would not likely be far enough along to stabilize soil movement. Therefore, the benefits of seeding a burned area may not be realized until the first full growing season following the seeding treatment. Once vegetation becomes reestablished, the potential for accelerated soil erosion would lesson and natural erosion processes for the site would resume.

Seeding Methods: Seedbed preparation techniques that would directly affect soils are harrowing, mastication, and chaining. A harrow has numerous teeth which drag along the soil surface to disturb the upper 1 to 2 inches. Mastication covers the seed with a mulch and soil from the tracks of the implement. Chaining scarifies the soil surface, creating numerous pits and small depressions. Both chaining and harrowing would modify some soil physical properties, further exposing the soil surface to erosion.

Large-scale (>100 acres) aerial herbicide treatments of annual vegetation would temporary reduce vegetation cover and extend the time that the site is susceptible to wind and water erosion (up to 2 years). The amount of time a sprayed area is more vulnerable to erosion may vary depending on the herbicide used. Since there is no ground disturbance when aerially applying chemicals, the potential for erosion is less than mechanical treatments up until the first growing season following treatment.

The potential for herbicide drift would be strongly considered when applying herbicides near or adjacent to private land. BLM Standard Operating Procedures and herbicide label requirements will be followed to reduce the potential for herbicide drift. For example, Glyphosate, the primary chemical considered for use in large-scale aerial applications in ESR treatments, is a non-specific herbicide that binds to soil particles and has a low propensity for leaching. Once bound, it is no longer available for plant uptake and would not harm off-site vegetation if soil is transported offsite. Glyphosate residues dissipate with a half-life of 45 days to 60 days (Spectrum, 2005). Low levels of Glyphosate may be found in the soil the first year after treatment. Herbicide-free buffer zones will be complied with to ensure that drift will not affect crops, livestock, or nearby residents/landowners.

Rangeland drills would be the primary tool used to seed rangelands. Drills will create small, 1-2 inch deep furrows dug at approximately 6-12 inch intervals. Disturbance width associated with each furrow ranges from about 3 to 6 inches. Depth bands restrict how deeply individual disks can penetrate, and therefore typically reduce both the depth and width of the disturbance. No-till drills also create small, 1-2 inch deep furrows. Disturbance width associated with each furrow is typically about 1 to 2 inches. Other methods include a land imprint seeder. This seeder imprints small impressions in the soil surface.

Mechanical seeding techniques would disturb the soil surface further increasing the potential for soil erosion the first year following a wildfire. The furrowing effect of drill seeding and the imprints left by the land imprinter seeder would allow for water capture and infiltration. The imprinter may be beneficial when used on sandy soils to create impressions that trap water for germination. However, it can cause the surface of clay soils to "seal" due to compaction. The sealed surface traps water but does not allow the water to infiltrate the soil, so the moisture is lost to evaporation.

Mechanical seeding methods would also disturb remnant burned or unburned microbiotic crust. The no-till drill or a modified rangeland drill equipped with depth bands and hand-seeding could have fewer short-term soil impacts than other mechanical methods as there are fewer disturbances to the soil, depending on soil texture and moisture. The no-till drill is useful on areas where microbiotic crust is still sufficiently present. The drill cuts through the crust, but does not destroy it. However, in areas requiring seeding to prevent dominance of invasive annuals, some disturbance may be necessary to reestablish a perennial plant community and, subsequently, the microbiotic crust. The establishment of a stable bunchgrass or shrub/bunchgrass community structure and prevention of cheatgrass invasion appears to be important in the reestablishment of the microbiotic crust (Hilty, et al., 2004). Microbiotic crust on the burned site may prevent invasive plants such as cheatgrass from germinating (Larsen 1995; Kaltenecker, Wicklow-Howard, & Rosentreter, 1999). In general, microbiotic crust cover improves hydrology, minimizes erosion, increases plant community structure and biological diversity, decreases the likelihood for invasive annuals to establish, and helps to reestablish more normal fire cycles.

The amount of soil surface disturbance resulting from mechanical seeding efforts is influenced by soil texture and moisture conditions at the time of treatment as well as residual vegetation. Moist conditions can result in clumping of fine-textured soils; consequently, accumulation of moist soil on equipment can result in more disturbance than when the soil surface is dry.

Although the potential exists for mechanical treatments to further disturb the soil, reestablishing perennial vegetation on a burned site quickly out-weighs the short-term impacts caused by the disturbance. Perennial vegetation would provide long-term soil cover and protection. Controlling annual grasses and establishing native or desirable non-native vegetation would result in more natural fire regimes that are less damaging to soils and produce less erosion in the long-term.

Watershed Stabilization/Erosion Control Treatments: Overall the effects of using the specified watershed stabilization and erosion control techniques would be minimal to the soil resource. Techniques involve placement of structures, erosion cloth, slash, or mulch on slopes to stabilize the soil resource.

Hill slope treatments would provide some immediate watershed protection by lessening the potential of erosion. Installation of hill slope treatments (low stage check dams, straw bales and wattles, contour felled logs) causes ground disturbance in the immediate area around the structure. However, the benefits of reducing overland flow energy and trapping sediment outweigh the potential for structures to fail.

In-channel sediment storage structures such as check dams would be used sparingly in small, ephemeral and naturally intermittent channels. Hill slope erosion control treatments that prevent sediment delivery to waterways are generally more effective than in-channel sediment storage structures and there is always a risk that sediment storage structures would fail, causing more damage to channels, aquatic habitat, and special status aquatic species when stored sediments are released (Robichaud, Beyers, & Neary, 2000; Rosgen, 1996). Straw bale check dams, gravel bags, straw wattles, and other structures that capture large material, allow fine sediment to pass and decompose over time, would have the lowest potential for channel damaging failures.

To reduce road failures, drainage treatments such as rolling dips, water bars, and culverts would be used to move water past the road cross-section. The impacts of drainage treatments would vary greatly depend on the level of maintenance, reconstruction, or new construction. For example, minor reconstruction would be the equivalent of annual maintenance with no expected increase in sediment generated. Although major re-construction rarely occurs, it would be the equivalent of new road construction, including the installation of new culverts. Potential for erosion exists until the culverts, cutbanks, fillslopes, and/or road surfaces are stabilized. Trail reconstruction would also generate some sediment but to a much lesser degree than road reconstruction. These relatively short-term, low-level sediment increases would prevent road failures, culvert blowouts, mass wasting, slumping, and other potentially large-scale sources of sediment.

Other ESR Actions: Noxious weed control, fence repair or construction, and OHV traffic associated with ESR treatments could create some site-specific short-term impacts to soils such as increasing the rate of wind erosion in coarse soils, sealing the soil surface in clay soils, and possibly compacting soils by driving off road. Shrub and tree plantings would have minimal effect on soils since the areas treated are site-specific and small in size.

Water

Fire severity is a major factor in determining the potential effects to the water resources. For analysis and comparison purposes the following assumptions are made.

- Wildfires burned hot enough that vegetation and ground cover is either completely removed or drastically reduced.
- As vegetation returns to the burned site, effects caused by wildfire will be reduced.

No Action

Wildfire effects on water resources depend on several factors. These factors include a fire’s impact on vegetation, how a fire modifies the landscape, and the timing of subsequent precipitation events. Interception, infiltration, evapo-transpiration, soil moisture storage, and the overland flow of water can be greatly affected by fire. Vegetation, litter, and other ground cover intercept or interrupt the fall of precipitation, protecting the soil surface. Most of the vegetative canopy and litter is completely lost in severe wildfires, and as a result, comparatively little post-fire interception of precipitation occurs (Rosgen, 1996; Pyne, Andrews, & Laven, 1996; DeBano, Neary and Ffolliott, 1998). Soils can become compacted or dislodged by raindrop splash once vegetation and ground cover are lost to a wildfire which, in turn, influences the infiltration characteristic of the soil surface.

Wildfire can reduce soil infiltration by compacting and destroying organic matter, sealing the soil surface with dislodged/displaced soil particles, and ash residue clogging soil pores. Infiltration capacity and cumulative infiltration into the soil can be affected by fire to varying degrees, often resulting in decreased infiltration (McNabb, Gaweda, & Froelich, 1989) and increased overland flow (DeBano et al., 1998; Brooks, Ffolliott, Gregersen, & DeBano, 2003). Ultimately, this will increase streamflow discharge.

Evapo-transpiration is the collective loss of water from an ecosystem due to evaporation from soils, plant surfaces, and water bodies, and water losses from transpiring plants. Loss of vegetation and ground cover from a fire results in less evapo-transpiration and potentially more surface runoff and streamflow discharge.

Fire affects soil water storage by removing vegetation, which lowers the evapo-transpiration losses (Brooks et al., 2003). Lower evapo-transpiration losses, in turn, leave more water in the soil at the end of the growing season than would be present if the vegetation had not been burned (Tiedemann et al., 1979; Wells et al., 1979; DeBano et al., 1998). If field capacity of soils is met, water not infiltrated into the soil would result in greater surface runoff and streamflow discharge.

Overland flow of water occurs when the rainfall intensity or the rate of snowmelt exceeds infiltration capacity of a site. Overland flows move water to stream channels, quickly resulting in streamflows. Influences that vegetation and the soil exert on interception, evapo-transpiration, infiltration rates, and soil moisture would affect the magnitude of overland flow.
Although the Twin Falls District has not experienced many high severity fires, such a fire can consume all or nearly all of the protective vegetative cover and litter layer over extensive watershed areas, producing a major effect on the magnitude of overland flow and on streamflow from a watershed (Tiedemann et al., 1979; Baker, 1990; DeBano et al., 1998). Formation of hydrophobic soils following fire reduces infiltration, increases overland flow, and speeds delivery of the overland flow to stream channels (Scott and Van Wyk, 1990). Soil loss due to erosion normally increases with increased overland flows.

The most common impairments to water quality are sediment, temperature, nutrients, and streamflow alterations. The areas of most concern are streams or segments of streams that are not functioning properly before a wildfire. The length of time for water quality to recover from a wildfire is directly related to the rate of riparian recovery; therefore, riparian vegetation and instream conditions would need to recover before water quality would improve.

Wildfire, especially a wildfire of high severity, influences streamflow discharge. The combined effects of a loss of vegetative cover, a decrease in the accumulations of litter and other decomposed organic matter on the soil surface, and the possible formation of water repellent soils are among the causes of increases in streamflow discharge (Tiedemann et al., 1979; Baker, 1990; Pyne et al., 1996; DeBano et al., 1998; Brooks et al., 2003). In some severe situations, increased streamflows can result in floods. Erosion and flooding often remove topsoil and alter the site, hindering natural revegetation (Monsen, 1983).

Sediment and ash deposited into streams can greatly affect water quality. Post-fire increases in suspended sediment concentrations and turbidity can result from erosion and overland flow, channel scouring because of the increased streamflow discharge, creep accumulations in stream channels or combinations of all three actions after a fire (Neary, Ryan, & DeBano, 2005). The amount of suspended sediment (including ash) in streams is the highest up until vegetation growth begins the first fall following a fire. As vegetation reestablishes and soils stabilize, erosion would decrease reducing the amount of sediment that is deposited into streams. Sedimentation can also affect fish habitat, alter stream channels, and fill downstream lakes, reservoirs, ponds, and pools.

Riparian areas are often resilient to the effects of wildfire when they are properly functioning and have sufficient vegetation. These areas may burn in a fire, but with low to moderate intensity. Riparian burns tend to be "spotty" due to an elevated water table in the riparian area and the presence of water loving plants. Fire history studies have concluded that both frequency and severity of wildfires are lower in riparian areas than adjacent uplands (Morrison and Swanson, 1990).

The removal of streambank vegetation due to wildfire would cause water temperatures to rise. When riparian (streamside) vegetation is removed by fire or other means, the stream surface is exposed to direct solar radiation, and stream temperatures increase (Levno and Rothacher, 1969; Brown, 1970; Swift and Messner, 1971; Brooks et al., 2003). Increased temperatures can affect plants, fish, and other animals sensitive to changes in water temperatures.

Not implementing post-fire recovery actions that reduce surface erosion, where needed, would result in more fine sediments entering riparian areas. Erosion would be expected to increase until upland and riparian vegetation has been established. Fire damaged roads, culverts, and bridges that remain in disrepair would result in increased erosion from road surfaces or fill materials (e.g. culverts, bridge abutments) into riparian areas. This could increase stream channel instability and stream erosion, resulting in stream channel widening or braiding.

Increased soil erosion from uplands and riparian areas could occur if temporary closures such as grazing and OHV are not implemented or management infrastructure to implement closures (i.e. fences) are not repaired while vegetation is recovering from a wildfire. Not implementing actions to reduce surface erosion and recover burned vegetation would result in short term and possibly long-term declines in water quality.

Proposed Action

Excess sediment deposited into waterways is a result of soil erosion caused largely by the loss of vegetation and other ground cover. The more severe the fire, the greater the impacts are to the water resources. If vegetation is not expected to recover naturally, then ESR treatments will be considered. The ESR treatments for soil stabilization, road and trail drainage improvements, and channel stability would protect water quality by minimizing erosion and post-fire sediment delivery to stream channels.

Seeding Methods: Seeding uplands, regardless of methods, would have minimal effect on stream channels, floodplains, or water quality. Short-term effects could occur if soil particles from mechanized treatment areas are transported down slope to a stream. Overtime, upland treatments would improve hydrologic function of the watershed as the site becomes revegetated with perennial vegetation. As litter begins to accumulate soil infiltration capacities would increase, raindrop interception would occur, evapo-transpiration rates would increase, soil water storage capacity would not be exceeded and finally, overland flow would normalize resulting in less erosion and, ultimately, less sediment in streams.

ESR treatments to restore upland and riparian vegetation would assist in the maintenance of and/or improvement in water quality by maintaining bank stability, reducing sediment loads, maintaining low water temperatures, and diminishing the risk for post-wildfire flooding and landslides. Riparian tree and shrub seedlings or herbaceous plugs would be planted as needed to provide long-term canopy cover to shade streams from direct solar radiation or provide stream bank stability to maintain water quality. Water quality would be protected by using seed mixtures that do not contain added chemicals such as fertilizers and avoidance of hydro-mulch use in riparian areas and wetlands. Design features that restrict helicopter landings, refueling, or fuel storage areas would reduce the potential of chemical spills into aquatic systems. Restrictions on OHV use when completing vegetation treatments would further minimize the potential for impacts to water quality.

When applied according to label instructions, chemical applications should have negligible effects on water resources. If herbicides or other chemicals should inadvertently drift or are spilled into surface water impacts to water quality would likely be short term, but they could be long-term to aquatic life depending on toxicity and amounts of chemicals spilled. Design features and herbicide label instructions that restrict the use of herbicides near riparian areas and wetlands would minimize impacts on water quality.

Watershed Stabilization/Erosion Control Treatments: Localized disturbance to channels, floodplains, and water quality would occur during the installation of erosion control structures (e.g. check dams, in-stream silt fences, willow waddles, gabions). These activities can introduce fine sediments into streams and result in the short-term suspension of streambed sediments. Some of the proposed treatments are designed to reduce lateral stream channel movement by placing rock or other materials on unstable streambanks to reduce erosion and prevent streambank failure. Although these can slow streambank erosion, they can also disrupt the balance between erosion and deposition or cause downstream bank erosion. The placement of rock within the high water mark would be kept to a minimum required to protect structures (e.g. bridges, culverts, road bed, or fill materials) and would not be used extensively as a stream stabilization treatment.

Structures would help prevent channel down cutting, better ensuring progress towards healthy riparian and watershed systems. Erosion control structures, such as straw wattles interrupt overland flow, reduce runoff energy, minimize rill formation and trap sediment that may otherwise be transported down slope.

Other ESR Actions: Over time, noxious weed control would result in healthier watersheds by reducing competition with desirable species that provide greater soil stability.

ESR actions to repair infrastructure (e.g. roads, bridges, culverts) in riparian areas would result in localized disturbance of streambanks and streamside vegetation that can result in disturbance to large quantities of fine sediment adjacent to and within the stream channel. Since such actions normally require the use of heavy equipment, there is an increased risk to water quality from having equipment containing petroleum products in the stream channel and floodplain. Maintaining or replacing fire damaged infrastructure is typically necessary to prevent culvert or bridge failure. Infrastructure failure would likely result in more impacts to riparian areas due to erosion than if maintenance or replacement construction is done. Incorporating riparian vegetation plantings into infrastructure repairs would maintain some functional condition such as streamside shading, overhead cover, and nutrient cycles at streamside crossings.

Repairing or replacing allotment/pasture boundary fences could prevent livestock from accessing burned riparian areas or wetlands allowing both native vegetation and plantings sufficient time to establish and grow. There could be some localized impacts from activities related to fence construction, but the effects would be less than if livestock were allowed to graze these areas while they are recovering from wildfire.

Overall impacts to water and riparian areas are minimal, in part due to design features listed in the proposed action. Water quality and riparian areas would realize long-term benefits from upland, near-channel, and in-channel treatments that are designed to stabilize soil, minimize rill and gully erosion, protect stream banks, and control invasive plants and noxious weeds.

Air

No Action

Post-fire effects on air quality would primarily be from increased particulate matter (soil particles and ash) caused by wind erosion. Increases in dust and ash in the air could cause reduced visibility on roads and respiratory irritation to people who are sensitive to air pollutants. These effects are typically not expected to persist past the first precipitation event following the wildfire. As pre-burn vegetation becomes established on burned areas and soils are stabilized, there would be less particulate matter in the air.

Proposed Action

Ground-disturbing ESR activities associated with post-fire seeding and weed treatments would increase the amount of ambient dust in the air. If a mechanical treatment occurs adjacent to highways, driver visibility could be obscured in the direct vicinity of the ground-disturbing activities. However, the amount of dust raised is expected to be minimal and would only occur while the actual activity is taking place. The dust would settle in a few hours once the ground-disturbing treatment is discontinued. Effects to air quality would diminish as treatments are completed and vegetation is reestablished. Reestablishing vegetative cover would benefit air quality because soil that is at risk of erosion due to fire and ash would be stabilized and would not become airborne as dust storms. Short-lived increases in particulate matter are not expected to substantially increase the total amount of particulate matter; therefore, annual air quality standards would not be exceeded.

The herbicide label restriction and the proposed design features based on distance from open water, wind speed and direction, and public notification would generally protect human health during aerial herbicide applications. Controlling herbicide drift and preventing spills by restricting when, where, and how herbicides are applied (i.e. restrictions on wind speed, distance from water) along with public notification of such treatments would minimize the potential for incidental and accidental exposure to humans. This document incorporates by reference Appendix B: Human Health Risk Assessment, Final Vegetation Treatments on Bureau of Land Management Lands in 17 Western States Programmatic EIS which provides a more detailed analysis of herbicide use and the risk to human health.

Vegetation

No Action

General Vegetation

Healthy resilient vegetation types, which include fire-tolerant plant species, are expected to recover naturally after being burned, especially in areas that do not burn extremely hot or for long periods of time. Given adequate precipitation, perennial grasses and shrubs can out-compete invading cheatgrass by the second year (West and Hassan, 1985).

Vegetation types that are not healthy, exhibit low resiliency and/or burn so severely that vegetation is unable to recover naturally are highly vulnerable to invasive plant and noxious weed invasions. Even if fire destroys 90 percent or more of the cheatgrass seed, it can reestablish and compete with native perennials (Zouhar, 2003). The greater number of repeated burns, the more likely the vegetation type would be dominated by invasive plants. As wildfires become more common, cheatgrass can essentially dominate a site (Monsen, 1994). Once cheatgrass becomes abundant enough to increase the likelihood of fire, repeated fires may occur frequently enough to eliminate shrubs such as sagebrush and native perennials, progressively consuming the sagebrush steppe vegetation types. Fire frequencies have increased dramatically in the Great Basin following the introduction of cheatgrass, which has resulted in a conversion of shrubland to annual grassland in a sizeable area of the region (Whisenant, 1990). Fire intensity can also influence the establishment of annual grasses; for example, Tausch (1999) concluded that “high intensity fires are capable of causing shifts from woodlands to introduced annual communities.”

Frequent fires can also convert sagebrush stands to rabbitbrush, snakeweed, and horsebrush dominated stands. Most sagebrush species can slowly reseed themselves after a wildfire if patches of shrubs did not burn or if shrubs are located on adjacent unburned areas. However, sagebrush may require fire intervals of up to 50 years to regain their dominance (Bunting, Kilgore, & Bushey, 1987) once burned. Habitat changes concurrent with increased fire have included plant community composition changes (Blaisdell, 1949; Hassan and West, 1986), altered soil seed banks (Blank, Svejcar, & Riegel, 1995), and increased soil repellency (Salih, Taha, & Payne, 1973). Secondary consequences of wildfires in sagebrush can include range deterioration, flooding, erosion, lowered grazing capacity, loss of biodiversity, and reductions in the amount and quality of wildlife habitat (Neary, Ryan, & DeBano, 2005).

Since a burned area would not be treated (i.e. seeded) the vegetation on the site is expected to be dominated by grasses (annual or perennial). If pre-burn vegetation included shrubs, fire behavior is expected to change. Fire behavior would dramatically change if the burned area becomes dominated by invasive grasses such as cheatgrass. Fire intensity is anticipated to increase due to the increased continuity and drier fuel conditions that invasive grass dominated sites (primarily annuals) usually exhibit. Finally, the higher continuity of the annual grass cover type can further alter historic fire regimes by creating an environment where fires are easily ignited, burn earlier in the year, spread rapidly, and occur frequently (Young and Evans, 1978). These conditions would also increase the risk to public and firefighter safety because they would more frequently be exposed to larger, fast moving wildfires on both public and private lands.

Riparian vegetation is often resilient to the effects of wildfire when riparian areas are functioning properly. The ecological diversity of riparian areas is maintained by natural disturbance regimes (Naiman, Decamps, & Pollock, 1993), including fire-related flooding, debris flows, and landslides. In some cases fire may promote riparian vegetation growth through the release of nitrogen. For example, the regeneration and expansion of aspen clones, cottonwoods, and willows are promoted by fire. These riparian plant species are well adapted to the effects of wildfire and are a primary component of riparian vegetation.

The ability for riparian vegetation to recover naturally would be determined by the severity of the fire and the amount of watershed burned. In areas where fire severity is low, vegetation is expected to resprout and recover over time. In locations with high fire severity, riparian vegetation may recover slowly or not at all if plant mortality occurs. These areas would have the slowest rate of vegetation recovery because revegetation would depend on the expansion of unburned adjacent woody and herbaceous vegetation. Invasive plants and noxious weeds could displace native riparian vegetation in areas where it is not likely to recover due to pre-fire conditions or high fire severity.

Uncontrolled OHV use and livestock movement (both domestic livestock and wild horses) could occur if management infrastructure is not timely repaired. This combined with livestock grazing occurring before burned vegetation has recovered can affect the condition of both upland and riparian vegetation. Since burned vegetation would be grazed while it recovers, recovery of perennial plants is expected to be slower than if they were allowed to recover before being cropped by livestock.

Special Status Plants

Type 1 Federally Threatened, Endangered, and Candidate Plant Species

Slickspot Peppergrass

A recent geospatial data analysis of slickspot peppergrass element occurrence area affected by wildfire from 1957 to 2007 found that the perimeter of 107 wildfires that had occurred encompassed approximately 73 percent of the total element occurrence area rangewide (Stoner, 2009). This geospatial information represents relatively coarse vegetation information and may not reflect that some element occurrences may be located within remnant unburned islands of sagebrush habitat within fire perimeters. About 35,000 acres of un-inventoried potential slickspot peppergrass habitat burned in the 2010 Long Butte Fire.

Frequent wildfire can affect the quality of slickspot peppergrass habitats by reducing shrub cover, eliminating of soil crusts, and increases in invasive plants and noxious weeds in and around slickspots. In southwestern Idaho, Menke and Kaye (2006) found the total native species cover and shrub cover were consistently lower in burned transects, while total exotic species cover and exotic grass cover (including that by cheatgrass*)* were consistently higher in burned transects than in unburned transects. The loss of habitat and reduced habitat quality due to wildfire and invasive plants would threaten the continued existence of healthy slickspot peppergrass populations. Not establishing post-fire perennial vegetation in adjacent habitats would increase the opportunity for invasive plants and noxious weeds to dominate and compete with slickspot peppergrass.

Goose Creek Milkvetch

Goose Creek milkvetch habitat is impacted by large-scale habitat conversions, primarily to invasive grasslands. Conversion from sagebrush steppe to annual grassland changes vegetation structure as well as species composition, habitat quality is marginal, and the status of plants might be precarious due to competition and repeated fire. Not establishing post-fire perennial vegetation would increase the opportunity for invasive plants and noxious weeds (e.g. cheatgrass, leafy spurge (*Euphorbia esula*)) to dominate and compete with Goose Creek milkvetch. Such competition could result in fewer plant numbers and a decline in the amount of occupied habitat.

Type 3 Rangewide/Globally Imperiled Species Plant Species – Moderate Endangerment and Type 4 Species of Concern

Impacts to BLM sensitive plant habitats would be similar to those described above for general vegetation. Lack of treatment following wildfire, particularly in salt desert shrub, low-elevation shrub steppe, mid-elevation shrub steppe, and juniper woodlands vegetation types could result in conversion to invasive plants and/or noxious weeds. Increases in invasive plants and/or noxious weeds would increase competition to BLM sensitive plants and modify habitat structure. This could result in population declines and eventual elimination of sub-populations or populations of species that are dependent on the structural and biological components of perennial plant communities. Closing burned areas would improve recovery potential for BLM sensitive plants and their habitats, especially in areas where natural vegetation recovery is likely and risk of dominance by invasive plants or noxious weeds is low.

Proposed Action

General Vegetation

Natural recovery of vegetation would occur best in areas that experience a normal historic fire regime, have little or no invasive plants or noxious weeds, support healthy native plant communities that exhibit high resiliency to wildfire. Natural recovery in these areas is desired since vegetation indigenous to the site would reestablish. In general, the dry conifer, aspen/conifer, mountain shrub, wet/cold conifer, and vegetated rock/lava vegetation types are expected to recover naturally. Perennial grass types also are likely to recover naturally; however, shrub plantings/seeding may be needed depending on the long-term vegetation objectives for a specific area.

In the short term (5 to 10 years), ESR treatments would primarily result in a perennial grass seeding with the anticipation of the vegetation cover type moving towards a grass-shrub type in the long term. The production of grass (fuel) is mainly based on spring and early summer growing conditions. Favorable growing conditions usually result in increased fuel loading and continuity. Conversely, poor growing conditions usually have the opposite effect.

Most perennial grasses cure later in the growing season than invasive annual plants such as cheatgrass, thereby shortening the length of the fire season by several weeks. Perennial grasses are usually less continuous than cheatgrass which also directly affects fire behavior by reducing the rate of fire spread. However, under the most extreme conditions (i.e. for dryness, wind, and temperature) cured perennial grasses will burn just as well as cheatgrass or other invasive annual plants. In general, perennial vegetation cover types would reduce the risk to public and fire fighter safety because exposure would be reduced and large, fast moving wildfires would occur less often in perennial grass vegetation types than in invasive grass communities on both public and private lands.

Seeding Methods: Mechanical methods using masticators, chains, rangeland drills, and harrows would disturb or damage remnant vegetation left on a burned area. Methods that result in less soil surface disruption, such as the no-till drill or rangeland drill with depth bands, and hand seeding are potentially less damaging to remnant vegetation. However, these methods can also limit seeding success by not achieving appropriate seed burial, especially in areas with rocky soils or high cover of Sandberg bluegrass. Most mechanical methods also dry the soil surface by exposing more of the soil to the sun and wind, causing crusting and reduced infiltration.

Depressions and pits created by chaining or using a land imprint seeder or cultipacker would collect moisture; aiding in seedling establishment. No-till drills would cut through existing vegetation, and would not likely result in mortality of the plant. Enhanced site stability and a healthy, albeit seeded, plant community would out-weigh impacts from mechanical seeding treatments. Other effects expected to occur include: 1) improving and restoring the biodiversity of the plant community, 2) restoring quality habitat for wildlife, including special status species, 3) protecting special status plant habitats, and 4) contributing toward the return of a more natural fire regime.

Once planted, the native and non-native species listed in Appendix 1 would restore a more natural fire regime and reduce effects associated with large-scale, high-intensity fires fueled by annual grasses. Some competition, as well as change in community structure, can occur with the establishment of a non-native seeding. Seedings that replicate as closely as possible the structure, species composition, and seral dynamics to the native community would improve vegetation over post-burn invasion of annual grasses. The short-term effects of aerial seeding of sagebrush and other species would be negligible due to lack of soil disturbance. Effects of a successful aerial seeding are the same as a successful mechanical seeding in promoting vegetative recovery. However, in general broadcast seeding is less successful in establishing seeded plants largely because of seed eaten or damaged by rodents, rapid drying of the soil surface following a precipitation event, competition from invasive plants (Nelson, Wilson, & Goebel, 1970), and the higher possibility of reduced seed contact with the soil. These limitations require the need for more seed to be aerially broadcasted. Typically, aerial broadcast seedings require about twice the seed needed for ground application using mechanical methods.

The majority of ESR treatments in the Twin Falls District are expected to occur in the annual grass and low-elevation shrub steppe vegetation types. Areas heavily infested with cheatgrass prior to a wildfire or have the potential to be infested following a fire would be a priority to treat in order to promote the establishment of perennial vegetation, including the reestablishment of a sagebrush over-story.

The majority of ESR treatments in the Twin Falls District are expected to occur in the low-elevation shrub steppe and annual grass vegetation types. These two vegetation types generally are more susceptible to cheatgrass dominance due to low annual precipitation and a history of large frequent wildfires. The low-elevation shrub steppe vegetation type with a high canopy cover may burn hot enough to kill cheatgrass seed under the canopy, thus reducing cheatgrass competition with seeded plants. The annual vegetation type without a shrub canopy produces lower intensity fires which typically do not consume the cheatgrass seed bank at the soil surface. Cheatgrass germinating in the fall and early spring will compete with seeded perennial plants for moisture and nutrients.

Cheatgrass competition can be reduced with the use of herbicides. A post-emergent herbicide such as Glyphosate used during the early spring will kill germinating cheatgrass. Chemical control of cheatgrass would typically be used when the burn area can not be seeded the previous fall due to funding or logistical constraints. A seeding would be planted in the fall following the spring herbicide application.

Cheatgrass and medusahead offer serious competition to seeded species (Evans and Young, 1977; Hull, 1963; Hull and Pechanec, 1947; Robertson and Pearse, 1945; Rummell, 1946) because they germinate in the fall or spring and have the ability to utilize space and soil moisture to the exclusion of perennial grass and forb seedlings (Evans, 1961; Hull and Hansen, 1974; Robertson and Pearse, 1945). Evans and Young (1977) found that sagebrush seedlings are generally unable to compete with cheatgrass. Nearly complete removal of all annual plants and seed is necessary to establish new seedlings of most seeded species (Hulbert, 1955; Robertson and Pearse, 1945; Young, Evans, & Eckert, 1969). Immediate revegetation is required after reduction of invasives; otherwise invasive annual grasses that escape treatments will grow unabated, produce large numbers of seeds, and quickly dominate a site again (Mack and Pyke, 1983).

Control treatments, primarily herbicides, are generally conducted after cheatgrass plants have germinated and emerged (Evans & Young, 1977; Plummer, Christensen, & Monsen, 1968; Young et al., 1969). Cheatgrass seedlings are easily killed with herbicides such as Glyphosate. This herbicide can be applied early in spring when cheatgrass growth is active, with little damage to dormant perennials (USDA Forest Service, 2004). Multiple applications may be necessary to successfully control cheatgrass due to its ability to create large seedbanks. Considering the poor ecological pre-fire condition of areas supporting the annual grassland type and to a lesser extent the low-elevation shrub steppe, the impacts to vegetation would be minimal, even when treatments occur at a large scale. Herbicide applications may facilitate native shrub and grass reestablishment (Downs, Rickard, & Caldwell, 1995).

Herbicides used in ESR seedbed preparation and noxious weed treatments are either selective and target only broadleaf species or are non-selective and target both broadleaf plants as well as grasses. Pre-emergent and early post-emergent herbicides can also be used in the control of invasive plants such as cheatgrass. The type of herbicides to be used and application rates would depend on the site-specific plant control needs. If non-selective herbicides are applied when the targeted weeds are actively growing and native vegetation is inactive, there is less potential for impacts to native vegetation. Spraying in early spring, late summer and fall mimic native plan growth cycles. Perennial grasses may suffer slight damage with selective herbicide treatments but should begin to recover the next growing season, increasing their cover and vigor due to reduced competition from invasive plants and noxious weeds.

Standard operating procedures for applying herbicides on public land are listed in the Final Vegetation Treatments Using Herbicides Programmatic Environmental Impact Statement Appendix B and herbicide active ingredients approved for use on BLM administered land are listed in the subsequent Record of Decision. Herbicide active ingredients most often used by the BLM for controlling noxious weeds include picloram, tebuthiuron, clopyralid, glyphosate, and 2,4-D. Picloram and tebuthiuron are persistent in soil for a year or more, while clopyralid, glyphosate, and 2,4-D are relatively non-persistent in soil. Accidental spills, herbicide drift, and off-target movement (e.g. soil erosion) from treatment areas could be damaging to non-target vegetation. Standard operating procedures, design features, and herbicide label requirements will be followed, reducing the risk of spills, drift, and off-target movement.

Aerial herbicide application is typically used to treat large invasive plant infestations. Noxious weed treatments would mostly be done at a smaller scale and specific to target species. The primary effect of an herbicide application is mortality of the target plants. Over time, remnant native plants and seeded species would benefit from reduced competition and a more natural fire regime.

Existing perennial grasslands would be treated in areas where plant community diversity and structure can be improved (e.g. seeding sagebrush) or areas dominated by invasive plants and/or noxious weeds. Shrub planting treatments applied to perennial grasslands would result in reestablishment of a sagebrush component and the possible diversification of the herbaceous understory.

