United States Department of the Interior
Bureau of Land Management

BLM

Environmental Assessment

Twin Falls District Noxious Weed and Invasive Plant Treatment

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U.S. Department of the Interior
Bureau of Land Management
Twin Falls District
2878 Addison Avenue East
Twin Falls, ID 83301
Phone: (208) 735-2060
FAX: (208) 735-2076

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Acronyms

ACEC	Area of Critical Environmental Concern
APHIS	Animal and Plant Health Inspection Service
ARMPA	Approved Resource Management Plan Amendment
ATV	All-Terrain Vehicle
AUM	Animal Unit Month
BA	Biological Assessment
BCC	Birds of Conservation Concern
BFO	Burley Field Office
BLM	United States Department of the Interior, Bureau of Land Management
CFR	Code of Federal Regulations
CWMA	Cooperative Weed Management Area
DEQ	Department of Environmental Quality
DFC	Desired Future Condition
DNA	Determination of NEPA Adequacy
DR	Decision Record
EA	Environmental Assessment
EOs	Element Occurrences
EPA	Environmental Protection Agency
ERA	Ecological Risk Assessment
ESA	Endangered Species Act
ESR	Emergency Stabilization and Rehabilitation
FFI	Firemon and Feat Integrated
FIAT	Fire and Invasives Assessment Tool
FRCC	Fire Regime Condition Class
FMDA	Fire, Fuels, and Related Vegetation Management Direction Plan Amendment

GHMA	General Habitat Management Area(s)
GPS	Geographic Positioning System
GRSG	Greater Sage-Grouse
HMA	Horse Herd Management Area
IDFG	Idaho Department of Fish and Game
IDL	Idaho Department of Lands
IHMA	Important Habitat Management Area(s)
IM	Instruction Memorandum
INFISH	Inland Native Fish Strategy
ISDA	Idaho State Department of Agriculture
JFO	Jarbidge Field Office
MFP	Management Framework Plan
MP	Management Plan
MRA	Minimum Requirement Analysis
MSDS	Material Safety Data Sheet
MUA	Multiple Use Area
NEPA	National Environmental Policy Act of 1969
NFP	National Fire Plan
NHT	National Historic Trail
NIOSH	National Institute for Occupational Safety and Health
NPS	National Park Service
OHMA	Other Habitat Management Area
OHV	Off-Highway Vehicle
OPLMA	Omnibus Public Land Management Act
PEIS	Programmatic Environmental Impact Statement
PER	Programmatic Environmental Report
PHMA	Priority Habitat Management Area(s)
PM	Particulate Matter

POEA	Polyoxyethyleneamine
PPE	Personal Protective Equipment
PUP	Pesticide Use Proposals
RAC	Resource Advisory Council
RCA	Riparian Conservation Area
RMP	Resource Management Plan
RNA	Research Natural Area
ROD	Record of Decision
ROW	Right-of-Way
SFO	Shoshone Field Office
SOP	Standard Operating Procedure
TEP	Threatened, endangered, or proposed
TFD	Twin Falls District
TSS	Total Suspended Solids
USC	United States Code
USDA	United States Department of Agriculture
USDI	United States Department of the Interior
USFS	United States Department of Agriculture, Forest Service
USFWS	United States Department of the Interior, Fish and Wildlife Service
USGS	U. S. Geological Survey
UTV	Utility-Terrain Vehicle
VRM	Visual Resource Management
WMA	Weed Management Area
WMP	Wilderness and Wild and Scenic Rivers Management Plan
WSA	Wilderness Study Area
WSRs	Wild and Scenic Rivers
WUI	Wildland Urban Interface

CHAPTER 1 - PURPOSE AND NEED FOR ACTION

Background

In response to the threats of noxious weeds and invasive plants, BLM and other federal agencies signed a Memorandum of Understanding (MOU) in 1994 to coordinate and collaborate on weed treatment and prevention through the Federal Interagency Committee for the Management of Noxious and Exotic Weeds (1997). In addition, federal legislation including the Carson-Foley Act of 1968, the Federal Noxious Weed Act of 1974 (as amended), and the Plant Protection Act of 2000 authorize and direct the BLM to manage noxious weeds. The Idaho Noxious Weed Law of 1977 also establishes a legal requirement to control weeds designated by the state as noxious.

Noxious weeds are non-native plants with the potential to displace native vegetation at the watershed and local scale. A noxious weed is any plant designated by a federal, state, or county government to be injurious to public health, agriculture, recreation, wildlife, or any public or private property (Sheley & Petroff, 1999). Idaho currently has 67 different species of weeds that are designated noxious by state law. Appendix A lists noxious weeds currently known from the Twin Falls District (TFD).

According to Executive Order 13112, invasive plants are defined as non-native plants whose introduction cause or are likely to cause economic or environmental harm or harm to human health. Non-native invasive plants, such as cheatgrass (*Bromus tectorum*) and medusahead wildrye (*Taeniatherum caput-medusae*), have become dominant in portions of the TFD. This dominance has altered fire regimes and, in some cases, resulted in landscape-scale changes in vegetation composition and structure. For example, cheatgrass rapidly invades disturbed areas and acts as a hazardous fuel, increasing the fire frequency and intensity in sagebrush steppe ecosystems and other landscapes characteristic of south-central Idaho. Appendix A contains a list of non-native invasive plants found in the TFD.

Noxious weeds and their continued expansion have been recognized as the single greatest threat to the integrity of native plant communities (Asher, 1998). The rapid expansion of invasive plants across public lands continues to be a primary cause of ecosystem degradation, and control of these species is one of the greatest challenges in land management (U.S. Department of the Interior [USDI BLM], 2007c). Noxious weeds and invasive plants are aggressive and can out-compete native vegetation, especially following a disturbance. Left unchecked, noxious weeds and invasive plants can create monocultures that degrade or reduce soil productivity, water quality and quantity, species diversity and structure of native plant communities, wildlife habitat, wilderness values, recreational opportunities, and livestock forage, and are detrimental to agriculture and commerce of Idaho (USDI BLM, 2007b).

Integrated weed management on public lands is a high priority for BLM. The TFD noxious weeds and invasive plants control program coordinates with partners from other federal and state agencies, county and tribal governments, industry, conservation organizations, and private citizens. The TFD currently has cooperative agreements in place with most of the counties that occur within the district boundary for noxious weed management. The goals of the weed control program are:

1. Prevention of weed establishment.
2. Early detection and rapid eradication of new weed infestations.
3. Stabilization and rehabilitation of disturbed areas.
4. Integration of weed management measures into land management actions/authorizations.
5. Implementation and monitoring of weed control measures.
6. Adaptive management for controlling new weed species and use of new and approved treatments.

Noxious weeds pose a threat to the entire TFD. Approximately 3.1 million acres, or about 80% of the TFD, have high potential to be dominated by invasive plants, particularly cheatgrass and medusahead wildrye. Although these invasive species occur throughout the district, they are most competitive at lower elevations, typically below 5,500 feet elevation (See Figure 1). Historical data shows that the highest fire frequencies in the TFD occur below 5,500 feet elevation (See Figure 2).

There is an immediate need to treat noxious weeds and invasive plants that have become dominant across the TFD. This dominance has altered fire regimes and, in some cases, resulted in landscape-scale changes in vegetation composition and structure. For example, diffuse knapweed and rush skeletonweed have spread rapidly throughout the TFD over the last 20 years. Most of this spread is attributed to large wildfires. Although post-fire inventory and treatment occurred, the ability of these species to spread following disturbance has resulted in large, extensive populations. These landscape-scale changes are having negative effects on wildlife habitat, especially for sagebrush obligate species such as Greater sage-grouse (sage-grouse).

Introduction

The Bureau of Land Management (BLM) TFD has prepared this Environmental Assessment (EA) for noxious weed and invasive plant management within the TFD boundaries. The EA will disclose the direct, indirect, and cumulative environmental effects that would result from management and treatment of noxious weeds and invasive plants on BLM lands as required by the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [USC] 4321-4347), the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] 1500-1508), and the BLM NEPA Handbook (H-1790-1).

The EA tiers to the 2007 *Final Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement* (2007 PEIS) (USDI BLM, 2007b). The ROD was signed September 29, 2007. The 2007 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. The EA also incorporates by reference the *Final Vegetation Treatments on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Report* (PER) (USDI BLM, 2007c). The Vegetation Treatments PER describes the effects of other non-chemical vegetation treatments which includes prescribed fire, manual, mechanical, and biological treatment methods to control vegetation (USDI BLM, 2007c).

The EA also tiers to the 2016 *Final Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on BLM Lands in 17 Western States PEIS* (2016 PEIS) (USDI BLM, 2016). The ROD for this PEIS was signed August 15, 2016. The 2016 PEIS ROD approves three new herbicides: *aminopyralid*, *fluroxypyr*, and *rimsulfuron*. These three new herbicides are integrated into the herbicide treatment activities that were assessed in the 2007 PEIS. The ROD for the 2016 PEIS increased the number of herbicide active ingredients available to the BLM from 18 to 21. The 2016 PEIS incorporated by reference the analyses completed in the 2007 PEIS for all other vegetation treatment activities.

Location of Proposed Action

The Proposed Actions would take place on public land managed by the TFD BLM which consists of three field offices; Burley Field Office (BFO), Jarbidge Field Office (JFO), Shoshone Field Office (SFO) and BLM portions of Craters of the Moon National Monument (Craters) in south-central Idaho. There are approximately 3.9 million acres of public land within the TFD. These lands also include approximately 45,000 acres of public land in Elko County, Nevada (see Figure 3). The counties (or portions of counties) occurring within the bounds of the TFD are: Blaine, Butte, Camas, Cassia, Custer, Elmore, Gooding, Jerome, Lincoln, Minidoka, Oneida, Owyhee, Power, and Twin Falls counties, Idaho, and Elko County, Nevada.

Figure 1 – Twin Falls District High Potential Invasive Plant Communities

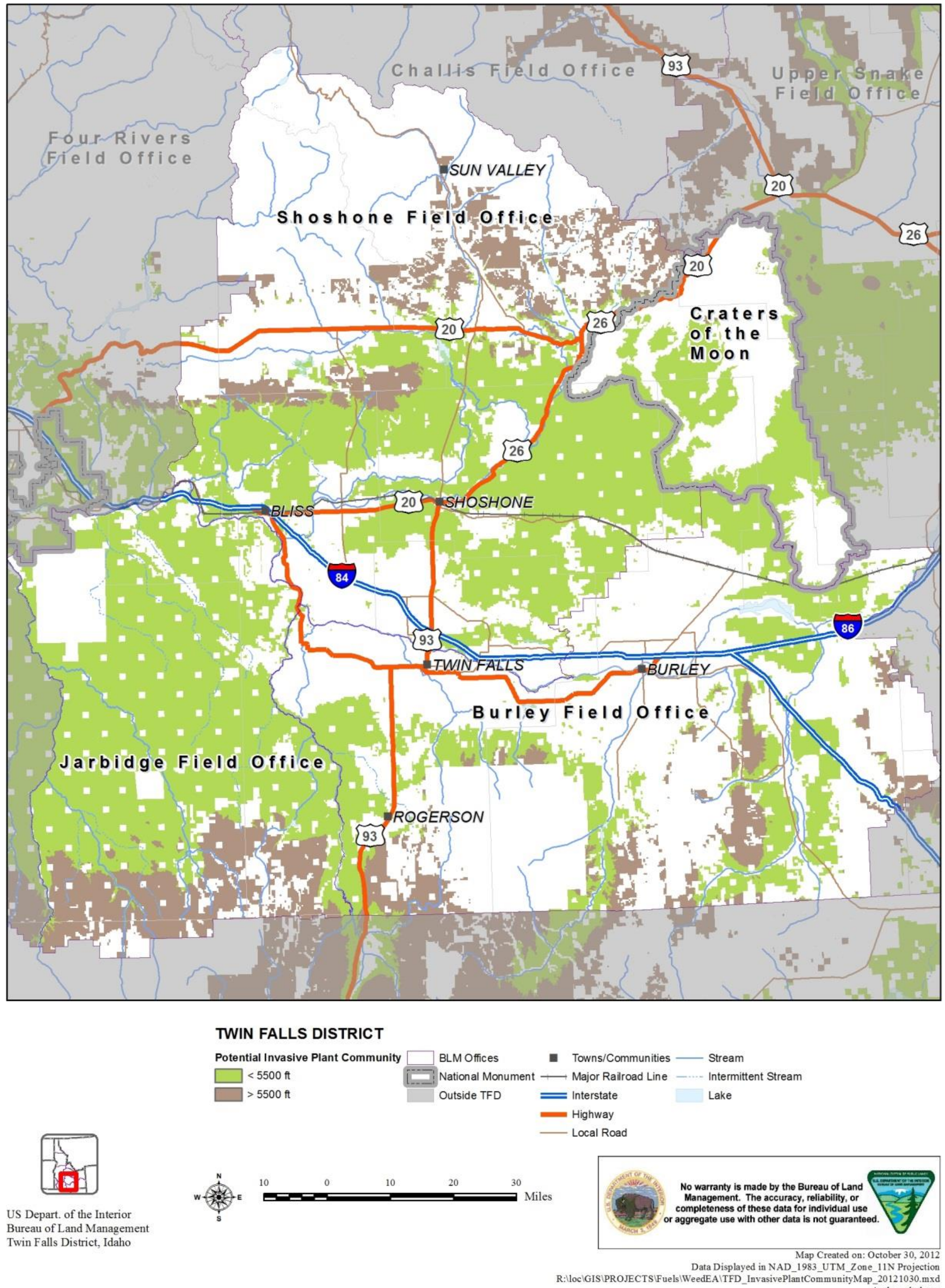


Figure 2 – Twin Falls District Fire Frequency, 1939-2012

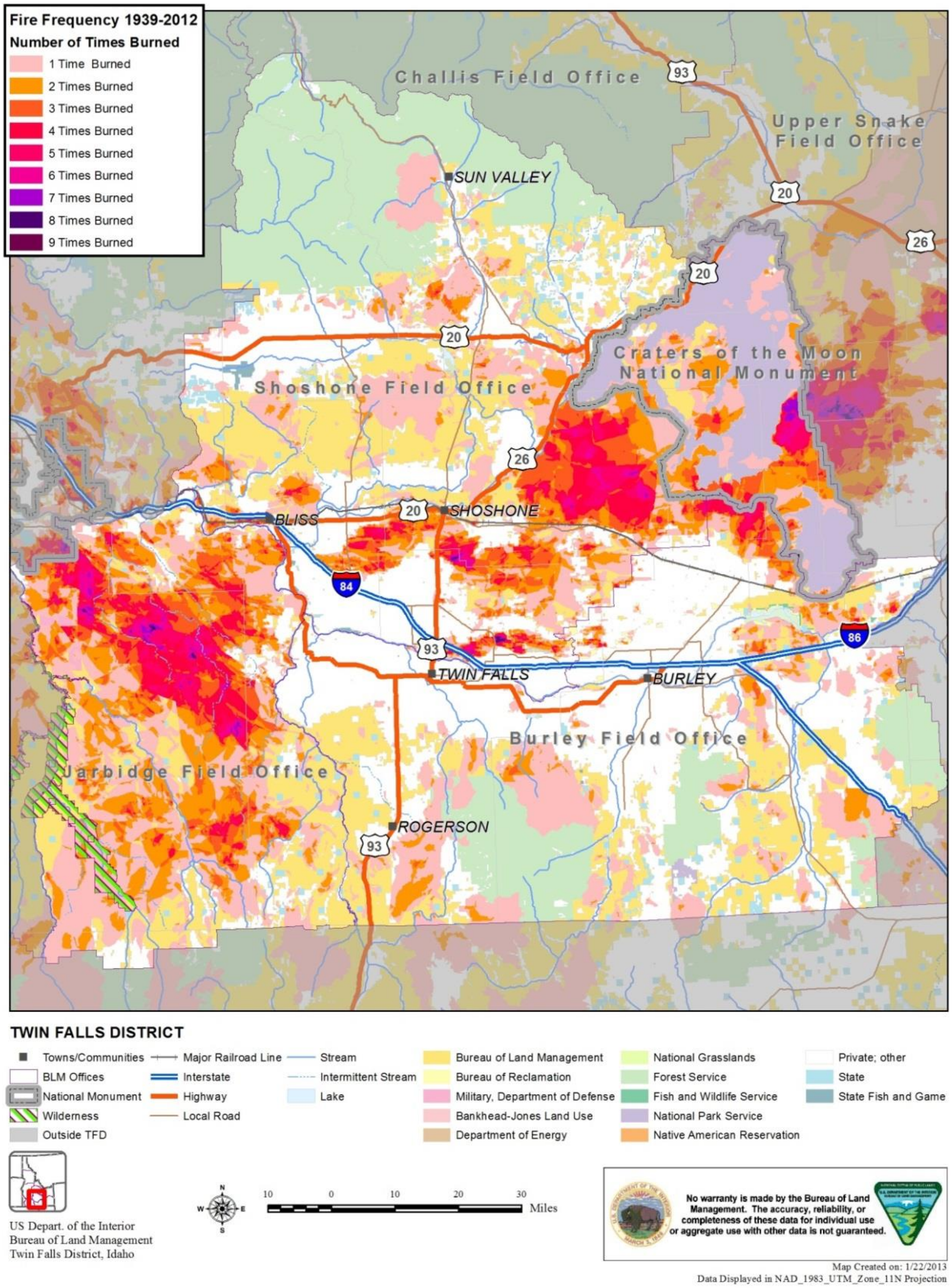
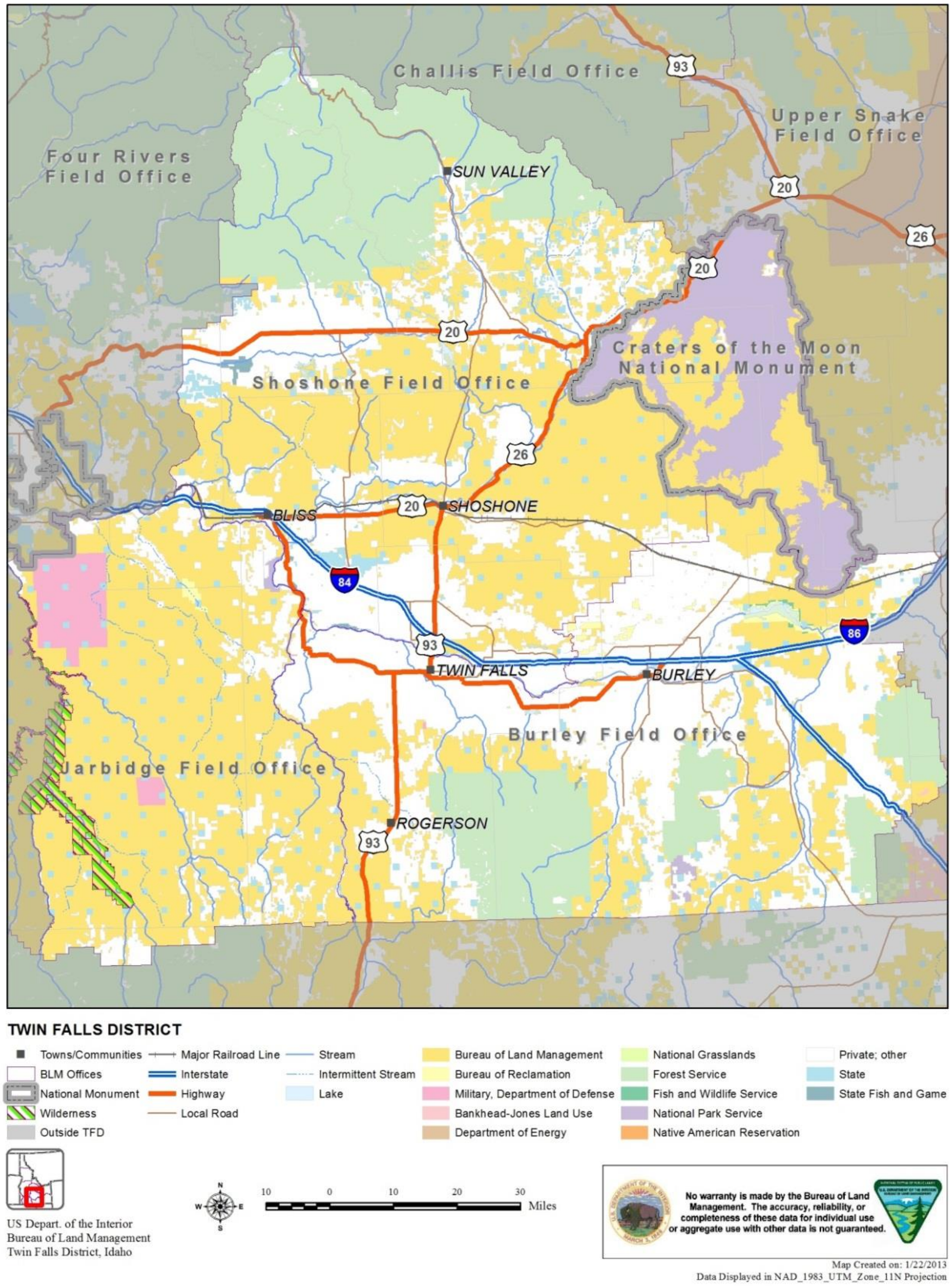


Figure 3 – Twin Falls District



Purpose and Need for Action

The purpose of the Proposed Action is to treat current and foreseeable future infestations of noxious weeds and invasive plants to promote land health. This would be accomplished through an integrated noxious weed and invasive plant management program on public lands within the TFD, consistent with treatment methods approved in the RODs for the 2007 and 2016 PEISs.

The TFD currently implements noxious weed and invasive plant treatments under three separate Decision Records, one for each field office:

- Burley District Noxious Weed Control EA ID-020-88-16 Decision Record (DR) (1988)
- Shoshone District Noxious Weed Control EA ID050-EA-92031 DR (1992)
- Boise District and Jarbidge Field Office Noxious Weed Treatment EA ID100-2005-EA-265 DR (2007)

The Proposed Action is needed because these decision documents do not adequately address current issues in the TFD in regard to large-scale control of invasive species and are not consistent with the more recent RODs for the 2007 and 2016 PEISs. The DR for this EA would replace the three existing decision documents for the TFD. The DR would only apply to lands administered by the TFD.

Conformance with Applicable Land Use Plans

Noxious weed and invasive plant treatment actions identified in the Proposed Action are consistent with the following applicable land use plans, as amended:

- Magic Management Framework Plan, 1975
- Bennett Hills/Timmerman Hills Management Framework Plan, 1980
- Sun Valley Management Framework Plan, 1981
- Twin Falls Management Framework Plan, 1982
- Cassia Resource Management Plan, 1985
- Monument Resource Management Plan, 1985
- Craters of the Moon National Monument and Preserve Management Plan (Craters MP), 2006
- Fire, Fuels, and Related Vegetation Management Direction Plan Amendment (FMDA), 2008
- Owyhee Canyonlands Wilderness Areas and Wild and Scenic Rivers Management Plan, (Owyhee Canyonlands Wilderness MP) 2015
- Approved Resource Management Plan Amendments (ARMPA) for the Great Basin Region Sage-Grouse Sub-regions (Idaho and Southwestern Montana, Nevada and Northeastern California, Oregon, and Utah), 2015
- Jarbidge Resource Management Plan (Jarbidge RMP), 2015

Conformance of the Proposed Action and alternatives with management direction contained in the FMDA, Jarbidge RMP, Craters MP, Owyhee Canyonlands Wilderness MP, and ARMPA is presented below.

FMDA

The FMDA amended all of the land use plans in the TFD except for the Jarbidge RMP, Craters MP, and Owyhee Canyonlands Wilderness MP. The FMDA provides a framework for decisions regarding fire management, hazardous fuels reduction, and related vegetation management.

The Proposed Action is in conformance with the following FMDA goals and objectives:

- Protect and enhance sage-grouse source habitats.
- Protect and enhance key ecological components in plant and animal communities.
- Consider mechanical and/or chemical treatments first where fire is not an appropriate tool due to risk to life, property, or resource impacts.
- Move all vegetation types toward Desired Future Condition (DFC).

Jarbidge RMP

The Proposed Action is in conformance with the following Jarbidge RMP goals and objectives:

- Manage upland vegetation communities to promote soil stability, water infiltration, nutrient cycling, and energy flow; provide habitat for sage-grouse and other sagebrush steppe obligates; and provide for multiple uses.
- Manage vegetation to restore the ability of the ecosystem to recover following a disturbance and reduce fragmentation of habitat for sage-grouse and other native species.
- Achieve healthy, functioning watersheds, riparian areas, wetlands, and associated aquatic habitats.
- Provide habitat to support populations of well-distributed native and desired non-native plants, vertebrate, and invertebrate populations that contribute to the sustainability of riparian-dependent communities.
- Maintain or improve naturally functioning vegetation communities that include natural timing and variability of surface and groundwater in riparian areas and wetlands, and diversity and productivity of native and desired non-native plant communities.
- Manage public lands to promote diverse, structured, resilient, and connected habitats for wildlife.
- Maintain or improve wildlife habitat by managing uses and activities and actively restoring annual, non-native perennial and native communities.
- Manage public lands to contribute to the conservation and recovery of sage-grouse and other special status species.
- Maintain or improve the quality and quantity of habitat for sage-grouse and other special status species by managing public land activities to sustain or benefit those species.
- Manage public lands to prevent, eliminate, or control noxious weeds and invasive plants.

- Manage uses and treat noxious weeds such that there is no net increase in the number of acres containing noxious weeds; reduce the number of noxious weed species present.
- Reduce cover of invasive plants in native, non-native perennial and non-native understory communities to less than 5%.
- Reduce fire hazard within the Wildland Urban Interface (WUI).
- Manage plant communities within the WUI to reduce relative risk rating.
- Manage vegetation communities outside the WUI to maintain or restore their fire regimes and mosaic of successional classes to within their historic range.
- Manage native plant communities outside the WUI to move toward Fire Regime Condition Class (FRCC) 1. Manage non-native plant communities to reduce wildland fire size and intensity.
- Implement fuels treatments to protect critical suppression areas; limit the spread, size, and intensity of wildland fire; and maintain or improve vegetation.

In addition, management actions in the Jarbidge RMP allow for the use of chemical, mechanical, and biological treatments; seeding and planting; targeted grazing; and prescribed fire for treating noxious weeds and invasive plants and implementing noxious weed and invasive plant, fuels reduction, and restoration treatments. The use of both native and non-native plants is allowed and dependent on specific resource concerns.

Craters of the Moon Monument MP

The Proposed Action is in conformance with the following Craters MP goals and objectives:

- Existing sagebrush steppe communities will be protected to prevent loss of shrub cover and managed to promote a diverse, desirable grass and forb understory.
- Current science and best available technologies and plant materials will be considered in analysis and implementation of all restoration projects. Restoration treatments may be active or passive and may include but are not limited to the following: prescribed fire, thinning, mowing, herbicide treatment, and seeding.
- Approximately 80,000 acres of BLM-administered land (11% of the entire Monument) will be restored. About 31,000 acres of annual grassland and 49,000 acres of highly degraded low elevation sagebrush steppe (poor to fair biotic integrity) will be treated to control cheatgrass and restore big sagebrush cover with a perennial understory.
- Weed infestations in wilderness areas will be controlled by methods consistent with minimum tools requirements and integrated weed management principles, including prevention of disturbance activities, use of cultural and mechanical methods to control or physically remove noxious weeds, and selective application of herbicides and possibly biological controls.
- Integrated weed management principles will be applied proactively throughout all zones. This program will emphasize protection of weed-free areas and aggressive detection and control of noxious or highly invasive exotic weeds and will include an analysis of the trade-offs involved in herbicide use versus non-chemical methods of weed control.

Owyhee Canyonlands Wilderness MP

The Bruneau-Jarbidge Rivers Wilderness was designated by Congress in 2009 with the Omnibus Public Lands Management Act of 2009, Section G, P.L. 111-11. The 90,000 acre Bruneau-Jarbidge Rivers Wilderness Area (63,000 acres within the JFO) will be managed according to the *Owyhee Canyonlands Wilderness and Wild and Scenic Rivers Management Plan* (2015). The Proposed Action is in conformance with the following Owyhee Canyonlands Wilderness MP management actions, goals, and objectives:

- Manage the Bruneau-Jarbidge Rivers Wilderness to protect wilderness values.
- Provide for the long-term protection and preservation of wilderness character.
- Protect and preserve wildlife habitat to support healthy, viable, and naturally distributed wildlife populations to retain the wilderness areas' natural and undeveloped character.
- Maintain the natural wilderness character by reducing or eliminating infestations of noxious weeds and non-native invasive species.

Idaho and Southwestern Montana and Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendments (ARMPA)/Final EISs

Management decisions and required design features contained in the ARMPA were incorporated into the Proposed Action. The Proposed Action is in conformance with the ARMPA as sage-grouse habitat management areas would be protected, restored, and connected. Applicable management decisions are listed in Appendix L and design features are included in Chapter 2.

Relationship to Statutes, Regulations or Other Plans

Broad objectives for management of vegetation on public lands are identified in BLM's *Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment 10-Year Comprehensive Strategy Implementation Plan* (Western Governors' Association, 2006); *Partners Against Weeds: An Action Plan for the Bureau of Land Management* (USDI BLM, 1996); and *Pulling Together: National Strategy for Invasive Plant Management* (Federal Interagency Committee for the Management of Noxious and Exotic Weeds, 1997), while treatment activities at the local level are guided by the goals, standards, and objectives of land use and other plans developed at the field office level. The following laws, acts, plans, manuals, and policies provide a foundation for noxious weed and invasive plant management by the BLM.