Wildfire in the mid-elevation shrub steppe and areas of juniper encroachment result in reduction of shrub and tree canopy, as well as temporary reduction in herbaceous canopy due to removal of biomass. Seeding to restore a perennial herbaceous understory is not always necessary in this vegetation type, but may be needed when the understory is depleted. Seeding methods that result in soil surface disturbance (drilling, masticating, chaining, and harrowing) could result in disturbance to existing shallow-rooted plants. However, chaining to knock down juniper skeletons has proven to be the most effective practice available to prepare a seedbed and cover seed following a fire in juniper-dominated areas (USDA Forest Service, 2004).

Planting vegetation (e.g. willows, cottonwood, and sedges) in the riparian vegetation type would likely be necessary in areas experiencing severe (hotter) fires. Planting shrubs and trees would expedite the long-term recovery of vegetation that provides woody debris to streams and is essential to stabilizing the stream channels. Expediting the recovery of native riparian vegetation would also reduce the potential for sediment loading, lateral channel scouring, and widening of the stream channel. Short-term impacts from planting woody and herbaceous vegetation are expected to be localized and minimal. Impacts would primarily be associated with introducing fine sediment into the stream channel or localized damage to the streambanks. Interseeding and inter-transplanting are useful techniques to improve portions of riparian areas without extensively disturbing the soil (USDA Forest Service, 2004). ESR actions are expected to expedite the recovery of riparian and wetland vegetation and function.

Watershed Stabilization/Erosion Control Treatments: Implementing riparian or in-channel bio-engineering techniques (seeding, planting woody riparian species, willow wattles, whole tree felling) or silt fencing to stabilize channels would result in localized disturbances that would be quickly revegetated due to available soil moisture. Bio-engineering would improve riparian and channel processes in the long-term, channel stability would be maintained, and aquatic habitat would be enhanced or protected.

Other ESR Actions: Noxious weeds would be monitored and would be a priority to treat on burned areas. Noxious weed treatments would primarily consist of spot spraying and be species specific. Treatment would result in reduced competition to native vegetation and enhanced recovery of the vegetation community. Herbicide treatments in the riparian vegetation could affect some hydric vegetation. However, the impacts would be minimal compared to the benefits of maintaining the appropriate woody and herbaceous vegetation that support natural hydrologic cycles and maintain riparian and wetland function.

Temporary closures would protect recovering sites until vegetation is adequately established to support livestock grazing, wild horses, and recreational use. Some short-term vegetative impacts would be associated with fence construction or reconstruction, primarily from OHV traffic and brush clearing. These impacts would be site-specific and minimal compared to the long-term revegetation benefit. Protective fencing would also enhance the recovery of slickspot peppergrass habitat and microbiotic crusts.

Special Status Plants

Potential effects of ESR treatments on known populations of special status plants and/or their habitats would be addressed at the project level. However, due to the burned environment, undocumented populations or habitats could be present, but not detected. Therefore, ESR treatments could have direct and indirect impacts, especially for undetected populations. Design features for special status plants are considered in the following analyses.

Type 1 Federally Threatened, Endangered, and Candidate Plant Species

Slickspot Peppergrass

ESR recommendations in the 2009 Conservation Agreement for slickspot peppergrass are incorporated in the species-specific design criteria.

Seeding Methods: The use of a no-till drill, modified rangeland drill with depth bands, other methods that minimize soil surface disturbance, would reduce impacts to slickspot peppergrass habitat, burial of seed too deeply for germination, and potential injury or mortality of individual plants. ESR seedings would benefit slickspot peppergrass by reestablishing a natural habitat, reducing invasive plants, and contributing to the return of a more normal fire cycle. Emphasizing the use of native seed and including native forbs in the seed mix would increase the diversity and pollen sources for insect pollinators.

Restricting the use of potentially invasive non-native species (i.e. the use of prostrate kochia for stabilization projects and in greenstrips) would reduce any potential impacts from these plants on slickspot peppergrass. Since use of potentially invasive non-native species could have an adverse impact on slickspot peppergrass, additional site-specific ESA Section 7 conferencing would be required before approving the use of these plants within the known range of slickspot peppergrass.

Other ESR Actions:

Potential adverse effects to slickspot peppergrass associated with the proposed ESR treatments would be avoided by using site specific design features. Realignment of proposed fence lines or relocating other structures following preconstruction surveys would avoid impacting slickspots and slickspot peppergrass caused by ground disturbance.

Ground-based herbicide spraying for control of invasive plants and noxious weeds may impact individual or groups of slickspot peppergrass plants. To minimize this potential effect, ground-based herbicide spraying for noxious weed control within slickspot peppergrass element occurrences would be done using site-specific design features under the proposed action. These design features include use of hand sprayers only and the establishment of 10-foot no-herbicide treatment buffers around slickspots located in element occurrences. Invasive plants and/or noxious weeds within the 10-foot buffer would be treated by hand or with hand tools (e.g. pulling, grubbing, digging, hoeing, mowing, and cutting).

The use of persistent herbicides could impact slickspot peppergrass through soil movement of these chemicals by wind or water. The potential for chemicals to be transported by wind or water could be eliminated by not conducting noxious weed treatments with persistent herbicides within 150 feet of slickspot peppergrass element occurrences.

Individual slickspot peppergrass plants could also be damaged or killed if aerial herbicides are applied in un-surveyed potential habitat or inadequately surveyed slickspot peppergrass habitat. Therefore, aerial application of herbicides in areas that are unsurveyed or inadequately surveyed within the known range of slickspot peppergrass would require additional site-specific ESA Section 7 conferencing.

Closing the recovering burned areas to grazing and the use of protective fencing would benefit slickspot peppergrass by promoting the reestablishment of vegetation and by eliminating the effects of trampling, thus protecting the hydrology of slickspot microsites during the post-fire recovery process.

Goose Creek Milkvetch

Design features such as hand treating invasive plants and noxious weeds would minimize the potential of treating Goose Creek milkvetch with an herbicide. Aerial and hand seeding would also minimize ground disturbance thereby reducing impacts to Goose Creek milkvetch habitat and eliminating the potential to damage individual plants. Potentially invasive non-native plant materials would not be used in Goose Creek milkvetch habitat.

Type 3 Rangewide/Globally Imperiled Species Plant Species – Moderate Endangerment and Type 4 Species of Concern

Design features for BLM sensitive plants were considered in determining potential direct and indirect effects of treatments. Except when otherwise specified, the effects described below are for situations where BLM sensitive plant populations are not known and are undetected in the burned area.

Seeding Methods: Seedbed preparation utilizing chemical treatments could result in damage or mortality of BLM sensitive plants. In cases where an herbicide is needed to control invasive plants or noxious weeds prior to seeding, treatment of areas with known special status plant populations would need to be planned or avoided in light of 1) effects of the herbicide (e.g. broad vs. narrow spectrum), 2) phenology of the plant (active growing phases vs. dormancy), 3) the level of impact relative to the distribution of the species, and 4) quality of habitat with and without treatment. Broadcast chemical seedbed preparation would only occur in areas that were dominated by invasive plants or noxious weeds prior to burning and where seeding treatments are not expected to be successful without chemical control. Therefore, the conditions present for herbicide use prior to seeding are indicative of a degraded habitat.

Application of an herbicide while a special status plant is actively growing, flowering, or setting fruit could result in damage to the plant, mortality, and/or lack of seed production, which would affect the sustainability of the population. Herbicide treatments utilizing non-persistent herbicides such as Glyphosate that occur during plant dormancy are not anticipated to have a direct effect to BLM sensitive plants.

Mechanical seedbed treatments could result in damage or mortality of live plants. Depending on the depth of disturbance, plants could be uprooted or fragmented. Mechanical treatment would typically occur in fall when plants have set seed and/or are dormant. Some types of mechanical treatment that result in disruption of the first few inches of soil (e.g. disking) could bury seed at a depth that is too deep for germination to occur. Perennial species with well-established root systems could resprout if the roots are not badly damaged.

Drill seeding could result in damage or mortality of plants that occur in drill rows. Use of drill methods that reduce soil surface disturbance, such as the no-till or minimum-till drill, could reduce the spatial area where plants are affected. Aerial or ground broadcast seeding would not result in damage or mortality of live plants. Successful establishment of competitive non-native species could result in reduced vigor of individuals or populations. However, design features for BLM sensitive plants that encourage use of native plant materials would reduce this risk.

Establishment of a perennial plant community resulting from successful implementation of seeding treatments could result in long-term habitat improvement and expansion of potential special status plant habitat. This would occur due to reestablishment of a more natural plant community structure and diversity. Additions of forbs to native seed mixes could indirectly affect BLM sensitive plants through increase of food and habitat availability for pollinators, thus potentially increasing and diversifying pollinator populations.

Other ESR Actions: It is unlikely that spot herbicide treatments for noxious weeds would directly result in damage or mortality of BLM sensitive plants, unless the plants grow in close proximity to the target vegetation, due to design features and lable restrictions. There is a low probability of damage or mortality due to herbicide drift or movement of affected soil. Control of noxious weeds would reduce competition to BLM sensitive plants and enhance habitat quality.

Closing the recovering burned areas to grazing and the use of protective fencing would benefit BLM sensitive plants by promoting seeding success and natural vegetation recovery.

Wildlife

No Action

Mammals and birds are emphasized in the following discussions because little information is available regarding wildfire effects to reptile and amphibian habitats. Discussions also center on those species whose habitats are located in areas notably vulnerable to wildfire such as the shrub steppe, perennial and annual grasslands, and juniper vegetation types.

General Wildlife

Over time, frequently burned shrub-steppe vegetation types could be converted to invasive plants such as cheatgrass and medusahead. Wildlife habitats dominated by these invasive species are less diverse which in turn reduces wildlife species diversity. Further, the opportunity for habitat improvement is decreased as a result of declining ecosystem functions such as soil productivity (e.g. loss of nutrient and water retention capabilities) and diversion of BLM resources to respond to fire and its aftermath. The increase in wildfires in the Great Basin has resulted in loss of important big game winter ranges (Pellant, 1990; Updike, Loft and Hall, 1990), habitat supporting North America's densest concentration of nesting raptors (Kochert and Pellant, 1986), and non-game bird occurrence (Dobler, 1992). Ground-dwelling wildlife (e.g. reptiles, amphibians, and small mammals) movements can be restricted by dense stands of cheatgrass or other invasive plants. Some wildlife species have small home ranges and could be extirpated from large areas of cheatgrass or medusahead infestations. Noxious weeds could spread from the initial area of disturbances and eventually occupy a variety of vegetation types.

Loss of trees and shrubs that provide cover, food, and fawning sites, affect mule deer populations. This is most critical in winter range where mule deer congegate around isolated pockets of shrubs taller than the snow cover. Mule deer may find the quantity and quality of burned vegetation in the spring and summer attractive (Stager, 1977) if the fire is not too severe for natural recovery. As trees and shrubs reestablish, providing sufficient cover in 20 or more years, habitat conditions improve. Repeated wildfire tends to convert native plant communities to annual grasses, which are missing important shrubs such as sagebrush and bitterbrush and therefore, impact mule deer diets (Clements and Young, 1997). The loss of native plant communities to invasive plants as a result of not implementing ESR actions after a fire is expected to continue in lower elevation sites.

Sagebrush-obligate or sagebrush associated bird species can be expected to decline following wildfire in sagebrush steppe, especially in response to larger scale fire events. Sagebrush obligate species are expected to decline as a result of not planting sagebrush since shrub reestablishment may not occur or will take much longer to reestablish as compared to the proposed action. Most sagebrush is readily killed by wildfire (Blaisdell, 1953) and it takes 25 to 50 years to reestablish itself as a dominant shrub (Young et al., 1989) under a normal fire regime.

In stand replacing fires, animals that depend on shrubs, trees, and other vegetation providing structure would be affected the most and for the longest period of time. Under this situation, bat species may suffer the most because the reduced vertical structure is expected to reduce insect abundance and thus reducing the forage base for bats.

Some wildlife can adjust to an increase in herbaceous grass and forb cover after a wildfire. Small mammals tend to respond quickly to habitats that have been burned. Any immediate effects to rodents are relatively short in duration because of vegetation recovery and high reproductive productivity of rodents (Riggs, Bunting, & Daniels, 1996).

General Fish

The analysis for native non-game fish assumes actions that affect special status fish (e.g. riparian condition, water quality, and water quantity) also affect native non-game fish. The impacts from the no action alternative would have the same general effects to non-game fish as those described for special status fish.

The absence of ESR treatments on uplands could increase the risk of excessive sediment loading and channel degradation of streams, diminishing the quality and quantity of fisheries habitats. Habitat recovery would be slow since progress toward a properly functioning system would be impeded, especially in areas where large fires occur verses small acreages of burned habitats.

Native non-game fish can tolerate habitat conditions that are less suitable than special status fish and, therefore, may return to stream reaches with burned riparian vegetation sooner. In any event, native non-game fish returning to sparsely vegetated stream reaches are at an increased risk of predation and mortality due to lack of cover, elevated water temperatures, water quality impairment, and reduced streamflows. Burned stream reaches with little riparian vegetation or substantially elevated fine sediments would not support all of the life cycle requirements of native non-game fish.

Culverts damaged by wildfire or post-fire debris flows could prevent or impair the movement of native non-game fish. Fire related changes to in-culvert conditions such as debris, increased streamflows, or streambed erosion that creates outfalls below a culvert could create a barrier to the seasonal movement of native non-game fish. Culverts that have a small outlet drop, low gradient, low water velocities similar to those of natural reaches, contain natural substrate, and provide in-culvert conditions generally allow for adequate passage of most small bodied, weak swimming fish such as suckers and minnows (Rosenthal, 2007). Not repairing or replacing culverts damaged by wildfire could delay or prevent the return of native non-game fish to suitable habitats after a wildfire.

Special Status Wildlife and Fish

Type 1 Federally Threatened, Endangered, and Candidate Species

This analysis was based on the following assumptions:

- Effects of wildfire on special status aquatic wildlife species are greater in riparian areas that are not in properly functioning condition.
- Wildfires have a greater impact to these species in smaller headwater streams than along the Snake River. Fire impacts to smaller streams are typically more concentrated; therefore, whole populations of these species are more likely to be affected than in a larger stream or river.
- Fire severity directly influences the level of effect to special status aquatic species and their habitats.
- The relationship between aquatic species, riparian conditions, and water quality are interrelated and directly influence one another.

- Burned areas with desirable perennial upland and riparian vegetation would be allowed to recover naturally and would result in no human-caused direct or indirect effects to aquatic species.
- In stream reaches with high fire severity, riparian vegetation would recover slowly or not at all. The rate of riparian vegetation recovery in these areas would rely on the expansion of adjacent woody and herbaceous vegetation.
- Riparian habitats would likely recover from the wildfire in the long term as long as frequent repeated fires do not occur and public land uses did not impede vegetation recovery.
- Both general and livestock closures would be implemented and existing infrastructure such as fences repaired in the No Action Alternative, resulting in similar effects as described for natural recovery in the proposed action.

Bruneau Hot Springsnail

Riparian areas experiencing high fire severity would have a slow rate of recovery because revegetation would likely depend on the expansion of unburned adjacent woody and herbaceous vegetation. Not replacing vegetation in these areas containing Bruneau hot springsnails could result in loss of habitat for the snails.

Topsoil erosion due to wildfire would likely increase on hillslopes and tributaries that drain toward geothermal springs until upland and riparian vegetation recovers to pre-wildfire conditions. Geothermal springs containing the Bruneau hot springsnails or their habitat are at a greater risk for wildfire related impacts from the erosion of surface soils than if revegetation and soil stabilization were implemented. Over time, wind-blown sediment and runoff from burned areas could contribute large amounts of fine sediments to the snail's habitat depending on soil type, annual precipitation, slope, aspect, and the type of vegetation that recovers in the burned area (i.e. perennial plants or invasive plants and noxious weeds). Because this snail occupies such a limited amount of habitat, any impacts from fire-related erosion could reduce the number and distribution of the species.

Post-fire expansion of invasive plants or noxious weeds into or adjacent to geothermal springs containing the Bruneau hot springsnail would result in a decline in habitat conditions. Not treating invasive plants known to spread into upland and riparian areas after a wildfire, such as cheatgrass, could pose a threat to aquatic vegetation that naturally occurs at geothermal springs containing Bruneau hot springsnail habitat.

Banbury Springs Lanx, Snake River Physa Snail, and Bliss Rapids Snail

Erosion of topsoil by wind and water would be expected to increase on the hillslopes and tributaries that drain toward the Snake River until upland and riparian vegetation has reestablished over a period of about 1 to 5 years. It is expected that a portion of these eroded soils could enter the habitats used by Snake River snails. By not implementing post-fire recovery actions to reduce surface erosion, more fine sediments could enter the Snake River. However, much of the area adjacent to the Snake River has burned in the last 20 years. Therefore, most fires are expected to be of low to moderate severity due to dominance by herbaceous plants.

Amounts of fine sediments delivered into the Snake River would vary depending on soil type, annual precipitation, slope, aspect, and pre-fire vegetation. Fires in shrub-dominated areas would have higher severity and would likely remain vegetation-free longer than areas dominated by herbaceous plants.

Not implementing ESR treatments to treat invasive plants and noxious weeds could result in an increase and expansion of these plants in both upland and riparian areas associated with the Snake River. Invasive plants and noxious weeds establishing in riparian areas could reduce or displace native woody and herbaceous vegetation naturally occurring along streams. Displacement of riparian vegetation would result in more fine sediments entering occupied snail habitats in the Snake River.

Damaged infrastructure could remain in disrepair resulting in increases in in-stream fine sediments from eroded road, culvert, and bridge materials. These eroded materials could be deposited into river reaches used by Snake River snails for foraging and reproduction. Not implementing temporary livestock, OHV, or other land use closures could result in increased soil erosion from uplands into occupied snail habitats in the Snake River. Access to the Snake River immediately after a wildfire could result in increased streambank alterations due to the lack of woody and herbaceous cover and would be an additional source of fine sediment to the Snake River.

Jarbidge River Bull Trout

Under the No Action Alternative post-fire actions to reduce soil erosion in watersheds containing bull trout would not be done and could result in more fine sediments entering bull trout occupied streams. Soil erosion caused by wind and water would be expected to increase until pre-burn upland and riparian vegetation has recovered. As in-stream fines increase, the quality of habitat features important to bull trout, such as pool depth, pool quality, and spawning substrate composition, is reduced. The post-fire changes in habitat could locally displace or reduce bull trout populations and impair bull trout critical habitat in the years immediately following a wildfire. The impacts from wildfire are reduced if bull trout are able to access undisturbed habitats adjacent to the area affected by the fire and then can return to the burned area once in-stream habitat conditions have stabilized or improved. Bull trout evolved in ecosystems where fire altered in-stream and riparian habitats, enabling them to adapt to short-term changes in habitat condition (Burton, 2005; Rieman, Lee, Chandler, & Myers, 1997). In time, it is expected that bull trout and their habitats would recover from the fire, but at a slower rate than would occur if ESR treatments were applied that reduced the amount of sediment entering bull trout occupied streams.

Since they are often the first colonizers of disturbed areas, increases or the expansion of invasive plants and noxious weeds could occur under the no action alternative. Invasive plants and noxious weeds are less effective in stabilizing soils and maintaining hydrologic processes than perennial upland vegetation and could result in erosion of upland soils into streams containing bull trout or their critical habitat. In riparian areas, the shallow roots exhibited by most invasive plants and noxious weeds are not as efficient in binding soils on streambanks and in the floodplain as is riparian vegetation. This combined with post-fire changes in upland hydrology can lead to erosion of streambanks and undesirable stream channel conditions, such as channel widening, reduced pool depth, and increased fine sediments in spawning substrates. These channel changes result in reduced habitat quality for sustaining bull trout populations.

Erosion of road surfaces or fill materials in watersheds containing bull trout could result in substantial increases in downstream fine sediments in spawning gravels and pools. The debris washed from the erosion of these fill materials could increase streambank erosion and result in stream channel widening or braiding. These channel conditions are less desirable for bull trout than the narrow, deep, singled-thread channels that bull trout require for spawning, rearing, and overwintering.

Columbia Spotted Frog

Spotted frogs live in spring seeps, meadows, marshes, ponds and streams, and other areas where there is abundant vegetation (FWS species profile web page). Immediate loss of vegetation from a wildfire would impact the Columbia spotted frog; however, once the riparian area naturally recovers, frog habitat should be available in the long term. However, slow or limited recovery of perennial upland and riparian vegetation could lead to soil surface erosion and fine sediments entering riparian areas and wetland that provide habitat for Columbia spotted frogs. Increased erosion and downcutting of occupied habitat would lead to a decline in occupied stream habitat.

If native perennial vegetation does not recover there is an increased risk of invasive plants and noxious weeds expanding into riparian areas that support Columbia spotted frogs. Invasive plants and noxious weeds establishing in riparian areas could reduce or displace native woody and herbaceous vegetation naturally occurring along streams. Displacement of riparian vegetation could result in increased erosion, loss of foraging areas, preferred insect food sources, and more fine sediments entering occupied frog habitats affecting eggs and tadpoles. Post-fire livestock grazing and heavy wildlife use (e.g. elk) that occurs prior to the recovery of vegetation would likely prolong the recovery of perennial plants and the recovery of suitable habitat for the Columbia spotted frog.

Yellow-billed Cuckoo

Under the no action alternative, existing yellow-billed cuckoo habitat (cottonwood and willow riparian forest) could be lost if invasive, fire-adapted salt cedar or other invasive plants and noxious weeds dominate these sites or if substantial erosion of the stream channel and floodplain occurs.

Greater Sage-grouse

Sage-grouse require large expanses of mature sagebrush as part of its habitat, so extensive stand-replacing burns are likely to reduce its populations (Benson, Braun, & Leininger, 1991). The specific effects of fire on sage-grouse habitat vary and are driven by a number of factors including site potential; ecological condition; functional plant groups; and the pattern, size, and season of burning (Crawford et al., 2004). On the Hart Mountain National Antelope Refuge in Oregon, Byrne (2002) reported nest success in burns > 20 years old was similar to nest success in unburned areas but was zero in burns ≤ 20 years old. In an analysis of the 2007 Murphy Complex fire, IDFG reconstructed the minimum number of sage-grouse males from 1988-2010 and found that the estimated population decreased within the fire boundary, but increased in the surrounding landscape (Moser and Lowe, 2011). Moser and Lowe (20100) also found that the 3 year average finite rate of population increase for leks inside the Murphy Complex fire from 2008-2010 was 0.7, suggestive of a declining population. In areas outside the fire boundary, the rate of population change was 1.037.

Depending on the species and the size of a burn, sagebrush can reestablish itself within 5 years of a burn, but a return to a full pre-burn community (density and cover of sagebrush) cover can take 15 to 30 years (Bunting 1984, Miller and Rose 1999). However, the opportunity for Wyoming big sagebrush to reestablish successfully in areas infested with annual invasive grasses is unlikely due to altered fire return cycles. The normal fire return cycle in Wyoming big sagebrush steppe is estimated at 60 to 110 years (Wright and Bailey 1982, Whisenant 1990). Cheatgrass alters fire frequency from historic intervals of 30 to 110 years to shorter cycles of 5 years or less (Whisenant 1990). Further, the potential for annual grasslands to increase in size from repeated wildfires is greater if ESR treatments are not completed.

High quality, tall perennial grass understories are also important to sage-grouse because tall perennial grasses provide important horizontal nest concealment not provided by shorter annual grass-type understories. Perennial grasses also retain space for annual and perennial forbs which are important to the summer sage-grouse diet. Forbs are generally lacking in annual grassland habitats.

Type 2 Rangewide/Globally Imperiled Species

Pygmy Rabbit

Pygmy rabbits dig their burrows in dense stands of sagebrush and other shrubs located on alluvial soils. They consume sagebrush throughout the year and it is their primary food source during the winter (Green and Flinders, 1980). Pygmy rabbits have a patchy distribution in the landscape. This habitat attribute makes them vulnerable to disturbances, such as wildfire which removes shrub cover. Fragmentation of shrub cover may pose a potential threat by limiting dispersal into favorable habitats (Weiss and Verts, 1984). Effects to pygmy rabbit expected from no action include the time for naturally recovering vegetation to become suitable and the loss of potential habitat through type conversion to annual grasslands.

Redband Trout, Yellowstone Cutthroat Trout, and Wood River Sculpin

The no action alternative is expected to have similar effects for all three of these fish species.

Burned areas with desirable perennial upland and riparian vegetation would be allowed to recover naturally. Riparian vegetation that experience high fire severity would recover slowly or possibly not at all where plant mortality occurs. The rate of riparian vegetation recovery in burned areas would rely on the expansion of adjacent woody and herbaceous vegetation. These habitats would likely recover from the wildfire in the long term (> 5 years) as long as frequent repeated fires do not occur and public land uses do not impede vegetation recovery.

Soil erosion would likely increase until upland and riparian vegetation has recovered. As in-stream fine sediments increase, the quality of habitat features important to these special status fish, such as pool depth, pool quality, and spawning substrate composition, are reduced. These post-fire changes in habitat conditions could locally displace or reduce fish populations in the years immediately following the wildfire.

Redband trout, Yellowstone cutthroat, and Wood River sculpin evolved in ecosystems where fire restructured in-stream and riparian habitats and are able to adapt to short-term changes in habitat condition (Burton, 2005; Rieman et al., 1997). The length of time native fish are displaced from burned areas is longer in streams where fish access is impeded or prevented by migration barriers (e.g. improperly placed culverts, diversion structures, dewatered stream reaches) than for streams that are connected to other fish-bearing habitats.

Slow recovery of woody vegetation would prolong the restoration of streamside shading, thermal insulation, and nutrient cycles needed for fish habitat. Livestock access into burned riparian areas would result in increased incidence of streambank alteration. There would also be an increased risk for stream channel erosion (i.e. lateral channel movement and channel widening) further altering the condition and suitability of redband trout, Yellowstone cutthroat trout, and Wood River sculpin habitats.

Shoshone Sculpin

Impacts to the Shoshone sculpin from implementing the no action alternative are primarily tied to increases in fine sediment and the loss or delay in recovery of riparian vegetation. More sediment is expected to enter springs and streams containing Shoshone sculpin than if revegetation and soil stabilization actions were implemented. Where sediment enters springs or streams, the amount of spawning, rearing, and overwintering habitat for Shoshone sculpin would be reduced. It would take longer for fine sediment to be flushed out of spring-fed systems because these systems do not experience the spring flushing flows that occur in streams and rivers. Shoshone sculpin could be temporarily displaced from habitats with increased sediment loading until vegetation has recovered and in-stream fines are reduced. The ability for Shoshone sculpin to move into adjacent unburned habitat would provide important refuge until in-stream conditions in burned habitat return to levels that support this species.

Livestock grazing in these habitats before they recover could result in a decline in streambank conditions, reduction in riparian vegetation, an increase in in-stream fine sediments, and potential direct trampling of Shoshone sculpin individuals. Impacts from the wildfire combined with effects from livestock grazing that occurs prior to habitat recovery could result in the long-term decline in habitat condition or the amount of habitat available for sustaining Shoshone sculpin populations.

Type 3 Rangewide/Globally Imperiled Species Plant Species – Moderate Endangerment and Type 4 Species of Concern

Effects to the habitat of Type 3 and 4 sensitive animals would be the same as general wildlife. Response by species would depend on the habitat type(s) affected by fire and the likelihood for natural recovery. Untreated lands which recover poorly may reduce the amount and quality of habitat for Type 3 and 4 sensitive animals. Generally, species requiring shrubs for cover or nesting substrate and diverse vegetation communities are expected to experience the most habitat loss.

Migratory Birds

Species which are also BLM sensitive include sagebrush obligates; therefore, this section will only include effects to migratory bird species of conservation concern that use grasslands. Shorebirds are not expected to be impacted since fire does not typically burn to the shoreline of most reservoirs and ponds.

Repeated wildfire and the conversion of perennial vegetation to invasive plants such as cheatgrass would reduce the prey base for raptors over time due to reduced habitats (food and cover) for mammalian species (e.g. rabbits, mice, voles, squirrels) and remove nesting and roosting habitat for birds using the juniper vegetation type.

Some migratory birds, such as the long-billed curlew, horned lark, and burrowing owl live in annual and shorter perennial grassland vegetation types and would benefit from no action. For instance, burrowing owls are adapted to more open areas, and both species often increase after wildfire or other disturbances which reduce dense sagebrush canopies (McAdoo, Schultz, & Swanson, 2004).

Proposed Action

General Wildlife

Allowing burned areas with suitable perennial vegetation to recover naturally is a valid option under the proposed action alternative. Such areas should, in time, provide habitat needs for animal species occupying these areas prior to a wildfire. Areas where fire destroyed sagebrush, junipers, and other shrubs would take longer to fully recover in the lower elevation vegetation types. Large-scale fires that leave little to no shrub patches would provide less opportunity for occupancy by shrub-dependent wildlife species across the entire burned area and would take very long to recover naturally, if at all, given current fire frequencies in some areas.

During the first 1 to 3 years, there are no expected immediate indirect effects to wildlife from implementation of ESR treatments since their habitat has already been disturbed from wildfire and all post-fire recovery takes some amount of time to occur. In time, the establishment of suitable perennial grass, forb, and shrub communities would provide a variety of habitats with increased structural and plant species diversity. Wildlife habitats would generally be restored in areas where pre-burn vegetation consisted largely of invasive plants such as cheatgrass. Furthermore, habitats at risk of invasive plant invasion could be protected from invasion through restoration thus reducing habitat loss. The overall amount of habitat burned by subsequent fires could lessen due to the establishment of healthier fire resistant plants and a more normal fire cycle and fire spread than currently exists in plant communities dominated by cheatgrass.

Implementing ESR treatments would result in increased structural and community diversity in burned annual grasslands and in large burns where sagebrush is not likely to reestablish. Further, ESR treatments in these areas would: (1) better meet the needs of big game animals in the winter; and (2) provide reliable, high quality forage for seasonal big game dietary needs. Diversity of food and cover types over short distances is the key to enhancing mule deer populations in big sagebrush areas (Holechek, 1982). The expected increase in shrub cover would improve habitat values on mule deer and pronghorn winter range. Availability of shrubs as winter forage has been directly linked to antelope survival (Barrett, 1982; Bayless, 1969; Kindschy, Sundstrom, & Yoakum 1982; Smith and Beale, 1980; Yoakum, 1990).

The habitat values for many small game and non-game wildlife (including bats) would be improved by the establishment of a mixed canopy plant community. Expected changes in the structural qualities of the herbaceous and shrub component would provide an increase in the diversity and array of micro-habitats, providing suitable conditions for an increased number of wildlife species. High nutritional quality and a variety of forbs and shrubs present in native plant communities are vital for maintaining wildlife diversity (Dietz and Negy, 1976; Memmott, 1995; Yoakum, 1978). Improved nutritional quality and vegetation diversity are expected as a result of the proposed action, which would also help maintain wildlife diversity.

Seeding Methods: Effects from mechanical methods on small mammals, waterfowl, song birds, amphibians, and reptiles are expected to only occur during project implementation. Impacts during treatment implementation are temporary disturbance or displacements of mobile wildlife. Wildlife burrows may collapse where drills, harrows, and chains are used, but collapsed burrows could be re-excavated or new ones dug.

Aerial and ground herbicide applications may come in direct contact with smaller, less mobile species (i.e. rodents, snakes, lizards), but when applied according to design features notable effects to wildlife would be minimized and would not be lethal. There is a possibility that aerial applications may come in direct contact with big game animals; however, these species are likely to vacate an area during aircraft activity. Herbicides used for seedbed preparation during ESR activities generally do not bio-accumulate and are rapidly excreted if ingested on plant material, so there would be little or no effects from ingestion (USDI BLM, 2007b). Glyphosate is the primary herbicide used by the Twin Falls District to treat invasive annual grasses. When applied at typical rates, the acute toxity risk to animals from direct spray and consumption and chronic toxicity from explosure is generally low (USDI BLM, 2007b).

Seed mixture priority is usually given to the species with the most need of habitat rehabilitation and is based on site-specific review. For instance, in the absence of snow, or when elk and deer are able to paw through the snow, they prefer and will seek out evergreen and semi-evergreen species such as prostrate kochia, Lewis flax, small burnet, and Palmer penstemon (USDA Forest

Service, 2004). These species could be prioritized in crucial winter habitat where these plant species would be established quickly to benefit elk and deer. In sage-grouse habitats, sagebrush and forbs favorable to sage-grouse would most likely be in the seed mix.

Watershed Stabilization/Erosion Control Treatments: Temporary disturbance of wetland, riparian, or aquatic habitats may occur during implementation of watershed stabilization and/or erosion control treatments. However, effects are expected to be minor and short-lived with the incorporation of design features. Long-term effects would include a more rapid reestablishment of suitable riparian and aquatic habitat than natural recovery; improved water quality by maintaining bank stability, reducing sediment loads, and maintaining low water temperatures; and diminishing the risk of post-fire flooding and land sliding that could degrade riparian habitat, water quality, and aquatic habitat.

Other ESR Actions: Herbicide application design features would minimize impacts to riparian vegetation and water quality. Prevention and control of noxious weed-infested areas and reestablishment of desirable riparian species would provide better soil and water protection, insect production, stream canopy cover, bank protection, and large woody debris recruitment potential for aquatic wildlife.

Fences would be built using design features and BLM specifications that minimally inhibit wildlife movements and increase the visibility of a fence where needed to prevent wildlife collisions.

General Fish

Of the game fish species, redband trout are the most likely to be directly or indirectly affected by ESR activities as redband trout occur in streams where these activities are typically needed. Other game fish primarily occur in reservoirs and therefore are not likely to be directly or indirectly affected by ESR treatments. Because ESR treatments are not expected to affect these other game species, they are not discussed further.

The impacts to native non-game fish from implementing ESR actions would have the same general impacts as those described for special status fish species. No additional impacts beyond those identified for special status fish are identified.