- *2015 Strategic Plan for Managing Noxious Weeds for Idaho*. This interagency MOU agrees to continue supporting the CWMAs, the 2012 Idaho Invasive Species Strategic Plan, and to facilitate collaboration among all land managers, owners, and users to prevent the spread of noxious weeds in Idaho.

- *The Idaho Invasive Species Strategic Plan 2012-2016*, guides efforts to prevent, control, and minimize invasive species across Idaho's jurisdictional boundaries. The strategy focuses upon three goals: 1) Preventing the introduction of new invasive species to Idaho, 2) Limiting the spread of existing invasive species populations in Idaho, and 3) Abating ecological and economic impacts that result from invasive species populations in Idaho.
- The *Carson-Foley Act of 1968* (Public Law 90-583; 43 U.S.C. 1241 et seq.), and the *Plant Protection Act of 2000* (Public Law 106-224) authorize and direct the BLM to manage noxious weeds (including management of undesirable plants on federal lands) and to coordinate with other federal and state agencies in activities to eradicate, suppress, control, prevent, or retard the spread of any noxious weeds on federal lands.
- The *Endangered Species Act of 1973* (16 U.S.C. 1531-1544, 87 Stat. 884), *as amended*, requires consultation with the U.S. Fish and Wildlife Service (USFWS) for any federal action that may affect a species listed as threatened, endangered, or proposed for listing under the Act.
- The *Federal Noxious Weed Act of 1974* (Public Law 93-629), *as amended by Section 15, Management of Undesirable Plants on Federal Lands, 1990*, (7 U.S.C. 2801 et seq.) authorizes the Secretary "...to cooperate with other federal and state agencies and others in carrying out operations or measures to eradicate, suppress, control, prevent, or retard the spread of any noxious weed." This Act established and funded an undesirable plant management program, implemented cooperative agreements with state agencies, and established integrated management systems to control undesirable plant species.
- The *Federal Land Policy and Management Act of 1976, as amended*, (Public Law 94-579; 43 U.S.C. 1701 et seq.) directs BLM to "...take any action necessary to prevent unnecessary and or undue degradation of the public lands."
- The *Idaho Noxious Weed Law* (Title 22 Agriculture and Horticulture, Chapter 24 Noxious Weeds, 1977) specifies the list of noxious weeds in the state and requires control of these designated weeds and other pests on public and private lands.
- The *Public Rangelands Improvement Act of 1978* (Public Law 95-514; 43 U.S.C. 1901 et seq.) requires that BLM manage, maintain, and improve the condition of the public rangelands so that they become as productive as feasible.
- *The Clean Water Act (1987)*, as amended (33 U.S.C. 1251), establishes objectives to restore and maintain the chemical, physical, and biological integrity of the nation's water. The Act also requires permits for point source discharges to navigable waters of the United States and the protection of wetlands and includes monitoring and research provisions for protection of ambient water quality.
- *The Clean Air Act (1955 and amended several times since)*, (S.1630.ES), establishes a mandate to reduce emissions of specific pollutants via uniform federal standards. The Act also defines Environmental Protection Agency (EPA's) responsibilities for protecting and improving the nation's air quality and the stratospheric ozone layer.

- The *Noxious Weed Control and Eradication Act of 2004* (Public Law 108–412) established a program to provide assistance through the states to eligible weed management entities to control or eradicate harmful, non-native weeds on public and private lands.
- *Idaho Water Quality Regulations* implement permitting and monitoring requirements for the *National Pollutant Discharge Elimination System*, operation of injection wells, groundwater protection requirements and prevention and response requirements for spills.
- *Floodplain Management (Executive Order 11988)* provides for the restoration and preservation of national and beneficial floodplain values, and enhancement of the natural and beneficial values of wetlands in carrying out programs affecting land use.
- *Protection of Wetlands (Executive Order 11990)* requires federal agencies to take action to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands.
- *Executive Order 13112, Invasive Species, 1999*, directs federal agencies to prevent the introduction of invasive species and provide for their control, and to minimize the economic, ecological, and human health impacts that invasive species cause.
- *Secretarial Order 3336, Rangeland Fire Prevention, Management and Restoration, 2015,* enhances policies and strategies for preventing and suppressing rangeland fire and for restoring sagebrush landscapes impacted by fire.
- *BLM Manual 6840: Special Status Species Management* – Directs management of species listed or proposed or candidates for listing under the Endangered Species Act (ESA) as well as BLM sensitive species.
- *BLM Manual 9011 and Manual Handbook H-9011-1: Chemical Pest Control* – Outlines policy and provides guidance for conducting pest control programs on public land.
- *BLM Manual 9014 – Use of Biological Control Agents of Pests on Public Lands* – Outlines policy, defines responsibilities, and provides guidance for the release, maintenance, and collections of biological control agents for integrated pest management (IPM) programs on the lands administered by the BLM.
- *BLM Manual 9015: Integrated Weed Management, 1992*, provides policy relating to the management and coordination of noxious weed activities among BLM, organizations, and individuals.
- *BLM Manual 9220: Integrated Pest Management* – Outlines policy, defines responsibilities, and provides guidance for implementing integrated pest management programs on the lands administered by BLM.

- *Department of the Interior, Departmental Manual 609: Weed Control Program, 1995*, prescribes policy to control undesirable or noxious weeds on the lands, waters, or facilities under its jurisdiction to the extent economically practicable, as needed for resource protection and accomplishment of resource management objectives.
- The *Final Vegetation Treatments on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement* (2007b) and the *Final Vegetation Treatments on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Report* (2007c) analyzed the direct, indirect, and cumulative effects to various resources from proposed vegetation treatments and alternatives. The ROD for the final PEIS was signed September 29, 2007.
- The *Final Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on BLM Lands in 17 Western States PEIS* (2016) analyzed direct, indirect and cumulative effects to resources from *aminopyralid*, *fluroxypyr*, and *rimsulfuron* herbicides. The ROD for the final PEIS was signed August 15, 2016.

Tiering and Incorporation by Reference

This EA would implement the tiering process outlined in 40 CFR 1502.20, which encourages agencies to tier environmental documents, eliminating repetitive discussions of the same issue. Agencies are encouraged to analyze actions at a programmatic level for those programs that are similar in nature or broad in scope [40 CFR 1502.4(c), 1502.20, and 1508.23]. After a broad programmatic analysis has been prepared, any subsequent EA on an action included within the entire program or policy (particularly a site-specific action) need only summarize issues discussed in the broader statement and concentrate on the issues specific to the subsequent action.

The 2007 and 2016 Vegetation Treatment PEISs or subsequent equivalent documents, which this EA will tier to, provide NEPA compliance by assessing the use of vegetation treatments to treat undesirable vegetation on public lands administered by the BLM. These PEISs provide a broad, comprehensive background source of information to which subsequent environmental analyses can be tiered. The programmatic analysis in the PEISs contains broad regional descriptions of resources, provides a broad environmental impact analysis, including cumulative effects, focuses on general policies, and provides Bureau-wide decisions on herbicide use for vegetation management.

Additionally, Section 7 consultation under the ESA was completed for the broad range of activities described in the PEISs. Tiering of the analysis in the EA to the PEISs would allow the TFD to prepare more specific environmental documents without duplicating relevant portions of the PEISs. The PEISs are used to facilitate the analysis process by providing BLM treatment design features and impact assessment data for herbicides. The effects on the environment from using non-herbicide treatment methods, including prescribed fire and mechanical, manual, and biological controls to treat hazardous fuels, invasive species, and other unwanted or competing vegetation are disclosed in the 2007 PEIS and PER.

Scoping, Public Involvement, and Issues

This project has been listed on the BLM NEPA Register since February 7, 2012. Public scoping was initiated on March 8, 2013, with posting of the scoping document on the web and mailing 452 letters notifying interested publics of the scoping document posting and a public meeting date. One public meeting was held at the Rock Creek Fire Station in Kimberly, Idaho, on April 11, 2013. Four people attended the public meeting. The Proposed Action was presented to the BLM Twin Falls District Resource Advisory Council (RAC) on April 23, 2013.

The Proposed Action and draft TFD cultural resource programmatic agreement were shared with the Shoshone-Bannock tribe on May 12, 2015. The Proposed Action and draft TFD cultural resource programmatic agreement were shared with the Shoshone-Paiute tribe on April 23, May 20, July 23, and September 24, 2015 and January 26, 2017.

Section 7 ESA consultation was initiated on March 29, 2017. On May 18, 2017, the Service asked to extend the 60 day timeline for completing consultation from May 29, 2017 to June 30, 2017. The BLM and the Service agreed to complete consultation within this timeframe (ref. 01EIFW00-2017-F-0231). No new actions would be authorized and implemented in areas with ESA-listed species or habitats until ESA consultation is completed.

The Twin Falls Regional Office of the Idaho Department of Environmental Quality (DEQ) requested a meeting to discuss the Proposed Action. This meeting was held at the Idaho DEQ offices on April 25, 2013, and written comments were subsequently submitted. The public scoping comment period ended April 23, 2013.

Six scoping comment letters were received via email and four by regular post. One letter was received from a TFD RAC member, one was from a federal agency, one was from a state agency, three were from county weed control entities, two were from conservation organizations, and two were from private individuals.

Several comments were not brought forward into this analysis because they were outside the scope of the Proposed Action. Some of these comments were directed at current policies or regulations. Issues relevant to the Proposed Action were brought forward into this analysis and are summarized below:

> ***Comment:*** New programmatic document approach considers more flexibly with herbicide use as often newer and more selective herbicides are needed to control Idaho’s more problematic noxious weeds.
> ***Response:*** There is a designated process in the 2007 EIS that allows for incorporation of new chemicals for use on public lands. As newly developed chemicals are made available in the market place they will be analyzed utilizing the EIS process at the national level. Upon the completion of that national level analysis and approval for use on public land they can then be utilized at the local level once a District-level NEPA review and/or analysis has been completed.

Comment: It is often unclear how annual weed management priorities are established throughout the district. We ask that you consider including a method of weed management prioritization either by management area or unit, by weed species, by control strategy, or a combination of these criteria. Allowing this prioritization to be reevaluated annually or as needed would allow managers to shift resources to higher priorities.
Response: The general prioritization process is described in the Proposed Action scoping package.

Comment: Propose that chemical control be used 2 times annually on public roads specifically in Owyhee County to accomplish effective control. Plants of concern are Scotch thistle, curly cup gum weed, skeleton weed, several thistles, cockle burr, sunflower, knapweed, and prevent goat-heads from starting.
Response: Chemical control to these species will be based on District priorities, herbicide label compliance, available funding, and need for subsequent treatments.

Comment: New chemicals need to be fast tracked.
Response: There is a designated process in the 2007 EIS that allows for incorporation of new chemicals for use on public lands. As newly developed chemicals are made available in the market place they will be analyzed utilizing the EIS process at the national level. Upon the completion of that national level analysis and approval for use on public land they can then be utilized at the local level once a District level NEPA analysis has been completed.

Comment: Treat all noxious weeds not just some.
Response: Treatment of noxious weeds will be based on the Proposed Action prioritization process and available funding.

Comment: Would like to see (*Aminopyralid*) Milestone® placed on the approved list of herbicides. This particular product has been so efficient on many of the noxious weeds in Southern Idaho that it would be a great tool to add.
Response: *Aminopyralid* was approved for use on public lands under the 2016 PEIS. *Aminopyralid* is being analyzed in this document.

Comment: I am asking that fire not be used to treat noxious weeds across the Burley, Jarbidge, and Shoshone Field Offices. Who takes the blame for a decision that ramps up an already out of control problem? Who decides which day, week, month is the perfect time to set a prescribed burn and then watch as it grows into a wildfire destroying everything in its path? Who notifies each and every neighbor of what is planned?
Response: Prescribed fire is one of the tools proposed to treat primarily invasive plants and in some cases noxious weeds. Anytime prescribed fire is proposed as a treatment a burn plan must be developed which addresses burn prescriptions (i.e. weather, fuel moisture type and loading), safety, timing, objectives, public notification and smoke management. In coordination with experienced fire professionals, the authorized officer makes the final determination to carry out the prescription.

Comment: Addition of intensive grazing on noxious weeds is another tool that must be utilized. This method has proven to be effective.
Response: The Proposed Action included the limited use of grazing (goats or sheep) as a biological control for noxious weeds.

Comment: Several herbicides will be analyzed for use to control noxious and invasive plants. A potential exists for these chemicals to directly, or indirectly, impact surface water. Please consider these potential impacts in the analysis; or, address these impacts through application of avoidance design features such as buffer strips, application timing (e.g. to avoid runoff), and adherence to pesticide label restrictions.
Response: The analysis will include direct, indirect and cumulative effects of herbicides on all potentially affected resources. Design features, prevention measures, and application criteria have been included to mitigate potential adverse effects.

Comment: A stream temperature determined to exceed beneficial use criteria is considered to be a water quality impairing pollutant as defined in Idaho Water Quality Standards (IDAPA 58.01.02). A vegetation treatment that reduces or alters a riparian community could directly, or indirectly, impact the shade condition on a stream. This could affect water temperature and contribute to long-term water quality impairment. Please consider this potential impact in the analysis; or, address this impact through application of appropriate design features.
Response: The analysis will include direct, indirect and cumulative effects of herbicides on all potentially affected resources. Design features have been included to mitigate potential adverse effects.

Comment: High proportions of Total Suspended Solids (TSS) or sediment in surface waters may impair water quality and beneficial uses. Some vegetation treatment tools may directly disturb soils leading to direct, or indirect, impacts to surface waters. This may affect sediment loading in stream, and contribute to long-term water quality impairment. Please consider this potential impact in the analysis; or, address this impact through application of appropriate design features.
Response: The analysis will include direct, indirect and cumulative effects of herbicides on all potentially affected resources. Design features have been included to mitigate potential adverse effects. BLM may seek technical assistance where water quality limited streams may be affected.

Comment: This noxious weed and invasive plant proposal should include an analysis of the potential to reduce the spread of noxious weeds based on permanent or seasonal closures of roads and motorized trails or adjustments in the types of use. When the BLM determines that such closures would help to reduce the spread of noxious weeds in priority areas, those decisions could be tiered to the EA.
Response: Travel management planning is beyond the scope of this EA. However, project level planning could include restoration of areas damaged due to unauthorized activities. Road or trail closures are generally a tool used in travel management planning and are beyond the scope of the document; however roadside treatments would be a high

priority for control of noxious weeds and invasive plants where risk of spread is affecting high value resources.

Comment: This analysis could also identify any redundant, unauthorized off-highway vehicle (OHV) routes, and non-systems roads that are contributing to the spread of noxious weeds. These roads and routes should be closed, obliterated, and re-vegetated with native species.
Response: See response above.

Comment: The BLM should work with the Idaho Department of Parks and Recreation and local off-road groups to disseminate information on best practices that reduce the spread of noxious weeds.
Response: Public education is carried out by the BLM in cooperation with the County Weed Management Areas (CWMA), the Idaho Weed Awareness Campaign, and is part of the Proposed Action.

Comment: The BLM should consider a noxious weed outreach campaign and educational signage at popular trailhead locations. This information should instruct off-road vehicle users on how to inspect and clean their equipment before and after riding on public lands to remove seeds and other noxious weed material from their vehicles.
Response: Public education is carried out by the BLM in cooperation with the CWMAs, the Idaho Weed Awareness Campaign, and is part of the Proposed Action.

Comment: The EA should analyze and implement an alternative that requires stock users to feed their livestock with certified weed-free feed. Information should be posted at all trailheads and available at BLM offices informing livestock users of this requirement.
Response: BLM policy requires the use of weed free seed, forage, and straw on all Idaho BLM public lands (USDI BLM, 2011). This BLM policy is included as part of the Proposed Action. All stock users and permit holders will be notified through their permits.

Comment: Although the BLM cannot patrol feeding habitats on farms and ranches, livestock users should be asked to corral and begin feeding their animals with certified weed-free feed a few days prior to entering public lands. The BLM website, pamphlets, fliers and trailhead information should ask that livestock users corral their stock at least three days prior to their trip and begin feeding certified weed-free feed at that time. This will allow sufficient time for any non-weed free forage or feed to pass through the digestive tracts of their stock prior to entering public lands. Noxious weed management campaigns should be used to inform ranchers and range users on how to limit spread.
Response: Noxious weed control on private land is enforced by the county and/or Idaho State Department of Agriculture. The Idaho Weed Awareness Campaign provides information to the general public regarding weed prevention and control.

Comment: The BLM should work with ranchers to limit livestock grazing in weed-infested areas during flowering and seeding periods. The BLM should also require permittees to transport livestock to a holding area for 14 days after grazing weed-infested zones before moving to weed-free rangelands.
Response: Management of permitted livestock grazing actions is beyond the scope of this planning effort.

Comment: Only biodegradable chemical herbicides should be used.
Response: Herbicides proposed for use on public lands all biodegrade at certain rates dependent on the chemical and environmental factors. Herbicides will be used according to product label and design features.

Comment: Herbicides should not be used that have been shown to enter the food chain or act as a bio accumulator, resulting in fish and wildlife mortality.
Response: Herbicides proposed for use on public lands all biodegrade at certain rates dependent on the chemical and environmental factors. Herbicides will be used according to product label and design features. Design features and application criteria are proposed to minimize potential adverse effects to resources.

Comment: Herbicides that could poison streams, rivers, lakes or municipal water supplies should also be avoided. When possible, herbicides also should not be applied in riparian areas or in areas where there is a potential for the herbicide to be transported into riparian and aquatic habitats.
Response: Herbicides will be used according to product label and design features. Design features and application criteria are proposed to minimize potential adverse effects to resources.

Comment: When herbicides are applied to noxious weeds, these treatments may be effective at eradicating an entire generation of noxious weeds. However, herbicide treatments do not usually kill the remaining seeds. This EA should address this concern.
Response: While herbicide application may be effective, it is only one tool in an integrated weed management program. Follow-up treatments such as biocontrol and re-vegetation with desirable species are integral to noxious weed population control.

Comment: When noxious weeds are eradicated by chemical treatments, the end result is often exposed, mineral soil and a seedbed for the re-establishment of noxious weeds. Efforts must be made to ensure that re-establishment does not occur. This includes follow-up monitoring, seeding of native species such competitive grasses and properly managing these grasses*, biological controls, and sometimes travel closures.
Response: Most of the herbicides proposed for use are somewhat selective. For example, most of the herbicides used for treating broadleaf noxious weeds have minimal effects on established perennial grasses and shrubs. The Proposed Action includes methods for re-vegetation of treated areas when necessary.

Comment: Herbicides should be contained in durable canisters that will not break or leak their contents. Significant care should be taken when mixing herbicides. Herbicides and chemicals should be mixed according to their labels and instructions.
Response: All herbicides are stored, mixed and applied according to label restrictions.

Comment: Herbicide containers should never be placed or "dunked" into streams or water to fill for mixing. A separate clearly labeled water-only container should be used to retrieve water for mixing. Herbicides should never be mixed in a riparian area.
Response: All herbicides are stored, mixed and applied according to label restrictions. Design features and application criteria specific to stream and riparian areas are proposed to minimize potential adverse effects to these habitats.

Comment: When biological controls are used, the BLM should consider the potential unintended consequences. Proven biological controls should be utilized only when a particular biological control has been proven not to lead to the unintended establishment of another non-native species.
Response: Biological controls go through a rigorous testing process before being approved by United States Department of Agriculture (USDA).

Comment: For the purpose of managing noxious weeds and invasive plants across the TFD, a single, standardized list of both noxious weeds and invasive plants should be compiled as part of this process. A single, standardized list is necessary to develop a coherent, orchestrated effort amongst all of the relevant BLM districts to successfully control and treat noxious weeds and invasive plants.
Response: Noxious weeds and invasive plants are treated under different processes. Noxious weed control is required by state law to be treated whereas invasive plants are treated under Executive Order 13112. The list in Appendix A is split out due to state noxious weed classification and treatment priorities. There is no official list for invasive plants. The list in Appendix A was compiled by BLM staff from observation in the field.

Comment: Guides and outfitters will also be integral to efforts that minimize, contain, or reduce noxious weeds and invasive plants. A condition of being granted a permit for outfitters and guides should require that they practice methods that contribute to this effort. Hunting outfitters that use stock animals should also be required to use certified weed-free feed for livestock.
Response: Permits for guides and outfitters are required per BLM policy to include stipulations for weed free feed (USDI BLM, 2011a). Additionally, the Idaho Department of Fish and Game's (IDFG) hunting regulations require that anyone using pack animals on BLM, Forest Service, and State Wildlife Management Areas use only weed-free certified forage to prevent the spread of noxious weeds.

CHAPTER 2 - PROPOSED ACTION AND ALTERNATIVES

Proposed Action

Targeted Plant Communities

Noxious Weeds

Noxious weeds and invasive plants known to occur and treated in the TFD are included in Appendix A. Idaho law defines a noxious weed as any plant having potential to cause injury to public health, crops, livestock, land or other property. Nevada law defines a noxious weed as any species of plant which is, or likely to be, detrimental or destructive and difficult to control or eradicate. The BLM defines a noxious weed as a plant species designated by federal or state law as generally possessing one or more of the following characteristics:

- aggressive and difficult to manage;
- parasitic;
- a carrier or host of serious insects or disease;
- non-native, new, or not common to the United States.

The State of Idaho administrative rules put noxious weeds into three categories that can affect how they are managed:

- **Statewide Early Detection and Rapid Response.** Plants in this category must be reported to the Idaho State Department of Agriculture (ISDA) within 10 days after being identified at the University of Idaho or by another qualified authority approved by the ISDA director. Eradication of these weeds must begin in the same season they are found.
- **Statewide Control.** Plants in this list may already exist in some parts of the state. In some areas of the state control or eradication is possible, and a plan must be written that will reduce infestations within 5 years.
- **Statewide Containment.** Plants in this category exist in the state. New or small infestations can be reduced or eliminated, while established populations may be managed as determined by the weed control authority, which usually is the county weed program.

The State of Nevada lists noxious weeds in three categories:

- **Category A** noxious weeds are weeds that are generally not found or that are limited in distribution throughout the State.
- **Category B** listed noxious weeds are weeds that are generally established in scattered populations in some counties of the State.
- **Category C** listed noxious weeds are weeds that are generally established and generally widespread in many counties of the State.

Invasive Plants

In addition to treating noxious weeds, plant communities dominated by invasive species, such as cheatgrass and medusahead wildrye, would be the priority for large-scale treatment utilizing proposed methods to reduce the incidence and dominance of these communities. Other invasive species that have potential to dominate on a smaller scale could also be treated. Appendix A includes a list of invasive plants occurring in the TFD. Specific treatment methods could occur singly or in combination.

According to Executive Order 13112, invasive plants are defined as non-native plants whose introduction cause or are likely to cause economic or environmental harm or harm to human health.

Invasive plants:

- are not part of the original plant community or communities;
- have the potential to become a dominant or co-dominant species on the site if their future establishment and growth is not actively controlled by management interventions; or
- are classified as exotic or noxious plants under state or federal law.

Native species that become dominant for only one to several years (e.g. short-term response to drought or wildfire) are not invasive plants. Douglas-fir and juniper are not targeted species under the Proposed Action.

Invasive plants compromise the BLM's ability to manage lands for a healthy native ecosystem. They create a host of environmental and other effects, most of which are harmful to native ecosystem processes, including:

- displacement of native plants,
- reduction in functionality of habitat and forage for wildlife and livestock,
- increased potential for soil erosion and reduced water quality,
- alteration of physical and biological properties of soil,
- loss of long-term riparian area function,
- loss of habitat for culturally significant plants,
- high economic cost of controlling invasive plants, and
- increased cost of keeping systems and recreational sites free of invasive species.

Plant communities dominated by non-native annual invasive species across the Snake River Plain and TFD occur primarily below 5,500 feet elevation. It is anticipated that the majority of invasive plant treatment proposals would be implemented within this zone (See Figure 1). These invasive plant communities can be the dominant vegetation cover or be a significant component (≥10% cover) of a native vegetation stand. Treatment of these native plant communities to reduce the incidence of invasive species can be critical to maintaining or improving key wildlife habitats (e.g. sage-grouse habitat, big game winter ranges).

Treatment Planning

The Proposed Action consists of two planning levels.

1) **On-going Actions**: Manual, biological control, ground-based broadcast herbicide, and spot herbicide treatments of new and existing infestations of noxious weeds where immediate and continued actions are required would be implemented with no further NEPA analysis. Estimated annual acreages are identified for each treatment type (See Table 2). These acreages are estimates based on past treatments, current noxious weed inventories, and anticipated future needs to control or contain noxious weed populations. Actual treatment acreages could vary from year-to-year.
2) **Larger-scale Treatments**: Planning of larger-scale non-native invasive plant community and noxious weed treatment projects that are not part of the on-going actions listed above would incorporate by reference this analysis. Individual project planning would require a Determination of NEPA Adequacy (DNA), land use plan conformance review, and project-specific Decision Record (DR). Proposals that do not fall within the scope of this analysis would require additional NEPA analysis.

<u>On-going Actions</u>

On-going actions would treat noxious weeds that occur primarily in burned areas or locations with frequent disturbance such as roadways, gravel pits, private/public land interfaces, or high-use recreation sites, including OHV areas, camp sites, and trails. Spot herbicide treatments consist of treating individual plants or small patches up to one acre with a hand-held wand attached to a backpack sprayer or vehicle-mounted spray equipment. Ground-based broadcast herbicide treatments are implemented with a boom attached to a vehicle. The ground-based broadcast method allows for treatment of larger patches (greater than one acre), such as roadsides. Manual and biological control treatments would also be implemented as on-going actions.

Areas burned by wildland or prescribed fire would be inventoried for noxious weeds post-fire. Noxious weeds detected during the inventory process would be spot-treated with herbicide using a hand-held wand attached to a backpack sprayer or vehicle-mounted spray equipment. Ground-based broadcast treatments could be used for large patches. In addition, some areas containing known infestations that cannot be completely eradicated require regular (e.g. annual) treatment for containment and to prevent spread to adjacent areas. These areas would be treated at intervals necessary for containment using manual, biological control, ground-based broadcast, or spot herbicide spray methods. Anticipated annual acreages for each of the methods are discussed in the individual treatment methods below. As new invaders are discovered, they would be treated as an on-going action with appropriate methods, as necessary.

<u>Larger-scale Vegetation Treatments</u>

Larger-scale, site-specific vegetation treatment projects utilizing one or more methods for control of noxious weeds and invasive plants would be addressed using the DNA review process. This review process allows the BLM to base site-specific proposed actions on a previous NEPA document. A DR would then be prepared based on the existing NEPA analysis if the DNA review determines that the proposed action has been adequately analyzed in that document and there are no changed circumstances. If a proposed project falls outside the scope of the analysis or if baseline conditions change, a new EA would be prepared to address these circumstances.

Integrating Vegetation Treatments

Per BLM policy and manual direction, including Department of the Interior (DOI) Integrated Pest Management Manual 517, the BLM utilizes an integrated pest management approach to managing and treating vegetation. This approach is inclusive of concepts such as integrated weed management (BLM Manual Section 9015) and more broadly, integrated vegetation management (BLM Handbook 1740-2, 2008).

The integrated weed program on BLM-administered lands is based on weed management objectives and priorities that are influenced by weed infestations and site susceptibility. These criteria provide focus and direction for the weed program and allow for site-specific and adaptive decision making. Integrated weed management strategies may include, but are not limited to, prevention; mechanical and manual methods, biological control, and herbicides; and prescribed fire. For some of the most aggressive invaders, herbicides may be the most effective way to control weed spread.

The BLM would treat noxious weed and invasive plant communities using prescribed fire, mechanical and manual methods, biological control, and herbicides. In an integrated weed management program, each management option is considered, recognizing that no one management option is a stand-alone option and that each has its own strengths and weakness.

General Site Selection and Treatment

Treatment priorities are established and influenced by several factors. These factors include national, state, and local priorities pursuant to current policies, directives, and initiatives. The following local treatment priorities would promote integrated efforts across BLM resource programs that manage vegetation.

- Design Wildland Urban Interface (WUI) community protection treatments that reduce the risk of wildfire to the community and/or its infrastructure and are developed collaboratively with the community.
- Protect, maintain, or restore:
  - special status species habitat;
  - big and upland game crucial habitat, including winter range;
  - special management areas including Craters of the Moon National Monument and Preserve, the Bruneau-Jarbidge Rivers Wilderness, National Historic Trails (NHT), and Areas of Critical Environmental Concern (ACECs);
  - healthy, diverse, resilient, and productive desired plant communities.

Priorities would also be influenced by:

- Treatments that will be planned, implemented, and/or monitored using funding from multiple sources, both internal and external.

- Landscape treatments coordinated across field office or land management boundaries [i.e. Idaho Department of Lands (IDL), U.S. Forest Service (USFS), National Park Service (NPS), USFWS, or Military] to improve treatment effectiveness.
- Contracted treatments that support economic opportunities for rural communities and/or high potential to use stewardship contracting authorities.