Special Status Wildlife and Fish

The reestablishment of shrub steppe vegetation types would eventually provide suitable habitats for special status species. The proposed action is expected to contribute to the return of a more natural fire regime over time, which would assist in the conservation of special status species by reducing future habitat loss and fragmentation due to large-scale wildfire. Seeded perennial vegetation is expected to be more resilient to the effects of wildfire and once established, it is expected to shorten the wildfire season for treatments where annual grass vegetation cover types previously occurred.

Type 1 Threatened, Endangered, Candidate Wildlife Species

In the last 30 years, over 87% of ESR treatment acres in the Twin Falls District have occurred in low-elevation shrub, annual grass, and perennial grass vegetation types (BLM GIS Data). The remaining treatments have primarily occurred in mid-elevation and mountain shrub vegetation types. ESR treatments that may occur in the preferred habitats for listed animal species, which are mainly associated with riparian and aquatic habitats, are not common.

Existing information would be reviewed and surveys completed, as appropriate for threatened, endangered, and candidate species and their habitats prior to implementation of ESR treatments. Generally, treatments would result in a “no effect” or a “may affect, but not likely to adversely affect” determination since implementation of the treatments would incorporate design features that minimize or eliminate affects to listed species.

The proposed action is expected to contribute to the recovery of wildlife habitats and eventually lead to more natural fire regimes over time. Habitat recovery would assist in the conservation of these species by reducing future sedimentation and associated habitat loss from wildfire. Using the specific design features, most of the proposed ESR treatments would either have “no effect” or “may affect, not likely to adversely affect” on the Jarbidge River bull trout, listed aquatic snails, and Columbia spotted frog. ESR treatments would comply with ESA consultation requirements that minimize or eliminate impacts to listed species and their habitats.

This analysis is based on the same assumptions for special status aquatic species as identified for the no action alternative.

Bruneau Hot Springsnail

Seeding Methods: Effects to the Bruneau hot springs snail from ESR treatments would be minimal due to the low likelihood that fire will occur in their habitat. Mechanical seedbed preparation and seed covering, broadcast seeding using motorized vehicles, OHV traffic, and aerial seeding near their habitat would be designed to have no substantial effects to the snails. Fire severity is expected to be low to moderate along springs containing Bruneau hot springsnail due to the presence of water and saturated soil conditions. Any planting actions to restore riparian vegetation along springs containing these snails would be implemented using methods that would not result in trampling of individual snails or disturbance to their habitat. These methods would include not walking within their habitat during planting operations or planting in a manner that would not introduce sediment into springs.

Watershed Stabilization/Erosion Control Treatments: Implementing post-fire recovery actions to reduce surface erosion would indirectly affect Bruneau hot springsnails by reducing the amount of sediment entering springs containing them. These snails would benefit from these treatments because less fine sediment would enter, potentially altering occupied habitats. Overall, upland erosion control treatments would occur far enough away from streams that direct impacts to Bruneau hot springsnails or their habitats would be minimal.

Other ESR Actions: ESR treatments that reduce the potential for invasive plants and noxious weeds to displace riparian vegetation would maintain suitable habitat for the Bruneau hot springsnail. Noxious weed and invasive plant treatments would comply with existing ESA consultation (OALS #1-4-05-I-759, FWS, 2005). Design features for reducing impacts to Bruneau hot springsnail include no aerial herbicide applications within 0.5 mile of occupied spring habitats. Other herbicide use within 0.5 mile of occupied habitat would be ground based spot treatment of noxious weed populations. The surfactant R-900 would not be used within or adjacent of occupied spring habitats. Further, design features for helicopter landings, fueling, or fuel storage would minimize the potential for impacts resulting from the use of equipment near these streams. These actions would reduce the potential for ESR herbicide treatments to measurably affect Bruneau hot springsnails or their habitats.

Maintaining exclosure fences around Bruneau hot springsnail habitat after a wildfire is important in avoiding trampling of the snails and damage to riparian vegetation and spring condition that may result from livestock, OHV, and other land uses. Temporary grazing closures in burned areas adjacent to Bruneau hot springsnail habitat would reduce the potential of fine sediments entering occupied habitat resulting from livestock grazing occurring prior to the recovery of burned vegetation.

Banbury Springs Lanx, Snake River Physa Snail, and Bliss Rapids Snail

In burned areas with low to moderate fire severity, natural rates of riparian and upland vegetation recovery would be expected to restore vegetation over time without the potential for localized impacts to Snake River aquatic snails or their habitats from stabilization activities. In riparian areas where resources are not expected to recover naturally, proposed ESR treatments would better ensure soil stabilization and recovery of hydric vegetation (e.g. sedges, rushes, willows, cottonwoods) benefitting Snake River snails.

Seeding Methods: Seeding treatments would be designed to avoid effects to ESA-listed snails or their habitats in the Snake River. The recovery of riparian vegetation in burned streams would improve and maintain water quality for Snake River snails by maintaining bank stability, reducing sediment loads, and reducing the potential of eroded soils from entering the Snake River and snail habitats.

Watershed Stabilization/Erosion Control Treatments: Erosion control treatments would generally result in less sediment entering the Snake River by reducing the amount of topsoil from hillslopes and tributaries that drain toward the Snake River. Depending on their distance from the Snake River and magnitude, some treatments could result in ground disturbance and soil deposition into the Snake River in the short-term, which could reduce the quality of the snails' habitats. However, these treatments are expected to reduce fire-related impacts to in-stream conditions for Snake River snails over the long-term.

Other ESR Actions: ESR treatments to control invasive plants and noxious weeds would reduce competition with native plants that support natural hydrological cycles. Since herbicide treatments would occur in riparian areas, there is a potential for off-target movement and drift of chemicals into surface water. Protective buffers between treatment areas and surface waters would be used to reduce the potential for impacts to Snake River snails and their habitats. For example, no aerial herbicide applications would occur within 0.5 mile of the Snake River or occupied spring habitats. Water quality will be further protected by use of seed mixtures that do not contain added chemicals such as fertilizer and avoidance of hydro-mulch use in riparian areas that contain or are upstream of snail sites. Specific streamside, wetland, and riparian herbicide restrictions would minimize impacts of aerial and ground-based chemical weed control on ESA-listed species in the Snake River. Noxious weed and invasive plant treatments would also comply with existing ESA consultation (OALS #1-4-05-I-759, FWS, 2005).

Design features for helicopter landings, fueling, or fuel storage areas would also reduce the potential for petroleum products to accidently enter the Snake River and affect water quality for Snake River snails. Preventative measures such as cleaning equipment prior to completing instream ESR activities (e.g. culvert repair) would reduce the risk of introducing nuisance aquatic species to the Snake River and its tributaries. Such species could compete with listed Snake River snails.

There is a low potential for in-stream treatments to be implemented in the Snake River; however, all proposals that have the potential to affect Snake River snails would require Section 7 consultation. Effects are more likely to occur from in-stream stabilization or replacement activities in the tributaries to the Snake River. The impact would be sediment inputs to streams from activities such as stabilizing fill materials for damaged infrastructure (e.g. roads, culverts, bridges). Sediments could be deposited into river reaches used by Snake River snails for foraging and reproduction. Sediment related impacts from in-stream stabilization activities are expected to be localized, short term, and less than if fire-damage roads, culverts, and bridges were not repaired.

Temporary livestock, OHV, and other land use closures would expedite the rate of recovery for upland and riparian vegetation and would result in less soil erosion, lessening the amount of fine sediments entering the Snake River than would occur in the no action alternative. Repairing or replacing allotment and pasture boundary fences would also expedite vegetation recovery by preventing livestock from accessing burned areas. Localized impacts to Snake River snails are not likely to occur from the construction of temporary fences or the repair of boundary fences because disturbance to the Snake River or its tributaries could be avoided.

Jarbidge River Bull Trout

ESR treatments would focus on expediting the recovery of vegetation which would promote the infiltration of surface water and reduce the potential for eroded topsoil from entering streams with bull trout and their designated critical habitat.

Seeding Methods: There is the potential for mechanical treatments to result in localized disturbances which could introduce fine sediments into bull trout habitat. As in-stream fine sediments increase, the quality of the habitat is reduced. Fine sediments can accumulate in spawning gravels and pool habitats that are important for bull trout spawning, rearing, and overwintering. The proposed revegetation treatments are intended to reduce surface erosion once seeded species are established. Treatments can be locally adapted to avoid steep slopes or drainage features that could introduce fine sediment into bull trout occupied streams. ESR treatments to restore upland vegetation would result in less fine sediments entering bull trout occupied streams and their designated critical habitat than if no treatments were applied to reduce surface erosion from burned watersheds.

Revegetation treatments in riparian areas would restore woody vegetation along stream channels where vegetation is not expected to resprout after a wildfire. Bull trout would benefit from reestablishing native woody plant species such as cottonwood, aspen, and willow. Restoring woody vegetation would expedite the long-term recovery of vegetation that moderates water temperatures, restores nutrient cycles that support insect production (an important food source for bull trout), and provides woody debris to streams. In-stream woody debris provides stability to stream channels and is important for the creation of pools that provide hiding cover. Localized sediment introduction to bull trout occupied streams from plantings are expected to be short term. Overall, ESR treatments to restore riparian vegetation and adjacent upland vegetation would result in fewer fire-related impacts to streams containing bull trout and their designated critical habitat.

Watershed Stabilization/Erosion Control Treatments: Erosion control barriers in uplands would be used to stabilize soils and increase surface water infiltration on burned areas. These actions would reduce the amount of fine sediments entering bull trout occupied streams. However, localized soil disturbances would occur when completing these actions and some sediment could enter bull trout occupied streams. The less fine sediment entering bull trout streams the more likely for pool depth, pool quality, and spawning substrate composition to be maintained. Generally, upland erosion control treatments would be away from streams so direct impacts to bull trout streams are unlikely and by reducing soil erosion and improving infiltration rates these actions would have beneficial indirect impacts to bull trout.

ESR actions to reduce erosion in the floodplain or riparian areas (e.g. check dams, armoring stream crossing and culverts, in channel silt fences, log dams, willow waddles, and gabions) have the potential to adversely impact this species and its designated critical habitat. All of these erosion control methods result in disturbance to the streambed and stream banks and introduce sediment into the channel. Some erosion control treatments are designed to reduce lateral stream channel movement by placing rock on unstable streambanks. Although these treatments can slow streambank erosion, they can also disrupt the balance between erosion and deposition or cause downstream bank erosion. The placement of rock within the high water mark would be kept to the minimum required to protect structures (i.e. bridge, culverts, road bed fill materials) and would not be used extensively as a stream stabilization treatment. The placement of in-stream gabions would only be used in the most extreme cases because of the long-term impact of these structures on natural channel process which are necessary to maintain the proper function of streams. All in-stream treatments that have the potential to affect bull trout or their designated critical habitat would require Section 7 consultation.

Other ESR Treatments: Controlling the expansion or increase of invasive plants and noxious weeds into riparian areas would reduce competition with recovering hydric plants that are more capable of supporting natural hydrologic cycles and maintaining riparian functional condition. To avoid chemical impacts to water quality, aerial herbicide applications related to ESR activities would not occur within 0.5 mile of water bodies that contain or are upstream of bull trout populations or designated critical habitat. Water quality will be further protected by use of seed mixtures that do not contain added chemicals such as fertilizer while aerially seeding in or upstream of occupied habitat and by not using hydro-mulch in riparian areas that support bull trout. Treatments requiring the use of herbicides in watersheds containing bull trout would comply with design features specific to listed aquatic species in Appendix C. All such treatments would also comply with existing consultations (OALS#1-4-05-I-759), as amended. Specific guidance for streamside, wetland, and riparian herbicide applications would minimize impacts of aerial and ground-based chemical weed control on bull trout and their designated critical habitat.

Design features for helicopter landings, fueling, or fuel storage would minimize the potential for impacts resulting from the use of equipment near these streams. Limiting use of all-terrain vehicles in live water to designated crossings and work areas would minimize the potential for impacts to water quality which could ultimately affect bull trout individuals or their designated critical habitat.

Post-fire actions to repair or replace burned infrastructure in uplands (e.g. powerlines, water troughs, fences) is expected to have minimal impacts to bull trout occupied streams since the treatments would occur outside of riparian areas. In watersheds containing bull trout, ESR actions to replace infrastructure in riparian areas (e.g. roads, culverts, bridges) could result in localized disturbance of streambanks and streamside vegetation, disturb large quantities of fine sediment adjacent to and within the stream channel, and often require temporary dewatering of the stream. This can result in localized displacement of fish, stream channel instability, and fine sediments being washed downstream where they can become embedded in bull trout spawning, rearing, and overwintering habitats. There is also an increased risk to water quality having equipment containing petroleum products in the stream channel and floodplain. The use of design features and compliance with the programmatic consultation for Stream Crossing Structure Replacement and Removal Program (FWS, 2012 - #01EIFW00-2012-F-0015) would substantially reduce impacts to bull trout and their designated critical habitat. Overall, the impacts from installing and repairing stream crossings (i.e. culverts, bridges, and stream fords) would be less than if post-fire erosion caused these structures to fail and stream channels were inundated with, or destabilized by, sediment and debris. All in-stream activities that have the potential to affect bull trout or their designated critical habitat would require Section 7 consultation.

Bull trout would benefit from temporary closures (e.g. livestock, OHV, other land uses) since the recovery of upland and riparian vegetation would likely be expedited, stabilizing soils much faster, and reducing the potential of invasive plants and noxious weed expansions. Temporarily excluding livestock from burned areas would reduce ground disturbance and allow seeded plants to establish and pre-burn vegetation to recover more quickly than if livestock grazing were to continue. Recovery of woody riparian vegetation would provide habitat attributes such as shade, thermal cover, and streambank stabilization. Replacing allotment and pasture boundary fences would also enhance the recovery rate of burned vegetation. There would be some localized disturbance from fence repair in riparian areas containing bull trout or its designated critical habitat, but the effects of replacing fences would be less than if livestock grazing resumed while vegetation was recovering from wildfire.

Columbia Spotted Frog

ESR treatments are not typically done in Columbia spotted frog habitat. However, ESR treatments that incorporate design features to minimize impacts of ground disturbance and herbicide applications upstream and adjacent to Columbia spotted frog habitat are expected to have minimal short-term and beneficial long-term impacts.

Seeding Methods: Seeding treatments would be designed to avoid effects to Columbia spotted frogs and their habitats. Planting riparian vegetation would improve and maintain water quality for the frogs by maintaining bank stability, reducing sediment loads entering streams and wetlands, and maintaining preferred insect food sources.

Watershed Stabilization/Erosion Control Treatments: Implementing post-fire recovery actions to reduce surface erosion would reduce the amount of sediment entering streams containing Columbia spotted frogs. Although some amount of sediment would likely enter these streams from implementing ESR treatments, the impacts are expected to be minimal. Overall, upland erosion control treatments would aid in the recovery of burned habitats and are expected to result in fewer impacts to Columbia spotted frogs and their habitat than if no efforts are made to control soil erosion.

Other ESR Treatments: Design features minimizing impacts of herbicide applications of invasive plants and noxious weeds upstream and adjacent to Columbia spotted frog habitat are expected to ensure any effects are short term. The most restrictive herbicide design features would be implemented on vegetation closest to live water to protect water quality and wetland, riparian, and aquatic habitats. Design features for helicopter landings, fueling, or fuel storage would minimize the potential for impacts resulting from the use of equipment near these streams. The installation of in- or near-channel erosion control structures, or repair or replacement of facilities such as roads, culverts, and bridges have the potential to contribute to in-stream sediment levels, or directly impact individual Columbia spotted frogs. Site-specific in-stream or sediment generating treatments upstream or adjacent to frog populations would be designed to minimize potential impacts.

Temporary closures (e.g. livestock, OHV, other land uses) in burned watersheds would expedite the rate of recovery for upland and riparian vegetation. Less soil erosion is expected, lessening the amount of fine sediments entering occupied Columbia spotted frog streams than would enter if OHV, livestock grazing, and other land uses occurred while burned vegetation is recovering. Localized impacts to Columbia spotted frogs may occur from construction of temporary fences and the repair of boundary fences. However, these impacts would be short-lived and repairing allotment and pasture boundary fences would expedite vegetation recovery by preventing livestock from accessing burned areas.

Yellow-billed Cuckoo

Proposed ESR treatments would have minimal effects on yellow-billed cuckoo because activities would be restricted from occupied habitat during the nesting season. The proposed action is also expected to contribute to the return of a more natural fire regime over time, which would assist in the conservation of the yellow-billed cuckoo by reducing future habitat loss and fragmentation due to large-scale, high-intensity wildfires.

Seeding Methods: ESR treatments can benefit the yellow-billed cuckoo by accelerating soil stabilization and recovery of native vegetation, especially riparian trees such as cottonwoods and willows. Planting cottonwoods in areas previously lacking them could eventually expand the overall amount of suitable habitat thus improving conditions for yellow-billed cuckoo. The recovery of riparian vegetation would promote reestablishment of insect food sources and potential nesting habitat for the cuckoo, reduce erosion, and reduce the risk of post-fire invasion by invasive plants and noxious weeds into cuckoo habitat.

Watershed Stabilization/Erosion Control Treatments: ESR treatments that control erosion of streambanks would maintain willows and cottonwoods important for insect food sources and nesting habitat.

Other ESR Treatments: Avoidance of herbicide treatments near occupied yellow-billed cuckoo habitat during the nesting season would reduce potential impacts to food resources and cover. Disturbances to yellow-billed cuckoo during nesting may decrease reproductive success. While it is unlikely that yellow-billed cuckoo would use habitat burned to the extent that ESR treatments are necessary, nesting could occur in adjacent unburned habitats. Noise generating activities caused by ESR activities (e.g. motorized vehicles, aircraft, construction) may disrupt breeding, nesting, or feeding behavior, and could cause nest abandonment. Proposed design features avoid disturbance to yellow-billed cuckoo during nesting periods and near nest locations.

Greater Sage-grouse

Once established, healthy sagebrush communities would provide suitable habitat for sage-grouse, once they reach the desired structural characteristic for seasonal habitat needs. In 10 to 20 years, the establishment of a sagebrush plant community with more numerous structural components is also expected to create habitat conditions beneficial for sage-grouse. Further, the prevention of burned areas converting to fire prone annual grasslands is expected to protect adjacent unburned sage-grouse habitat.

Seeding Methods: Sage-grouse could be impacted by the use of harrows, drills, cultipacker, imprinter, masticator, and chains in areas where suitable habitat remains within the recently burned treatment area or where suitable habitat is immediately adjacent to treatment areas. Temporary displacement of animals or temporary disruption of movements between habitats could occur due to human activity and noise. Effects would be minimized by design features that limit ground-disturbing activities during between 6 p.m. and 9 a.m. during the March-April lekking season (within 0.6 mile of occupied leks) as well as during the May-June nesting season. The probability of sage-grouse using ESR treatment areas while herbicides are being applied is relatively low due to unsuitable habitat conditions following a wildfire.

Watershed Stabilization/Erosion Control Treatments: ESR treatments that control surface erosion of uplands would aide in the recovery of perennial vegetation and shrubs important to habitats used by sage-grouse for nesting, brood rearing, and wintering. Design features would minimize disturbances to sage-grouse during critical periods of time such as the breeding (within 0.6 mile of occupied leks) and nesting seasons.

Other ESR Treatments: ESR treatments which incorporate design features for the use of herbicides in sage-grouse habitats would minimize effects on the species. Design features would be implemented for large scale aerial treatments not occur during the breeding season and therefore the impacts from ESR treatements would be minimized.

Implementing temporary livestock, OHV, and other land use closures until burned vegetation has recovered would benefit sage-grouse habitat by promoting a rapid establishment of a suitable habitat along with an overall increase in quality and quantity of food and cover. Design features which restrict temporary fence placement as well as improve the visibility of fences would minimize the potential of sage-grouse colliding with fences. Construction of temporary fences could increase the number of available raptor perches and sage-grouse predation. However, most temporary protective fences would likely be removed within the first 3 to 5 years following a wildfire, eliminating long-term potential impacts.

Type 2 Rangewide Globally Imperiled Species

Pygmy Rabbit

Seeding Treatments: Pygmy rabbits could be impacted by the use of harrows, drills, cultipacker, imprinter, masticator, and chains in areas where suitable habitat remains within the recently burned treatment area or where suitable habitat is immediately adjacent to treatment areas. Temporary displacement of animals or temporary disruption of movements between habitats could occur. The probability of pygmy rabbits using ESR treatment areas while herbicides are being applied is relatively low due to unsuitable habitat conditions following a wildfire.

Subsequent to treatment, pygmy rabbits are expected to eventually benefit from the increased diversity of vegetation that is expected to result from ESR treatments. Reestablishing sagebrush through seeding efforts is also expected to return treated burned sites to suitable pygmy rabbit habitat faster than the no action alternative.

Watershed Stabilization/Erosion Control Treatments: ESR treatments that control surface erosion of uplands would aide in the recovery of perennial vegetation and shrubs important to habitats used by pygmy rabbits.

Other ESR Treatments: Construction of temporary fences could increase available raptor perches that potentially could increase pygmy rabbit predation. However, most temporary fences would be removed within the first 3 to 5 years following a wildfire, eliminating long-term potential effects.

Repairing existing fences is expected to manage grazing in areas where pygmy rabbits occur such that sufficient forbs and grasses are available to pygmy rabbits. Grasses and forbs are seasonal components of their diet. Last, the prevention of burned areas converting to fire-prone annual grasslands is expected to protect adjacent unburned pygmy rabbit habitat.

Redband Trout, Yellowstone Cutthroat Trout, and Wood River Sculpin

The proposed action is expected to have similar effects for all three of these fish species.

Seeding Methods: Post-fire treatments that promote the recovery of perennial herbaceous and woody vegetation would result in the infiltration of surface water and reduce the potential for eroded soils to enter fish-bearing streams. Mechanical treatments would result in localized ground disturbance which could introduce sediment into fish-bearing streams; however, proposed upland revegetation treatments would avoid steep slopes or drainage features minimizing the amount of sediments that could enter into these streams.

Redband trout, Yellowstone cutthroat trout, and Wood River sculpin would benefit from reestablishing native woody plant species such as cottonwood, aspen, and willow along stream channels where burned woody vegetation is not likely to recover. Restoring woody vegetation would expedite the recovery of vegetation that moderates water temperatures and provides woody debris to streams. In-stream woody debris is important for stabilizing stream channels and creating hiding cover for fish. Expediting the recovery of riparian vegetation would also reduce the potential for sediment loading to streams that results in streambank erosion and widening of the stream channel. Short-term impacts to native fish from hand plantings are expected to be localized and minimal.

Watershed Stabilization/Erosion Control Treatments: Upland erosion control treatments to stabilize soil, control overland flow, and increase infiltration rates would reduce the amount of fine sediments entering fish-bearing streams. Upland treatments would reduce surface erosion from burned areas; however, when completing these treatments localized soil disturbance would occur and some sediment may enter fish-bearing streams. However, less sediment is expected to enter streams where these treatments are applied than if no treatments were done.

In-stream erosion control treatments result in disturbance to the streambed and streambanks and can alter erosion and deposition rates and stream channel morphology. Treatments would be determined on a site-specific basis where channel erosion can be reduced without altering the natural response and recovery of the stream channel. Overall, these treatments would reduce the potential for stream channel erosion that would affect in-stream habitat conditions for these fish.

***Other ESR Treatments*:** Specific streamside, wetland, and riparian herbicide restrictions would minimize impacts of aerial and ground-based chemical weed control near fish-bearing streams. Design features for helicopter landings, fueling, or fuel storage would minimize the potential for impacts resulting from the use of equipment near these streams. ESR treatments to control invasive plants and noxious weeds would expedite the recovery of both upland and riparian vegetation and hydrologic watershed processes, benefiting fish habitat.

Post-fire actions to repair or replace burned infrastructure in uplands (e.g. powerlines, water troughs, fences) would have minimal impacts to fish and their habitats since the treatments would occur outside of riparian areas. ESR actions to replace infrastructure in riparian areas (e.g. roads, culverts, bridges) would result in localized disturbance of streambanks and streamside vegetation and can disturb large quantities of fine sediment adjacent to and within the stream channel. This can result in localized stream channel instability and fine sediments being washed downstream where they can become embedded in spawning, rearing, and overwintering habitats. There is also an increased risk to water quality having equipment containing petroleum products in the stream channel and floodplain. Treatment design would need to consider features that would ensure weak swimming fish, such as juvenile salmonids and Wood River sculpin are able to move upstream and downstream through repaired or new structures. Overall, the impacts from installing and maintaining stream crossings are less than if fire-damaged roads, culverts, and bridges were to inundate downstream fish-bearing streams with sediment and debris.

Implementing temporary closures (e.g. livestock, OHV, other land uses) and replacing allotment and pasture boundary fences to appropriately manage livestock would expedite the rate of riparian vegetation benefitting fish-bearing streams. There may be localized impacts from the repair of fences in riparian areas, but the effects to native fish would be less than if livestock were able to graze burned areas while they recovered or proper livestock management was not implemented in the long term.

Shoshone Sculpin

Due to the abundance of surface water and hydric vegetation, the habitats occupied by Shoshone sculpin are unlikely to burn.

Invasive plant and noxious weed treatments have the greatest potential to impact Shoshone sculpin and their habitat. The use of herbicides along streams occupied by Shoshone sculpin could have localized impacts to water quality, but limiting treatment methods to hand spraying would reduce the risk for impacts. The short-term impacts from treating invasive plants and noxious weeds next to Shoshone sculpin habitat are expected to be less than if these undesirable plants were to displace riparian vegetation that is essential for maintaining channel stability, overhead cover, and thermal insulation for the sculpin. Design features for helicopter landings, fueling, or fuel storage would minimize the potential for impacts resulting from the use of equipment near these streams.

Shoshone sculpin would benefit from temporary closures (e.g. livestock, OHV, and other land uses) and repair of burned allotment and pasture boundary fences. These actions would ensure that in the unlikely event that streams and springs containing Shoshone sculpin are damaged by wildfire, post-fire land uses would not result in direct or indirect impacts to Shoshone sculpin or impede the recovery of their habitat.

Type 3 Rangewide/Globally Imperiled Species Plant Species – Moderate Endangerment and Type 4 Species of Concern

Effects to BLM type 3 and 4 sensitive animals is expected to be similar to the effects described for general wildlife. Species which use low-elevation shrub steppe habitats would experience the most effects because it is the habitat type most likely to burn and to receive ESR treatments. Direct effects may occur to burrowing species such as Wyoming ground squirrel, little pocket mouse and kit fox if treatment overlaps their territories and burrows. Although unexpected, some injury or mortality may occur to these species. No direct effects are expected to avian species because they would not be expected to be around when treatments occur.

Indirectly, ESR treatments are expected to improve habitats for BLM Type 3 and 4 sensitive animals by increasing the diversity and eveness of vegetation where loss of diversity would otherwise be expected. Species which utilize shrubs for nesting or burrowing cover would experience the most effects if ESR treatments return shrubs to burned areas quickly.

Migratory Birds

Revegetation with a variety of desired perennial species is expected to maintain or improve migratory bird nesting habitat and would benefit migratory birds. Including short grass species in seed mixes in known long-bill curlew habitat would maintain or may even improve its forage.

Over the long term, wildlife species which require grassland plant communities to supply all or a portion of their life cycle needs would likely decline in abundance as seeded shrubs begin to exert more dominance in the treatment areas as a result of seeding or planting efforts and reduced fire frequency. Long-billed curlew habitat has increased over the last several decades due to the increased size and frequency of fires, and conversion of large areas of shrub-steppe to grasslands. Places in the western United States have seen increases in breeding numbers of curlews in response to invasion by cheatgrass and development of agricultural crops such as hay meadows, alfalfa, and some cereal grains (Jenni, Redmond, & Bicak, 1981; Pampush and Anthony, 1993; Cochran and Anderson, 1987). Return to a more normal fire cycle and protection/restoration of shrub-steppe ecosystems would result in less long-billed curlew and western burrowing owl foraging, breeding, nesting, or brood rearing habitat; however, impacts would be localized since wildfires would continue to occur over the landscape.

Raptors would benefit from increases in shrub composition that provides more suitable habitat for prey species such as the black-tailed jackrabbit. In 10 to 20 years, the establishment of a sagebrush plant community with more numerous structural components is expected to create habitat conditions beneficial for prairie falcon (*Falco mexicanus)*, Swainson's hawk (*Buteo swainsoni)*, ferruginous hawk, golden eagle, and other migratory species such as Brewer's sparrow, sage sparrow, and loggerhead shrike (*Lanius ludovicianus)*. Plant community complexity is expected to result in increased insect diversity, leading to improved availability of prey for migratory birds.

Design features implementing seasonal restrictions for migratory birds (including design features for eagles) during the nesting period would prevent direct impacts. Features limiting motorized vehicle use and aerial applications around active raptor nests and roost sites would minimize disturbance to nesting eagles, hawks, and other raptors. Design features which avoid disturbance near existing raptor nest trees (0.5 to 0.75-mile radius) would prevent the destruction of existing nests.

Recreation

No Action

Recreation experiences could diminish if perennial vegetation does not reestablish in burned areas and is replaced by invasive plants and noxious weeds. Once established, cheatgrass and noxious weeds such as knapweed could be spread into others areas by recreational use. Weed seeds and plant parts are moved along road systems by vehicles and people, allowing the establishment of plants into previously uninfested areas (Gelbard and Belnap, 2003; USDA Forest Service Sandpoint Ranger District, 2001).

Wildfire results in the exposure of bare ground, making burned areas vulnerable to cross-country OHV use. Such use on bare ground could result in accelerated erosion and scarring. Trails also could experience accelerated erosion due to the loss of adjacent vegetation cover. The loss of vegetation from a wildfire may result in an increased amount of soil erosion which could impact trail treads by filling them in with sediment or eroding some or all of the trail tread. Damage to remnant vegetation may also occur from OHV use.

Proposed Action

Immediately after a wildfire, recreation use may decline substantially because of access restrictions and damage to infrastructure such as roads, trails, and minor structures. Temporary closures restricting access and recreational use may be enforced to prevent resource damage or to allow ESR seedings and plantings to become established. In developed or high use undeveloped areas, these closures would result in reduced recreational opportunities and may result in increased use in other areas that are unaffected by the fire. Closures may also result in temporary economic losses to local communities. Over time the effects of the wildfire on recreation generally fade (Englin, Boxall, Chakraborty, & Watson, 1996) as vegetation recovers naturally or ESR treatments stabilize soil and promote the establishment of healthy plant communities.

Temporary closures of recreation areas and facilities could also occur in burned areas to support ESR activities, temporarily affecting recreation opportunities. Repair and/or reconstruction of damaged recreation facilities (e.g. minor structures) would allow for their continued use by the public. All herbicide applications would follow strict design features to protect potable water sources and recreationists.

Special Management Areas

No Action

Wilderness characteristics would decline if perennial vegetation is replaced by invasive plants or noxious weeds and soil erosion occurs on bare ground or sparsely vegetated soil. Wildfire can affect wilderness characteristics by altering the composition of vegetation communities, habitat quality, and the aesthetic quality of the landscape. All these characteristics are components of naturalness and opportunities for primitive recreation. Depending on the areas ability to recover (native versus invasive plants) the effects may be temporary or long-term. Wild and Scenic Rivers and Areas of Critical Environmental Concern values may also be affected if wildfires and subsequent natural recovery degrade the character of these areas that resulted in their designation as special management areas.

Proposed Action

National Landscape Conservation System

Wilderness

The Owyhee Canyonlands Wilderness and Wild and Scenic Rivers Management Plan is not yet final. Once the plan is completed, any specific design features or management practices related to ESR activities would be incorporated into applicable ESR plans. Until the wilderness management plan is completed, ESR activities would be limited to hand or aerial seeding of native vegetation species to restore vegetation where the natural processes of healing is not expected to occur (BLM Manual 6340). Only native plant species would be seeded in the Bruneau-Jarbidge Rivers Wilderness, retaining the natural character of the area. If needed, protective fences can be built adjacent to, but outside of the wilderness boundary.

Post-fire recreation would likely fluctuate over time in response to changing conditions in the wilderness area. Some visitors, may be deterred by the burned landscape and choose to recreate elsewhere. Other visitors, however, may be attracted to burned areas to witness both the initial effects of the fire and the natural landscape processes that occur after fire (Englin, Loomis, & Gonzalez-Caban, 2001; Loomis, Gonzalez, & Englin, 2001). Brown, et al. (2008) found that visitation to the Mount Jefferson Wilderness in Oregon, did not dramatically change after a 2003 wildfire. Permit data showed that after these fires, visitation remained relatively stable with only slight fluctuations from year to year.

Wilderness Study Areas

All ESR treatments must be accomplished pursuant to BLM policy and guidance as listed in BLM Manual 6330 - Management of Wilderness Study Areas. All ground treatments would be managed so as not to impair WSA suitability for preservation as a wilderness. Therefore, only plant materials and seeding methods that are least likely to impair wilderness values would be used. Seeding treatments would be done in an irregular or staggered pattern thereby maintaining the appearance of naturalness. Design features to protect water quality, viewsheds, airsheds, and native plant and animal habitats by preventing soil erosion, water quality degradation, spread of invasive plants and noxious weeds, and maintaining vegetation cover, native ecosystems, and pristine landscapes would preserve the values associated with wilderness study areas.

Seed cover methods have varying degrees of impact to the wilderness resource. The primary effect would be visual based on the selected seed cover method. Using a rangeland drill or no till-drill to directly apply seed would result in the highest probability of seed germination because of optimum seed coverage. However, even with the design feature of irregular planting margins, the use of a drill would leave a visual imprint. The no-till drill is less visually impacting because the drill row is less discernible. Visual impacts could be lessened by drilling perpendicular to where an observer would view the drilled area.