The extent of noxious weed infestations in the TFD requires prioritization of weed treatment efforts for the most efficient use of limited time and resources. The following management situations would be used to prioritize noxious weed and invasive plant treatments in order to focus efforts towards success (USDI BLM, 2007b):

Priority 1: New aggressive infestations in a previously un-infested area or small infestations in areas of special concern (e.g. special management areas, special status species habitat).

- Management Objective: *Eradicate.* Eliminate all traces of a population (including reproductive propagules) to the point where individuals are no longer detectable. This eliminates the potential for further introduction and spread.

Priority 2: Areas of high traffic or sources of infestation and larger infestations in areas of special concern.

- Management Objective: *Control.* Reduce the extent and density of a target weed to limit the potential for further introduction and spread.

Priority 3: Existing large infestations or roadside infestations where spread can be checked or slowed.

- Management Objective: *Contain.* Prevent weeds from moving beyond the current infestation perimeter.

Applying these priorities would result in the following general strategy:

- Keep weed-free areas weed-free. Keeping weed-free areas weed-free is the most biologically and cost-effective approach. Once an area has been taken over by weeds, restoration may be expensive and may not always return an area to its full native community of plants and animals. Thus it is better to maintain the native vegetation than to have to restore it.
- Use biological controls (if available for the respective weed species) to limit and reduce weeds in areas where they are already well established and beyond control by herbicides, areas difficult to access, or sensitive areas where biological control is the most efficient method.
- Use BLM-approved herbicides, or manual methods such as hand-pulling, or grubbing where weeds are establishing in new areas.
- Use hand-pulling and grubbing near special status plant populations and other areas when it is determined that herbicides cannot be used.
- Use aerial application in areas difficult to access or too large to effectively treat by ground methods.

- Assess current vegetation condition to determine site potential to release and increase desirable perennial vegetation through control of invasive annual species (i.e., herbicide application).
- Revegetate areas where the potential native plant community cannot naturally reestablish following noxious weed and invasive plant control.
- Monitor all types of treatment for effectiveness and adjust control methods accordingly.
- Continue education, prevention, and inventory.

Cooperative Weed Management Areas and Partnerships

A Cooperative Weed Management Area and Partnership (CWMA) is composed of local, private, and Federal interests. CWMAs typically center on a particular watershed or similar geographic area in order to combine resources and management strategies in the prevention and control of weed populations. Much of the BLM's on-the-ground invasive species prevention and management is done directly or indirectly through CWMAs.

The BLM partners with all counties in the TFD as well as Southern Idaho Biocontrol, state, and other Federal agencies to control noxious weeds. The TFD would continue utilizing partnerships to control noxious weeds with allowable methods as funding is made available.

Prevention

As stated in *Partners Against Weeds: An Action Plan for the BLM*, prevention and public education are the highest priority weed management activities. Priorities are as follows:

Priority 1: Take actions to prevent or minimize the need for vegetation control when and where feasible, considering the management objectives of the site.

Priority 2: Use effective non-chemical methods of vegetation control when and where feasible.

Priority 3: Use herbicides after considering the effectiveness of all potential methods or in combination with other methods or controls.

The Proposed Action adopts prevention measures included in the 2007 PEIS. Appendix B contains the detailed list of these prevention measures. Weed free seed, forage, and straw for permitted activities are required on public lands (USDI BLM, 2011a).

Treatment Methods

Treatment methods would be chosen based on site characteristics. Selection of the most appropriate treatments depends on numerous factors, including specific noxious weeds or invasive plants present on the site, risk of expansion, weed species biology, season, soil type, environmental setting, and objectives. In addition, data regarding past treatment successes or failures would also be considered.

Vegetation treatment methods are selected based on several parameters, which may include the following:

- Management program/objective for the site.
- Historic and current conditions.
- Opportunities to prevent future problems.
- Opportunities to conserve native and desirable vegetation.
- Effectiveness and cost of the treatment methods.
- Success of past restoration treatments or treatments conducted under similar conditions or recommendations by local experts.
- Characteristics of the target plant species, including size, distribution, density, life cycle, and life stage in which the plant is most susceptible to treatment.
- Non-target plant species that could be impacted by the treatment.
- Land use of the target area.
- Proximity to communities and private agricultural land.
- Slope, accessibility, and soil characteristics of the treatment area.
- Weather conditions at the time of treatment, particularly wind speed and direction, precipitation prior to or likely to occur during or after application, and season.
- Proximity of the treatment area to sensitive areas, such as wetlands, streams, or habitat for plant or animal species of concern.
- Potential impacts to humans or terrestrial and aquatic wildlife, including non-game species.
- Need for subsequent re-vegetation and/or restoration.

For most vegetation treatment projects, pre-treatment inventories are conducted before selecting one or more treatment methods. These inventories involve the consideration of all feasible treatments, including their potential effectiveness based on previous experience, and best available science, impacts, and costs. Before vegetation treatment or ground disturbance occurs, the BLM consults specialists or databases for information on sensitive resources within the proposed project area. If no current information exists, the proposed treatment area would have to be inventoried for special status species and evidence of cultural or historic sites.

Detailed descriptions of the methods and equipment used in proposed vegetation treatment actions can be found in Restoring Western Ranges and Wildlands, General Technical Report RMRS-GTR-136, Rocky Mountain Research Station (Monsen, Stevens, & Shaw, 2004).

Manual Methods

Manual methods would typically be used on small isolated infestations, around sensitive plant locations, or in areas where chemical or biological control is not practical or is restricted. Manual treatment involves the use of hand tools and hand-operated power tools to cut, clear, or prune herbaceous and woody species. Treatments include cutting undesired plants above the ground level; pulling, grubbing, or digging out root systems of undesired plants to prevent sprouting and regrowth; cutting at the ground level or removing competing plants around desired species.

Hand tools used in manual treatments include the handsaw, axe, shovel, rake, machete, grubbing hoe, mattock (combination of cutting edge and grubbing hoe), Pulaski (combination of axe and grubbing hoe), brush hook, and hand clippers. Power tools such as chain saws and power brush saws are also used, particularly for thick-stemmed plants.

Manual treatments, such as hand pulling and hoeing, are most effective where the weed infestation is limited and soil types allow for complete removal of the plant material (Rees et al., 1996). Additionally, pulling works well for annual and biennial plants, shallow-rooted plant species that do not re-sprout from residual roots, and plants growing in sandy or gravelly soils. Repeated treatments are often necessary due to soil disturbance and residual weed seeds in the seed bank.

Manual techniques would be used in many areas, particularly where low impact treatments are desirable. Although they have limited value for weed control over a large area, manual techniques can be highly selective. Manual treatment would be used in sensitive habitats such as riparian areas, areas where burning or herbicide application would not be appropriate, and areas that are inaccessible to ground vehicles (USDI BLM, 1991).

Approximately 600 acres of manual treatment could occur annually under the Proposed Action (See Table 2).

Mechanical Methods

Mechanical treatments would be used on larger infestations where manual noxious weed and invasive plant treatments would be impractical or too expensive or where seedbed preparation is required for re-vegetation. Mechanical treatment involves the use of vehicles such as wheeled tractors, crawler-type tractors, or specially designed vehicles with attached implements designed to cut, uproot, mulch, or chop existing vegetation. The selection of a particular mechanical method is based on the characteristics of the vegetation, seedbed preparation and re-vegetation needs, topography and terrain, soil characteristics, and climatic conditions. Mechanical methods that would be used by the BLM include tilling (disk plowing), drill seeding, broadcast seeding followed by harrowing or chaining, mowing, and mastication.

Disk plowing would be implemented where herbicide or prescribed fire is not a feasible treatment or to create fuel breaks when implementing a prescribed fire treatment. Mechanical disk plowing would be used to reduce competition from invasive plants. Application of herbicides such as *Glyphosate* following disk plowing may occur to eliminate any later germination of invasive plants. To be effective, disk plowing would need to be completed prior to seed production of invasive plants.

Drill or broadcast seeding in the fall would be utilized to establish desirable perennial vegetation. Rangeland drills or no-till drills would be utilized to seed grass, forb, and shrub mixtures after seedbed treatments (prescribed fire, herbicide, disk plowing, etc.). The rangeland drill was developed to seed rough rangeland sites and is typically used in open, relatively flat topography, which is fairly absent of larger rocks [8-10" in diameter]. This method works well in most soil types and is the primary seeding method that would be used. A no-till drill is best utilized in areas with low surface rock present. The advantage of using a no-till drill is less soil disturbance;

however, no-till drills are not readily available and can only be used in non-rocky soils. The drill seed method has the greatest probability of seeding success among various seeding tools and methods. Broadcast seeding would be utilized on small tracts or when the terrain is not conducive to drill seeding. Broadcast seeding is normally followed with a cover treatment using a harrow or aerator implement.

A harrow/aerator implement, such as a Dixie harrow or Lawson aerator, would be utilized to prepare a seedbed or cover seed broadcast over an area that is not conducive to drill seeding due to impeding standing live or dead vegetation.

The Dixie harrow consists of metal tubes attached to a 1,500 pound drawbar. Each tube has four sets of steel fins which protrude 12 inches from either side of the tube. When the Dixie harrow is dragged along the ground the design of these fins allow for the tubes to twist and turn which reduces woody cover and covers seed that has already been broadcast on the soil surface. A rubber–tired tractor of 150 horsepower or greater is required to pull the Dixie harrow effectively. A tined harrow could be used to cover broadcast seed where no live or dead woody cover is present. The Lawson aerator is a large drum aerator pulled behind a large tractor and is designed to crush shrubs and reduce canopy cover while not killing plants. It causes minimal impact to the soil.

Chaining would be utilized for seed coverage where brittle brush or tree skeletons preclude the use of drills. Chaining consists of pulling heavy (40 to 90 pounds per link) chains in a “U” or “J” shaped pattern behind two crawler-type tractors. The chain is usually 250 to 300 feet long and may weigh as much as 32,000 pounds. The width of each swath varies from 75 feet to 120 feet. Chaining can be done on irregular, moderately rocky terrain, with slopes of up to 20%.

Mowing tools, such as rotary mowers or straight-edged cutter bar mowers, would be used to cut herbaceous and woody vegetation above the ground surface. Generally mowing treatments would be followed-up with herbicide treatments. Mowing treatments alone have limited use for noxious weed control, as the machinery tends to spread seeds and not kill roots. Mowing is most effective on annual and biennial plants (Rees et al., 1996). Weeds are rarely killed by mowing, and an area may have to be mowed repeatedly for the treatment to be effective (Colorado Natural Areas Program, 2000). However, the use of a “wet blade,” in which an herbicide flows along the mower blade and is applied directly to the cut surface of the treated plant, can greatly improve the control of some species.

Mastication would be utilized to remove live or dead shrubs or trees with less soil surface disturbance than chaining. Mastication treatment may be followed by spot herbicide application for species that resprout (e.g. Russian olive, tamarisk). Mastication is achieved utilizing an implement such as a Fecon® head attached to a crawler-tractor. The head grinds the woody plant from the top down, creating debris that acts as mulch on the soil surface. Mastication can be used in combination with broadcast seeding; the woody debris resulting from mastication provides cover for seed.

Prescribed Fire

Prescribed fire would be used in combination with other treatment methods to combat non-native annual invasive plants and restore native plant communities. Prescribed fire would be used as a treatment to remove plant cover and litter accumulations to improve success of herbicide and seeding treatments. This would occur in degraded upland plant communities, including adjacent ephemeral drainages, but would not occur in perennial or intermittent drainages supporting woody riparian vegetation. Project area boundaries, sagebrush islands or other important habitat features would be protected from the burn by one or more of the following actions: wet line, foam line, hand line, location of ignition, dozer or disk line or other mechanical methods as described in the Mechanical Methods section above. Prescribed fire would also be used to remove accumulations of noxious weeds or invasive plants from fence lines, drainages, or ravines where the integrity of BLM projects or wildlife migration corridors is compromised.

A project-level prescribed burn plan would be developed to describe burning parameters and address safety and smoke management. Burning prescriptions would minimize soil erosion and mortality of desirable perennial plants. All prescribed burning will be coordinated with state and local air quality agencies to ensure compliance with local air quality standards.

Prescribed fire in sage-grouse habitat would be subject to the following criteria and would be addressed in the site-specific project and burn plans per the Idaho and Southwestern Montana and Nevada and Northeastern California Greater Sage-Grouse ARMPA/Final EISs (2015):

- why alternative techniques were not selected as a viable options;
- how sage-grouse goals and objectives would be met by its use;
- how the Conservation Objectives Team Report objectives would be addressed and met;
- a risk assessment to address how potential threats to sage-grouse habitat would be minimized.

Prescribed fire could be used to meet management objectives to protect and/or enhance greater sage-grouse habitat in Priority Habitat Management Areas (PHMA) and Important Habitat Management Areas (IHMA). In PHMA or IHMA, use of prescribed fire would be determined on a project-by-project basis and would be dependent on existing vegetation, including shrub cover and patch size, understory composition, and distance to sage-grouse seasonal habitats. Limited prescribed fire may be utilized for initial seedbed preparation in Wyoming big sagebrush patches with greater than 10% shrub foliar cover and a degraded understory dominated by non-native annual invasive vegetation. Prescribed fire would be followed by additional treatments to control noxious weeds and invasive plants and re-establish desirable perennial vegetation, including shrubs. Projects would be reviewed to ensure that they meet requirements for adaptive management thresholds under the ARMPAs.

Any prescribed fire in sage-grouse winter habitat would need to be designed to strategically reduce wildfire risk around and/or in the winter range and designed to protect and/or restore winter range habitat quality (Idaho and Southwestern Montana and Nevada and Northeastern California Greater Sage-Grouse ARMPA/Final EISs, 2015).

Biological Control

Biological control involves the intentional use of insects, nematodes, mites, or pathogens (agents such as bacteria or fungi that can cause diseases in plants), or domestic animals that weaken, consume, or destroy vegetation (USDI BLM, 1991). The concept of biological control is to introduce natural enemies that are specific to particular weeds and which would not attack other plants. The use of biological agents other than domestic animals is strictly controlled and permitted by the USDA Animal and Plant Health Inspection Service (APHIS) following rigorous testing to ensure that agents are host-specific. The goal of biological control is to reduce the weed to a minor part of the vegetation community instead of the dominant member of the community. Biological control will not eradicate a weed species and is not appropriate to be used when eradication of a weed is the management goal.

Biological control agents have been utilized in the TFD weed control program for approximately 20 years. Biological controls used to date include insects and domestic animals. Under the Proposed Action, currently approved biological control agents would be released as necessary. As new agents are approved for release, they would also be considered as a control method. If additional weeds become established in the TFD for which approved agents are available, those agents will also be considered as a treatment tool if their use would help to achieve treatment goals. Table 1 details the biological control agents currently approved for use in Idaho. Based on past treatments, an estimated 60 releases of biological control agents could be made per year under this proposal (See Table 2).

Table 1 – Approved Biological Control Agents for Idaho

Target Weed	Biological Control Agent(s)
Canada thistle	Canada thistle stem weevil (*Hadroplontus* [*Ceutorhynchus*] *litura*) Canada thistle gall fly (*Urophora cardui*)
Dalmatian toadflax Yellow toadflax	Toadflax flower-feeding beetle (*Brachypterolus pulicarius*) Toadflax moth (*Calophasia lunula*) Toadflax root boring moth (*Eteobalea intermediella*) Toadflax root boring moth (*Eteobalea serratella*) Dalmatian toadflax stem weevil (*Mecinus janthiniformis*) Yellow toadflax stem weevil (*Mecinus janthinus*) Toadflax seed capsule weevil (*Rhinusa* [*Gymnetron*] *antirrhini*) Toadflax root galling weevil (*Rhinusa* [*Gymnetron*] *linariae*)

Target Weed	Biological Control Agent(s)
Diffuse knapweed Russian knapweed Spotted knapweed	Knapweed root boring moth (*Agapeta zoegana*) Russian knapweed gall wasp (*Aulacidea acroptilonica*) Knapweed seed head weevil (*Bangasternus fausti*) Knapweed seed head fly (*Chaetorellia acrolophi*) Knapweed root boring weevil (*Cyphocleonus achates*) Russian knapweed gall midge (*Jaapiella ivannikovi*) Knapweed seed head weevil (*Larinus minutus*) Knapweed seed head weevil (*Larinus obtusus*) Knapweed seed head moth (*Metzneria paucipunctella*) Knapweed root boring moth (*Pelochrista medullana*) Knapweed root boring moth (*Pterolonche inspersa*) Knapweed root boring beetle (*Sphenoptera jugoslavica*) Russian knapweed nematode (*Subanguina picridis*) Knapweed seed head fly (*Terellia virens*) Knapweed seed head gall fly (*Urophora affinis*) Knapweed seed head gall fly (*Urophora quadrifasciata*)
Field bindweed	Bindweed gall mite (*Aceria malherbae*) Bindweed defoliating moth (*Tyta luctuosa*)
Hydrilla	Indian hydrilla tuber weevil (*Bagous affinis*) Australian hydrilla stem boring weevil (*Bagous hydrillae*) Australian hydrilla leaf mining fly (*Hydrellia balciunasi*) Indian hydrilla leaf mining fly (*Hydrellia pakistance*)
Leafy spurge	Minute spurge flea beetle (*Aphthona abdominalis*) Brown dot spurge flea beetle (*Aphthona cyparissiae*) Black spurge flea beetle (*Aphthona czwalinae*) Copper spurge flea beetle (*Aphthona flava*) Brown-legged spurge flea beetle (*Aphthona lacertosa*) Black dot spurge flea beetle (*Aphthona nigriscutis*) Spurge root/defoliating beetle (*Aphthona spp.*) Spurge clearwing moth (*Chamaesphecia crassicornis*) Spurge clearwing moth (*Chamaesphecia hungarica*) Spurge gall midge (*Dasineura capsulae*) Spurge hawk moth (*Hyles euphorbiae*) Red-headed spurge stem borer (*Oberea erythrocephala*) Spurge tip gall midge (*Spurgia esulae*)
Mediterranean sage	Mediterranean sage root weevil (*Phrydiuchus tau*)
Musk thistle	Musk thistle seed head fly (*Urophora solstitialis*)
Puncturevine	Puncturevine seed weevil (*Microlarinus lareynii*) Puncturevine stem weevil (*Microlarinus lypriformis*)
Purple loosestrife	Black-margined loosestrife beetle (*Galerucella calmariensis*) Golden loosestrife beetle (*Galerucella pusilla*) Loosestrife root weevil (*Hylobius transversovittatus*) Loosestrife seed weevil (*Nanophyes marmoratus*)

Target Weed	Biological Control Agent(s)
Rush skeletonweed	Rush skeletonweed root boring moth (*Bradyrrhoa gilveolella*) Rush skeletonweed gall midge (*Cystiphora schmidti*) Rush skeletonweed gall mite (*Eriophyes chondrillae*) Rush skeletonweed rust(*Puccinia chondrillina*)
Russian thistle	Russian thistle gall mite (*Aceria salsolae*) Russian thistle casebearer (*Coleophora klimeschiella*) Russian thistle stem mining moth (*Coleophora parthenica*)
Saltcedar	Saltcedar defoliating beetle (*Diorhabda carinulata*) Saltcedar defoliating beetle (*Diorhabda elongate*) Saltcedar defoliating beetle (*Diorhabda sublineata*)
Scotch broom	Broom seed beetle (Bruchidius villosus) Scotch broom seed weevil (*Exapion fuscirostre*) Scotch broom twig miner (*Leucoptera spartifoliella*)
Yellow starthistle	Yellow starthistle bud weevil (*Bangasternus orientalis*) Yellow starthistle peacock fly (*Chaetorellia australis*) Yellow starthistle hairy weevil (*Eustenopus villosus*) Yellow starthistle flower weevil (*Larinus curtus*) Yellow starthistle rust (*Puccinia jacea soltitialis*) Yellow starthistle gall fly (*Urophora sirunaseva*)
Accessed 5/9/2013 from the Idaho State Department of Agriculture website and modified by known availability by BLM specialists http://www.agri.state.id.us/Categories/PlantsInsects/NoxiousWeeds/Bio_Control.php	

Domestic goats or sheep would be the only classes of livestock used to control specific noxious weed populations. This method would be used as a small scale application in areas where herbicide use is not desirable due to high human use or sensitive resources, or where manual treatment is impractical due to difficult access. This could include but is not limited to recreation sites including campsites, trailheads, and trails; near public/private land boundaries; and in areas with steep terrain. Goats or sheep would not be used as a weed control treatment within Riparian Conservation Areas (RCAs) in undeveloped sites. Goats or sheep would not be used in developed sites in RCAs with ESA-listed aquatic species habitat. Approximately 500 acres could be treated annually using this method under the Proposed Action (See Table 2). Treatments using domestic goats or sheep would not occur within nine miles of the Jarbidge/Bruneau river canyons bighorn sheep population. Separation between domestic goats or sheep used for biocontrol and bighorn sheep in other areas would require an effective separation plan coordinated with IDFG that provides sufficient separation to minimize the risk of contact and disease transmission. Goats or sheep would need to be quarantined before and after moving to a new location to ensure no transfer of undesirable plant materials.

Herbicides

The TFD is proposing to use 20 herbicides that are approved for use on public lands by the RODs for the 2007 and 2016 PEISs. Herbicides would be used to control and eliminate areas of noxious weeds and invasive plants spread and to contain existing infestations. The 20 active ingredients in these herbicides are:

- *2,4-D*
- *Aminopyralid*
- *Bromacil*
- *Chlorsulfuron*
- *Clopyralid*
- *Dicamba*
- *Diflufenzopyr (*in formulation with *dicamba* and known as Overdrive® and Distinct®*)*
- *Diquat*
- *Diuron*
- *Fluridone*
- *Fluroxypyr*
- *Glyphosate*
- *Hexazinone*
- *Imazapic*
- *Imazapyr*
- *Metsulfuron methyl*
- *Picloram*
- *Rimsulfuron*
- *Tebuthiuron*
- *Triclopyr*

A list of these approved BLM herbicides, available formulations, registered trade names, and general effects can be found in Appendix C. The registered trade names are the most current as of January 12, 2016. Other formulations of the active ingredient may be used and include less common trade named products. Additional information concerning the herbicides available for use under the Proposed Action is included in the 2007 and 2016 PEISs.

The active ingredient *sulfometuron methyl* (OUST®) was approved for use in the ROD for the 2007 PEIS. Idaho BLM currently has a moratorium (Instruction Memorandum No. ID-2001-050) that disallows the use of this chemical on public lands. Therefore, use of s*ulfometuron methyl* is not included as part of the Proposed Action. In addition, herbicides containing *sulfometuron methyl* in combination with other active ingredients would not be used.

Chemical treatment involves the application of herbicides (chemical compounds), by a variety of application methods, at certain plant growth stages to kill noxious weeds and invasive plants. Depending on the type of herbicide selected, they can be used for control or complete eradication and may be used in combination with other control treatments. Selection of an herbicide and timing of application would depend on its chemical effectiveness on a particular weed species, habitat types present, proximity to water, and presence or absence of sensitive plant, wildlife, fish or other aquatic species.

Herbicide applications also utilize adjuvants to enhance or prolong the activity of an active ingredient (USDI BLM, 2007a; USDI BLM, 2015a). For terrestrial herbicides, adjuvants aid in proper wetting of foliage and absorption of the active ingredient into plant tissue. Adjuvant is a broad term that includes surfactants, selected oils, anti-foaming agents, buffering compounds, drift control agents, compatibility agents, stickers, and spreaders. Adjuvants are not under the same registration guidelines as pesticides; the EPA does not register or approve the labeling of spray adjuvants. Individual herbicide labels contain lists with "label-approved" adjuvants for use with a particular herbicide under specific conditions. Currently more than 200 adjuvants are approved for use on BLM lands (USDI BLM, 2015a). Under the Proposed Action, only approved adjuvants would be used and all label restrictions would apply.

Ecological risk assessments (ERAs) for herbicides analyzed in the 2007 and 2016 PEISs included the use of adjuvants; results of the ERAs were incorporated into the biological assessments (BAs) for the PEISs. Conservation measures resulting from consultations on the 2007 and 2016 PEISs address the use of adjuvants for sensitive aquatic resources (USDI BLM, 2007a; USDI BLM, 2015a). These conservation measures are incorporated into the *Design Features and Conservation Measures* section below.

Application methods that would be used include spraying from all-terrain vehicle (ATV), utility-terrain vehicle (UTV), truck, tractor, backpack, horse, helicopter or fixed wing aircraft. Ground-based broadcast applications would utilize ATVs, UTVs, trucks, and tractors with a boom attachment. Low boom [20 in/0.51 meters and below] ground-based broadcast applications would utilize ATVs and UTVs; high boom [50 in (1.27 meters) and above] ground-based broadcast applications would utilize trucks or tractors (AECOM, 2014). Spot treatments would utilize a hand-held wand attached to a backpack sprayer or vehicle mounted spray equipment. Aerial herbicide application would be considered for larger-scale use on a project-by-project basis and is restricted for some herbicides. Twin Falls District application criteria developed from label specifications and the 2007 and 2016 RODs are listed for each herbicide in Appendix D. All application rates, procedures, and restrictions would be within label specifications.

Approximately 8,000 spot herbicide applications for noxious weed control would occur annually as an on-going action (See Table 2). Based on past application records, these spot applications could range in size from a single plant to one acre.

On-going noxious weed treatments would also include ground-based broadcast roadside spraying along travel routes to reduce weed spread due to road use and maintenance. Treatments would be implemented using broadcast spray equipment mounted to a pickup, trailer, tractor, UTV, or ATV. Approximately 30 feet on either side of roads could be treated. Approximately 500 miles of road (about 3,600 acres or <1% of the District) could be treated annually (See Table 2).

Herbicide Treatment Standard Operating Procedures

The BLM will adopt Standard Operating Procedures (SOP) from the RODs for the 2007 and 2016 PEISs to ensure that risks to human health and the environment from herbicide treatment actions are minimized. The SOP are the management controls and performance standards intended to protect and enhance natural resources that could be affected by vegetation treatments involving the use of herbicides. These SOP are listed in Appendix E.

Herbicide Application Criteria

The current list of BLM approved herbicides and local site-specific herbicide use criteria can be found in Appendix D. These criteria along with design features described below would be utilized to formulate site-specific vegetation treatment plans and Pesticide Use Proposals (PUP) across the TFD. The 2007 and 2016 PEIS decisions concerning specific use of certain chemicals approved for BLM use were included in the development of local use criteria. These decisions are addressed below.

Consistent with decisions made in the RODs for the 2007 and 2016 PEISs, the BLM will not utilize aerial application of:

- *Bromacil, chlorsulfuron, diuron,* and *metsulfuron methyl.*
- In addition, *diquat* will not be aerially applied in riparian areas and wetlands.

The use of *tebuthiuron* will be avoided in Native American traditional use areas. To address potential risks associated with the adjuvant R-11® and polyoxyethyleneamine (POEA), the BLM will not use R-11® in aquatic environments, and either avoid using *glyphosate* formulations containing POEA, or seek to use formulations with the least amount of POEA, to reduce risks to amphibians and other aquatic organisms. In addition to the SOP that are protective of resources and values in the planning area, design features and conservation measures listed below would be incorporated into project-level planning.

Herbicides used for pre-emergent control of noxious weeds or invasive plants would not be applied to bare soil where there is potential for off-site soil movement that may negatively impact sensitive resources or private agricultural crop land. Site factors to consider in this determination are topography, soil type and erosion potential, treatment location relative to sensitive resources or private agricultural crop land, project size, wildfire or prescribed fire intensity, and residual vegetation and litter cover. Appropriate SOP would also be applied in the determination (See Appendix E).

Re-vegetation

When natural recovery of the native plant community will not occur following treatment for noxious weeds and invasive plants, re-vegetation would be used to stabilize the site, restore desirable vegetation, and eliminate or reduce the conditions that favor noxious weeds and invasive plants. This would be accomplished by seeding or planting desirable perennial vegetation that will re-establish plant community structure and diversity.

Seed Treatments

Based upon site-specific conditions, re-vegetation may include seed-bed preparation (e.g. prescribed fire, disk plowing, and/or herbicide treatments) and seed or seedling plantings. Rangeland drill and broadcast seeding (with or without a following cover treatment) would be the primary methods used for re-vegetation of desirable plant species, especially on larger areas. Seeding would be metered and distributed either by placing seed into the soil at a predetermined depth using a drill or broadcasting seed on the soil surface.

Seed Selection

Plant materials for vegetation treatment would be selected and seed mixtures designed to best meet land use plan resource management objectives and may include native and/or introduced species. Species selected for use would be taken from the seed list in Appendix F, although other plant materials may be added as they become available. Species planted on vegetation treatment areas must provide for attainment of resource management objectives and be in compliance with Executive Order 13112, Invasive Species (February 3, 1999).

The use of native species or cultivars is emphasized over the use of non-natives for vegetation treatments based on availability, adaptation (ecological site potential) and probability of success. In some land use plan areas of the TFD, use of native species may be required. Non-native species may be selected for use that would exhibit the ability to effectively compete with non-native annual vegetation, mimic natives both structurally and functionally and support sage-grouse objectives. A mixture of native and non-native species would be proposed if all the desired native species are not available in sufficient quantities to meet resource objectives or the existing plant community has crossed an ecological threshold and non-native annual vegetation is dominant. Non-native species could be used if they are the best plant material available to meet the objectives of a project. Seed mixtures proposed for use could contain a variety of grasses, forbs, and shrubs and would be consistent with species normally adapted to soils and precipitation of the site.