A Dixie harrow, spike-toothed harrow, masticator, or chaining may be used to cover seed following an aerial application of the seed. The vegetation could appear more natural than a drilled site depending on seeding success. Seed coverage utilizing these methods is not optimal as drilling because of reduced probability of seed germination.

Erosion control structures would be constructed only as needed to avoid or repair disruption of natural processes (BLM Manual 6330). Structures could have short-term visual impacts to wilderness values until the burned area is stabilized by vegetation. The use of erosion control to stabilize watersheds and to minimize the risk of disrupting natural processes by preventing accelerated soil erosion would also protect, maintain, or improve water quality, wildlife habitat, and special status species habitat values.

Chemical treatments applied to control invasive plants and noxious weeds could result in short-term loss of cover from perennial vegetation left in the burned area. However, in most cases all chemical treatments (other than spot spraying of noxious weeds) would be followed by a seeding treatment. All methods used would be accomplished so as not to impair wilderness suitability. Ground herbicide applications and seeding methods would result in temporary loss of wilderness values from equipment noise and tracks (e.g. trucks, tractors, harrows, chains) during the first year or two after the fire. Scenic and visual resources would be temporarily impaired from the placement of any temporary protective fences. In time, ESR treatments that replace invasive plants and noxious weeds with healthy native perennial plant communities would further enhance wilderness values and satisfy the non-impairment criteria.

Wild and Scenic Rivers

In 2009, Congress designated the Bruneau, Jarbidge, and West Fork Bruneau Wild and Scenic Rivers. The Owyhee Canyonlands Wilderness and Wild and Scenic Rivers Management Plan is being developed to protect the segments' outstandingly remarkable values. Until a plan is completed, ESR actions implemented in the Bruneau, Jarbidge, and West Fork Bruneau Wild and Scenic Rivers and any future designations would be designed to preserve the basic character of the river(s). Design features to protect water quality, viewsheds, airsheds, and plant and animal habitats by preventing soil erosion, water quality degradation, spread of invasive plants and noxious weeds, and maintaining vegetation cover, healthy ecosystems, and pristine landscapes would preserve the values associated with the wild and scenic river designation. Visitors to the Jarbidge Wild and Scenic River are not expected to substantially decline following a wildfire and ESR activities. Portions of the Jarbidge Wild and Scenic River burned in the 2007 Murphy Complex Fire. Since the fire, the number of recreationists visiting the area is similar to those visiting prior to the fire (W. Yingst, personal communication, 16 March 2011).

National Historic Trails

Mechanical ESR treatments would not be directly applied to the Oregon or California National Historic Trails (i.e. seeding treatments, erosion control treatments). The design features specific to these trails and other features that prevent soil erosion, water quality degradation, the spread of invasive plants and noxious weeds, and improve and/or maintain vegetation cover would preserve the physical and visual setting of both the Oregon and California trails.

Craters of the Moon National Monument

ESR treatments and design features specific to the Craters of the Moon National Monument would be done is such a manner to return burned plant communities to a natural appearance and healthy state. Short-term effects (< 5 years) from implementing ESR treatments on soil, water, air, wildlife, and other resources would be similar to those described throughout this chapter. Rehabilitation efforts resulting in healthy plant communities and a natural-appearing environment would contribute to better opportunities for primitive and unconfined experiences free of human influence (USDI BLM, 2006) within the Monument**.**

Areas of Critical Environmental Concern

In general, an Area of Critical Environmental Concern would be allowed to recover naturally, unless the values for which the area was designated are compromised. ESR treatments in an Area of Critical Environmental Concern would be designed and implemented using methods that best protect its values. The effects from ESR treatments would be minimized by utilizing design features. Other features that are designed to protect water quality, viewsheds, airsheds, plant and animal habitat, and recreational opportunities by preventing soil erosion, water quality degradation, spread of invasive plants and noxious weeds, and improving and maintaining vegetation cover, healthy ecosystems, and landscapes would also preserve the designated character of an Area of Critical Environmental Concern.

Visual Resources

No Action

Wildfires can temporarily disrupt scenic quality. If perennial vegetation does not become established after a fire and invasive plants and/or noxious weeds become dominant as a result, the character of the landscape is changed. Further, visual quality could continue to diminish due to increased fire frequency and size.

Proposed Action

The aesthetic properties of the landscape can change as a result of wildfire and ESR treatments. Recreational use patterns could also change depending on the importance of the pre-burn scenic values to individual users or user groups. A survey of outdoor recreationists found that 75 percent said scenery quality was very or extremely important while recreating (Morehouse, 2001). Treatment of previously degraded areas (e.g. annual grassland) would result in enhanced visual quality to much of the public.

Effects to visual resources are relatively high immediately following mechanical treatments such as drilling, mastication, chaining, or harrowing. Mechanical seeding treatments may create high levels of contrast to the surrounding landscapes, temporarily impairing the scenic quality near heavily traveled roads and recreation areas. As seeded vegetation successfully establishes, the levels of contrast should fade and the area would appear more natural. Some watershed structures and stabilization treatment would be visible until vegetation or natural decay softens the visual impact.

ESR treatments would be designed to preserve the visual qualities of the landscape in all special management areas (i.e. wilderness study areas, wild and scenic rivers, areas of critical environmental concern, etc.). Treatments would be applied to minimize the visual impacts of management activities through careful location, minimal disturbance, and consideration of visual contrasts with the surrounding landscape. ESR treatments can contribute to the preservation of the visual quality of special management areas by preventing erosion, maintaining healthy ecosystems, and promoting the natural appearance of an area.

Cultural Resources

No Action

Wildfire can remove surface vegetation resulting in the exposure of cultural, historic, and paleontological (e.g. artifacts and surface features) resources to erosion and illegal collection. As vegetation recovers naturally exposure of these resources would lessen, reducing potential impacts from erosion and illegal collection. Increased fire frequency due to the propagation and expansion of cheatgrass and other invasive annual plants could result in increased erosion and subsequent damage to cultural and paleontological resources. Burned structural historic sites could be lost if not repaired.

Proposed Action

ESR treatments are subject to Section 106 compliance prior to implementation. All ground-disturbing treatment sites would be surveyed for cultural, historic, and paleontological resources and if found, treatments would be designed to avoid them. Avoidance would protect irretrievable cultural, historic, and paleontological resources from disturbance associated with seedbed preparation, seeding, seed covering, contour trenching, and fencing.

Mechanical treatments that minimize surface-disturbing activities (i.e. no-till drill, rangeland drill with depth bands) would reduce the potential to alter the integrity of cultural and paleontological resources. The use of no-till or rangeland drills with depth bands, where appropriate (i.e. soils with few rocks), would promote revegetation and prevent degradation or loss of cultural and paleontological resources due to exposure and/or illegal surface collection. Healthy, resilient plant communities would reduce the threat of repeated large fires, which in turn would reduce erosion and illegal surface or subsurface collection. Soil stabilization treatments would also protect cultural and paleontological resources by minimizing soil movement around and onto a cultural or paleontological site.

However, there may be times when avoidance is not possible (e.g., unknown site). If unknown/unidentified archaeological surface sites are inadvertently treated, artifacts could be broken and non-diagnostic lithic material crushed. Ground disturbance can also displace cultural materials horizontally and vertically, destroying a site's interpretive context. However, thorough pretreatment site inventories and investigations would minimize damage that could occur.

Structural ESR treatments of historical properties would be done in close coordination with BLM cultural resource specialists. The Idaho State Historic Preservation Officer and affected Native American tribes would be consulted on all proposed treatments. Treatments would be designed to protect and preserve historical properties damaged by fire.

ESR treatments that change the viewshed of cultural and historic places may impair the attributes of a place of traditional cultural importance to Native American tribes and may diminish a historic site's ability to convey its importance to the public. ESR actions would be designed and implemented to reduce or eliminate visual effects from ESR treatments in the vicinity of historic roads, trails, and places of traditional cultural importance.

Aerial applications of seed and chemicals would not disturb the ground, having no direct impact to cultural, paleontological, and historical resources.

Grazing Management

No Action

Livestock

Temporary reductions in AUMs due to livestock closures would cause adjustments in livestock operations. This could result in short-term economic losses to the livestock permittee and possibly to local communities depending on the number of grazing allotments burned and permittees affected. Long-term changes in permitted livestock AUMs is outside of the scope of this plan and would be implemented according to Title 43 CFR, Subchapter D – Range Management (4000).

The effect of fire on grass productivity and recovery is variable; therefore, impacts to livestock grazing can also differ. For example, studies have found the production of burned bluebunch wheatgrass increased when compared to unburned sites (Zlatnik, 1999, Cook, Hershey, & Irwin, 1994, Antos, McCune, & Bara, 1983, Uresk, Cline, & Richard, 1976, 1980) while a study done on the Snake River Plain (Mueggler and Balisdell, 1958) found the production of bluebunch wheatgrass on burned sites to be less than half that of unburned sites 3 years after the wildfire. Further, bunchgrasses that have densely clustered culms and lots of leaf tissue (i.e. Idaho fescue and needlegrasses) are generally less tolerant of fire than wheatgrasses. These grasses tend to burn longer and hotter and typically need more time to recover from a fire. Bradley (1986) found

Idaho fescue to be sensitive to wildfire and therefore had a tendency to recover slowly, while on some sites it can withstand burning (Bradley, 1986).

Reduced productivity can result from a variety of factors including plant mortality; reduction in basal area of grasses, forbs, and shrubs; changes in species composition to less productive plants; and reduced availability of soil nutrients (USDA, 2000). These changes are generally short term and dependent on the relationship between species involved, fire frequency, fire intensity, and fire severity. Under a normal fire conditions, the amount of forage available to livestock is expected to remain the same or similar to pre-burn levels once the burned area successfully recovers to pre-burn conditions.

In contrast, frequent and severe wildfires resulting in decreased plant vigor and increased plant mortality could lead to less herbaceous plant production and ultimately fewer AUMs for livestock in the long term. Loss of perennial plants also provides the opportunity for invasive plants and noxious weeds to establish, further impacting forage sustainability for livestock and the economic stability of livestock permittees dependent on public lands for their operations. Increased disruption of grazing and impacts to local communities could result from reoccurring large fires.

Wild Horses

Wild horses would be temporarily removed from a burned area in the Saylor Creek Herd Management Area. They would either be moved to an unburned area in the Herd Management Area or as in the case of the Murphy and Long Butte fires, moved to temporary holding facilities until the burned area has recovered. A burned area that recovers to a healthy stand of grasses and forbs is likely to provide sufficient forage for horses; however, if cheatgrass or another invasive annual plant invades and dominates the burned area, there could be less forage for horses. A permanent loss in forage would possibly cause horses to be removed from the Saylor Creek Herd Management Area and either moved to another BLM location or adopted by the public.

Proposed Action

Livestock

Success of seeding treatments would create long-term forage stability, especially in burned areas susceptible to invasive plant dominance. Conversion from cheatgrass or medusahead to desired perennial vegetation should decrease the risk of large wildfires, further stabilizing the forage base, increasing forage productivity and sustainability, and in some cases, may improve forage palatability where forage has become stale or rank. No short term increases in AUMS are expected from the implementation of ESR treatments. Such changes are typically long-term and are outside the scope of this plan.

Temporarily implementing grazing closures could create both long and short-term decreases in livestock forage availability. Pre-burn AUMs should be available once these areas have successfully recovered from the wildfire and ESR livestock closure objectives have been met. The amount of time that a closure is in effect will generally depend on the time needed to meet

ESR objectives and could be influenced by the type of treatment (seeding versus natural recovery), habitat recovery considerations for special status species, and weather. Temporary protection fences would assist BLM in managing public lands by keeping livestock from grazing burned areas, while still allowing grazing to continue in unburned portions of pastures. Considerations given prior to authorizing a temporary fence would include funding availability, size of the pasture, percent of pasture burned, cost of the fence relative to the forage that would be made available, special status plant and wildlife habitats, and the location of water.

Some economic loss to livestock permittees and possibly local communities could occur as a result of post-fire ESR treatments due to temporary grazing closures and/or restrictions. Closures and/or restrictions would be in effect until site objectives for soil stabilization and vegetation are met. During these time frames, permittees must locate other feed sources such as purchasing hay or other feed, leasing private pasture, and/or liquidating their livestock herd until ESR vegetative recovery objectives have been met.

Burned areas where ESR treatments have failed, such as seedings, would either be retreated or left alone. If retreated, temporary closures would continue, extending the time permittees must locate or purchase other feed for their livestock. If the burned area is left untreated, livestock management and permitted AUMs may need to be modified to meet BLM requirements such as rangeland health standards before grazing is reauthorized.

Wild Horses

Temporary disruptions to horses would occur during ESR efforts. Management actions may include exclusion through temporary fencing, gathering and reducing numbers, or moving the entire herd to holding facilities. Horses may be excluded from burned areas and treated areas to allow for vegetation recovery and seeding establishment. Displaced horses may be put in an unburned area of the Saylor Creek Herd Management Area or gathered and relocated to a holding facility. Some trauma and injuries are expected to occur from capture and relocation to holding facilities. Horses also experience stress initially associated with the gather, transport, and holding of the animals. However, stress quickly diminishes as the horses become accustomed to their new surroundings.

ESR treatments that result in healthy rangelands would improve the stability of forage available to the Saylor Creek wild horse herd. ESR treatments would stabilize soils, establish desired perennial plant communities, and restore the amount of sustainable forage available for horses. Protective fences constructed in wild horse herd management areas would be visibly marked to reduce the chance for collision and entanglement.

CUMULATIVE IMPACTS

Cumulative impacts of ESR treatments are primarily defined in the context of effects to the vegetation resource within a burned environment, which in turn influences all other resources. The types of actions considered in the cumulative impact analysis are:

- Vegetation treatments, including fuels reduction projects, weed treatments, restoration, and ESR treatments
- Wildfire suppression
- Rights-of-way (including energy development, transmission lines)
- Range improvement projects
- Livestock grazing
- Recreation
- Mining, (leasable, salable, locatable)
- Transportation management (includes OHV use)
- Agriculture activities

The following assumptions were made to aid in the discussion and analysis of cumulative effects.

- Treatments identified in this programmatic environmental assessment would be implemented over the next 10 years.
- Cumulative effects are based on a burned environment; ESR actions/treatments would only occur after a wildfire.
- Pre-existing resource conditions and wildfire characteristics (i.e. severity, size) drive the type, scale, and success of ESR treatments.
- Treatments, although determined to be successful, may not reach desired vegetation or habitat conditions within 10 years.
- Adverse impacts to cultural resources related to future Federal undertakings would be reduced or eliminated through stipulations or mitigation measures developed in consultation with the affected Native American tribes, State Historic Preservation Officers, and Advisory Council on Historic Preservation, as appropriate. These protective measures would be developed during project planning and enforced during implementation.
- Due to recent increases in wildfire frequency, proactive land treatments that improve vegetation conditions to reduce the potential for frequent expansive wildfires are an increasing activity within the Twin Falls District. These treatments are designed to reduce fuels that would carry a fire over large distances, reduce damage to infrastructure (i.e. roads, bridges, historic buildings, private property, power lines), and prevent fire from burning into an area with a specific resource concern (e.g. sage grouse habitats, big game wintering habitat). Vegetation treatments include but are not limited to actions such as mechanical (i.e. chaining, masticating, blading, bull dozing), chemical (herbicides), and the use of prescribed fire.

- Increased human presence on public lands can influence natural resources due to cross-country and route-based vehicle travel, camping, hunting, construction and maintenance of infrastructure, and other activities.
- Increased public use due to population growth and improved access in the vicinity of the Twin Falls District can result in a greater number of human-caused fires. Between 2003 and 2012 the average number of human starts in the Twin Falls District was 67.3 per year; the average number of natural starts was 41.3 per year. The 10-year average number of human versus natural starts varies by field office:
    - Burley Field Office – 21.7 human starts, 17.4 natural starts
    - Jarbidge Field Office – 6.9 human starts, 10.8 natural starts
    - Shoshone Field Office – 38.7 human starts, 13.1 natural starts

  The Shoshone and Burley field office boundaries occur in areas close to or contain population centers including the towns of Gooding, Wendall, Shoshone, Fairfield, Carey, Bellevue, Hailey, Ketchum, Twin Falls, Burley, and Albion. In addition, paved U.S. and state highways are primary travel routes within the field office boundaries. The towns of Hammett, Glenns Ferry, and Hagerman are peripheral to the Jarbidge Field Office, but the boundaries do not include any population centers and travel is primarily by improved gravel or unimproved roads. Therefore, the Jarbidge Field Office is the most remote of the three field offices, followed by Burley. The Shoshone Field Office contains the largest population within its administrative boundary.

For analysis purposes of actions potentially affecting BLM managed public lands, the cumulative effects analysis area includes federal and non-federal lands (e.g. public lands, State lands, military lands, and private lands) within the BLM Twin Falls District administrative boundary. Unless otherwise stated, the temporal scope of the cumulative effect analysis is 10 years (i.e. temporal boundaries vary from one affected resource to another and may exceed 10 years).

Soils

Actions that could cumulatively affect soils include vegetation treatments, wildfire suppression, rights-of-way (ROW), livestock grazing, mining, transportation management, and agricultural activities.

No Action

The cumulative impact to soils is usually in the form of accelerated soil erosion. Wildfires remove or reduce vegetation that provides cover and litter that protect the soil surface. Once this protective layer is removed or reduced, soils become more susceptible to wind and water erosion. Erosion on burned areas typically declines in subsequent years as the site stabilizes (MacDonald and Robichaud, 2008) and vegetation becomes established. Past and present actions that removed cover and litter and were not rehabilitated or restored (i.e. vegetation treatments) have likely increased erosion potential.

Actions to suppress wildfires, protect private property, and provide for the safety of fire fighters and the public (i.e. retardant drops, diverting surface flows, creating dozer lines, back-burning to

reduce fuels and slow the progression of wildfires) can influence the amount of accelerated soil erosion occurring after a wildfire causing an additive effect to reduced conditions from not implementing ESR treatments.
For actions such as mining and ROW construction, the BLM requires that disturbed areas be rehabilitated when the activity is complete. This rehabilitation requires reseeding with an approved seed mix to reestablish vegetation, which reduces erosion potential. However, such efforts may not occur on adjoining lands.

Accelerated erosion can result from poorly designed or undesignated OHV trails, uncontrolled livestock grazing on adjacent properties (i.e. private land), and farming practices such as tilling or agriculture burns. Since ESR actions would not occur, there are no present or reasonably foreseeable actions that would restore perennial vegetation to reduce the time the burned area is potentially susceptible to wind and water erosion.

Cumulatively, areas burned in wildfires that overlap areas where other actions (i.e. uncontrolled livestock grazing and OHV use) have or are occurring could result in larger areas prone to accelerated erosion and would remain susceptible to wind and water erosion for a longer period of time than if actions were taken to revegetate and stabilize soils.

Proposed Action

Similar past, present, and foreseeable future actions and their effects would occur as previously described under the no action cumulative effects section.

Under the proposed action, most ESR treatments would occur in burned areas during the fall following the wildfire thereby reducing the time these areas are susceptible to wind and water erosion. However, herbicide spray treatments in the spring would extend the time a burn area is susceptible to soil erosion. Spring herbicide treatments are normally followed by a fall seeding which would stabilize soils in the long term. Areas disturbed during wildfire suppression would be stabilized, reducing the potential of soil erosion. Treatments would be designed to establish a resilient plant community that would help stabilize soils and reduce erosion.

In some areas, ESR treatments such as seeding and erosion control would overlap or be adjacent with other actions. Such actions may include trails (e.g. OHV, mountain bikes, hiking) experiencing high recreational use, areas disturbed by mining, ROW construction activities, improper grazing, agricultural activities (e.g. tilling, flood irrigation). Stabilization and rehabilitation actions would reduce the time burned areas, which overlap other actions, are exposed and susceptible to erosion and limit the amount of area susceptible to accelerated soil erosion. The proposed action would cause an incremental decrease in the time that a burned area is susceptible to erosion of soils as compared to the no action alternative.

Water

Actions that may cumulatively affect water include wildfire suppressions, ROWs, livestock grazing, range improvement projects, recreation, mining, transportation management, and agricultural activities.

No Action

Riparian areas and wetlands are focus areas for many uses and, as a result, the health of many of these areas declined. However, BLM policy has resulted in improved management of these areas and improvement in riparian health continues to occur. Factors that have contributed to unhealthy riparian areas include recreational uses, road construction and use, wildfire suppression, increases in the amount of noxious weeds and invasive plants, livestock grazing, and the diversion of surface water. These factors could continue to influence riparian condition in the future if not managed correctly.

Population growth in the vicinity of the Twin Falls District has resulted in increased human use of public lands. Increased human presence on public lands can pose a higher risk of wildfire starts due to cross-country and route-based vehicle travel, camping, hunting, construction and maintenance of infrastructure, and other activities. Actions to suppress wildfires, protect private property, and provide for the safety of fire fighters and the public (i.e. retardant drops, diverting surface flows, dozer lines, back-burning to reduce fuels and slow the progression of wildfires) can influence the condition of riparian and wetlands resulting in poorer water quality from not implementing ESR treatments. Overall, the effects of not implementing ESR actions could slow the overall improvement of riparian areas and water quality, but the trend in improving conditions is expected to continue.

Land use authorizations include a variety of uses granted under a ROW or other permits. ROWs include a variety of uses such as roads, low-voltage powerlines, transmission lines, pipelines, ditches, canals, communication sites, and airstrips. There currently are several proposals for high voltage powerlines and wind development within the Twin Falls District. ROWs for public land uses, particularly those related to energy development are expected to increase on Federal, State, and private land in the future. Impacts from these authorizations are expected to minimally increase the amount of sediment entering streams affecting riparian areas and water quality.

The kind of livestock and livestock numbers within the boundary of the Twin Falls District are not expected to change considerably during the next 10 years. Livestock grazing can impact water quality. The amount of sediment loading occurring in streams outside of a burned area due to livestock grazing could add to the effects of wildfire. Unstable areas that are not treated within a burned area could result in sediment loading once livestock grazing is resumed. However, since the late 1980s the BLM has implemented management changes in riparian areas resulting in their improvement towards properly functioning condition and any additive effects would occur immediately after the burn and until vegetation recovers.

Range improvements such as spring developments typically divert water from its source and if not regulated, can potentially cause the the wet meadow and riparian area surrounding the spring to become more arid over time. As these areas become drier, they also can become more vulnerable to the negative effects of fire such as noxious weed invasion and acceleraterd soil erosion.

Recreation uses on public land within the Twin Falls District have focused around fishing, hiking, hunting, and whitewater recreation. More recently, recreational use (e.g., motorized) has increased as a result of the technologic advancements. The number of recreationists who use more remote locations for outdoor recreational experiences has also increased. This trend is expected to continue throughout the District. With more people recreating and increases in recreational opportunities, the potential for impacts to occur to riparian areas and water quality (primarily from localized soil and vegetation disturbances) will likely increase. These actions could further contribute to the decline in functioning condition in areas where soil erosion is occurring because of wildfire. Similar trends in recreation are expected for Federal, State, military, and private lands within the District.

Salable minerals such as gravel and decorative rock are not usually approved near riparian areas. However, a few established pits may be contributing sediment into streams. These sites would continue to be used as public demands for salable minerals increases. Salable mineral sources are known locations of invasive plants and noxious weeds and are a potential source of erosion to riparian areas as well as pose a threat to water quality. Impacts from salable mineral sites near streams could further impact riparian areas and water quality where ESR treatments are not done to stabilize soils and establish desirable perennial vegetation.

Developed roads can contribute more localized sediment to streams than any other land management activity. Roads that are poorly planned, designed, located, constructed, or maintained can impair riparian condition and water quality. Roads directly affect natural sediment and hydrologic regimes by altering streamflow patterns, sediment loading, sediment transport and deposition, channel morphology, substrate composition, water quality, and riparian conditions. Sediment is most frequently delivered to streams by drainage ditches leading directly to stream crossings, or by ditch relief pipes that discharge close to streams. Roads can also be a source of invasive plants and noxious weeds. The use of roads during hot and dry weather conditions can increase the number of human-caused fires in areas with fine fuels. Impacts from roads in unburned areas that overlap burned areas would further contribute to the prolonged reduced conditions resulting from wildfire, especially in areas where vegetation is unlikely to recover. Incremental impacts from roads are expected to decline as travel management planning on public lands is implemented.

As human population increases over time, the current surface and ground water that supports riparian areas could be diverted for other uses (e.g. agriculture, municipal, recreation associated uses). These actions combined with not completing ESR treatments could further contribute to the decline of water quality and riparian areas. Additionally, the relationship between aquatic species, riparian condition, and water quality are interrelated. Therefore, actions that affect one of these resources likely affect the other resources.

Proposed Action

Similar past, present, and foreseeable future actions and their effects would occur as previously described under the no action cumulative effects section.

Implementing the proposed ESR treatments would be expected to reduce wildfire-related impacts to riparian areas and water quality than would be expected in the no action Alternative. Therefore, the cumulative adverse effects of the proposed action and past, present, and future actions is expected to be less than those of the no action Alternative.

Air

Actions that could cumulatively affect air include prescribed fires, ROWs, mining, transportation management, and agriculture.

No Action

Wildfires would continue to burn as they have in the past, potentially producing large amounts of smoke and ash in the summer months. Under the no action alternative, dust from wind erosion is expected until a precipitation event occurs following a wildfire. Dust from wind erosion in burned areas may overlap with smoke and ash from wildfires and result in reduced visibility. Mining, OHV use, and construction activities can also increase dust. Most of the dust created from OHV use, construction activities, and land treatments disperse within a few hours after the activity is stopped. Dust from mining, OHV use, and ROW construction activities may overlap dust from wind erosion when these activities occur near areas that have recently burned or areas that experience many fires or large burns. Other sources of dust and particulate matter include prescribed burning, agricultural burning, and crop-tending activities such as plowing and tilling.

Dust, ash, and smoke from agricultural activities are also expected to disperse within a few hours after the activity ends. Dust, ash, and smoke combined are not expected to cumulatively result in non-attainment of air quality standards. Cumulative impacts to air quality are expected to be short-term since particulate matter from other activities known to occur in the area, typically disperse within a few hours.

Proposed Action

Similar past, present, and foreseeable future actions and their effects would occur as previously described under the no action cumulative effects section.

Wildfires produce large amounts of smoke and ash. Dust would be generated from some of the ESR treatments until a precipitation event occurs. This dust would be of short duration and is expected to settle out of the air within a few hours after activities are completed. Because most seedbed preparation and planting treatments typically occur in the fall and spring, dust created from these activities is not expected to overlap with smoke and ash produced in the summer months from wildfires. Other sources of dust and particulate matter include prescribed burning, agricultural burning, and crop-tending activities such as plowing and tilling. Dust and smoke from agricultural activities are also expected to disperse within a few hours of the activity being halted. Mining, OHV use, and construction activities also produce dust. Most of the dust created from OHV use and construction activities disperse within a few hours of the time the activity is stopped. Dust from these activities could overlap with dust produced from seedbed preparation and planting treatments. Cumulatively, there would be some short-term (a few hours to a day) decreases in air quality where dust, smoke, and ash are all produced at the same time in the same area. These short-term decreases in air quality would not cumulatively result in non-attainment of air quality standards. ESR treatments resulting in healthy, resilient plant communities should result in fewer large wildfires, lessening the cumulative impacts of ESR treatments and other ground-disturbing activities.

Vegetation

Actions that may cumulatively affect vegetation include vegetation treatments, wildfire suppression, ROWs, livestock grazing, range improvement projects, mining, and transportation management.

No Action

General Vegetation

Many areas that burned in the past and were not treated have crossed an ecological threshold dominated by invasive plants (e.g. cheatgrass, medusahead) or noxious weeds (e.g. knapweed, rush skeletonweed). In the future, these communities could provide sources of invasive plants or noxious weeds to surrounding intact plant communities. Intact native communities that are not directly affected by a wildfire can become threatened by invasive plant and noxious weed seed dispersal or establishment from adjacent burned areas. This would affect the health, vigor, and resiliency of both burned plant communities as well as the surrounding plant communities that did not burn. Over time, invasive plant and noxious weed expansion into adjacent healthy plant communities could result in the replacement of perennial vegetation by invasive annuals and noxious weeds. This could result in the need for more restoration and hazardous fuels treatments in the future. Past vegetation treatments (i.e. restoration, fuels, and ESR) that are stable may buffer or limit the expansion of invasive plants and noxious weeds depending on site resiliency.

Human-caused wildfire has the potential to increase with increases in uses such as recreation use and construction and maintenance of proposed infrastructure. As the incidence of wildfire increases, the need for suppression activities also increases. Actions to suppress wildfires, protect private property, and provide for the safety of fire fighters and the public (i.e. retardant drops, diverting surface flows, creating dozer lines, back-burning to reduce fuels and slow the progression of wildfires) can influence the health and condition of native and seeded plant communities causing an additive effect to reduced conditions from not implementing ESR treatments.

Low elevation plant communities would be most vulnerable to further conversion to invasive plants and noxious weeds. Fire frequencies in these plant communities are high and invasive plants such as cheatgrass, as well as noxious weeds, thrive in this environment. Infestations that are not either controlled or contained following a wildfire could spread to unburned areas that may have been previously void of them. Improper livestock management on unburned lands can promote the establishment of invasive annuals and noxious weeds which could expand into an adjacent burned area. In addition, future disturbance actions such as electrical distribution lines (low voltage power lines), roads, trails, buried pipelines, recreation uses and their vehicles, mining, and livestock developments can provide for openings in the plant community that allow invasive plants and noxious weeds to establish. Electrical distribution lines and OHV use can also result in more fire starts. These actions can accelerate the spread of these undesirable plants across the landscape when combined with the effects of wildfire.

Wildfires can affect the integrity of native plant communities within both the burned area and adjacent areas. Wildfires can affect plant diversity, resistance to invasive species, and maintenance and vigor of desirable species. The degree of natural recovery is dependent upon the previous condition of the site that burned. Sites that were in a healthy condition prior to a wildfire may regain their pre-fire condition after many years of natural recovery or never, if frequently burned. Areas that are not healthy prior to a burn are vulnerable to dominance by invasive annuals and noxious weeds.

In summary, the combined effects of all other past, present, and reasonably foreseeable future actions, in addition to the expected effects of not implementing ESR actions, would occur throughout the Twin Falls District. The effects of not implementing ESR actions could contribute to an incremental increase in invasive plants and noxious weed, increased fire frequencies, and and to a lesser extent, a loss of biological diversity in adjacent non-burned plant communities.

Special Status Plants

BLM policy (BLM Manual 6840) and the ESA (1973) require that authorized actions include considerations to eliminate, avoid, or reduce impacts to special status plants and their habitats. Human activities that occurred prior to 1973 may have contributed to declines in populations and habitats and the need for specific management of special status plants. These actions could include but are not limited to ongoing livestock grazing, construction and maintenance of roads, transmission lines and communication sites, livestock range improvements, mineral extraction, and vegetation treatments. Impacts would have resulted due to soil-disturbing activities. Such impacts likely included soil loss, vegetation loss, introduction of invasive plants and/or noxious weeds, or planned conversion of native vegetation communities for forage production. New authorized actions would include provisions to eliminate, avoid, or reduce impacts to special status plants and their habitats.

Unplanned events such as repeated, short-interval wildfires during the past 20 years or more have resulted in population declines in plants that were not fire-adapted or their habitats prone to modification by invasive plants and noxious weeds. Special status plants occurring in the salt desert shrub and low-elevation shrub steppe vegetation types are very susceptible to such declines. Actions such as dispersed recreation could have contributed to population declines or habitat degradation in localized areas.

Past, current, and future activities on non-federal lands generally lack protective designs to eliminate, avoid, or reduce impacts to special status plants. The 2003 *Candidate Conservation Agreement for Slickspot Peppergrass*, as updated in 2006, between the State of Idaho, the BLM, the Idaho Army National Guard, and nongovernmental cooperators (private landowners who also hold BLM livestock grazing permits) (State of Idaho et al., 2003, 2006) contains conservation measures for protection of slickspot peppergrass on non-federal lands. Lands addressed under the Candidate Conservation Agreement and contained within the Twin Falls District are scattered and consist primarily of areas with known populations. Conservation measures listed in the 2003 and 2006 agreements addressing potential impacts from actions including OHV use, invasive plant and noxious weed treatments, livestock grazing and associated infrastructure, and wildfire management do not extend to potential slickspot habitat. Activities that occur on non-federal lands within potential habitat could result in adverse effects to slickspot peppergrass plants or their habitat on public lands. This is likely to occur in the form of spread of invasive plants and noxious weeds from non-federal lands to public lands.

Cumulatively, the no action Alternative would be expected to contribute to declines in populations and habitat for special status plants in areas where vegetation communities do not recover naturally, particularly at lower elevations. Factors contributing to these declines would include soil loss and invasion of habitat by invasive plants and noxious weeds. Since non-federal lands might not be treated following wildfire, effects would tend to be continuous in areas with mixed federal and non-federal ownership especially in those areas experiencing frequent, repeated wildfires. For instance, the opportunity for invasive annual plants and noxious weeds to spread from non-federal lands to BLM lands would be greater, potentially impacting special status plants and their habitats and any efforts to conserve them.

Proposed Action

Similar past, present, and foreseeable future actions and their effects would occur as previously described under the no action cumulative effects section.

General Vegetation

In the past (>20 years ago), vegetation treatments focused on meeting soil stabilization and range management objectives. These treatments resulted in monocultures of crested wheatgrass seedings. Crested wheatgrass was the most available and affordable grass species available at that time. Past treatments provided a vegetation community resilient to disturbances and drought, but one that does not particularly provide for diversity and wildlife values. With recent BLM policy emphasizing the use of native plants in seed mixes and an increase in the availability of native and preferred non-native seeds, recent vegetation treatments (<20 years) are designed to establish a more structural and functional plant community. Current seeding methods and the availability of herbicides for invasive plant (e.g. cheatgrass) control have increased the success of treatments.