The National Seed Strategy for Rehabilitation and Restoration, 2015-2020 (Plant Conservation Alliance (PCA), 2015) promotes the development and use of locally adapted, genetically appropriate native seed. The use of local seed sources for native plants would be emphasized, especially for ecotypes of plants like big sagebrush (*Artemisia tridentata*). Important elements that would be considered in creating seed mixtures with native plants include the following:

- availability at a reasonable cost per acre,
- adaptation to the area proposed for treatment (i.e. select the seed mixture based on ecological site potential),
- impacts of competition (noxious weeds, invasive plants, other plants in the seed mixture, and existing land uses) on native plant establishment and persistence, and
- select the warmer component of a species' current range when selecting native species (other than sagebrush) for restoration when available and appropriate (Kramer & Havens, 2009).

The TFD Emergency Stabilization and Rehabilitation Seed Mixture Development Instruction Memorandum (IM #ID200-2008-003) provides additional guidance on development and use of seed mixtures. The recommendations contained in this IM are in Appendix F.

Shrub Seeding and Planting

Following completion of a drill or broadcast seeding treatment, shrub seed (primarily sagebrush) could be applied using aerial or ground methods on the drill seed treatment area. Ground application would be done with a tractor/truck and broadcast seeder. The seed could be lightly covered by a rubber-tired packer or drag chains. Large-scale aerial applications of sagebrush and other small seed species typically are not covered post-application.

Sagebrush appropriate to site potential would be seeded and/or planted in PHMA and IHMA. Planting would occur after establishment of desirable perennial understory vegetation. Shrub seedlings may be planted following a drill seed treatment. In some cases, the only habitat improvement needed is to re-establish shrubs and only shrub planting would occur in such areas. The following upland native shrubs are the primary species that would be utilized for planting: Wyoming and basin big sagebrush (*Artemisia tridenata* ssp. w*yomingensis* and *Artemisia tridentata* ssp. *tridentata*), silver sagebrush (*Artemisia cana*), and antelope bitterbrush (*Purshia tridentata*). Other native shrubs or trees would be used as appropriate to re-vegetate treated sites (e.g. replanting riparian shrubs where noxious weeds or invasive plants have been treated). Planting would occur during the early spring or late fall when precipitation and temperatures are more favorable for shrub establishment.

Planting of shrub seedlings would be done when it is desirable to establish species quickly, create a seed source, stabilize soils, and/or restore wildlife habitat. This method is usually limited to bare root or containerized shrub or tree seedlings. The disturbance associated with hand planting consists of the area within a two to three-inch radius of the plant. Planting tools include planting bars, hoedads, and augers. If hand planting is done the second growing season after a re-vegetation treatment, a two by two-foot clearing of vegetation for each seedling planted may be required. Areas immediately around the hole may be cleared of competitive vegetation (scalped) using a tool such as a shovel, Pulaski or McLeod.

Mechanical planting can cover larger areas in shorter time periods. Use of a tree planter would create a linear scalp in which a narrow furrow is cut and the shrub planted, and then pressed into the ground.

Summary of Proposed Actions

Table 2 describes the anticipated yearly treatment acreages for on-going actions. These estimates are based on past records, current noxious weed inventory, and expected future needs for manual, biological control, and spot or ground-based roadside herbicide applications. These actions, if approved, would be authorized under the DR for this document and no further decision would be required.

Table 2 – Estimated Annual Treatment for On-going Actions

Treatment Method	Estimated Treatment Per Year
Manual	600 acres
Biological Control Agents	60 releases
Biological Control (goats/sheep)	500 acres
Spot Herbicide Application	8,000 acres
Ground-based Roadside Herbicide Application	3,600 acres

Larger-scale vegetation treatments would be planned using the DNA review process. A separate DR would be issued following that review process.

Livestock and Wild Horse Management

Coordination with permittees would occur for large–scale noxious weed and invasive plant treatments where permitted livestock grazing occurs. New seedings would not be grazed until treatment objectives have been met or the treatment is determined to be a failure, as documented by monitoring. This time frame is typically two growing seasons. In sage grouse habitat, ARMPA management decisions concerning rest and monitoring of new seedings would be implemented (Appendix L-MD Fire 34, MD LG 20, and MD LG 22). The length of rest necessary to allow plants to mature and develop robust root systems may vary, dependent on growing conditions and seeded species. Resumption of livestock grazing would ultimately depend on monitoring and meeting of resource management objectives. Monitoring needs and criteria for resumption of grazing would be developed as part of the site-specific treatment plan. Design features for livestock grazing would be considered and included as appropriate during project planning (see Design Features for livestock below).

Livestock permittees would be informed of proposed temporary closures early in the project planning process. Temporary livestock closures or adjustments would be implemented by decision or agreement. Grazing decisions or agreements will specify the terms and conditions of closures including the temporary loss of animal unit months (AUMs) and monitoring objectives and criteria for re-authorizing livestock grazing on the treated area. If it is determined through monitoring that treatment objectives have not been met, a new proposed decision or agreement would be issued addressing additional rest and/or other livestock management direction needed to help meet treatment objectives, if necessary.

Treatments for noxious weed and invasive plants within the Saylor Creek Wild Horse Herd Management Area (HMA) would be focused on improving rangeland health and reducing fire frequency. Proposed treatments would be implemented in a manner to prevent the need for removal of horses from the HMA. Design features for wild horses would be considered and included as appropriate during project planning (see Design Features for wild horses below).

Livestock and wild horses may be temporarily excluded from a treatment area by using existing management fences or constructing temporary fences. Temporary fences would be placed around the perimeter of a treated area to the minimum amount required. When constructing fences, such factors as topography, rocky outcrops, soils, and existing fences would be considered. Temporary fence construction would be strategically located to avoid concentration of livestock and/or wild horses in riparian habitats. 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 new fences are built. Fence construction will conform to BLM Manual Handbook H-1741-1 (1989). In general, all fence posts, braces, and gates would be constructed of steel or wood.

The size of the treated area to be fenced, difficulty in fence construction (e.g. topography), 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 protective fence is required. Cost effectiveness is also an important consideration when determining if a fence is needed, especially if the tangible benefits produced by the cost to construct a fence are minimal.

Permanent exclosures could be constructed within vegetation treatments to evaluate exclusion of land uses and the long-term establishment of plant materials. Exclosures could contain both treated and untreated vegetation and should be established in areas that are representative of larger scale projects.

Cultural Resources

Inventories for cultural resources would be performed during project planning. Consultation with the State Historic Preservation Officer was completed (Section 106 of the National Historic Preservation Act) according to the National Programmatic Agreement. The TFD-specific cultural resource programmatic agreement was signed on October 29, 2015. Important cultural resource sites identified during the inventory will be recorded, marked, and avoided during treatment implementation if the proposed treatment would cause adverse effects to the resource. Law enforcement patrols may be used to protect cultural resources from unauthorized human activities.

Paleontological Resources

The potential for the presence of paleontological resources would be assessed during project planning. Field inventories would be conducted as needed for sites where there is potential for paleontological resources to occur. Important paleontological resource sites identified during the inventory will be recorded, marked, and avoided during treatment implementation.

Design Features and Conservation Measures

The purpose of design features and conservation measures is to reduce or eliminate potential impacts that may be caused by vegetation treatment actions. Design features and conservation measures were derived from land use plans, conservation plans and agreements, existing NEPA documents, and current ESA Section 7 consultations. In addition, mitigation and conservation measures contained within the RODs and BAs for the 2007 and 2016 PEISs are included, as appropriate. Where multiple design features or conservation measures in different documents addressed the same resource, the most conservative option was chosen for incorporation into this plan. Project-specific design features and conservation measures in addition to those listed below could be included in individual project plans if needed to reduce or eliminate potential adverse impacts.

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.

Water Resources and Riparian Conservation Areas (RCAs)

The TFD uses the Inland Native Fish Strategy (INFISH) for the Intermountain, Northern, and Pacific Northwest Regions (USDA FS, 1995) to identify areas where management actions may affect aquatic resources, including water quality. The INFISH Riparian Conservation Areas (RCAs) are:

- 300 feet for fish bearing streams;
- 150 feet for perennial non-fish bearing streams;
- 150 feet for ponds, lakes, reservoirs, and wetlands greater than one acre;
- 50 feet for seasonally flowing or intermittent streams, wetlands less than one acre, landslides and landslide-prone areas.

Figure 4 displays the relationship between the stream channel, riparian vegetation, and upland vegetation within the RCA. The RCA consists of the stream channel and the area on either side of the stream extending from the edges of the active channel (i.e., where high water scours perennial vegetation or deposits debris within the active floodplain) beyond the outer limits of hydric vegetation for a linear distance appropriate for the RCA (i.e., fish-bearing, non-fish bearing, or wetlands). The term hydric vegetation refers to vegetation types that are influenced by surface or subsurface water and include woody (e.g., aspen, dogwood, willow) and herbaceous (e.g., carex, rush, sedge) plant species. Management actions within RCAs, such as noxious weed and invasive plant treatments, are often necessary to meet riparian management objectives for special status aquatic species. The following conservation measures were developed to reduce the potential for noxious weed and invasive plant treatments to have negative effects to RCAs. Additional design features and conservation measures to protect special status aquatic species are listed below.

Conservation Measures for Site Access and Fueling/Equipment Maintenance

- Where feasible, access work sites only on existing roads and limit all travel on roads when damage to the road surface will result or is occurring.
- *Within RCAs,* do not use full-sized vehicles for transport or fueling off of established roads.
- *Outside of RCAs,* allow driving off of established roads only on slopes of 20% or less.
- Helicopter service landings, fuel trucks, and fueling or storage of fuel would not occur within 300 feet of live water.
- Except in emergencies, land helicopters outside of RCAs.
- Prior to helicopter fueling operations prepare a transportation, storage, and emergency spill plan and obtain the appropriate approvals; for other heavy equipment fueling operations use a slip-tank not greater than 250 gallons; prepare spill containment and cleanup provisions for maintenance operations.

Conservation Measures Related to Mechanical Treatments

Outside RCAs:

- Conduct soil-disturbing treatments only on slopes of 20% or less, where feasible.

Within RCAs:

- Do not use vehicles or heavy equipment in perennial channels or in intermittent channels with water, except at crossings that already exist.
- Do not conduct ground disturbing activities (e.g., disking, drilling, chaining, and plowing) or mowing within riparian areas. Within upland vegetation areas in RCAs, utilize seed cover methods that minimize ground disturbance and sediment production.
- Do not remove large woody debris or snags during mechanical treatment activities.
- Leave suitable quantities (to be determined at the local level) of excess vegetation and slash on site. Do not completely remove invasive hydric trees and shrubs (e.g. saltcedar, Russian olive) from riparian areas if removal would result in bank destabilization. Phase removal with planting of native riparian shrubs to maintain bank stability.

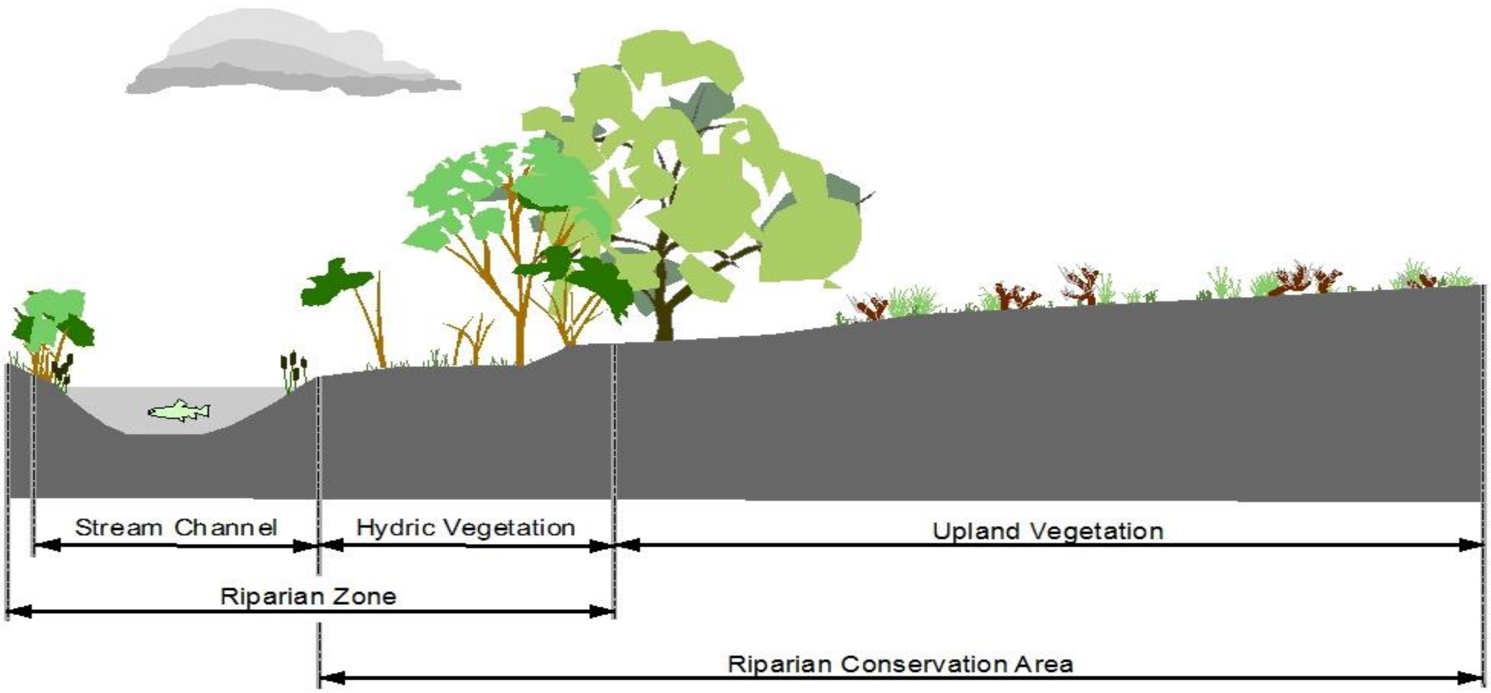
Conservation Measures Related to Prescribed Fire

- Prescribed fire would not be used in RCAs associated with perennial or intermittent drainages.

Conservation Measures Related to Biological Control

- Goats or sheep would not be used as a weed control treatment within RCAs in undeveloped sites.