Past actions after a wildfire on non-federal lands have not always followed the same direction as adjacent federal lands. This has led to a visible difference in vegetation types between the two land types, such as when a seeding treatment is implemented on BLM lands and the bordering lands are left untreated. Adjacent burned lands that are left untreated can provide a pathway for invasive plants and noxious weeds to move onto treated BLM lands, reducing the effectiveness of ESR treatments carried out by the BLM.

Past and future disturbances, such as pipelines, new roads/road maintenance, and power-lines interrupt the natural vegetation continuity and increase the opportunity for invasive plants or noxious weeds to establish. Wildfires that pass through these weed sources expand the disturbance zone beyond the pre-fire area, and can provide an opportunity for expansion of invasive plants and noxious weeds into previously non-infested areas. The amount and types of noxious weeds can also increase in weed-infested burn areas. ESR actions and stabilization efforts on areas disturbed by wildfire suppression can help control and diminish the potential spread of these plants from known disturbance areas, as well as to reduce and rehabilitate to some extent the disturbance areas.

Special Status Plants

Rehabilitation treatments would be implemented to avoid soil loss and expansion of invasive plants and noxious weeds into special status plant habitats. Further, the proposed action contains specific project design criteria for special status plants, and these criteria, along with conservation measures associated with present and future actions, would eliminate, avoid, reverse, or reduce impacts to special status plants. Where fires occur in areas with mixed federal and non-federal ownership, population or habitat declines could continue on non-federal lands and that influence, such as introduction and spread of invasive plants and noxious weeds, could extend to federal lands. However, with ESR treatments occurring on public land, declines in populations and habitat would most likely be limited to non-federal lands and therefore impacts to habitats and populations would be less continuous on a landscape scale as compared to the no action alternative.

Wildlife

Actions that could cumulatively affect wildlife are vegetation treatments, wildfire suppression, ROWs, livestock grazing, range improvement projects, mining, and transportation management.

No Action

General Wildlife

The effects of past vegetation treatments such as chaining, clearing with chainsaws, shrub thinning or removal (via harrow, herbicide, or prescribed burn), shrub and tree planting, and noxious weed treatments on wildlife vary according to the location (also reflecting the original vegetation community) and time since disturbance. Residual effects are expected to vary by species. In areas where plant communities were converted from native vegetation to non-native perennial grasses (e.g. crested wheatgrass), wildlife values (habitats) were reduced due to the lack of plant diversity and types of habitat cover. Wildlife values have improved as native plants and shrubs have reestablished into some of these seedings. Frequently burned areas now dominated by cheatgrass and other invasive plants no longer provide habitat for many wildlife species and would likely continue in this state. The amount and diversity of habitat available for wildlife would further decline in burned areas where perennial vegetation does not recover naturally.

On-going non-ESR noxious weed treatments are expected to benefit most wildlife species in the long term through the protection of vegetation diversity in areas where treatments occur and in surrounding areas. The effects of noxious weed treatments on wildlife would vary depending on the proximity of source populations to the treated habitat, the local ecological site characteristics, vegetation communities in surrounding areas, and the juxtaposition of the treated area in relation to other sources of effects such as developed sites and roads. On-going non-ESR weed treatments may limit the expansion of noxious weeds into untreated burned areas, lessening their impact to wildlife and habitats.

Present and future vegetation treatments include some thinning and clearing of trees, shrub planting, conversion of cheatgrass to perennial grasslands, and ongoing noxious weed treatments. The effects of these treatments (e.g. reduced fire frequency and size; diverse resilient plant communities) are expected to contribute to maintaining wildlife habitats over the next 10 to 20 years. Such treatments adjacent to burned areas may buffer the potential expansion of invasive plants and noxious weeds into areas naturally recovering from wildfire, reducing the amount of habitat that could be lost. The effect of not stabilizing or rehabilitating burned areas could also reduce the effectiveness and increase the need of such actions or repeat of actions in the future.

Post-fire restoration efforts (including stabilizing areas disturbed by wildfire suppression) completed in the last 20 years have similar direct and indirect effects on wildlife as the proposed action. Residual effects from past ESR treatments vary depending on the restoration methods used, success of the treatments, and the time since the wildfire. Burned areas that were successfully treated in the past are less likely to influence habitat recovery of an adjacent burned area since there would less likelihood of invasive annual plants and noxious weeds dominance and subsequent expansion.

Population growth in the vicinity of the Twin Falls District has resulted in increased human use of public lands. Increased human presence on public lands can pose a higher risk of wilfire starts that affect upland and riparian wildlife habitats due to cross-country and route-based vehicle travel, camping, hunting, construction and maintenance of infrastructure, and other activities. Actions to suppress wildfires, protect private property, and provide for the safety of fire fighters and the public (i.e. retardant drops, diverting surface flows, dozer lines, back-burning to reduce fuels and slow the progression of wildfires) can influence the condition of wildlife habitat causing an additive effect to reduced conditions from not implementing ESR treatments.

Large energy projects involving the construction of new roads and wind turbines are expected to reduce wildlife habitats even with conservation design and mitigation features. Wind testing projects utilizing existing roads would have the lesser effects. Effects from these projects include human disturbance, increased fragmentation, habitat modification or removal, collision hazard (to birds), and potentially increased noxious weeds. Although construction may be dependent on maintaining weed free ROWs. Overall, large wind energy projects would have an additive effect to wildlife and their habitats where they overlap burned areas under the no action alternative.

Older electrical distribution lines are a known source of wildfire. Increasing wildfire starts could affect the habitat of wildlife species. The potential for habitat loss or reduced habitat conditions is increased when burned areas are not rehabilitated.

Ongoing grazing occurs in most areas of the Twin Falls District. Effects of ongoing grazing are expected to vary by wildlife species. Species which use more open habitats are expected to benefit while species which require taller vegetation (such as taller grasses) could be negatively affected by grazing. Cattle or sheep could displace, trample (e.g. small, less conspicuous animals such as frogs and young animals), or disturb some wildlife species. However, documentation of such forms of disturbance is rare.

Cattle and sheep can reduce the habitat quality of some riparian areas when poorly managed. This could include reduction in the recruitment of desirable woody vegetation which can reduce concealment opportunities, improve brood parasitism, and possibly increase nest predation. However, livestock grazing in riparian areas are being managed better to reach or maintain rangeland health standards. Unmanaged livestock grazing could potentially impact wildlife where habitats are lost or are providing insufficient habitat due to wildfire and the absence of post-fire rehabilitation efforts.

Range improvements occur throughout the Twin Falls District (including private, state, and Forest lands) and include livestock watering troughs and associated pipelines, wells, and fences (of various constructed materials) which have been constructed in the past and some which have recently been proposed. Concentrated livestock use and reduced vegetation cover associated with troughs causes these sites to be susceptible to invasive plants and noxious weeds. Although small, these areas could be a source of invasive plants and noxious weeds to adjacent burned areas, especially those areas where recovery of perennial vegetation is sparse, further impacting wildlife and their habitats.

Range improvements are expected to improve grazing management. The result of this is that allotments would be expected to be meeting rangeland health standards or moving in the direction of meeting these standards. Range improvements can also be used to divert grazing spatially or temporally from important wildlife habitats. Thus, range improvements could minimize the effects of grazing as described below. One to two acres surrounding troughs would likely have increased bare ground and invasive annual plants.

Mining operations in the Twin Falls District range from small test drilling areas to decorative stone quarries. Operations can disturb wildlife on site through extraction activities and off site through vehicle use transporting materials. Types of disturbance may include excessive noise from cutting and crushing equipment and human encounters. Wildlife habitat is temporarily unavailable or reduced in quality because of such disturbances. Some wildlife may desensitize to operations and may remain nearby.

Travel management of OHV occurs throughout the Twin Falls District. Travel management actions are generally associated with seasonal closures or restrictions that have been implemented for the benefit of wildlife (e.g. reduce disturbance to wintering or nesting wildlife). However, the no action alternative could reduce the effectiveness or the need for travel management protections if wildlife habitat is lost.

Cumulatively, the effects of past, present, and foreseeable actions resulting in soil erosion, invasive plants and noxious weed expansion, and a decline in healthy vegetation conditions combined with similar effects of the no action alternative would generally diminish wildlife habitat quality.

General Fish

The cumulative analysis for native non-game fish assumes actions that affect special status aquatic species habitat (e.g. riparian condition, water quality, and water quantity) also affect native non-game fish. The impacts from not completing ESR actions would have the same effects to non-game fish as those described for special status aquatic species, including fish.

Special Status Wildlife and Fish

Type 1 Federally Threatened, Endangered, and Candidate Species

Bruneau Hot Springsnail, Snake River Snails, and Jarbidge River Bull Trout

The actions that have the potential to affect aquatic resources generally include: wildfire suppression, ROWs, livestock grazing, rangeland improvement projects, recreation, transportation management, and agricultural activities (i.e. surface water diversions). Human actions that result in the decline of riparian conditions or water quality would increase the effects to special status aquatic species habitats in areas affected by wildfire.

Actions to suppress wildfires, protect private property, and provide for the safety of fire fighters and the public (i.e. retardant drops, diverting surface flows, creating dozer lines, back-burning to reduce fuels and slow the progression of wildfires) can influence the condition of riparian areas, water quality, and water quantity causing an additive effect to reduced conditions from not implementing ESR treatments.

Higher grazing intensities can result in considerably less ground cover which can contribute to the amount of sediments entering occupied Snake River snail and bull trout habitats. Combined with not initiating ESR actions that reduce the potential for accelerated erosion in burned areas, sediment loading could increase affecting the quality of these aquatic habitats.

An increasing number of outdoor recreationists are discovering travel opportunities on BLM-managed land where most of the area is designated as open to cross country motorized vehicle use. The changes in travel management plans on adjacent planning units coupled with an increasing population are expected to result in more travel-related recreation throughout Twin Falls District. Travel related to authorized uses and recreational purposes has contributed to localized impacts to riparian areas containing special status aquatic species, such as increasing the amount of sediment to stream channels and removing riparian vegetation at stream crossings. Where travel overlaps burned areas the risk to aquatic species and their habitats increases. Consumptive and non-consumptive water uses include livestock watering, crop irrigation, hydroelectric power generation, fish hatcheries, reservoirs, and other impounded waters for recreational and private irrigation water. The availability of surface water directly influences the condition and quantity of riparian vegetation and has direct impacts to special status aquatic species habitats on BLM-managed streams. These impacts combined with impacts from the no action alternative that result in changes in the condition and quantity of riparian habitat could affect the long-term maintenance of special status aquatic species habitats.

The effects of not implementing ESR actions could contribute to a widespread reduction in the condition of riparian habitats used by Jarbidge River bull trout, Snake River snails, and the Bruneau hot springsnail for spawning/reproduction, rearing, feeding, migration, or overwintering. The habitats used by federally listed aquatic species would be at a greater risk for the cumulative impacts from wildfire than if actions were implemented to reduce the potential for wildfire effects to these species and their habitats.

Columbia Spotted Frog

Actions which could cumulatively affect Columbia spotted frog within the Twin Falls District include livestock grazing and range improvement projects. Ongoing livestock grazing could affect Columbia spotted frog if cattle trample the frogs, eggs, or tadpoles. However, Columbia spotted frog reproduction and recruitment in northeastern Oregon was not negatively effected by livestock grazing (Bull and Hayes, 2000). Columbia spotted frogs may have been affected by past range improvements if historic habitat was altered through spring development of occupied habitat. A range improvement project, such as a fence, that excludes or minimizes grazing in a riparian area, is expected to benefit the Columbia spotted frog. Any actions that result in a decline of riparian areas and less water in occupied Columbia spotted frogs habitats would further affect the frogs where burned riparian vegetation did not successfully recover naturally.

Yellow-Billed Cuckoo

Actions which could cumulatively affect the yellow-billed cuckoo include livestock grazing, range improvement projects, travel management, and agricultural activities (i.e. surface water diversions). Yellow-billed cuckoos could be affected by ongoing grazing by reducing willow growth and recruitment of cottonwood trees. However, managing riparian habitats suitable for yellow-billed cuckoos in a manner that either maintains or attains rangeland health standards is expected to continue to provide habitat suitable for yellow-billed cuckoo. Any range improvement projects, OHV use, and agricultural practices that result in reduced woody riparian vegetation in yellow-billed cuckoo habitat, could further impact these birds if burned riparian areas that supported willows and cottonwoods do not successfully recover.

Greater Sage-grouse

Actions which could cumulatively affect sage-grouse include vegetation treatments, wildfire suppression, ROWs, livestock grazing, range improvement projects, mining, and travel management.

Sage-grouse benefit when residual shrub components remain after a vegetation treatment or when enough time has occurred since disturbance for the natural establishment of shrubs in areas adjacent or near burned areas. Shrub plantings outside of the ESR program could reduce the time needed for some areas to become suitable for sage-grouse, providing alternate habitat while burned areas recover.
Past ESR treatments have established perennial vegetation in burned sage-grouse habitats. Reestablishment of sagebrush from seeding treatments typically occurs over a 15 to 20 year period. In general, residual effects would vary depending on the restoration methods and the time since disturbance.

Past vegetation treatments that resulted in monocultures of crested wheatgrass either do not provide habitat or provide marginal habitat for sage-grouse. Burned areas that are not revegetated and where perennial vegetation does not recover would further add to the loss of habitat for sage-grouse.

Actions to suppress wildfires, protect private property, and provide for the safety of fire fighters and the public (i.e. retardant drops, diverting surface flows, dozer lines, back-burning to reduce fuels and slow the progression of wildfires) can influence the condition of sage-grouse habitat causing an additive effect to reduced conditions from not implementing ESR treatments.

Impacts to sage-grouse from energy development could result in habitat reduction/fragmentation, introduction of invasive plants and noxious weeds, injury or mortality of birds, noise, and disturbance from increased human activity. In general, energy projects occurring near sage-grouse habitats are expected to influence sage-grouse movement and use of their habitats.

Livestock grazing occurs in most areas of the Twin Falls District. However, effects of ongoing grazing are not expected to adversely affect sage-grouse provided the area is meeting rangeland health standards. Cattle or sheep could displace, trample, or disturb sage-grouse or their nests. However, such forms of disturbance are expected to be rare. Improperly managed livestock grazing harms sage-grouse where habitats are lost or are providing insufficient habitat due to wildfire and the absence of post-fire rehabilitation efforts.

Range improvements are expected to improve grazing management. The result of this is allotments would be expected to be meeting rangeland health standards or moving in the direction of meeting these standards. Range improvements can also be used to divert grazing spatially or temporally from important sage-grouse habitats. Thus, range improvements could minimize the effects of grazing as discussed below.

Existing fences near sage-grouse leks may pose collision risks to sage-grouse. Current projects consider the potential risks of fences and mitigate any effects to sage-grouse.

Mining operations in the Twin Falls District range from small test drilling areas to hard rock precious stone quarries. Operations can disturb sage-grouse on site through extraction activities and off site through vehicle use transporting materials. Types of disturbance may include excessive noise from cutting and crushing equipment and human encounters. As a result, sage-grouse habitat is temporarily unavailable or reduced in quality. It is possible for some sage-grouse populations to become desensitized to operations so they may remain nearby.

Travel management occurs throughout the Twin Falls District. Travel management actions are generally associated with seasonal closures or restrictions that have been implemented for the benefit of wildlife (e.g. reduce disturbance to wintering or nesting wildlife). However, the no action alternative could reduce the effectiveness or the need for travel management protections if wildlife habitat is loss.

Type 2 Rangewide/Globally Imperiled Species, Type 3 Rangewide/Globally Imperiled Species Plant Species – Moderate Endangerment, Type 4 Species of Concern, and Migratory Birds

The cumulative analysis for general wildlife is similar for BLM sensitive species and migratory birds; that is, those actions that cumulatively affect wildlife habitat would also affect sensitive species and migratory birds. The impacts from not completing ESR actions would have the same general effects (declines in habitat or habitat conditions) to BLM sensitive species as those described for general wildlife and other special status species. In short, the effects of not implementing ESR actions could contribute to a widespread reduction in the condition of habitats used by BLM sensitive species. Therefore, BLM sensitive species and their habitats would be at a greater risk for the cumulative impacts from wildland fire than if ESR actions were implemented to reduce the potential for wildfire effects.

Proposed Action

Similar past, present, and foreseeable future actions and their effects would occur as previously described under the no action cumulative effects section.

General Wildlife and Fish, Special Status Wildlife and Fish, and Migratory Birds

ESR actions are expected to provide suitable habitat (i.e. cover, food) by increasing the rate of vegetation recovery and replacing annual invasive plants with desirable perennial vegetation. ESR actions are also expected to reduce the amount of sediment entering rivers and streams and reduce wildfire effects to aquatic habitats. Existing fences near sage-grouse leks may pose collision risks to sage-grouse. Design features identified in the proposed action will reduce or eliminate this risk when constructing temporary fences for closures or reconstructing burned fences. Therefore, the incremental cumulative impact from existing fences and the proposed action should be minimal. Cumulatively, the effects of the proposed action when combined with other actions and their effects would result in overall improved habitats for wildlife, fish, special status species, and migratory birds.

Recreation

Actions that cumulatively affect recreation are vegetation treatments, ROWs, livestock grazing, range improvement projects, and transportation management.

No Action

Past recovery of burned areas where cheatgrass, medusahead, or noxious weeds have a dominant presence have affected the recreation quality, especially in areas where other past, present, and reasonably foreseeable future actions (i.e. transmission lines and other infrastructure) are established or may be built. Activities such as hunting, fishing, hiking, wildlife viewing, and photography would likely be further displaced if wildlife habitat quality declines because no ESR actions were taken, especially on those areas experiencing repeated wildfire.
Recreation opportunities would temporarily decrease in areas where proactive restoration and fuels treatments occur. Opportunities such as hiking, hunting, fishing, photography, and wildlife viewing would be displaced immediately following a vegetation treatment but would eventually return as vegetation reestablishes on the treated area. Recreational opportunities could be further affected if large fires occurred in the vicinity where proactive fuels reduction and restoration treatments are underway by extending the amount of area affected. Frequent, repeated fires would likely lengthen the amount of time needed for an area to return to pre-burn conditions impacting recreational opportunities even more.

Energy projects such as wind and geothermal developments can impact some recreation opportunities through displacement, obstruction of viewsheds, development of roads, and to some extent restrictions on access. Roads associated with these projects could give motorized access to areas that did not previously have access and would have similar cumulative impacts. Natural recovery of burned areas resulting in rangelands dominated by invasive plants and noxious weeds would further impact the quality of recreation experiences and opportunities for some recreationists.

Transmission lines may diminish the quality of recreation experiences for some people by obstructing the view of the landscape or by harming raptors, sage-grouse, and other bird species. During construction of transmission lines and associated infrastructure big game animals may be displaced which could disrupt the hunting recreationist. As with energy projects, roads associated with transmission lines can also open motorized access to areas that were not easily accessed in the past benefitting some recreationists such as OHV users. This could increase the potential for wildfire starts, which could increase the effects from burned areas that do not effectively recover naturally from wildfire.

Effects from facilities associated with livestock management such as corrals, cattle guards, watering tanks, salt blocks, and fences have varying effects on recreation. For the most part, the preferences and viewpoints of the individual recreationist determine the kind and level of effects associated with the recreation experience. Fences are likely the most obtrusive since they can cover several miles and obstruct cross-country travel. However, fences are also an important tool in livestock management, helping to meet and/or maintain rangeland health standards. Not reconstructing fences after a wildfire has destroyed them has varying effects. Fence debris and burned materials would be an obstruction and even a safety hazard if not seen by cross-country travelers (e.g. all-terrain vehicles, horseback riding, and hiking). However, not having an intact fence line would benefit those recreationists who perceive fences as an obtrusion to their recreation experience.

Unhealthy plant communities resulting from past and present improper grazing can dimimish both the experience and visual quality of areas available for recreation. Further, any evidence of livestock grazing is intrusive to some recreationists. These actions could further limit recreation opportunities if located near or adjacent to a burned area that did not recover to a healthy plant community.

In summary, the combined effects of all other past, present, and reasonably foreseeable future actions, in addition to the expected effects of not implementing ESR actions, would occur throughout the Twin Falls District. The effects of not implementing ESR actions could contribute to a decline in the quality of the recreation experience.

Proposed Action

Similar past, present, and foreseeable future actions and their effects would occur as previously described under the no action cumulative effects section.

Proposed ESR treatments combined with past, present, and future established vegetation treatments would result in healthy perennial vegetation cover types which support a diversity of wildlife, maintaining the quality of the recreation experience throughout the Twin Falls District.

ESR treatments would not add to or change the effect to recreation opportunities caused from energy project and their infrastructure.

Perennial vegetation established from ESR treatments and in the vicinity of electricity distribution lines and transmission lines could benefit recreation by reducing the intensity and duration of a wildfire that could be caused by these lines. However, for those recreationists whose experience is diminished due to distribution and transmission lines the effect of these lines would likely be the same.

Constructing temporary fences could negatively affect the experience of some recreationists. However, using the fences to aid in seeding establishment (annual vegetation vs. perennial vegetation) could indirectly provide quality recreation experiences with the successful establishment of perennial vegetation.

Temporary road closures and cross-country restrictions would likely occur under the proposed action and remain in effect until ESR objectives are met. These closures combined with existing restrictions would limit access to public lands further reducing recreation opportunities while they are in effect.

Special Management Areas

Actions which could cumulatively affect special management areas are vegetation treatments and ROWs.

No Action

Current and future vegetation treatments occurring in wilderness, wilderness study areas, wild and scenic rivers, Areas of Critical Environmental Concern, along National historic trails, and in the Craters of the Moon National Monument are designed to protect and maintain those features/attributes associated with special management areas. Permanent facilities and construction and maintenance activities associated with transmission lines, energy projects, cell towers, and other ROWs could change the physical and visual setting associated with the historical context of the California and Oregon National Historic Trails if located within site of these trails).

Burned areas occupied by invasive plants, noxious weeds, or sparse vegetation can diminish the visual quality of the special management area, increase the potential of soil erosion, and affect water quality; therefore, further affecting the nature of the landscape of wilderness, wilderness study areas, wild and scenic rivers, the Craters of the Moon National Monument, some Areas of Critical Environmental Concern, and the historical settings of the California and Oregon Trails.

The combined effects of all other past, present, and reasonably foreseeable future actions, in addition to the expected effects of not implementing ESR actions, would occur throughout the Twin Falls District. Overall, the effects of not implementing ESR actions could contribute to a cumulative decline in the quality and amount of features/attributes associated with special management areas.

Proposed Action

Similar past, present, and foreseeable future actions and their effects would occur as previously described under the no action cumulative effects section.

ESR treatments and design features that protect water quality, viewsheds, airsheds, plant and animal habitat, and recreational opportunities by preventing soil erosion, water quality degradation, spread of invasive plants and noxious weeds, and maintaining vegetation cover, native ecosystems, and pristine landscapes would further preserve the character and features of most special management areas.

Visual Resources

Actions that cumulatively affect visual resources are vegetation treatments, wildfire suppression, ROWs, range improvement projects, and mining.

No Action

Under the no action alternative, burned areas would be left to recover naturally. Depending on the condition of pre-existing vegetation, burned areas may be re-occupied by invasive plants and/or noxious weeds. If invasive plants and/or noxious weeds are substantial in the post-fire plant community they could spread to areas in the vicinity that have been recently seeded or to nearby unburned plant communities. More intensive weed management would have to occur in these seeded areas or the quality of visual resource would decline.

Actions to suppress wildfires, protect private property, and provide for the safety of fire fighters and the public (i.e. retardant drops, diverting surface flows, dozer lines, back-burning to reduce fuels and slow the progression of wildfires) can influence the quality of the visual resource causing an additive effect to reduced conditions from not implementing ESR treatments.

Wind and geothermal energy development involves ancillary features such as roads, structures, and transmission lines that would impact visual resources. For example, wind towers do not usually repeat the basic elements of the landscape and therefore may be obtrusive to the visual and scenic quality of an area.

Transmission lines do not repeat the basic elements of the landscape and could detract from the visual quality depending where a ROW is granted. The post-fire expansion of invasive plants and noxious weeds where transmission lines exist would further diminish the visual quality.

Visual resource values would decline temporarily or long term following implementation of a range improvement depending on the extent and obtrusiveness of the project. Vegetation treatments could improve the scenic and aesthetic values of the visual resource depending on the quality and condition of pre-treatment vegetation.

In general, mining would alter viewsheds since activities associated with mining do not usually repeat the basic elements of a landscape. Further, the larger the mining operation the more visible it is from long distances. Cumulative effects would be similar to transmission lines, energy projects, and other ROW infrastructure.

In summary, the combined effects of all other past, present, and reasonably foreseeable future actions, in addition to the expected effects of not implementing ESR actions, would occur throughout the Twin Falls District. Overall, the effects of not implementing ESR actions could contribute to a cumulative decline in the quality of visual resources.

Proposed Action

Similar past, present, and foreseeable future actions and their effects would occur as previously described under the no action cumulative effects section.

Successful ESR treatments in combination with past, present, and future vegetation treatments would result in extensive desired perennial vegetation cover types, improving the quality of visual resources throughout the Twin Falls District.

Wildfire suppression actions such as building a fire line could temporarily affect visual resources. Once the area is stabilized and perennial plant cover recovers the visual impact should lessen.

Establishment of a perennial grass cover type as opposed to an annual grass cover type could reduce the potential for wildfires originating near energy infrastructure and mining projects from becoming exceedingly large fires. However, the potential for fires starts near these structures would persist due to lightning and human influences such as ROW maintenance (fires caused by equipment).

Cultural Resources

Actions that cumulatively affect cultural resources are vegetation treatments, wildfire suppression, ROWs, livestock grazing, range improvement projects, recreation, mining, and transportation management.

No Action

Under the no action alternative, the primary effect to cultural resources is the potential loss of or damage to cultural sites, features, and/or artifacts due to accelerated soil erosion.

Soil erosion associated with vegetation treatments, wildfire suppression, range improvement projects, mining activities, and OHV travel can be an additive effect to soil erosion occurring after a wildfire, especially in areas where reestablishment of vegetation is sparse.

Livestock trampling can cause horizontal and vertical displacement of artifacts; break or alter stone tools and ceramics (Broadhead, 1999; Osborn, Vetter, Hartley, Walsh, & Brown, 1987); compact soils; and, in riparian settings, damage stream banks leading to accelerated erosion and soil loss (Fleischner, 1994; Kauffman, Krueger, & Vavra, 1983). Not seeding a burned area after a wildfire could further expose artifacts due to soil movement and sparse perennial vegetation, making them vulnerable to livestock trampling.

Recreation such as camping, hunting, fishing, and boating can cause impacts to cultural resources that are present where recreation is occurring. Activities associated with recreation such as digging fire pits, driving cross-country, and trampling stream banks can disturb the soil resulting in vegetation loss and stream bank erosion. These activities could also diminish the integrity of cultural resources by modifying surface artifact relationships or mixing surface and subsurface cultural material. Annual grass cover types that establish after a wildfire or areas of sparse vegetation can be susceptible to accelerated erosion, affecting cultural resources.

In summary, the combined effects of all other past, present, and reasonably foreseeable future actions, in addition to the expected effects of not implementing ESR actions, would occur throughout the Twin Falls District. Overall, the effects of not implementing ESR actions could contribute to a cumulative decline in the quality of cultural resources.

Proposed Action

Similar past, present, and foreseeable future actions and their effects would occur as previously described under the no action cumulative effects section.

Cultural resources would be recorded, marked, and avoided during treatment implementation; therefore, cumulative impacts directly associated with implementation of the proposed action are negligible.

ESR treatments in the vicinity of transmission lines, energy projects, and other ROWs could further impact the viewshed of cultural and historic places in the area (i.e. drill rows, sparse vegetation). However, as perennial vegetation (including shrubs) becomes established on the site, treatments would be less noticeable.

Grazing Management

Actions that cumulatively affect grazing management are vegetation treatments, ROWs, range improvement projects, and recreation.

No Action

Livestock

Vegetation treatments normally occurred in areas where vegetation cover types were altered. Disturbed areas that have been successfully treated provide a more sustainable forage base than those areas not treated. Successful vegetation treatments also reduce the opportunity of annual grasslands becoming established and expanding with future wildfire occurrences.

Burned areas that were not seeded in the past and lacked sufficient perennial plant cover often recovered to unhealthy plant communities. These areas are typically dominated by invasive annual grasses, primarily cheatgrass with some presence of noxious weeds. The potential for invasive annual plants and noxious weeds to spread into recently burned areas is more apt to occur under the No Action alternative. As a result, the amount, palatability, and nutrition of the livestock forage base could decline over time. Because of the unreliability of annual vegetation, livestock permittees may have to find alternative forage. Season of use and long-term management may change overtime.

Transmission lines, energy projects, and other ROWs can displace livestock grazing and reduce the amount of available forage. Projects that affect more acres, such as wind energy, could disrupt current livestock grazing (e.g. access, season of use, grazing schemes, management flexibility). Declines in available forage as a result of no action following a wildfire, would impose an additional financial and operational burden on livestock permittees.

Range improvement projects (e.g. water developments, fences) aid in the implementation of livestock grazing management. An objective of livestock grazing management is to maintain sustainable forage. If range improvements damaged in a wildfire are not rebuilt or repaired, livestock management may have to be modified to prevent improper grazing. Improper grazing practices could result in less sustainable forage and reduced forage quality. Direct conflicts between livestock permittees and recreationists could arise in developed recreation use areas where livestock are currently fenced out.

In summary, the combined effects of all other past, present, and reasonably foreseeable future actions, in addition to the expected effects of not implementing ESR actions, would occur throughout the Twin Falls District. Overall, the effects of not implementing ESR actions could contribute to a cumulative decline in livestock forage.

Wild Horses

Vegetation treatments resulting in perennial herbaceous vegetation (as opposed to annual vegetation) would increase the amount and quality of forage available for wild horses. Burned areas that result in the expansion of invasive plants and noxious weeds could decrease the amount and quality of forage, offsetting benefits of successful vegetation treatments in the Saylor Creek Herd Management Area. Invasive plants and noxious weeds could also expand into recently seeded vegetation treatments and unburned perennial plant communities and could eventually affect forage quality and amounts even further. As a result, wild horses could be removed to meet management objectives associated with declines in temporary and permanent forage availability.

Similar to livestock grazing, transmission lines, energy projects, and other ROWs have the potential to displace wild horses and reduce the amount of forage available with permanent infrastructure. Declines in available forage could result in the removal of some or all wild horses from the Saylor Creek Herd Management Area.

Livestock could compete with wild horses for forage if the amount of available forage decreases due to declines in rangeland health (e.g. annual grass cover type replaces perennial vegetation cover types). As a result, reductions in livestock use and/or wild horses would occur.

Water developments in the Saylor Creek Herd Management Area provide the only water available to wild horses. If troughs and/or pipelines are damaged by wildfire and not repaired, horses could be left without water. In general, fences pose a barrier to wild horse movements. If existing fences are damaged and not repaired, horse movement would not be restricted. Further, if burned debris such as barbed wire is not picked up, burned fences become a safety hazard to the horses as well as to livestock and the public.

Foaling season is the most vulnerable time for the wild horse herd and can be greatly disrupted by recreation activities, primarily motorized travel, including OHV. Travel management that results in seasonal road closures, emergency closures and other types of closures during foaling season would improve survival rates of newborns. However, under the no action alternative closures would not be implemented, negating any cumulative impacts associated with closures that may be implemented under the proposed action.

In summary, the combined effects of all other past, present, and reasonably foreseeable future actions, in addition to the expected effects of not implementing ESR actions, would occur throughout the Twin Falls District. Overall, the effects of not implementing ESR actions could contribute to a decline in forage for livestock and/or wild horses.

Proposed Action

Similar past, present, and foreseeable future actions and their effects would occur as previously described under the no action cumulative effects section.

Livestock

Successful ESR treatments provide sustainable livestock forage in addition to that provided by other vegetation treatments and unburned native range. Repair of range improvement projects would facilitate appropriate livestock management, better allowing for rangeland health standards to be met.

Adjacent non-federal lands that do not treat burned areas, could be a seed source of invasive plants and noxious weeds. Depending on the location of these lands, seed from undesirable plants could spread to BLM administered lands, reducing the amount of sustainable forage. If non-federal lands provide alternative forage for livestock operators and they burn the same year that the grazing allotment for which the livestock operator has permitted AUMs burns, a further burden is placed on the livestock operator to find alternative grazing. Additionally, the cost of alternative forage is likely to increase as a higher demand for it occurs, especially during a high fire year that affects several livestock operators in the Twin Falls District, across Idaho, or in adjacent states.

Wild Horses

Successful ESR treatments would further provide sustainable forage for wild horses in addition to that provided by other vegetation treatments and unburned native range. ESR motorized vehicle closures combined with any existing closures in a herd management area would be beneficial to wild horses during their foaling season.

CONSULTATION AND COORDINATION

Public Involvement Process

A scoping letter, dated March 21, 2007 was sent to interested publics, other federal agencies, and state and local governments requesting their input into the development of a PESRP. Comments were received from three environmental groups, one grazing association, one private citizen, Idaho Department of Agriculture, and the Owyhee County Commissioners. The EA was available to the public for review and comment on August 24, 2011. Comments were received from one environmental group, one private citizen, and the IDFG.

List of Agencies, Organizations, Native American Nations, and Individuals Consulted

Advocates for the West
Boise District Grazing Board
Burley Field Office Livestock Permittees
Camas County Commissioners
EHM Engineers Incorporated
Elko County Weed Control
Elmore County Weed Control
Idaho Conservation League
Idaho Department of Lands
Idaho Mule Deer Foundation
Idaho Association of Soil Conservation Districts
Idaho Department of Fish and Game
Idaho Office of Species Conservation
Idaho Wildlife Foundation
Jarbidge Advisory Board
Jarbidge Field Office Livestock Permittees
Jarbidge Sage-Grouse Local Working Group
Mountain Home Air Force Base
The Nature Conservancy
Nevada Cattlemen’s Association
Nevada Mule Deer Foundation
Owyhee County Natural Resource Committee
Owyhee County Weed Control
Sagebrush Sea Campaign
Sage Community Resources
Schroeder and Lezamiz Law Offices, PA
Shoshone Bannock Tribes
Shoshone Paiute Tribes
Shoshone Field Office Livestock Permittees
Society for Range Management

South Central Idaho Tourism and Recreation Development Association
Twin Falls County Weed Control
Twin Falls District Resource Advisory Council Members
University of Idaho Extension Service
USDA-Agriculture Research Service
Western Land Exchange Project
Western Watersheds Project
The Wilderness Society
Wood River Land and Trust

List of Preparers

Joseph Russell – Shoshone Field Office Fire Use Specialist
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Jeremy Bisson – Burley Field Office Wildlife Biologist
Dustin Smith – Burley Field Office Fire Ecologist
Julie Hilty – Jarbidge Field Office Fire Ecologist
Scott Uhrig – Twin Falls District Supervisory ESR
Elena Shaw – Twin Falls District Resource Coordinator

LIST OF ACRONYMS

AUM – Animal Unit Month

BLM – Bureau of Land Management

CFR – Code of Federal Regulations

DNA – Determination of NEPA Adequacy

ESA – Endangered Species Act

ESR – Emergency Stabilization and Rehabilitation

FWS – Fish and Wildlife Service

GIS – Geographic Information Systems

IDEQ – Idaho Department of Environmental Quality

IDFG – Idaho Department of Fish and Game

NPS – National Park Service

NEPA – National Environmental Policy Act

OHV – Off Highway Vehicle

PESRP – Programmatic Emergency Stabilization and Rehabilitation Plan

ROW – Right-of-Way

USDA – United States Department of Agriculture

USDI – United States Department of Interior

GLOSSARY

A word followed by an asterisk denotes that the word is also defined in this glossary.

Abiotic: Nonliving components of the environment, such as air, rocks, soil, and water.

Airshed: An area covered by a volume of air with similar characteristics and separated from other volumes of air by weather patterns or topography.

Annual Plant: A plant that completes it life cycle and dies in one year or less.

Beneficial Uses: Those beneficial uses assigned to identified waters in Idaho Department of Environmental Quality Rules, IDAPA 58.01.02, "Water Quality Standards and Wastewater Treatment Requirements," Sections 110 through 160, whether or not the uses are being attained.

Biological Diversity: The variety of life and its processes, including the variety of living organisms, the genetic differences among them, and the communities and ecosystems in which they occur.

Biotic: Living components of the environment, such as plants, animals, and micro-organisms.

Cold Water: Water quality appropriate for the protection and maintenance of a viable aquatic life community for cold water species. (Idaho Administrative Code: IDAPA 58.01.02)

Class I Air Shed: Any area designated under section 162 or 164 of the Federal Clean Air Act as a Class I area. Class I areas receive the highest degree of protection under the Clean Air Act.

Climax Community: The final stage of a plant succession* in which vegetation reaches a state of equilibrium with the environment. The community is self-perpetuating, except that changes may occur very slowly and over a time-scale that is extensive compared with the rapid and dramatic changes during the early stages of succession.

Ecology: A branch of science concerned with the interrelationships of organisms and their environments.

Ecosystem: Organisms, together with their abiotic* environment, that form an interacting system and inhabit an identifiable space.

Ecotype: A population of a species* that survives as a distinct group through environmental selection and isolation and that is comparable with a taxonomic subspecies*.

Element Occurrence: An area of land and/or water in which a species or natural community is or was present.

Ephemeral Stream: A stream which flows only after rain or snow-melt and has no base flow component.

Field Capacity: The total amount of water remaining in a freely drained soil after the excess has flowed into the underlying unsaturated soil. It is expressed as a percentage of the oven-dry soil.

Fire Frequency: How often fire burns a given area, often expressed in terms of fire return intervals (e.g. fire returns to a site every 5 to 15 years).

Fire Intensity: The rate of heat energy released during combustion per unit length of fire front.

Fire Severity: Denotes the scale at which vegetation and a site are altered or disrupted by fire, from low to high. It is a combination of the degree of fire effects on vegetation and on soil properties.

Flora: All the plant life in a particular region or period.

Fluvial: Of, relating to, or living in a stream or river.

Functioning-at-Risk: Riparian-wetland areas that are in functional condition but have an existing soil, water, or vegetation attribute that makes them susceptible to degradation.

Greenstrip: A type of treatment utilizing strips of fire-resistant vegetation established at strategic locations to help protect ESR investments (vegetation treatments) from wildfire, invasive plants and noxious weeds.

Habitat: The place or environment where a plant or animal naturally or normally lives and grows.

Habitat (Slickspot Peppergrass): Potential habitat areas with Wyoming big sagebrush ecological sites that through Stage 1 surveys have documented slickspot microsites within 2,200 feet and 5,400 feet elevation in Southwest Idaho. Slickspot peppergrass habitat includes areas with slickspots of unknown occupancy and in some cases may be dominated by non-native vegetation such as annual grasses or crested wheatgrass (USDI BLM, 2009).

Herbaceous Vegetation: Plants lacking a permanent, woody stem.

Hydrophobicity: The property of being water-repellent; tending to repel and not absorb water.

Invasive Plant: A plant that is likely to spread into native flora* or managed plant systems, develop a self-sustaining population, and becomes dominate or disruptive to those systems.

Juxtaposition: The act or an instance of placing two or more things side by side.

Land Use Plan: A resource management plan or management framework plan, developed under the provisions of 43 CFR 1600. These plans are developed through public participation in accordance with the provisions of the Federal Lands Policy and Management Act of 1976 and establish management direction for resource uses of public lands (43 CFR 4100).

Litter: Litter in sagebrush steppe ecosystems includes fallen dead leaves, stems, bark, flowers, and seeds of shrubs, forbs, and grasses; dead cushion plants and moss; detached lichen; animal feces and dead insects; and unidentifiable woody organic matter lying on the mineral soil surface (Van Haveren, 2003).

Monitor: The orderly collection, analysis, and interpretation of resource data to evaluate progress towards meeting management objectives. The process must be conducted over time in order to determine whether or not management objectives are being met.

Native Plant Species: A plant native to a specific region, where it grows naturally and where it evolved.

Natural Fire Regime: A general classification of the role fire would play across a landscape in the absence of modern human intervention, but including the influence of aboriginal burning (Agee, 1996).

Naturalized Species: An introduced plant species that has become established and exhibits successful reproduction in an ecosystem*.

Nonfunctional: Riparian-wetland areas that clearly are not providing adequate vegetation, landform, or woody debris to dissipate energies associated with flow events, and thus are not reducing erosion, improving water quality, etc.

Non-game Fish: Native fish not managed by angler harvest regulations due to their small size, but important as forage fish for other fish and wildlife.

Non-Native Species: Plants or animals that are not indigenous to an area.

Noxious Weed: Any plant having potential to cause injury to public health, crops, livestock, land, or property and which is designated noxious by the State of Idaho.

Occupied Habitat: Habitat associated with an existing population that is essential for sustaining the population in the long term.

Occupied Habitat (Slickspot Peppergrass): Areas where slickspot peppergrass has been documented or identified as an element occurrence* and includes the area generally within 0.5 mile of that occurrence that is important to maintain or improve habitat integrity and pollinator populations necessary for species conservation (USDI BLM, 2009).

Plant Materials: Any part of a plant collected and used to propagate the plant, such as seeds, seedlings, rootstock, branches, and bulbs.

Playas: Naturally occurring depressions in the land that contain pools of water seasonally.

Population Ecology: Major sub-field of ecology that deals with the dynamics of species populations and how these populations interact with the environment.

Potential Habitat (Slickspot Peppergrass): Areas within the known range of slickspot peppergrass that have certain general soil and elevation characteristics that indicate the potential for the area to support slickspot peppergrass, although the presence of slickspots or the plant is unknown (USDI BLM, 2009).

Preliminary General Habitat: Areas of occupied sage-grouse seasonal or year-round habitat outside of priority habitat.

Preliminary Priority Habitat: Areas that have been identified as having the highest conservation value to maintaining greater sage-grouse populations.

Primary Contact Recreation: Water quality appropriate for prolonged and intimate contact by humans or for recreational activities when the ingestion of small quantities of water is likely to occur. Such activities include, but are not restricted to, those used for swimming, water skiing, or skin diving.

Properly Functioning Condition: Lentic riparian-wetland areas are functioning properly when adequate vegetation, landform, or debris is present to: dissipate energies associated with wind action, wave action, and overland flow from adjacent sites, thereby reducing erosion and improving water quality; filter sediment and aid floodplain development; improve flood-water retention and ground-water recharge; develop root masses that stabilize islands and shoreline features against cutting action; restrict water percolation; develop diverse ponding characteristics *to provide* the habitat and the water depth, duration, and temperature necessary for fish production, waterbird breeding, and other uses; and support greater biodiversity.

Qualitative Data: Non-quantitative data derived from observations, commonly visual, and recorded descriptively. Qualitative data is not numerically measured (e.g. descriptive or non-numerical data) (USDA ARS, 2005).

Quantitative Data: Data derived from measurements, such as counts, dimensions, and weights, and recorded numerically; may include ratios and other values. Qualitative numerical estimates, such as ocular cover and production estimates are often referred to as “semi-quantitative.”(USDA ARS, 2005).

Rest: No livestock or wild horse grazing for period of time.

Riparian Areas: Vegetated areas along rivers and streams that provide a transition zone between aquatic and upland areas.

Riparian Conservation Area: Areas emphasizing riparian resources management. They are typically adjacent to water bodies and include riparian corridors, wetlands, intermittent, headwater streams, and other areas where ‘proper’ ecological function is crucial for maintaining water, sediment, woody debris, and nutrient delivery to the system or that they function within the regional range of variability (BLM, 2008).

Salmonid Spawning: Waters which provide or could provide habitat for active self-propagating populations of salmonid fishes.

Sediment: Material deposited by water, wind, or glaciers.

Seed Bank: A reserve of dormant seeds generally found in the soil.

Seral: A phase in the sequential development of a climax community*.

Slickspots: Microsites with poor water infiltration and soil chemistry, silt, or alkaline soils within a larger matrix of saline soils, that differs from the surrounding soils within the sagebrush ecosystem. These microsites are often lower than surrounding areas, so they retain water longer than the surrounding soil. Slickspots may be as small as a square foot, or as large as half a basketball court, and are usually surrounded by big sagebrush, native bunchgrasses, wildflowers, mosses, and lichens (FWS, 2004).

Soil Creep: The slow, steady downhill movement of soil and loose rock.

Soil Crust: Relatively thin, dense, somewhat continuous layers of non-aggregated soil particles on the surface of tilled and exposed soils. Soil crusting results from rains breaking down soil aggregates into particles that cement into hard layers at the soil surface when drying occurs rapidly.

Special Status Species: Plant or animal species that are 1) officially listed as threatened, endangered or proposed under the ESA or are candidates for listing as threatened or endangered under the ESA; 2) listed by a State in a category such as threatened or endangered implying potential endangerment or extinction; 3) designated by the BLM State Director as sensitive (USDI BLM, 2003).

Species: A group of organisms all of which have a high degree of physical and genetic similarity, generally interbreed only among themselves, and show persistent differences from members of allied groups of organisms; a category of biological classification ranking immediately below the genus or subgenus.

State: A state includes one or more biological (including soil) communities that occur on a particular ecological site and that are functionally similar with respect to the three attributes (soil and site stability, hydrologic function, biotic integrity). States are distinguished by relatively large differences in plant functional groups, soil properties, and ecosystem processes and, consequently, in vegetation structure, biodiversity, and management requirements. They are also distinguished by their responses to disturbances. A number of different plant communities may be included in a state and the communities are often connected by traditionally defined successional pathways.

Subspecies: A subdivision of a species; a category in biological classification that ranks immediately below a species and designates a population of a particular geographic region genetically distinguishable from other such populations of the same species and capable of interbreeding successfully with them where its range overlaps theirs.

Succession: The sequential change in vegetation either in response to an environmental change or induced by the intrinsic properties of the plants themselves.

Surrounding habitat (Slickspot Peppergrass): Landscape-scale matrices of vegetation communities that may influence adjacent slickspot peppergrass occupied habitat (USDI BLM, 2009).

Suitable habitat: Habitat having necessary species specific characteristics for occupancy.

Threshold: The boundary between any and all states, or along irreversible transitions, such that one or more primary ecological processes has been irreversibly changed and must be actively restored before returning to a previous state is possible. (USDI BLM, 2001)

Water quality: A measure of the condition of water relative to the requirements of one or more biotic species and/or to any human need or purpose.

Wetlands: Wetlands are areas where surface and sub-surface waters result in saturated soil conditions throughout most of the year.

Volatilization: The chemical process of passing from a liquid state to a vapor or gas.

Viewshed: The natural environment that is visible from one or more viewing points.

REFERENCES

Agee, J.K. (1996). Fire Regimes and Approaches for Determining Fire History In: Hardy, Colin C.; Arno, Stephen F., eds. 1996. *The use of fire in forest restoration*. (Gen. Tech. Rep. INT-GTR341). Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station.

Allen, M.B., Connolly, P.J., Mesa, M.G., Charrier, Jodi, and Dixon, Chris, 2010, Distribution and movement of bull trout in the upper Jarbidge River watershed, Nevada: U.S. Geological Survey Open-File Report 2010-1033, 80 p.

Anderson, R. C. (1989). *The dunes tiger beetle* (Final Report to the Bureau of Land Management). Pocatello, ID: Idaho State University.

Baker, M. B., U.S. Department of Agriculture, Forest Service. (1990). *Hydrologic and water quality effects of fire* (General Technical Report RM-191). Flagstaff, AZ: Rocky Mountain Experiment Station.

Barrett, M. W. (1982). Distribution, behavior, and mortality of pronghorns during a severe winter in Alberta. *Journal of Wildlife Management*, *46*, 991-1002.

Baskin, J. M. & Baskin, C. C. (1978). The seed bank in a population of an endemic plant species and its ecological significance. *Biological Conservation, 14*, 125-130.

Bates, J. D., Rhodes, E. C., Davies, K. W., & Sharp, R. (2009). Postfire succession in big sagebrush steppe with livestock grazing. *Rangeland Ecology Management, 62,* 98-110.

Bayless, S. R. (1969). Winter food habits, range use, and home range of antelope in Montana. *Journal of Wildlife Management, 33*, 538-551.

Behnke, R. J. (1992). Monograph 6. *Native trout of western North America.* Bethesda, MD: American Fisheries Society.

Benson, L. A., Braun, C. E., & Leininger, W.C. (1991). Sage-grouse response to burning in the big sagebrush type. In R. D. Comer, P. R. Davis, & S. Q. Foster (et al.) (eds.), *Issues and technology in the management of impacted wildlife: proceedings of a national symposium* (pp. 97-104). Boulder, CO: Thorne Ecology Institute.

Blaisdell, J. P. (1949). Competition between sagebrush seedlings and reseeded grasses. *Ecology*, *30*, 512–519.

Blaisdell, J. P., U.S. Department of Agriculture, Forest Service. (1953). *Ecological effects of planned burning of sagebrush-grass on the upper Snake River plain*. (Technical Bulletin 1075). Ogden, UT: Intermountain Experimental Station.

Blank, R. R., Svejcar, T. J., & Riegel, G. M. (1995). Soil genesis and morphology of a montane meadow in the northern Sierra Nevada range. *Soil Sciences*, *160*(2), 136-152.

Bock, C. E., & Bock, J. H. (1987). Avian habitat occupancy following fire in a Montana shrubsteppe. *Prairie Naturalist*, *19*(3), 153-158.

Bowler, P.A. (1990). The rapid spread of the freshwater hydrobiid snail *Potamopyrgus antipodarum* (Gray) in the Middle Snake River, Idaho. *Proceedings of the Desert Fishes Council 21*, 173-182.

Broadhead, W. H., U.S. Department of Interior, National Park Service. (1999). *Cattle, control, and conservation* (Cultural Resources Management No. 9). Cultural Resources Management Archive Database.

Brooks, K. N., Ffolliott, P. F., Gregersen, H. M., & DeBano, L. F. (2003). *Hydrology and the management of watersheds* (3rd ed.). Ames, IA: Iowa State Press.

Brown, G. W. (1970). Predicting the effect of clearcutting on stream temperature. *Journal of Soil and Water Conservation*, *25*, 11-13.

Brown, R. N. K., Rosenberger, R. S., Kline, J. D., Hall, T. E., & Needham, M. D. (2008). Visitor preferences for managing wilderness recreation after wildfire. *Journal of Forestry, 106*(1), 9-16.

Bull, E. L & Hayes, M. P. (2000). Livestock Effects on Reproduction of the Columbia Spotted Frog. *Journal of Range Management, 53*, 291-294.

Bunting, S. C., Kilgore, B. M., & Bushey, C. L., U.S. Department of Agriculture, Forest Service. (1987). *Guidelines for prescribed burning sagebrush-grass rangelands in the northern great basin*. (General Technical Report INT-231). Ogden, UT: Intermountain Experimental Station.

Bunting, S. C., Robberecht, R., & Defosse, G. E. (1998). Length and timing of grazing on postburn productivity of two bunchgrasses in an Idaho experimental range. *International Journal Wildland Fire*, *8*(1), 15-20.

Burton, T. A. (2005). Fish and stream habitat risks from uncharacteristic wildfire: observations from 17 years of fire-related disturbances on the Boise National Forest, Idaho. *Forest Ecology and Management, 211*, 140-149.

Byrne, M. W. (2002). Habitat use by female greater sage-grouse in relation to fire at Hart Mountain National Antelope Refuge, Oregon (M.S. Thesis). Corvallis, OR: Oregon State University.

Clary, W.P., U.S. Department of Agriculture, Forest Service. (1989). Revegetation by land imprinter and rangeland drill (Research Paper INT-397). Ogden UT: Intermountain Research Station.

Clements, C. D., & Young, J. A. (1997). A viewpoint: rangeland health and mule deer habitat. *Journal of Range Management*, *50*, 129–138.

Cochran, J. F., & Anderson S. H. (1987). Comparison of habitat attributes at sites of stable and declining long-billed curlew populations. *Great Basin Naturalist, 47*, 459-466.

Connelly, J. W., Schroeder, M. A., Sands, A. R., & Braun, C. E. (2000). Guidelines to manage sage-grouse populations and their habitats. *Wildlife Society Bulletin 2000, 28*(4)*,* 967-985.

Crawford, J. A., Olson, R. A., West, N. E., Mosley, J. C., Schroeder, M. A., Whitson, T. D., et al. (2004). Ecology and management of sage-grouse and sage-grouse habitat. *Journal of Range Management, 57*, 2-19.

Dambacher, J. M., & Jones, K. K. (2007). Benchmarks and patterns of abundance of redband trout in Oregon streams: a compilation of studies. In R. K. Schroeder & J. D. Hall (eds.), *Redband trout: resilience and challenge in a changing landscape* (pp. 47-55). Corvallis, OR: Oregon Chapter, American Fisheries Society.

DeBano, L. F., Neary, D. G., & Ffolliott, P. F. (1998). *Fire's effects on ecosystems*. New York, NY: John Wiley & Sons, Inc.

Deines, L., Rosentreter, R., Eldridge, D. J., & Serpe, Marcelo D. (2007). Germination and seedling establishment of two annual grasses on lichen-dominated biological soil crusts. Plant and Soil, 295, 23-35.

Deitz, D. R., & Negy, J. G. (1976). Mule deer nutrition and plant utilization. In G. W. Workmand & J. B. Low (eds.), *Mule deer decline in the west--a symposium* (pp. 71-78). Logan, UT: Utah Agricultural Experiment Station, Utah State University.

Dobler, F. C., U.S. Department of Agriculture, Forest Service. (1992). Washington state shrub-steppe ecosystem studies with emphasis on the relationship between nongame birds and shrub and grass cover densities (General Technical Report INT-GTR-313). Ogden, UT: Intermountain Research Station.

Downs, J. L., Rickard, W. H., & Cadwell, L. L. (1995). Restoration of big sagebrush habitat in southeastern Washington. *Proceedings of the wildland shrub and arid land restoration symposium* (pp. 74-77). Ogden, UT: Forest Service Intermountain Research Station.

Englin, J., Boxall, P. C., Chakraborty, K., & Watson, D. O. (1996). Valuing the impacts of forest fires on backcountry forest recreation. *Forest Science*, *42*, 450-455.

Englin, J., Loomis, J., & Gonzalez-Caban, A. (2001). The dynamic path of recreational values following a forest fire: a comparative analysis of states in the intermountain west. *Canadian Journal of Forest Research, 31*, 1837-1844.

Evans, R. A. (1961). Effects of different densities of downy brome (*Bromus tectorum*) on growth and survival of crested wheatgrass (*Agropyron desertorum*) in the greenhouse. *Weeds, 9*, 216-223.

Evans, R. A., & Young, J. A. (1977). Weed control-revegetation systems for big sagebrush-downy brome rangelands. *Journal of Range Management*, *30*, 331-336.

Fisher, H., Eslick, L., & Seyfried, M., U.S. Department of Interior, Bureau of Land Management (1996). *Edaphic factors that characterize the distribution of Lepidium papilliferum* (Technical Bulletin 96-6). Boise, ID: Idaho State Office.

Fleischner, T.L. (1994). Ecological costs of livestock grazing in western North America. *Conservation Biology 8*, 629-644.

Gelbard, J. L., & Belnap, J. (2003). Roads as conduits for exotic plant invasions in a semiarid landscape. *Conservation Biology*, *17*(2), 420-432.

Gerstung, E. (2007). Status and management of three groups of redband trout in northeastern California. *Proceedings of the Redband trout: resilience and challenge in a changing landscape*. Corvallis, OR: Oregon Chapter, American Fisheries Society.

Governor's Office of Species Conservation, Idaho Department of Fish and Game, Idaho Department of Lands, Idaho National Guard, Ted Hoffman (Non-governmental Cooperator representative), & Bureau of Land Management. (2003). *Candidate conservation agreement for slickspot peppergrass (Lepidium papilliferum)*. Boise, Idaho: Governor's Office of Species Conservation as amended.

Green, J. S., & Flinders, J. T. (1980). *Brachylagus idahoensis*. *Mammalian species*, *125*, 1-4.

Hassan, M. A., & West, N. E. (1986). Dynamics of soil seed pools in burned and unburned sagebrush semi-deserts. *Ecology*, *67*, 269–272.

Hershler, R., T.J. Frest, E.J. Johannes, P.A. Bowler, and F.G. Thompson. (1994). Two new genera of hydrobiid snails (Prosobranchia: Rissooidea) from the Northwestern United States. *The Veliger*, *37*, 221-243.

Hilty, J. H., Eldridge, D. J., Rosentreter, R., Wicklow-Howard, M. C., & Pellant, M. (2004). Recovery of biological soil crusts following wildfire in Idaho. *Journal of Range Management*, *57*, 89-86.

Holechek, J. L. (1982). Managing rangelands for mule deer. *Rangelands*, *4*(1), 25-28.

Hulbert, L. C. (1955). Ecological studies of *Bromus tectorum* and other annual bromegrasses. *Ecological Monographs, 25*, 181-213.

Hull, A. C. (1963). Competition and water requirements of cheatgrass and wheatgrasses in the greenhouse. *Journal Range Management, 16*, 199-203.

Hull, A. C., & Hansen Jr., W. T. (1974). Delayed germination of cheatgrass seed. *Journal of Range Management*, *27*(5), 366-368.

Hull, A. C., & Pechanec, J. F. (1947). Cheatgrass - A challenge to range research. *Journal of Forestry, 45*, 555-564.

Idaho Department of Environmental Quality. (2008). *2007 Air quality monitoring data summary*. Boise, ID: Idaho Department of Environmental Quality. Retrieved from http://www.deq.state.id.us.air.

Idaho Department of Environmental Quality. (2011). *2011 Idaho's Integrated Report*. Boise, ID: Idaho Department of Environmental Quality. Retrieved from http://www.deq.idaho.gov/water-quality/surface-water/monitoring-assessment/integrated-report.aspx.

Idaho Department of Fish and Game, Idaho Conservation Data Center. (2005). *Idaho comprehensive wildlife conservation strategy*. Boise, ID: Idaho Department of Fish and Game. Retrieved from http://fishandgame.idaho.gov/cms/tech/CDC/cwcs.cfm.

Idaho Department of Fish and Game, Idaho Sage-grouse Advisory Committee. (2006). *Conservation plan for the greater sage-grouse in Idaho*. Boise, Idaho: Idaho Department of Fish and Game. Retrieved from http://fishandgame.idaho.gov/cms/hunt/grouse/conserv.pln.

Deines, L., Rosentreter, R., Eldridge, D. J., & Serpe, Marcelo D. (2007). Germination and seedling establishment of two annual grasses on lichen-dominated biological soil crusts. *Plant and Soil, 295*, 23-35.

Dillon, J. & Grunder, S.A., Idaho Department of Fish and Game. (2008). *Management Plan for the Conservation of Snake River White Sturgeon in Idaho.* Boise, Idaho: Idaho Department of Fish and Game.

Jenni, D. A., Redmond, R. L., & Bicak, T. K., U.S. Department of Interior, Bureau of Land Management. (1981). *Behavioral ecology and habitat relationships of long-billed curlew in western Idaho*. Boise, ID: Boise District Office.

Jirik, S. J., & Bunting, S. C. (1994). Post-fire defoliation response of *Agropyron spicatum* and *Sitanion hystrix*. *International Journal of Wildland Fire, 4*(2), 77-82.

Johnston, R., U.S. Department of Agriculture. (1997). *Introduction to microbiotic crusts*. Washington, DC: Government Printing Office.

Kaltenecker, J.H., Wicklow-Howard, M.C., & Rosentreter, R. (1999). Biological soil crusts in three sagebrush communities recovering from a century of livestock trampling. In E. D. McArthur, W. K. Ostler & C. L. Wambolt (eds.), *Proceedings of the shrubland ecotones* (pp. 222-226). Ogden, UT: Forest Service Rocky Mountain Research Station.

Kauffman, J. B., Krueger, W. C., & Vavra, M. (1983). Impacts of cattle on streambanks in northeastern Oregon. *Journal of Range Management, 36* (6), 683-685.

Kindschy, R. R., Sundstrom, C., & Yoakum, J. D., U.S. Department of Agriculture, Forest Service. (1982). *Wildlife habitats in managed rangelands - the great basin of southeastern Oregon* (General Technical Report 145-18). Portland, OR: Pacific Northwest Experimental Station.

Kochert, M. N., & Pellant, M. (1986). Multiple use in the Snake River birds of prey area. *Rangelands*, *8*, 217-220.

Larrison, E.J. & Johnson, D.R. (1981). Mammals of Idaho. The University of Idaho Press.

Larsen, K. D., Boise State University. (1995). *Effects of microbiotic crusts on the germination and establishment of three range grasses* (Unpublished Thesis). Boise, ID: Boise State University.

Laycock, W. A. (1991). Stable states and thresholds of range condition on North American rangelands: a viewpoint. *Journal of Range Management*, *44*, 427-433.

Laymon, S. A. (1998). Yellow-billed Cuckoo (Coccycus americanus). In The riparian bird conservation plan: a strategy for reversing the decline of riparian-associated birds in California. California Partners in Flight. Retrieved from http://www.prbo.org/calpif/htmldocs/riparian_v-2.html

Leffler, S.R. (2001). A new species of tiger beetle from southwestern Idaho (Coleoptera:Cicindelidae).Cicindela 33(1-2), 19-40.

Levno, A., & Rothacher, J., U.S. Department of Agriculture, Forest Service. (1969). *Increases in maximum stream temperatures after slash burning in a small experimental watershed* (Research Note PNW-110). Portland, OR: Pacific Northwest Experimental Station.

Loomis, J. A., Gonzalez, C., & Englin, J. (2001). Testing for differential effects of forest fires on hiking and mountain biking demand and benefits. *Journal Agriculture Resource Economics, 26*(2), 508-522.

MacDonald, L.H., & Robichaud, P.R., U.S. Department of Agriculture, Forest Service. (2008). *Post-fire erosion and the effectiveness of emergency rehabilitation treatments over time (Stream Notes).* Fort Collins, CO: Stream Systems Technology Center, Rocky Mountain Research Station. Retrieved from http://www.fs.fed.us/rm/pubs_other/rmrs_2008_macdonald_l001.pdf.

Mack, R. N., & Pyke, D. A. (1983). The demography of *Bromus tectorum*: variation in time and space. *Journal of Ecology, 71*, 69-93.

Mancuso, M., Idaho Department of Fish and Game, Idaho Conservation Data Center. (1997). The status of Malheur prince's plume (Stanleya confertiflora) in Idahos. Boise, ID: Idaho Department of Fish and Game.

Mancuso, M., Murphy, C., & Moseley, R., Idaho Department of Fish and Game. (1998). *Assessing and monitoring habitat integrity for Lepidium papilliferum (slickspot peppergrass) in the sagebrush-steppe of southwestern Idaho, plus appendices.* Boise, ID: Idaho Department of Fish and Game.

Mancuso, M., Idaho Department of Fish and Game, Idaho Conservation Data Center. (2000). *Monitoring habitat integrity for Lepidium papilliferum (slickspot peppergrass): 1999 results*. Boise, ID: Idaho Department of Fish and Game.

Mancuso, M., Idaho Department of Fish and Game, Idaho Conservation Data Center. (2001). *Monitoring habitat integrity for Lepidium papilliferum (slickspot peppergrass): 2000 results.* Boise, ID: Idaho Department of Fish and Game.

Mancuso, M., and Colket, B., Idaho Department of Fish and Game, Idaho Conservation Data Center. (2006). Monitoring Malheur prince's plum (Stanleya confertiflora) on Bureau of Land Management Lands in Southwestern Idaho: baseline results, 2005. Boise, ID: Idaho Department of Fish and Game.

McAdoo, J. K., Schultz, B. W., & Swanson, S. R., University of Nevada. (2004). *Wildlife diversities in sagebrush habitats* (Cooperative Extension Fact Sheet, FS-03-66). Reno, NV: University of Nevada.

McNabb, D. H., Gaweda, F., & Froehlich, H. A. (1989). Infiltration, water repellency, and soil moisture content after broadcast burning a forest site in southwest Oregon. *Journal of Soil Water Conservation*, *44*, 87-90.

Memmott, K. L. (1995). Seasonal dynamics of forage shrub nutrients and seasonal grazing impacts on cryptogamic crusts (M.S. Thesis). Provo, UT: Brigham Young University.

Menke, C. A., & Kaye, T. N. (2006). Lepidium papilliferum (slickspot peppergrass) evaluations of trends (1998 – 2004) and analysis of 2004 habitat integrity and population monitoring data. Corvallis, OR: Institute for Applied Ecology. Retrieved from http://www.appliedeco.org.

Meyer, K. A., Cassinelli, J. D., & Elle, S. (2008). Life history characteristics of the Wood River sculpin, *Cottus leipomus* (cottidae), in Idaho. *Copeia* (3), 648-655.

Meyer, S. E., Quinney, D., & Weaver, J. (2005). A life history study of the snake river plains endemic *Lepidium papilliferum* (brassicaceae). *Western North American Naturalist, 65*, 11-23.

Monsen, S. B. (1983). Plants for revegetation of riparian sites within the intermountain region. In S. B. Monson & N. Shaw (comps.), *Managing intermountain rangelands--improvement of range and wildlife habitats* (General Technical Report INT-152, pp. 83-89). Ogden, Utah: Forest Service Intermountain Research Station.

Monsen, S. B. (1994). The competitive influence of cheatgrass (B*romus tectorum*) on site restoration. In S. B. Monsen and S. G. Kitchens (eds.), *Ecology and management of annual rangelands* (pp. 43-50). Ogden, UT: Forest Service Intermountain Research Station.

Morehouse, B. J. (2001). Climate, Forest Fires, and Recreation: Insights form the U.S. Southwest. In Proceedings of the First International Workshop on Climate, Tourism and Recreation: Report of a Workshop Held at Porto Carras, Neos Marmaras, Halikidiki, Greece, edited by A. Matzarakis and C.R. de Freitas. International Society of Biometeorology.

Morrison, P. H. & Swanson, F. J., U.S. Department of Agriculture, Forest Service. (1990). *Fire history and pattern in a Cascade Range landscape* (General Technical Report PNW-GTR-254). Portland, OR: Pacific Northwest Research Station.

Morrow, L. A. and Stahlman, P. W. 1984. The history and distribution of downy brome (Bromus tectorum) in North America. *Weed Science, 32*, 2-6.

Moseley, R. K., Idaho Department of Fish and Game, Idaho Conservation Data Center. (1995). Conservation status of least phacelia (Phacelia minutissima). Boise, ID: Idaho Department of Fish and Game.

Moser, A. & Lowe, B. (2011). Wildlife Monitoring on the Murphy Complex Fire. Final Report. Unpublished report for the Idaho Department of Fish and Game, Boise, ID.

Mueggler, W.F. & Balisdell, J.P. (1958). Effects on Associated Species of Burning, Rotobeating, Spraying, and Railing Sagebrush. *Journal of Range Management, 11*, 61-66.

Murphy, C., Idaho Department of Fish and Game, Idaho Conservation Data Center. (2002). The conservation status of Phacelia inconspicua (obscure scorpion plant) in Idaho – an update. Boise, ID: Idaho Department of Fish and Game.

Naiman, R.J., Decamps, H., & Pollock, M. (1993). The role of riparian corridors in maintaining regional biodiversity. *Ecol. Appl. 3*, 209–212.

NatureServe (2009). *NatureServe Explorer: An online encyclopedia of life* [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer.

Neary, D. G., Ryan, K. C., & DeBano, L. F., U.S. Department of Agriculture, Forest Service. (2005, revised 2008). *Wildland fire in ecosystems: effects of fire on soils and water* (General Technical Report RMRS-GTR-42-vol. 4). Ogden, UT: Rocky Mountain Research Station.

Nelson, J. R., Wilson, A. M., & Goebel, C. J. (1970). Factors influencing broadcast seeding in bunchgrass range. *Journal of Range Management*, *23*(3), 163-170.

Noss, R. F. (1990). Indicators for monitoring biodiversity: a hierarchical approach. *Conservation Biology, 4*, 355-364.

Ogle, D.G., St. John, L., & Jensen, K. B., U.S. Department of Agriculture, Natural Resource Conservation Service. (2001). *Crested Wheatgrass Agropyron cristatum and Agropyron desertorum* (Plant Guide). Boise, ID: Natural Resource Conservation Service State Office.

Olson, Bret E. (1999). Impacts of noxious weeds on ecologic and economic systems. In: Sheley, Roger L., Petroff, Janet K., eds. *Biology and management of noxious rangeland weeds (pp. 4-18)*. Corvallis, OR: Oregon State University Press.

Osborn, A., Vetter, S., Hartley, R., Walsh, L., & Brown, J. (1987). *Impacts of domestic livestock grazing on the archaeological resources of Capitol Reef National Park, Utah.* Midwest Archaeological Center Occasional Studies in Anthropology No. 20.

Palazzo, A. J., Lichvar, R. W., Cary, T. J., & Bayshore, T. L. (2005). *An analysis of the seed bank of Lepidium papilliferum (slickspot peppergrass)*. Unpublished report dated February 23, 2005 submitted to Plant Ecology in March 2005.

Pampush, G. J., & Anthony, R. G. (1993). Nest success, habitat utilization and nest-site selection of long-billed curlews in the Columbia Basin, Oregon. *Condor 95*, 957-967.

Pellant, M. (1990). The cheatgrass-wildfire cycle – are there any solutions? In E. D. McArthur, E. M. Romney, S. D. Smith, & P. T. Tueller (comps.), *Proceedings of symposium on cheatgrass invasion, shrub die-off, and other aspects of shrub biology and management* (Forest Service General Technical Report INT-276, pp. 11-17).

Pellant, M. (2004). Greenstripping with forage kochia. In *Proceedings-forage kochia workshop and tour* (pp. 52-56). Logan, UT: Utah State University.

Peterson, J. G., Department of Fish, Wildlife and Parks, Wildlife Management Division. (1995). *Sagebrush: ecological implications of sagebrush manipulation*. Helena, MT: Montana Department of Fish, Wildlife & Parks.

Plummer, A. P., Christensen, D. R., & Monsen, S. B., Utah Division of Fish and Game. (1968). *Restoring big-game range in Utah* (Publication 68-3). Salt Lake City, UT: Utah Division of Fish and Game.

Ponzetti, J. M., McCune, B., & Pyke, D. A. (2007). Biotic soil crusts in relation to topography, cheatgrass and fire in the Columbia Basin, Washington. The Bryologist 110, 706-722.

Pyne, S. J., Andrews, P. L., & Laven, R. D. (1996). *Introduction to wildland fire* (2nd ed.). New York, NY: John Wiley and Sons, Inc.

Rich, T., & Altman, B. (2001). Under the sage-grouse umbrella. *Bird Conservation*, *14*, 10.

Rieman, B., Lee, D., Chandler, G., & Myers, D. (1997). Does wildfire threaten extinction for salmonids? Responses of redband trout and bull trout following recent large fires on the Boise National Forest. Proceeding of the *Fire effects on rare and endangered species habitat conference* (pp. 47-57). Boise, ID: Forest Service Intermountain Research Station.

Riggs, R. A., Bunting, S. C., & Daniels, S. E. (1996). Other wildlife conservation issues in range management: prescribed fire. In P. R. Krausman (ed.), *Rangeland wildlife* (pp. 295-319). Denver, CO: Society for Range Management.

Robertson, J. H., & Pearse, C. K. (1945). Artificial reseeding and closed communities. *Northwest Science, 19*, 58-66.

Robichaud, P. R., Beyers, J. L., & Neary, D. G., U.S. Department of Agriculture, Forest Service. (2000). *Evaluating the effectiveness of post-fire rehabilitation treatments* (General Technical Report RMRS-GTR-63). Fort Collins, CO: Rocky Mountain Research Station.

Rowland, M. M., Wisdom, M. J., Suring, L. H., & Meinke, C. W. (2006). Greater sage-grouse as an umbrella species for sagebrush-associated vertebrates. *Biological Conservation*, *129*, 323-335.

Rosenthal, L. R. (2007). Evaluation of distribution and fish passage in relation to road culverts in two eastern Montana prairie streams (Unpublished Thesis). Bozeman, MT: Montana State University.

Rosgen, D. L. (1996). A geomorphological approach to restoration of incised rivers. In S. S. Y. Wang, E. J. Langendoen, & F. D. Shields, Jr. (eds.), *Proceedings of the conference on management of landscapes disturbed by channel incision, 1997*. ISBN 0-937099-05-8.

Rummell, R. S. (1946). Some effects of competition from cheatgrass brome on crested wheatgrass and bluestem wheatgrass. *Ecology*, 27, 159-167.

Salih, M. S. A., Taha, F. K. H., & Payne, G. F. (1973). Water repellency of soils under burned sagebrush. *Journal of Range Management*, 26, 330–331.

Sankey, J.B., Germino, M.J., Glenn, N.F. (2009). Fire effects on wind erosion in sagebrush steppe rangelands of the Snake River Plain. *Final Report: Impact of Temporal Landcover Changes in Southeastern Idaho Rangelands,* Idaho State University, 343-354.

Scott, D. F. & Van Wyk, D.B. (1990). The effects of wildfire on soil wettability and hydrological behaviour of an afforested catchment. *Journal of Hydrology*, 121, 239–256.

Scott, J. M., Davis, F., Csuti, B., Noss, R., Butterfield, B., Groves, C., et al. (1993). Gap Analysis: A geographic approach to protection of biological diversity. *Wildlife Monographs, 123*, 1-41.

Scott, J. M., Peterson, C., Karl, J., Strand, E., Svancara L., & Wright, N. (2001). *Idaho GAP analysis project (*Gap Analysis Bulletin No. 10). USGS/BRD/Gap Analysis Program, University of Idaho, Moscow, Idaho. Retrieved from http://www.gap.uidaho.edu/Bulletins/10/bulletin10.htm

Smith, A. D., & Beale, D. M., Utah Division of Wildlife Resources. (1980). *Pronghorn antelope in Utah: some research and observations* (Publication No. 80-13). Salt Lake City, UT: Utah Division of Wildlife Resources.

Spectrum Laboratories. (2005). Chemical fact sheet. Retrieved December 6, 2010, from http://www.speclab.com/index.shtml.

Stager, D. W. (1977). Mule deer response to successional changes in the pinyon-juniper vegetation type after wildfire. UNR CALL # QH999 .S734 1977. UNR CALL # Thesis 1157.

Stephenson, M., and R. Myers. 2003. *FERC additional information request 9: Listed snails – Cove Creek.* Final report, Idaho Power Company.

State of Idaho Conservation Effort. (1996). Habitat Conservation Assessment and Strategy for the Idaho Dunes Tiger Beetle (Cicindela arenicola). Unpublished report prepared to the Idaho Department of Fish and Game, Boise, ID.

State of Idaho, Bureau of Land Management, Idaho Army National Guard, & Nongovernmental Cooperators. (2003). Candidate Conservation Agreement for Slickspot Peppergrass (*Lepidium papilliferum*).

State of Idaho, Bureau of Land Management, Idaho Army National Guard, & Nongovernmental Cooperators. (2006). Candidate Conservation Agreement for Slickspot Peppergrass (*Lepidium papilliferum*). 2nd Edition.

Stivers, S.J., Rinkes, T.E., Naugle, D.E. (2010). Sage-grouse Habitat Assessment Framework Multi-scale Habitat Assessment Tool. Unpublished report prepared for the U.S. Bureau of Land Management, Idaho State Office, Boise, ID.

Stoner, L. L. (2009). GIS analyses for the 2009 status review of slickspot peppergrass (Lepidium papilliferum): a report for the U.S. Fish and Wildlife Service (Cooperative Agreement #144209M007). Logan, Utah: Utah State University.

Stuart, A. M., Grover, D., Nelson, T. K., & Thiesfeld, S. L. (2007). Redband trout investigations in the Crooked River Basin. In R. K. Schroeder & J. D. Hall (eds.), *Redband trout: resilience and challenge in a changing landscape*. Corvallis, OR: Oregon Chapter, American Fisheries Society.

Sullivan and Nations. (2009). *Analysis of slickspot peppergrass (Lepidium papilliferum) population trends on Orchard Training Area and rangewide implications.* Unpublished report prepared for the U.S. Fish and Wildlife Service, Idaho Fish and Wildlife Office, Boise, ID.

Swift, L. W., & Messner, J. B. (1971). Forest cuttings raise temperatures of small streams in the southern Appalachians. Reprinted: *Journal of Soil and Water Conservation*, *26*(3).

Tausch, R. J. (1999). Historic pinyon and juniper woodland development. In S. B. Monsen & R. Stevens, (eds.), *Proceedings: ecology and management of pinyon–juniper communities within the interior west* (pp. 12-19). Ogden, UT: Forest Service, Rocky Mountain Research Station.

Tiedemann, A. R., Conrad, C. E., Dieterich, J. H., Hornbeck, J. W., Megahan, W. F., Viereck, L. A., et al., Department of Agriculture, Forest Service. (1979). *Effects of fire on water* (General Technical Report WO-10). Washington, DC: Government Printing Office.

Thurow, R. F., Rieman, B. E., Lee, D. C., Howell, P. J., & Perkinson, R. D. (2007). Distribution and status of redband trout in the Interior Columbia River Basin and portions of the Klamath River and Great Basins. In R. K. Schroeder, & J. D. Hall (eds.), *Redband trout: resilience and challenge in a changing landscape* (pp. 28-46). Corvallis OR: Oregon Chapter, American Fisheries Society.

TREC, Inc. (2005). A survey for yellow-billed cuckoo in recorded historic and other likely locations in Idaho: 2005 Summary Report. Rigby, ID: TREC, Inc.

Updike, D. R., Loft, E. R., & Hall, F. A. (1990). Wildfire on big sagebrush/antelope bitterbrush range in northeastern California: implications for deer population. In E. D. McArthur, E. M. Romney, S. D. Smith, & P. T. Tueller (comps.), *Proceedings-symposium on cheatgrass invasion, shrub die-off, and other aspects of shrub biology and management* (pp. 41-46). Ogden UT: Forest Service Intermountain Research Station.

Upadhyaya, Mahesh K., Turkington, Roy, & McIlvride, Douglas. (1986). The biology of Canadian weeds. 75. Bromus tectorum L. *Canadian Journal of Plant Science. 66*, 689-709. [43172]

U.S. Department of Agriculture, Forest Service. (2001). *Sandpoint noxious weeds control final environmental impact statement.* Sandpoint, ID: Sandpoint Ranger District.

U.S. Department of Agriculture, Forest Service. (2004). *Restoring western ranges and wildlands* (General Technical Report RMRS-GTR-136). Fort Collins, CO: Rocky Mountain Research Station.

U.S. Department of Interior, Bureau of Land Management. (1995). *Interim management policy and guidelines for lands under wilderness review handbook* (H-8550-1). Washington DC: U.S. Government Printing Office.

U.S. Department of Interior, Bureau of Land Management. (1982). *Twin Falls management framework plan*. Washington DC: U.S. Government Printing Office.

U.S. Department of Interior, Bureau of Land Management. (1984). *Boise District Oregon Trail management plan*. Boise, ID: Boise District Office.

U.S. Department of Interior, Bureau of Land Management. (1985). *Monument resource management plan*. Washington DC: U.S. Government Printing Office.

U.S. Department of Interior, Bureau of Land Management. (1985). *Cassia resource management plan*. Washington DC: U.S. Government Printing Office.

U.S. Department of Interior, Bureau of Land Management. (1987). *Jarbidge resource management plan*. Washington DC: U.S. Government Printing Office.

U.S. Department of Interior, Bureau of Land Management. (1988). *Sand Point natural history resource management plan*. Boise, ID: Boise District Office.

U.S. Department of Interior, Bureau of Land Management. (1991). *Sun Valley management framework plan amendment*. Washington DC: U.S. Government Printing Office.

U.S. Department of Interior, Bureau of Land Management. (1995). *Mountain sheep ecosystem management strategy in the 11 western states and Alaska*. Washington DC: U.S. Government Printing Office.

U.S. Department of Interior, Bureau of Land Management. (1997). *Idaho standards for rangeland health and guidelines for livestock management*. Boise, ID: Idaho State Office.

U.S. Department of Interior, Bureau of Land Management. (2001). *Ecological site inventory*. Technical Reference 1734-7. Washington DC: U.S. Government Printing Office.

U.S. Department of Interior, Bureau of Land Management & U.S. Department of Interior, National Park Service. (2006). Craters of the Moon National Monument and Preserve management plan. Washington DC: U.S. Government Printing Office.

U.S. Department of Interior, Bureau of Land Management. (2007a). *Burned area emergency stabilization and rehabilitation handbook* (H-1742-1). Washington DC: U.S. Government Printing Office.

U.S. Department of Interior, Bureau of Land Management. (2007b). V*egetation treatments using herbicides final programmatic environmental impact statement*. Washington DC: U.S. Government Printing Office.

U.S. Department of Interior, Bureau of Land Management & Shoshone-Paiute Tribes. (2007). Communication protocol for tribal consultation meetings. Boise, ID: Idaho State Office.

U.S. Department of Interior, Bureau of Land Management. (2008). *Guidance for Developing Aquatic Conservation Strategies for BLM Resource Management Plans in the Interior Columbia Basin*. Boise, ID: Idaho State Office.

U.S. Department of Interior, Bureau of Land Management. (2008a). *Biological assessment for existing land use plans*. Boise, ID: Idaho State Office.

U.S. Department of Interior, Bureau of Land Management. (2008b). *Fire, fuels, and related vegetation management direction plan amendment*. Twin Falls, ID: Twin Falls District Office.

U.S. Department of Interior, Bureau of Land Management. (2008c). *GIS analysis of the sage-grouse habitat planning map* (Unpublished data). Boise, ID: Idaho State Office.

U.S. Department of Interior, Bureau of Land Management. (2009). Biological assessment for slickspot peppergrass (Lepidium papilliferum): Jarbidge and Four Rivers field offices, land use plans and ongoing actions. Twin Falls, ID: Twin Falls District Office.

U.S. Department of Interior, Bureau of Land Management & U.S. Department of Interior, Fish and Wildlife Service. (2009). *Conservation agreement between BLM and USFWS for slickspot peppergrass.* Boise, ID: Idaho State Office and U.S. Fish and Wildlife Service, Idaho Fish and Wildlife Office.

U.S. Department of Interior, Bureau of Land Management. (2010a). TFD Annual Riparian-Wetland Report. Unpublished Data. Idaho Bureau of Land Management Twin Falls District.

U.S. Department of Interior, Bureau of Land Management. (2010b). Sage-grouse Habitat Planning Map. Unpublished Data. Idaho Bureau of Land Management State Office.

U.S. Department of Interior, Fish and Wildlife Service. (1995). *Snake River aquatic species recovery plan.* Boise, ID: Fish and Wildlife Service, Idaho Fish and Wildlife Office.

U.S. Department of Interior, Fish and Wildlife Service. (2003). *Species profile, Columbia spotted frog*. Retrieved August 6, 2009. from http://ecos.fws.gov/speciesProfile.

U.S. Department of Interior, Fish and Wildlife Service. (2007). *Bruneau Hot springsnail 5-year review and evaluation*. Boise, ID: Fish and Wildlife Service, Idaho Fish and Wildlife Office.

U.S. Department of Interior, Fish and Wildlife Service. (2008). *Bull trout 5-year review and evaluation*. Portland, OR: Fish and Wildlife Service, Oregon Fish and Wildlife Office.

U.S. Department of Interior, Fish and Wildlife Service. (2008). *Biological opinion for existing land use plans.* Boise, ID: Fish and Wildlife Service, Idaho Fish and Wildlife Office.

U.S. Department of Interior, Fish and Wildlife Service. (2009). Biological opinion for existing land use plans in the Boise and Twin Falls districts related to slickspot peppergrass conservation. Boise, ID: Fish and Wildlife Service, Idaho Fish and Wildlife Office.

U.S. Department of Interior, Fish and Wildlife Service. (2009). USFWS Pacific Region Eagles and Activities. Retrieved July 11, 2012. from http://www.fws.gov/pacific/eagle/otheractivity.html.

Van Haveren, B. P., U.S. Department of Interior, Bureau of Land Management. (2003). *Watershed protection on sagebrush steppe: characteristics and importance of litter cover* (BLM-NSTC Resource Note No. 64). Denver, CO: National Science and Technology Center.

Wallace, R. L., Griffith, J. S., Connolly, P. J., Daley, D. M., & Beckham, G. B. (1982). *Distribution, relative abundance, life history and habitat preferences of Shoshone sculpin (*Report to Fish & Wildlife Service). Boise, ID.

Weiss, N. T., & Verts, B. J. (1984). Habitat and distribution of pygmy rabbits (*Sylvilagus idahoensis*) in Oregon. *Great Basin Naturalist*, *44*(4), 563-571.

Wells, C. G., Campbell, R. E., DeBano, L. F., Lewis, C. E., Franklin, E. C., Froelich, R. C. et al., U.S. Department of Agriculture, Forest Service. (1979). *Effects of fire on soil* (General Technical Report WO-1, pp. 1–34). Washington, DC: Government Printing Office.

West, N. E., & Hassan, M. A. (1985). Recovery of sagebrush-grass vegetation following wildfire. *Journal of Range Management*, *38*(2), 131-134.

Whisenant, S. G., U.S. Department of Agriculture, Forest Service. (1990). *Changing fire frequencies on Idaho's Snake River plains: ecological and management implication* (General Technical Report INT-276, 4–10). Ogden, UT: Intermountain Research Station.

Wright, H. A., & Bailey, A. W. (1982). *Fire ecology-United States and southern Canada*. New York, NY: John Wiley and Sons, Inc.

Wydoski, R. S., & Whitney, R. R. (2003). *Inland fishes of Washington* (2nd ed.) Seattle, WA: American Fisheries Society and University of Washington Press.

Yoakum, J. D. (1978). Managing rangelands for the American pronghorn antelope. In *Proceedings, 8th biennial pronghorn antelope workshop* (pp. 321-336). Jasper/Edmonton, AB: Alberta Recreation, Parks, and Wildlife, Fish and Wildlife Division.

Yoakum, J. D. (1990). Food habits of the pronghorn. *Proceedings of the biennial pronghorn antelope workshop*, *14* (pp. 102-111).

Young, J. A., Evans, R. A., & Eckert, R. E. (1969). Population dynamics of downy brome. *Weed Science, 17*, 20–26.

Young, J. A., & Evans, R. A. (1978). Population dynamics after wildfires in sagebrush grasslands. *Journal of Range Management*, *31*, 283–289.

Young, J. A., & Evans, R. A. (1989). Dispersal and germination of big sagebrush (*Artemisia tridentata*) seeds. *Weed Science, 37*, 201-206.

Young, J. A., Evans, R. A., & Palmquist, D. E. (1989). Big sagebrush (*Artemisia tridentata*) seed production. *Weed Science*, *37*, 47-53.

Zaroban, D. (2008). Distribution, habitat use, ranging behavior, and disturbances influencing the Wood River sculpin. Department of Environmental Quality, Boise, Idaho.

Zouhar, K., U.S. Department of Agriculture, Forest Service. (2003). *Bromus tectorum*. Fire Effects Information System. Retrieved from http://www.fs.fed.us/database/feis/.

APPENDIX 1: PLANT SPECIES SEED LIST AND GUIDANCE FOR SELECTING PLANT MATERIALS

Plant species for use in ESR seed mixes within the Twin Falls District are identified for four geographical areas: 1) low elevation areas (8 – 10 inch ppt.), 2) Big Desert (10 – 12 inch ppt.), 3) mid elevation (>12 inch ppt.), and 4) juniper sites (>11 inch ppt.). Refer to Table 1a for plant species and varieties.

ESR seed mixes for these geographical areas were identified because these areas are located where most ESR activities occur in the Twin Falls District. Plant species and varieties are chosen for a seed mix based on their adaptability to the geographical areas. Species not currently listed on Table 1a can be used in ESR seed mixes with field office management concurrence. Rationale for seed mixes (i.e. plant species and seed rates) will be provided in the ESR plans.

The following list identifies the plant species that would generally be used in the development of seed mixes in each of the four designated areas.

Low Elevation

Grasses: Snake River Wheatgrass, Bluebunch Wheatgrass, Tall Wheatgrass, Siberian Wheatgrass, Bluegrasses, Indian Ricegrass, Bottlebrush Squirreltail, Basin Wildrye, Russian Wildrye, Crested Wheatgrass

Forbs: Lewis Flax, Globemallow, Sainfoin

Shrubs: Big Sagebrush, Four-winged Saltbush

Big Desert (i.e. Wildhorse/Minidoka)

Grasses: Snake River Wheatgrass, Bluebunch Wheatgrass, Bluegrasses, Basin Wildrye, Bottlebrush Squirreltail, Indian Ricegrass, Siberian Wheatgrass, Tall Wheatgrass, Crested Wheatgrass

Forbs: Sainfoin, Dark Blue Penstemon, Globemallow

Shrubs: Antelope Bitterbrush, Big Sagebrush

Mid Elevation

Grasses: Bluebunch Wheatgrass, Bluegrasses, Basin Wildrye, Bottlebrush Squirreltail, Siberian Wheatgrass, Tall Wheatgrass

Forbs: Western Yarrow, Palmer Penstemon, Sainfoin, Utah Sweetvetch

Shrubs: Antelope Bitterbrush, Black Sagebrush, Low Sagebrush

Juniper Sites

Grasses: Snake River Wheatgrass, Bluebunch Wheatgrass, Bluegrasses, Basin Wildrye, Russian Wildrye, Tall Wheatgrass, Siberian Wheatgrass, Indian Ricegrass, Bottlebrush Squirreltail, Crested Wheatgrass

Shrubs: Antelope Bitterbrush, Big Sagebrush, Black Sagebrush, Low Sagebrush

Due to the variability in environmental conditions, wildfire intensity, and seeding methods (i.e. drill, aerial), seed rates are not specifically identified, but a range of drill rates for individual plant species is shown in Table 1a. Aerial grass seeding rates will generally be 25-50% higher than the drill seed rates. For a typical juniper burn where masticating or chaining is identified in the ESR plan, the amount of grass seed applied should approximately double the drill rates. Specific application methods are guided by the District's PESRP and specifically identified in the individual ESR plans.

The plant species identified for use in ESR seed mixtures are chosen on their ability to adapt to the geographic areas in the Great Basin and proven success in past ESR efforts in the Twin Falls District. Non-native species are included for their known ability to out-compete weedy invasive plants. The need to plant more diverse seed mixtures (including other native species than those listed above), particularly in areas having specific resource needs or higher values (i.e. important sage grouse nesting/brood rearing habitats) is preferred.

As more desirable species and new varieties become available and/or are more economical, the plant species identified in Table 1a will be revisited and adjusted accordingly. Opportunities to experiment with new varieties should be implemented at a smaller scale and on a limited basis to determine whether they might be suitable for more widespread use throughout the District. ESR monitoring results will be used to identify or modify seed selection in future efforts.

Seed mixtures for those burned areas/sites that do not fall within the four designations or are atypical would be developed on a case-by-case basis, following protocols described in the District PESRP.

Table 1a. Drill Seed Mix Rates by Species.

Common Name	Species/Variety	Seeds/Lb	Typical Seeding Rate-Lbs/Acre/PLS	Comments
Grasses				
Bluebunch Wheatgrass	Whitmar, Goldar, P7, Anatone	140,000	2-6	When mixed with non-natives and native species are emphasized, limit the non-native species to <2 lbs./acre.
Snake River Wheatgrass	Secar, Discovery	170,000	1-3	Generally mixed with other natives or non-natives such as Siberian wheatgrass.
Siberian Wheatgrass	P-27, Vavilov, Vavilov II	220,000	2-5	Seeding rates for sole use or with other non-natives, or when natives are not emphasized.
Crested Wheatgrass	Nordan, Hycrest, Hycrest II, Fairway, Roadcrest	200,000	2-6	Seeding rates for sole use or with other non-natives, or when natives are not emphasized.
Tall Wheatgrass	Alkar	80,000	0.25-1.0	Use at lower rate when mixed with Basin Wildrye. Use higher when mixed alone.
Basin Wildrye	Trailhead, Magnar, Continental	150,000	0.25-1.0	N/A
Russian Wildrye	Bozoisky, Bozoisky II	175,000	0.25-1.0	N/A
Big Bluegrass	Sherman	917,000	0.2-0.3	Small seed
Canby Bluegrass	Canbar	930,000	0.2-0.3	Small seed
Sandberg Bluegrass	Reliable, Mountain Home	950,000	0.2-0.3	Small Seed
Bottlebrush Squirreltail	Fish Creek, Rattlesnake, Toe Jam Creek	220,000	1.0-3.0	N/A
Big Squirreltail	Sand Hollow	220,000	1.0-3.0	N/A
Indian Ricegrass	Rimrock, Nezpar	205,000	1.0-3.0	N/A
Forbs				
Sainfoin	Eski	28,000	2.0	Large seed
Lewis Flax	Maple Grove	420,000	0.1-0.2	N/A
Blue Flax	Appar	295,000	0.1-0.2	N/A
Palmer Penstemon	Cedar	600,000	0.1	N/A
Dark Blue Penstemon	N/A	600,000	0.1	N/A
Western Yarrow	Eagle	2,700,000	0.1	Broadcast seed
Globemallow	Scarlett, Munroe, Gooseberry Leaf	500,000	0.1	N/A
Utah Sweetvetch	Timp	90,000	0.5 – 1.0	N/A

Common Name	Species/Variety	Seeds/Lb	Typical Seeding Rate-Lbs/Acre/PLS	Comments
Shrubs				
Antelope Bitterbrush	N/A	15,000	0.5-1.0	Should drill seed in separate box
Big Sagebrush	Wyoming, Basin, Mountain	2,500,000	0.5-1.0	Bulk rate
Four-Wing Saltbush	N/A	55,000	0.5-1.0	
Black Sagebrush	N/A	900,000	0.5-1.0	Bulk rate
Low Sagebrush	N/A	980,000	0.5-1.0	Bulk rate

APPENDIX 2: DESIGN FEATURES

Table 2a: Sensitive Resource and Design Features.

Resource	Design Features
Soils	Where practical, minimum tillage or no tillage would be used on soils with high to very high wind erosion susceptibility. Wet soils at field capacity would be minimally disturbed. Drill rows and all seed covering projects would run along the contours of the land, where possible, to reduce erosion.
Slickspot Peppergrass	All wildfires within slickspot peppergrass habitat would be evaluated for ESR treatments, regardless of size. (Appendix A, Conservation Agreement for Idaho Bureau of Land Management Existing Land Use Plans and On-going Actions Affecting Slickspot Peppergrass, 2009, p. 84.) BLM will avoid or minimize activities that could be ground disturbing within element occurrences when soils are saturated and/or when slickspot peppergrass is flowering. As needed, protect disturbed and recovering areas using temporary closures or other measures. BLM will continue to rest areas from land use activities to meet post-fire recovery monitoring objectives, defined through the site-specific ESR plans. BLM will initiate and complete ESR efforts for slickspot peppergrass (e.g. planting shrubs and forbs) within slickspot peppergrass habitat. BLM will use seeding techniques that minimize soil disturbance, such as no-till drills and rangeland drills equipped with depth bands, in areas where ESR projects may impact potential and occupied slickspot peppergrass habitat. BLM will use native plant materials and seed during ESR activities, including native forbs that benefit slickspot peppergrass insect pollinators. If native plant materials and seed are not available, non-invasive, non-native species may be used for stabilization activities in slickspot peppergrass habitat. In areas adjacent to slickspot peppergrass habitat, if natives are not available, non-invasive, non-native species are acceptable for stabilization activities. Potentially invasive non-native plant materials such as prostrate kochia may be used as a last resort for stabilization activities in areas adjacent to slickspot peppergrass habitat provided the benefits of their use are demonstrated to outweigh the risks to slickspot peppergrass and its habitat. Aerial application of herbicides in areas that are un-surveyed or inadequately surveyed, or seeding of potentially invasive non-native species such as prostrate kochia within the known range of slickspot peppergrass would require additional site-specific ESA Section 7 conferencing.

Resource	Design Features
Slickspot Peppergrass	Site-specific stipulations for pesticide application would be developed locally using the following criteria: Evaluate the benefits and risks of vegetation treatment including the following: application methods; pesticides, carriers, and surfactants used; needed treatment buffers; and use of non-chemical weed control (e.g., bio-controls, hand pulling). Apply appropriate spatial and temporal buffers to avoid exposure of slickspot peppergrass to harmful chemicals. Explore opportunities to eradicate competing non-native invasive plants in occupied habitat where slickspots are being invaded by such plants. Implement appropriate revegetation and weed control measures to reduce the risks of non-native invasive plant infestations following ground/soil-disturbing actions in slickspot peppergrass habitat. Avoid pesticide contact with slickspot peppergrass plants or insect pollinators near element occurrences. Projects proposed in areas with known threatened or endangered plants would give full consideration to protecting these species, including fencing if necessary. If a proposed action is predicted, through a NEPA analysis, to have an adverse effect on threatened or endangered plants, the action would either be foregone or redesigned to eliminate such adverse effects. Herbicide application within slickspot peppergrass element occurrence boundaries would be done only with hand sprayers. A 10-foot no-herbicide treatment buffer would be established around slickspots located in element occurrences. Weeds would be treated by hand within the buffer zone. Ground-based herbicide application within management area boundaries using large droplet spray only, with reduced pump pressure, and spot spraying techniques to prevent drift of herbicide into slickspot peppergrass habitat. No persistent herbicides would be used for noxious weed treatments within 150 feet of slickspot peppergrass element occurrences.
Goose Creek Milkvetch	Ground-disturbing activities would not be accomplished, unless it is clearly beneficial for Goose Creek milkvetch. Only aerial seedings or hand plantings would occur in Goose Creek milkvetch habitat. Potentially invasive non-native plant materials would not be used in Goose Creek milkvetch habitat. Only hand treatment methods would be used to control invasive plants or noxious weeds in occupied Goose Creek milkvetch habitat.

Resource	Design Features
Type 2 and 3 Special Status Plants	Requirements of individual BLM sensitive plants would be considered when designing ground-disturbing activities in BLM sensitive plant habitats. Potentially invasive non-native plant materials would not be used in BLM sensitive plant habitats unless native plant materials are unavailable or they are needed to stabilize a site. Seeding within occupied habitat would not be done, unless it is clearly beneficial for the BLM sensitive plants occupying the site. Only aerial seeding or hand plantings would occur in Idaho penstemon habitat. No seeding would occur in playas occupied by Davis peppergrass. The needs of BLM sensitive plants would be considered when selecting herbicides and application methods. Non-herbicide treatment is preferred over those that use herbicides. Only hand treatment methods would be used to control invasive plants or noxious weeds in occupied Idaho Penstemon and Davis peppergrass habitats. The treatment of invasive annual plants and noxious weeds would be a priority in BLM sensitive plant habitats. Emphasis would be on hand spot spraying and mechanical control in order to avoid or minimize risk to BLM sensitive plants. No chemical would be applied directly on BLM sensitive plants during spot applications. Projects proposed in areas with sensitive plants would give full consideration to protecting these species, including fencing if necessary. If a proposed action is predicted, through a NEPA analysis, to have an adverse effect on sensitive plants, the action would either be foregone or redesigned to eliminate such adverse effects.
Special Status Wildlife	Where federally threatened, endangered, proposed, or candidate species and their designated or proposed critical habitat occur, seed mixtures would be chosen that comply with the BLM Biological Assessment and concurrence letter received from the FWS on this environmental assessment. Seed mixtures would be formulated to benefit wildlife and special status species habitats as appropriate.
All Riparian, Wetland, and Aquatic Habitats	Activities occurring in riparian areas, riparian conservation areas, wetlands, and aquatic habitats will be implemented in a manner that promotes the attainment of proper functioning condition. Limit the use of heavy equipment to actions necessary to repair facilities (e.g. culverts and bridges) or where needed to implement erosion control treatments (e.g. gabion placement). Areas with saturated soils or wetland vegetation would not be used as helicopter service landings, for equipment fueling, or storage of fuel or other petroleum products. Off-highway vehicle use for treatments such as herbicides use in riparian areas would be limited to non-ground disturbing actions and to designated water crossings or work areas. Fence construction would be strategically located to avoid concentration of livestock and/or wild horses in unburned riparian habitats.

Resource	Design Features
All Riparian, Wetland, and Aquatic Habitats	Riparian trees, shrubs, or herbaceous plant species would be planted as needed to prevent impairment of riparian and aquatic habitats for special status species, protect stream banks, and help to minimize threats to water quality.
Listed Snake River snails, Bruneau Hot springsnail, Jarbidge River bull trout, Columbia spotted frog, Redband trout, Snake River white sturgeon, Wood River sculpin, Yellowstone cutthroat, Shoshone sculpin	Ground-disturbing activities other than tree and shrub planting would not occur within 300 feet of all water bodies and springs containing Snake River snails, Bruneau hot springsnail, Columbia spotted frog, or bull trout or their designated critical habitat. Walking or disturbances to Bruneau hot springsnail habitat will be avoided when planting riparian plant species adjacent to Bruneau hot springsnail habitat. Aerial seeding within riparian conservation areas or aquatic habitats containing ESA-listed Snake River snails, Bruneau hot springsnail, bull trout or their designated critical habitat, Columbia spotted frog, redband trout, Snake River white sturgeon, Wood River sculpin, Yellowstone cutthroat, or Shoshone sculpin will be limited to seed mixtures with no added chemicals such as fertilizer. Hydro-mulch will not be used within riparian conservation areas and aquatic habitats containing ESA-listed Snake River snails, Bruneau hot springsnail, bull trout or their designated critical habitat, Columbia spotted frog, redband trout, Snake River white sturgeon, Wood River sculpin, Yellowstone cutthroat, or Shoshone sculpin. Helicopter service landings, fuel trucks, and fueling or storage of fuel would not occur within 300 feet of live waters containing ESA-listed Snake River snails, Bruneau hot springsnail, bull trout or their critical habitat, or Columbia spotted frogs, redband trout, Snake River white sturgeon, Wood River sculpin, Yellowstone cutthroat, and Shoshone sculpin Section 7 consultation is required on any in-stream activities that may occur in areas known or suspected of supporting ESA-listed Snake River snails, Bruneau hot springsnail, bull trout or their critical habitat, or Columbia spotted frogs and in drainages that flow directly into waterways upstream of sites that have these species. Fine mesh screens (i.e. 3/32 inch) around foot valves will be used when drafting water from salmonid streams for ESR treatments. Pumps used for drafting water from streams must have containment or other protective measures to ensure petroleum products do not directly or indirectly affect water quality. Preventative procedures would be used to ensure that aquatic nuisance species are not spread through the implementation of ESR actions. Prior to use for Bureau-administered activities, all equipment to be used instream (i.e. during culvert repair or replacement) will be thoroughly rinsed to remove mud and debris and disinfected with a chloride solution (one part bleach to 32 parts water, or stronger) or other FWS approved disinfectant. Rinsing the equipment with disinfectant solutions will not occur within 100 feet of natural water sources (streams or springs).

Resource	Design Features
Listed Snake River snails, Bruneau Hot springsnail, Jarbidge River bull trout, Columbia spotted frog, Redband trout, Snake River white sturgeon, Wood River sculpin, Yellowstone cutthroat, Shoshone sculpin	*Streamside, Riparian, and Wetland Herbicide Use Restrictions:* Maximum wind speed for aerial herbicide applications is 5 miles per hour for the following: • Aerial applications of herbicides would not occur within 0.5 mile of riparian conservation areas containing ESA-listed Snake River snails, Brunuau hot springsnail, bull trout or their designated critical habitat, or Columbia spotted frog. • Aerial herbicide applications must be >0.5 mile away from riparian conservation areas and aquatic habitats containing ESA-listed Snake River snails, Bruneau hot springsnail, bull trout and their designated critical habitat, and Columbia spotted frog. • Aerial herbicide applications must be >150 feet from the outer edge of riparian areas associated with perennial water (includes both fish bearing and non-fish bearing streams) that contain or are upstream of redband trout, Snake River white sturgeon, Wood River sculpin, Yellowstone cutthroat, and Shoshone sculpin, and other special status aquatic species. • Aerial herbicide applications must be >150 feet from the outer edge riparian areas for intermittent streams that are upstream of reaches containing redband trout, Snake River white sturgeon, Wood River sculpin, Yellowstone cutthroat, and Shoshone sculpin, and other special status aquatic species. Maximum wind speed for ground/broadcast spraying methods is 8 miles per hour for the following: • Herbicide methods used within 0.5 mile of riparian conservation areas containing ESA-listed Snake River snails, Bruneau hot springsnail, bull trout or their designated critical habitat, or Columbia spotted frog will be ground-based spot treatments of noxious weeds. • Broadcast boom spraying will be > 100 feet from live waters or shallow water tables or riparian conservation areas containing ESA-listed Snake River snails, Bruneau hot springsnail, bull trout or their designated critical habitat, or Columbia spotted frog. The following applies when conducting ground/broadcast spraying methods near or in riparian conservation areas and aquatic habitats containing ESA-listed Snake River snails, Bruneau hot springsnail, bull trout or their critical habitat, Columbia spotted frog, redband trout, Snake River white sturgeon, Wood River sculpin, Yellowstone cutthroat, Shoshone sculpin, or other BLM special status species: • Maximum wind speed is 8 miles per hour for ground broadcast spraying methods that are >100 feet from live waters in upland areas where such applications may influence perennial waters, riparian conservation areas, and aquatic habitats. • Selective treatment target species using ground/spot spraying, wicking, wiping, dipping, painting, or injecting can occur >15 feet from live waters or shallow water tables, or within riparian conservation areas and aquatic habitats containing special status species. When conducting these methods, maximum wind speed will not exceed 8 miles per hour.

Resource	Design Features
Listed Snake River snails, Bruneau Hot springsnail, Jarbidge River bull trout, Columbia spotted frog, Redband trout, Snake River white sturgeon, Wood River sculpin, Yellowstone cutthroat, Shoshone sculpin	• Selective treatment of target species using a backpack sprayer, hand sprayer, wicking, wiping, dipping, painting, or injecting can occur > 10 feet from live water or shallow water tables when wind speed is 5 miles per hour or less, aquatic approved herbicides are used, and use of surfactants are not authorized. Neither surfactant R-900 nor Picloram will be authorized for use within or adjacent to riparian conservation areas or aquatic habitats containing ESA-listed snails, Bruneau hot springsnail, bull trout or their designated critical habitat, Columbia spotted frog, redband trout, Snake River white sturgeon, Wood River Sculpin, Yellowstone cutthroat, Shoshone sculpin, or other BLM special status species. Avoid using the adjuvant R-11 in riparian conservation areas or aquatic habitats containing ESA-listed snails, Bruneau hot springsnail, bull trout or their designated critical habitat, Columbia spotted frog, redband trout, Snake River white sturgeon, Wood River sculpin, Yellowstone cutthroat, Shoshone sculpin, or other BLM special status species. Off-highway vehicle use for herbicide application in riparian conservation areas and aquatic habitats containing special status species would be limited to non-ground disturbing actions and to designated water crossings or work areas.
Yellow-billed Cuckoo	When developing vegetation treatment projects, no ground-based application of herbicides would occur from May 1 to August 31 within 200 feet of occupied yellow-billed cuckoo habitat. Aerial application of chemicals would not occur from May 1 to August 31 within 0.5-mile of occupied yellow-billed cuckoo habitat.
Sage-grouse	The Idaho Sage-grouse Preliminary Priority and Preliminary General Habitat maps (BLM, April 2012) or subsequently approved BLM planning map would be used when developing ESR activities that benefit sage-grouse and other sagebrush obligate species. When repairing existing fences where repeated sage-grouse collisions have been documented, marking or flagging of the fence would be done. Fences would not be constructed within 400 yards of an occupied sage-grouse lek. If sage-grouse collisions are possible due to fence placement, marking or flagging would be done. ESR treatments within 0.6 mile of occupied sage-grouse leks that results in or could likely result in disturbance to lekking birds would be avoided from approximately 6:00 pm to 9:00 am. This guideline would apply from March 15 through May 1 in lower elevation habitats and March 25 through May 15 in higher elevation habitats.

Resource	Design Features
Sage-grouse	Treatments in areas supporting sage-grouse nesting habitat would be limited from April 30 through June 15. Treatments in close proximity to sage-grouse wintering habitats would be limited from December 1 through March 1. Standing dead juniper trees that are potential raptor perches may be felled as needed to protect pygmy rabbits and sage-grouse from excessive predation. Fences would also be placed to avoid areas of high collision risk for sage-grouse, using the Collision Risk model (Stevens et al., in press) or as new science dictates.
Gray Wolf	ESR activities within 1 mile of an active gray wolf den or rendezvous site will be avoided from April 15 through June 30.

Resource	Design Features
Migratory Birds	Western burrowing owl nest sites would be avoided or would not be treated. Active long-billed curlew and burrowing owl nests would be avoided from treatment from April 1 and June 30. Aerial seeding treatments within 1000 feet of active bald and golden eagle nests would be avoided between January 1 and January 31. Aerial seeding treatments and aerial application of herbicides will be avoided within 0.5 mile to one mile of active American bald eagle and golden eagle nests during February 1 through August 15. Avoidance distances would be determined on the amount of screening provided by vegetation or topographic features. Aerial seeding treatments and aerial application of herbicides within 0.5 mile of bald eagle winter concentration sites during November 1 through March 1 will be avoided. On-the-ground ESR treatments will be avoided within 0.5 mile to one mile of an active American bald eagle nest during January 1 through August 15. Avoidance distances would be determined on the amount of screening provided by vegetation or topographic features. On-the-ground ESR treatments will not occur within 0.75 mile of an occupied golden eagle nest from February 1 through July 31. On-the-ground ESR treatments would be avoided within 0.5 mile of direct line of sight or within 0.25 mile of bald eagle winter concentration sites during the winter roosting season (November 1 through March 1). If treatments are necessary to meet ESR objectives outside of temporal and spatial restrictions for bald or golden eagles, the BLM may apply for a Non-Purposeful Take Permit from the FWS. The BLM will not conduct such treatments until a permit is acquired. From February 1 through August 15, restrictions may be imposed on restoration treatments in areas supporting nesting raptors. Restrict activity within visual range or 0.75-mile radius of known ferruginous hawk nest sites from March 1 to July 15.
Other Wildlife Species of Concern	Treatments in California bighorn sheep habitat would follow the Mountain Sheep Ecosystem Management Strategy in the 11 Western States and Alaska. Stabilization projects and seeding treatments would not occur in Idaho Dunes Tiger beetle habitat (i.e. sand dunes). ESR treatments within 0.6 mile of occupied Columbian sharp-tail grouse leks that results in or could likely result in disturbance to lekking birds would be avoided from approximately 6:00 pm to 9:00 am. This guideline would be applied from March 15 through May 1 in lower elevation habitats and March 25 through May 15 in higher elevation habitats.

Resource	Design Features
Wilderness	ESR treatments and design features in the Bruneau-Jarbidge Rivers Wilderness will be consistent with management direction defined in the enabling legislation, Bureau policy, and the Owyhee Canyonlands Wilderness and Wild and Scenic Rivers Management Plan. A Minimum Requirements Decision (MRD) worksheet would be prepared for all proposed ESR treatments in wilderness.
Wilderness Study Areas	ESR treatments and design features in wilderness study areas would be consistent with BLM Manual 6330 – Management of Wilderness Study Areas – and would meet requirements for non-impairment for wilderness suitability.
National Historic Trails	Historic trails adjacent to proposed treatment areas would be marked and monitored by a cultural resource specialist to ensure intact ruts are not disturbed. Vegetation treatments should focus on maintaining or improving the visual setting of the Oregon NHT to the extent practicable. Surface-disturbing activities should be kept to the minimum necessary within a 330-foot distance from the trail. Utilize broadcast seeding, chains, or harrows if a feasible alternative to rangeland drills, or a combination of methods with drills that reduce the appearance of drill rows. Mechanized equipment (both wheeled and tracked) would not be used on the Oregon Trail. Seeding along the Oregon Trail would be done using native plant species and broadcasting methods. Visual Resource Management guidelines and specifications of the Oregon Trail and other scenic values would be protected within a 0.25-mile corridor on either side of the Oregon Trail.

Resource	Design Features
Craters of the Moon National Monument	Use of native plants would be emphasized in rehabilitation and restoration projects, and only native plants would be used for rehabilitation or restoration projects within the Pristine Zone. Integrated noxious weed management principles would be used to: 1) detect and eradicate all new infestations of noxious weeds; 2) control existing infestations; and 3) prevent the establishment and spread of noxious weeds within and adjacent to the planning area. Plant materials used in vegetation treatments would be predominately native. However, non-native species may be used in vegetation treatments in the BLM portion of the Monument on harsh or degraded sites where they are needed to structurally mimic the natural plant community and prevent soil loss and invasion by invasive plants and noxious weeds. The species used would be those that have the highest probability of establishment on these sites without invading surrounding areas. These "placeholders" would maintain the area for future native restoration. Native seed would be used more frequently and at larger scales as species adapted to the local area become available. Crucial big game winter range – limit activities from November 15 through April 30. Treatments occurring on crucial winter range would be coordinated with the IDFG. Elk calving area – limit activities from May 15 through June 30. Treatments occurring in elk calving areas would be coordinated with IDFG. Pronghorn and mule deer fawning ground – Treatments occurring in fawning areas would be coordinated with IDFG with limited activities occurring from May 15 through June 30.
Areas of Critical Environmental Concern	Areas of critical environmental concern burned in a wildfire would be treated to protect the values for which the area was established and treatment would be in conformance with applicable management direction contained in the following land use plans and activity plans: Jarbidge Resource Management Plan, 1987; Sun Valley Management Framework Plan Amendment, 1991; Amendments to Shoshone Field Office Land Use Plans, 2003; Cassia Resource Management Plan Amendment, 1987; Twin Falls Management Framework Plan Amendment, 1989; Sand Point Natural History Resource Management Plan, 1988.
Cultural	A cultural resource inventory and consultation with the State Historic Preservation Officer w be completed (Section 106 of the National Historic Preservation Act) according to the National Programmatic Agreement. Cultural resource sites identified during the inventory will be recorded, marked, and avoided during treatment implementation. Law enforcement patrols may be used to protect cultural resources from unauthorized human activities.

APPENDIX 3: SPECIAL STATUS SPECIES LIST

Definitions of Special Status Species:

Type 1, Threatened, Endangered, Proposed, and Candidate Species

These species are listed by the U.S. Fish and Wildlife Service as threatened or endangered, or they are proposed or candidates for listing under the ESA.

Type 2, Rangewide/Globally Imperiled Species

These are species that have a high likelihood of being listed in the foreseeable future due to their global rarity and significant endangerment factors.

Type 3, Regional/State Imperiled Species

These are species that are globally rare with moderate endangerment factors. Their global rarity and inherent risks associated with rarity make them imperiled species.

Type 4, Peripheral Species in Idaho

These are species that are generally rare in Idaho with small populations or localized distribution and currently have low threat levels. However, due to the small populations and habitat area, certain future land uses in close proximity could significantly jeopardize these species.

Type 5, Watch List

Watch list species are not considered BLM sensitive species and associated BLM sensitive species policy guidance does not apply. Watch list species include species that may be added to the sensitive species list depending on new information concerning threats and species biology or statewide trends.

NOTE: The following lists are dynamic, and the conservation status for individual species may be updated.

Table 3a. Special Status Plant Species (2011 List).

Scientific Name	Common Name	Status*	JFO	BFO	SFO
Plants					
Lepidium papilliferum	Slickspot peppergrass	Type 1 (Proposed)	X		
Astragalus anserinus	Goose Creek milkvetch	Type 1 (Candidate)		X	
Phacelia inconspicua	Obscure phacelia	Type 2			X
Phacelia minutissama	Least phacelia	Type 2			X
Stanleya confertiflora	Malheur princesplume	Type 2			X
Astragalus oniciformis	Picabo milkvetch	Type 3			X

Scientific Name	Common Name	Status*	JFO	BFO	SFO
Astragalus yoder-williamsii	Mudflat milkvetch	Type 3	X		
Cleomella plocasperma	Twisted/Alkali cleomella	Type 3	X		
Cymopterus acaulis, var. *greeleyorum*	Greeley's wavewing	Type 3	X		
Epipactus gigantean	Chatterbox orchid	Type 3	X	X	X
Haplopappus insecticruris	Bug-leg goldenweed	Type 3			X
Ipomopsis polycladon	Spreading gilia	Type 3	X		
Lepidium davisii	Davis' peppergrass	Type 3	X	X	
Linanthus glabrum	Bruneau River phlox	Type 3	X		
Penstemon idahoensis	Idaho penstemon	Type 3		X	
Penstemon janishiae	Janish's penstemon	Type 3	X		
Sporobolus compositus var. compositus	Tall dropseed	Type 3			X
Townsendia scapigera	Scapose townsendia	Type 3		X	
Allium anceps	Two-headed onion	Type 4	X	X	
Astragalus astratus var. *inseptus*	Mourning milkvetch	Type 4			X
Astragalus newberry var. *castoreus*	Newberry's milkvetch	Type 4	X	X	
Astragalus purshii var. *ophiogenes*	Snake River milkvetch	Type 4	X		X
Astragalus tetrapterus	Four-wing milkvetch	Type 4	X	X	
Calandrinia ciliate	Fringed redmaids	Type 4			X
Catapyrenium congestum	Earth lichen	Type 4	X		
Chaenactis stevioides	Desert pincushion	Type 4	X		
Damasonium californicum	California damasonium	Type 4	X		
Downingia bacigalupii	Bacigalupi's downingia	Type 4			X
Eatonella nivea	White false tickhead	Type 4	X		X
Eriogonum shockleyi var. *packardiae*	Packard's buckwheat	Type 4	X		
Eriogonum shockleyi var. *shockleyi*	Shockley's matted buckwheat	Type 4	X		
Glyptopleura marginata	White-margined wax plant	Type 4	X	X	
Mentzelia congesta	United blazingstar	Type 4			X
Nemacladus rigidus	Rigid threadbush	Type 4	X		
Pediocactus simpsonii	Simpson's hedgehog cactus	Type 4	X	X	X
Peteria thompsoniae	Spine-noded milkvetch	Type 4	X		
Primula cusickiana complex	Cusick's primrose	Type 4	X		X
Teucrium canadense var. *occidentale*	American wood sage	Type 4	X		
Erigeron latus	Broad fleabane	Nevada BLM Sensitive	X		
Eriogonum lewisii	Lewis buckwheat	Nevada BLM Sensitive	X		

Table 3b. Special Status Animal Species (2011).

Scientific Name	Common Name	Status	JFO	BFO	SFO
Mammals					
Canis lupus	Gray wolf	Experimental Population		X	X
Brachylagus idahoensis	Pygmy rabbit	Type 2	X	X	X
Euderma maculatum	Spotted bat	Type 3	X	X	
Plecotus townsendii	Townsend's big-eared bat	Type 3	X	X	X
Spermophilus mollis artemisae	Piute ground squirrel	Type 3		X	X
Gulo gulo luscus	Wolverine	Type 3			X
Ovis canadensis californiana	California bighorn sheep	Type 3	X	X	
Tamias dorsalis	Cliff chipmunk	Type 4		X	
Spermophilus elegans nevadensis	Wyoming ground squirrel	Type 4	X	X	
Perognathus longimembris	Little pocket mouse	Type 4		X	
Vulpes velox	Kit fox	Type 4	X	X	
Myotis yumanensis	Yuma myotis	Type 5	X	X	X
Myotis evotis	Log-eared myotis	Type 5	X	X	X
Myotis volans	Long-legged myotis	Type 5	X	X	X
Myotis ciliolabrum	Western small-footed myotis	Type 5	X	X	X
Pipistrellus hesperus	Western pipistrelle	Type 5	X	X	X
Birds					
Coccyzus americanus	Yellow-billed cuckoo	Type 1 (Candidate)	X	X	X
Centrocercus urophasianus	Greater sage-grouse	Type 1 (Candidate)	X	X	X
Pelecanus erythrorhynchos	American white pelican	Type 2	X	X	X
Cygnus buccinators	Trumpeter swan	Type 3	X		X
Falco peregrinus anatum	Peregrine falcon	Type 3	X	X	X
Falco mexicanus	Prairie falcon	Type 3	X	X	X
Accipiter gentilis	Northern goshawk	Type 3	X	X	X
Buteo regalis	Ferruginous hawk	Type 3	X	X	X
Tympanuchus phasianellus columbianus	Columbian sharp-tailed grouse	Type 3	X		X
Oreotyx pictus	Mountain quail	Type 3	X		X
Chlidonias niger	Black tern	Type 3		X	
Otus flammeolus	Flammulated owl	Type 3		X	X
Stellula calliope	Calliope hummingbird	Type 3	X	X	X
Melanerpes lewis	Lewis woodpecker	Type 3	X	X	X
Sphyrapicus throideus	Williamson's sapsucker	Type 3			X
Empidonax trailii	Willow flycatcher	Type 3	X	X	X
Empidonax hammondii	Hammond's flycatcher	Type 3		X	X
Contopus borealis	Olive-sided flycatcher	Type 3		X	X
Lanius ludovicianus	Loggerhead shrike	Type 3	X	X	X
Amphispiza belli	Sage sparrow	Type 3	X	X	X
Spizella breweri	Brewer's sparrow	Type 3	X	X	X
Plegadis chihi	White-faced ibis	Type 4	X	X	X
Vermivora virginae	Virginia's warbler	Type 4		X	
Amphispiza bilineata	Black-throated sparrow	Type 4	X	X	
Buteo swainsoni	Swainson's hawk	Type 5	X	X	X

Scientific Name	Common Name	Status	JFO	BFO	SFO
Dendragapus obsurus	Blue grouse	Type 5	X	X	X
Numenius americanus	Long-billed curlew	Type 5	X	X	X
Phalaropus tricolor	Wilson's phalarope	Type 5	X	X	X
Glaucidium gnoma	Northern pygmy-owl	Type 5		X	X
Strix nebulosa	Great gray owl	Type 5		X	X
Asio flammeus	Short-eared owl	Type 5	X	X	X
Aegolius funereus	Boreal owl	Type 5		X	X
Speotyto cunicularia	Western burrowing owl	Type 5	X	X	X
Sphyrapicus nuchalis	Red-naped sapsucker	Type 5	X	X	X
Picoides arcticus	Black-backed woodpecker	Type 5			X
Empidonax occidentalis	Cordilleran flycatcher	Type 5	X	X	X
Gymnorhinus cyanocephalus	Pinyon jay	Type 5		X	
Oreoscoptes montanus	Sage thrasher	Type 5	X	X	X
Pipilo chlorurus	Green-tailed towhee	Type 5	X	X	X
Ammodramus savannarum	Grasshopper sparrow	Type 5	X	X	X
Euphagus cyanocephalus	Brewer's blackbird	Type 5	X	X	X
Carpodacus cassinii	Cassin's finch	Type 5		X	X
Amphibians					
Rana luteiventris	Columbia spotted frog	Type 1 (Candidate)	X		
Rana pipiens	Northern leopard frog	Type 2	X	X	X
Bufo boreas	Western toad	Type 3	X	X	X
Bufo woodhousii	Woodhouse toad	Type 3	X		X
Fish					
Salvelinus confluentus	Bull trout	Type 1 (Threatened)	X		X
Oncorhynchus mykiss	Redband trout	Type 2	X	X	X
Oncorhynchus clarki	Yellowstone cutthroat	Type 2		X	
Acipencer transmontanus	White Sturgeon	Type 2	X		
Cottus greenei	Shoshone sculpin	Type 2			X
Cottus leiopomus	Wood River sculpin	Type 2			X
Cila copei	N. Leatherside chub	Type 3		X	X
Cottus confuses	Shorthead sculpin	Type 5			X
Invertebrates					
Taylorconcha serpenticola	Bliss Rapids snail	Type 1 (Threatened)	X	X	X
Lanx spp.	Banbury Springs limpet	Type 1 (Endangered)			X
Physa natricina	Snake River physa snail	Type 1 (Endangered)	X	X	X
Pyrgulopsis bruneauensis	Bruneau hot springsnail	Type 1 (Endangered)	X		
Valvata utahensis	Utah valvata snail	Type 2	X		
Fisherola nuttalli	Shortface lanx	Type 2	X	X	X
Cicindela arenicola	St. Anthony Sand Dunes tiger beetle	Type 2		X	X
Cicindela waynei waynei	Bruneau Dunes tiger beetle	Type 2	X		
Glacicavicola bathyscoides	Blind Cave leiodid beetle	Type 2		X	X

Scientific Name	Common Name	Status	JFO	BFO	SFO
Anodonta californiensis	California floater	Type 3	X	X	X
Flumincola fuscus	Columbia pebblesnail	Type 3	X		X

APPENDIX 4: SPECIAL STATUS PLANT SPECIES NOT AFFECTED BY THE PROPOSED ACTION OR NO ACTION ALTERNATIVE

Type 2 Rangewide/Globally Imperiled Species Plant Species – High Endangerment

Three BLM Type 2 sensitive plants occur within the TFD. Obscure phacelia (*Phacelia inconspicua*) is a diminuative annual plant that occurs in mountain shrub and aspen communities in the foothills of the Pioneer Mountains in Craters of the Moon National Monument. The species tends to grow on disturbed soil and probably requires low-level soil disturbance and occatsional fire (to remove overstory woody vegetation) for persistence (Murphy, 2002). The occurrence of least phacelia (*Phacelia minutissima)* within the boundary of the TFD is documented with a 1951 collection 14 miles southeast of Fairfield. Habitat for this location is documented as “moist bank of brook in shelter of sagebrush” (Moseley 1995). The description of the location places the collection on the north side of the Mount Bennett Hills on the edge of the Camas Prairie in mid-elevation sagebrush steppe. Another population is documented near Soldier Mountain. Malheur prince’s plume (*Stanleya confertiflora*) is known primarily from southeastern Oregon and adjacent Idaho in Owyhee and Washington counties. A population occurs in the TFD in Gooding County within the Little City of Rocks Wilderness Study Area. This population occurs on soil mounds areas dominated by low sagebrush on shallow clay soils overlaying basalt (Mancuso, 1997; Mancuso & Colket, 2006).

Obscure phacelia, least phacelia, and Malheur prince’s plume occur in areas that are unlikely to be treated under the proposed action. Vegetation in the mountain shrub and aspen communities supporting obscure phacelia tends to reprout following fire; these areas typically do not require treatment for stabilization and rehabilitation. Likewise, least phacelia occurs in ephemerally moist habitats with low potential to burn and high resilience, should fire occur. Low sagebrush plant communities surrounding the population of Malheur prince’s plum typically have long fire return intervals, low fuel loads, and are resilient following fire. In addition, shallow, rocky soils and location of the population in a Wilderness Study Area would limit use of mechanical treatments. Therefore, potential effects of the proposed action and no action alternative were not further addressed for these species.

Type 3 Rangewide/Globally Imperiled Species Plant Species – Moderate Endangerment and Type 4 Species of Concern

Some Type 3 and 4 BLM sensitive plants are not expected to be directly or indirectly affected by the proposed action or no action alternatives. These plants fall into 3 categories based on their location and ecology and were not carried forward for analysis of potential impacts.

- *Plants occurring in riparian or wetland habitats* – The location of these plants in or bordering wet habitat reduce the potential for impacts by fire. Potential for ESR actions to occur in habitats occupied by these plants is negligible.

- *Plants occurring on canyon walls, in hard-bottom playas, or in rocky locations within low- or mid-elevation shrub steppe* – these species occur in inaccessible or hardened locations that do not require stabilization or rehabilitation.
- *Plants occurring in fire-resilient vegetation communities* – mountain shrub and aspen plant communities are expected to be resilient following fire and would not be treated.

Type 3 and 4 BLM sensitive species that are not expected to be affected by the proposed action or no action alternative and their general habitats are listed below:

Scientific Name	Common Name	General Habitat
Allium anceps	Two-headed onion	Low-elevation shrub steppe Mid-elevation shrub steppe
Astragalus astratus var. *inseptus*	Mourning milkvetch	Low-elevation shrub steppe Mid-elevation shrub steppe
Astragalus newberry var. *castoreus*	Newberry's milkvetch	Low-elevation shrub steppe Mid-elevation shrub steppe
Astragalus oniciformis	Picabo milkvetch	Low elevation shrub steppe
Astragalus purshii var. *ophiogenes*	Snake River milkvetch	Low-elevation shrub steppe
Astragalus tetrapterus	Four-wing milkvetch	Low-elevation shrub steppe Mid-elevation shrub steppe
Astragalus yoder-williamsii	Mudflat milkvetch	Mid-elevation shrub steppe
Calandrinia ciliata	Fringed redmaids	Mid-elevation shrub steppe
Catapyrenium congestum	Earth lichen	Low-elevation shrub steppe
Chaenactis stevioides	Desert pincushion	Salt desert shrub Low-elevation shrub steppe
Cleomella plocasperma	Twisted/Alkali cleomella	Wet alkaline meadows, greasewood flats, thermal springs
Cymopterus acaulis, var. *greeleyorum*	Greeley's wavewing	Salt desrt shrub Low-elevation shrub steppe
Damasonium californicum	California damasonium	Riparian, vernal pools, wetlands
Downingia bacigalupii	Bacigalupi's downingia	Riparian
Eatonella nivea	White false tickhead	Salt desert shrub Low-elevation shrub steppe
Epipactus gigantea	Chatterbox orchid	Riparian - cold and hot water springs
Erigeron latus	Broad fleabane	Mid-elevation shrub steppe
Eriogonum lewisii	Lewis buckwheat	Mid-elevation shrub steppe
Eriogonum shockleyi var. *packardiae*	Packard's buckwheat	Salt desert shrub Low-elevation shrub steppe
Eriogonum shockleyi var. *shockleyi*	Shockley's matted buckwheat	Salt desert shrub Low-elevation shrub steppe
Glyptopleura marginata	White-margined wax plant	Salt desert shrub Low elevation shrub steppe
Haplopappus insecticruris	Bug-leg goldenweed	Mid-elevation shrub steppe
Ipomopsis polycladon	Spreading gilia	Salt desert shrub Low elevation shrub steppe Mid-elevation shrub steppe

Scientific Name	Common Name	General Habitat
Lepidium davisii	Davis' peppergrass	Large hard-bottom playas
Linanthus glabrum	Bruneau River phlox	Canyon walls
Mentzelia congesta	United blazingstar	Low-elevation shrub steppe Mid-elevation shrub steppe Juniper woodlands
Nemacladus rigidus	Rigid threadbush	Salt desert shrub Low-elevation shrub steppe
Pediocactus simpsonii	Simpson's hedgehog cactus	Salt desert shrub Low-elevation shrub steppe Mid-elevation shrub steppe Juniper woodlands Mountain shrub
Penstemon idahoensis	Idaho penstemon	Mid-elevation shrub steppe Juniper woodlands
Penstemon janishiae	Janish's penstemon	Salt desert shrub Low-elevation shrub steppe
Peteria thompsoniae	Spine-noded milkvetch	Salt desert shrub
Primula cusickiana complex	Cusick's primula	Mid-elevation shrub steppe Mountain shrub
Sporobolus compositus var. *compositus*	Tall dropseed	Low-elevation shrub steppe
Teucrium canadense var. *occidentale*	American wood sage	Riparian – streambanks and moist bottoms
Townsendia scapigera	Scapose townsendia	Low-elevation shrub steppe Mid-elevation shrub steppe Mountain shrub

APPENDIX 5: MIGRATORY BIRD SPECIES OF CONSERVATION CONCERN IN THE GREAT BASIN

All species listed below are also designated Birds of Management Concern; a subset of the species protected by the Migratory Bird Treaty Act (see 50 CFR 10.13) which pose special management challenges because of a variety of factors (e.g., too few, too many, conflicts with human interests, societal demands). The Migratory Bird Program places priority emphasis on these birds. (USFWS Migratory Bird Program Strategic Plan 2004-2014).

Many of these species are also designated as BLM special status species.

Table 4a. Migratory Birds of Conservation Concern.

Scientific Name	Common Name	Special Status Species
Coccyzus americanus	Yellow-billed cuckoo	Type 1 (Threatened)
Aquila chrysaetos	Golden eagle	N/A
Falco peregrinus anatum	Peregrine falcon	Type 3
Falco mexicanus	Prairie falcon	Type 3
Buteo swainsoni	Swainson’s hawk	N/A
Buteo regalis	Ferruginous hawk	Type 3
Coturnicops noveborucensis	Yellow rail	N/A
Pluvialis dominica	American golden plover	N/A
Charadrius alexandrinus	Snowy plover	N/A
Otus flammeolus	Flammulated owl	Type 3
Speotyto cunicularia	Western burrowing owl	N/A
Melanerpes lewis	Lewis woodpecker	Type 3
Lanius ludovicianus	Loggerhead shrike	Type 3
Amphispiza belli	Sage sparrow	Type 3
Spizella breweri	Brewer’s sparrow	Type 3
Vermivora virginae	Virginia’s warbler	Type 4
Numenius americanus	Long-billed curlew	N/A
Phalaropus tricolor	Wilson’s phalarope	N/A
Recurvirostra americana	American avocet	N/A
Tringa solitaria	Solitary sandpiper	N/A
Numenius phaeopus	Whimbrel	N/A
Limosa fedoa	Marbled godwit	N/A
Calidris alba	Sanderling	N/A
Cypseloides niger	Black swift	N/A
Vireo vicinior	Gray vireo	N/A
Agelaius tricolor	Tricolored blackbird	N/A

APPENDIX 6: CONSIDERATION FACTORS FOR QUALITATIVE MONITORING

General

Allotment-Class of livestock, pasture
S&G Assessments completed (yes or no)
Age of S&G Assessment (Is the information still current?)

Vegetation

Vegetation type pre-burn (invasive annual vegetation vs. perennial vegetation)
Ecological Site description
Soil Complex and Types
Precipitation zone
Existing native/non-native vegetation-post burn

Treatments Implemented

Acres treated
Species/cultivars seeded
Seeding method utilized (drill, broadcast, harrow, aerial, etc.)
Herbicide use for invasive annual plant and noxious weed control-Effectiveness
Protection fences-miles

Seeded Vegetation Observations

Type of seed mix (native vs. non-native)
Root establishment based on above ground growth
Plant vigor
Seed production of seeded species
Precipitation information during the non–growing (winter) and growing (spring through early summer) seasons
Competition with invasive annual plants and noxious weed species
Competition with existing native vegetation

Natural Recovery Observations

Plant vigor (perennial plants)
Precipitation information during the non–growing (winter) and growing (spring through early summer) seasons
Competition with invasive annual plants and noxious weed species
Seed Production

Watershed

Soils-evidence of erosion from either water or wind
Soil Stabilization-watershed, crusts, rock, etc.
Soil Surface Factors

Other Factors

Human Activity Impacts (OHV use)
Grazing impacts-livestock, wild horses, or wildlife
Outbreaks of rodents, grasshoppers, crickets, or disease