Figure 4 – Relationship Between the Stream Channel, Upland, and Riparian Vegetation Within the RCA



Conservation Measures Related to Herbicide Treatments

- The following herbicides **would not** be broadcast sprayed in RCAs: *aminopyralid, bromacil, chlorsulfuron, clopyralid, dicamba, diflufenzopyr+dicamba* (Overdrive®), *diuron, fluroxypyr, hexazinone, imazapic, metsulfuron methyl, picloram, rimsulfuron, tebuthiuron.* These herbicides can be used for spot treatments in upland vegetation within RCAs, but cannot be used within 15 feet of hydric vegetation. Additional restrictions for *diuron* application adjacent to ESA TEP (threatened, endangered, or proposed) aquatic species habitats are listed in the *Special Status Aquatic Animal Species (TEP and BLM sensitive)* conservation measures.
- The following herbicides **could** be used in RCAs: *2,4-D, diquat, fluridone, glyphosate, imazapyr, triclopyr.* The following restrictions apply to use of these herbicides in all RCAs:
    - Only ground-based broadcast or spot herbicide treatments would be used within RCAs.
    - Do not broadcast spray within 100 feet of open water when wind velocity exceeds 5 mph.
    - Do not broadcast spray when wind velocity exceeds 10 mph.
    - Do not use a high boom for broadcast spray within 100 feet of hydric vegetation. A low boom may be used from 50-100 feet of hydric vegetation.
    - Do not broadcast spray within 0-50 feet of hydric vegetation. Spot application may occur using a backpack sprayer or ATV/UTV mounted spray equipment. Vehicles used for spraying would be appropriate for site conditions and local travel restrictions. Application methods may also include wicking, wiping, dipping, painting, or injecting.
    - Use only herbicides approved for aquatic use within 15 feet of hydric vegetation.
    - Avoid using *glyphosate* formulations that include R-11 and either avoid using any formulations with POEA, or seek to use the formulation with the lowest amount of POEA available, to reduce risks to aquatic organisms.
    - Do not spray if precipitation is occurring or is imminent (within 24 hours).
    - Do not spray if air turbulence is sufficient to affect the normal spray pattern.
    - Maintain equipment used for transportation, storage or application of chemicals in a leak proof condition.
    - Do not store or mix herbicides, or conduct post-application cleaning within riparian areas.
    - Ensure that trained personnel monitor weather conditions at spray times during application.
    - Strictly enforce all herbicide labels.
    - Follow all instructions and SOPs to avoid spill and direct spray scenarios into aquatic habitats. Special care should be followed when transporting and applying *2,4-D, bromacil, clopyralid, diruon, glyphosate, hexazinone, imazapyr, metsulfuron methyl, picloram, tebuthiuron,* and *triclopyr.*
    - Additional restrictions are listed below for treatments in and adjacent to ESA TEP aquatic species habitats.

Aquatic herbicides such as *diquat* and *fluridone* may be used to treat infestations of aquatic invasive plants on BLM lands within the TFD. Treatments would focus on reservoirs (e.g. Salmon Falls, Magic, Wilson Lake, or Lower Goose Creek Reservoirs) that are not occupied by special status aquatic species. Aquatic herbicides would only be used on a case-by-case basis after alternative aquatic vegetation treatments (i.e. mechanical or biological) have been demonstrated as ineffective.

Areas with potential for groundwater for domestic or municipal water use shall be evaluated through the appropriate, validated U.S. Environmental Protection Agency (EPA) model(s) to estimate vulnerability to potential groundwater contamination, and appropriate mitigation measures shall be developed if such an area requires the application of herbicides and cannot otherwise be treated with non-chemical methods.

Special Status Aquatic Animal Species (TEP and BLM sensitive)

Applicable conservation measures specific to TEP aquatic species listed below are from the BAs for the 2007 and 2016 PEISs and should be used to develop site-specific treatment plans. These would be applied in addition to the design features and conservation measures listed above for RCAs. These conservation measures would apply to treatments occurring in watersheds with TEP aquatic species, as well as designated and proposed critical habitats. Conservation measures for TEP aquatic species listed below, including protective buffers, should be reviewed and applied as needed to protect BLM sensitive aquatic species.

Additional conservation measures apply to all special status aquatic species (TEP and BLM sensitive), as noted.

Conservation Measures for Site Access and Fueling/Equipment Maintenance

- Where TEP aquatic species occur, consider ground-disturbing activities on a case by case basis, and implement SOPs to ensure minimal erosion or impact to the aquatic habitat.

Conservation Measures Related to Mechanical Treatments

- Ground-disturbing activities other than tree and shrub planting or minimum-disturbance seeding methods would not occur within 300 feet of all water bodies and springs containing special status aquatic species or their habitats. Minimum-disturbance seeding methods would include broadcast seeding with a lightweight smooth or tined harrow, smooth chain, or no-till drill.

Conservation Measures Related to Prescribed Fire

For prescribed fire treatments adjacent to RCAs:

- Within RCAs:
  - Do not camp, unless allowed by local consultation.
  - Have a fisheries biologist determine whether pumping activity can occur in streams with TEP aquatic species.

  - During water drafting/pumping, maintain a continuous surface flow of the stream that does not alter original wetted stream width.
  - Do not alter dams or channels in order to pump in streams occupied by TEP aquatic species.
  - Consult with a local fisheries biologist prior to helicopter dipping in order to avoid entrainment and harassment of TEP aquatic species.

Conservation Measures Related to Biological Control

- Goats or sheep would not be used in developed sites within RCAs containing TEP aquatic species habitat.

Conservation Measures Related to Herbicide Treatments

- Buffers for *diuron* would be as follows for TEP aquatic species:
  - If using a high boom at typical application rate or low boom at maximum application rate, do not spray within 300 feet of habitats where TEP aquatic species occur.
  - If using a high boom at maximum application rate, do not spray within 900 feet of habitats where TEP aquatic species occur.
- Do not use *diquat, fluridone*, terrestrial formulations of *glyphosate*, or *triclopyr BEE*, to treat aquatic vegetation in habitats where TEP aquatic species occur or may potentially occur.
- Do not broadcast spray *diuron, glyphosate, picloram,* or *triclopyr BEE* in upland habitats adjacent to aquatic habitats that support or may potentially support TEP aquatic species under conditions that would likely result in off-site drift.
- In watersheds that support TEP aquatic species or their habitat, do not apply *bromacil, diuron, tebuthiuron,* or *triclopyr BEE* in upland habitats within 0.5 miles upslope of aquatic habitats that support TEP aquatic species under conditions that would likely result in surface runoff.
- No surfactants would be used within 15 feet of streams containing TEP and BLM sensitive aquatic species.

The following conservation measures would apply to protect habitats for ESA-listed snails:

- Aerial herbicide treatments would not occur within 0.5 mile of the Snake River or lower Bruneau River downstream of the wilderness boundary (Bruneau hot springsnail Recovery Area) to protect listed Snake River snails, Banbury Springs lanx, and the Bruneau hot springsnail.
- No spraying of herbicides would occur within 15 feet of geothermal springs within the Bruneau hot springsnail Recovery Area or within 15 feet of the water in Box Canyon and Briggs Creek to protect Banbury Springs lanx. Manual treatments and aquatic-approved herbicide applications using wicking, wiping, dipping, painting, or injection are the only treatment methods allowed in these habitats.

The following conservation measure would apply to bull trout critical habitat:

- No aerial herbicide treatment would occur within 300 feet of the canyon rim for the Bruneau River or Jarbidge River (including the East Fork and West Fork Jarbidge River).

Additional conservation measures, including protective buffers, could be included in site-specific treatment plans to address conditions such as soil type, rainfall, vegetation type, and herbicide treatment method for protection of TEP aquatic species.

Conservation Measures Related to Re-vegetation Treatments

- Aerial seeding within or upstream of habitats occupied by special status aquatic species will be limited to seed mixtures with no added chemicals such as fertilizer.
- Ground-disturbing activities other than tree and shrub planting would not occur within 300 feet of all water bodies and springs containing special status aquatic species or their habitat.
- Hydro-mulch will not be used within 300 feet of occupied special status aquatic species habitat to avoid impacts associated with decreased water quality resulting from sediment and nutrient inputs and increased turbidity.

Wildlife (General)

To minimize risks to terrestrial wildlife and limit contamination of off-site vegetation, which may serve as forage for wildlife, do not exceed the typical application rate for applications of *dicamba, 2,4-D, bromacil, diuron,* Overdrive®, *glyphosate, hexazinone, tebuthiuron,* or *triclopyr* where feasible. Where practical, limit *glyphosate* and *hexazinone* to spot applications in rangeland and wildlife habitat areas to avoid contamination of wildlife food items. See Appendix D for specific herbicide application criteria.

Larger-scale treatments in big game habitat would be restricted during the following periods unless a short-term exemption is granted by the appropriate line officer. These dates, as specified, are general in nature and may be adjusted as needed based on local conditions. Treatments in big game winter range or breeding habitat would be coordinated with Idaho and Nevada state wildlife agencies.

- Big game winter range: November 15–April 30
- Calving/fawning/lambing habitat
  - Elk (*Cervus canadensis*)/mule deer (*Odocoileus hemionus*): May 1–June 30
  - Pronghorn (*Antilocapra americana*): May 15–June 30
  - Bighorn sheep (*Ovis canadensis*) lambing: April 15–June 30

See Appendix H for additional information regarding seasonal wildlife restrictions.

Special Status Plants and Wildlife

If special status plant and/or animal populations and their habitats occur in a proposed treatment area, the area would be assessed for habitat quality and options for treatment. The current BLM list of special status species and their presence in each field office is found in Appendix I.

Proposed treatments near or adjacent to special status species habitat would be designed to occur outside the sensitive periods of a species life cycle or habitat (e.g. breeding/spawning season, winter habitat). 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. Such treatments would be designed to minimize potential impacts to special status species and their habitats. Refer to SOP for herbicide use (Appendix E) in addition to design features listed below when planning projects using herbicides.

Special Status Plants

Potential project areas would be assessed to determine presence or absence of populations or habitats for plants that are designated by the BLM State Director as sensitive, plants that are listed as threatened, endangered, or proposed for listing under the ESA, or candidates for listing. Surveys of proposed project areas within potential habitat would be performed by botanically qualified staff to determine the presence/absence of the species.

The following general design features would apply to areas containing BLM sensitive plants or their habitats. These design features were derived from land use plans and amendments.

<u>General design features for BLM sensitive plants</u>

- Requirements of individual BLM sensitive plants would be considered when designing seed mixtures and ground-disturbing activities in their habitats.
- Use seeding methods that minimize impacts to special status species populations.
- Seeding within occupied habitat would not be done, unless it is clearly beneficial for the BLM sensitive plants occupying the site.
- Highly competitive 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.
- The biology and ecology of BLM sensitive plants would be considered when selecting a method of noxious weed control, including herbicides and associated application methods and biological controls. Treatments would be designed to avoid adverse impacts to sensitive plant populations and their habitats.
- Apply protective buffers for broadcast herbicide treatments as needed to protect BLM sensitive plants and their pollinators. General guidelines for herbicide-specific buffers are located on pp. 4-130 to 4-134 of the BA for the 2007 PEIS and Appendix C of the ROD for the 2016 PEIS.

<u>Slickspot peppergrass, Threatened</u>

Planning and implementation of vegetation treatment activities will comply with the Biological and Conference Opinion for the 2015 Jarbidge RMP (USFWS, 2015a). Applicable conservation measures and implementation actions from the Biological Opinion are presented below. Conservation measures from the BAs for the 2007 and 2016 PEISs, including buffers for broadcast herbicide treatments, were added as appropriate. Additional conservation measures, implementation actions, and design features from future plans and agreements would be incorporated to site-specific treatment plans as necessary.

BLM will promote diversity, richness, and health of native plant communities to support pollinators and habitat for slickspot peppergrass.

- BLM will focus slickspot peppergrass habitat conservation and restoration efforts in or adjacent to occupied habitat to encourage connectivity among populations through the following measures:
    - Utilize current inventory standards (USDI BLM, 2010, or more current) for evaluation of potential habitat.
    - Where habitat categories for slickspot peppergrass exist, BLM will conserve remaining stands of sagebrush and native vegetation in making activity plan and project level decisions.
    - Vegetation treatment projects undertaken in habitat categories for slickspot peppergrass will be compatible with species habitat restoration objectives, as described below.
    - BLM will select and implement specific projects to restore habitat categories for slickspot peppergrass in degraded areas as funding allows, such as planting shrubs and forbs and controlling noxious weeds, within and adjacent to occupied habitat. Apply methods described below.
    - Current element occurrence (EO) ranks would be used to prioritize the need for and scope of restoration treatments in occupied habitat. Habitat supporting A- or B-ranked EOs would have little need for restoration treatments except for spot noxious weed and invasive plant treatments using manual, biological control, or herbicide methods. C-ranked and lower EOs typically occur in habitats that contain or are dominated by noxious weeds and invasive plants, and may be lacking key native community components such as sagebrush, grasses, and forbs. These habitats would require larger-scale treatments using multiple methods to control noxious weeds and invasive plants and restore diverse plant communities that support slickspot peppergrass.
    - When conducting vegetation treatment projects, BLM will use seeding techniques that minimize soil disturbance such as minimum-till drills and rangeland drills equipped with depth bands, use native plant materials and seed during restoration activities, and select native forbs that benefit slickspot peppergrass insect pollinators.
    - Large-scale habitat restoration treatments that could result in short-term adverse effects, including broadcast herbicide application, would not be applied to more than 10 percent of occupied habitat until treatment effectiveness and impacts to slickspot peppergrass habitat have been determined through monitoring.
    - Limit use of full-size vehicles for treatment site access and equipment staging to existing roads in slickspot peppergrass habitats.

Although non-chemical methods will be the preferred approach in occupied habitat, when appropriate, 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 will be analyzed at the project level and designed such that pesticide applications will support conservation and minimize risks of exposure

- Site-specific stipulations will be developed locally using these 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 noxious weed control (e.g., biological controls, and hand pulling).
    - Apply appropriate spatial and temporal buffers to avoid species' exposure to harmful chemicals, including from off-site drift. Refer to Table 3 for buffer distances for ground and aerial broadcast application.
    - Explore opportunities to eradicate competing non-native invasive plants in occupied habitat where slickspots are being invaded by such plants.
    - Implement re-vegetation and noxious weed control measures to reduce the risks of non-native invasive plant infestations following ground/soil disturbing actions in slickspot peppergrass habitat.
    - Do not use goats or sheep to control noxious weeds or invasive plants in slickspot peppergrass occupied habitat.
    - Determine risks to slickspot peppergrass prior to use of biological control agents that affect target plants in the mustard family (Brassicaceae).

Suggested buffers for broadcast herbicide treatments are presented in Table 3. Herbicides would not be broadcast sprayed within buffers unless treatments would maintain or improve slickspot peppergrass habitat and would result in long-term benefits for the species.

Buffers could be altered at the local level based on site-specific conditions. Additional analysis may be necessary at the local level that considers site conditions such as soil type, annual precipitation, vegetation type, site topography, and treatment method. Where formulas are used that contain multiple active ingredients, the buffers for the formulated product will be based on the active ingredient that requires the greatest distance. If a tank mix of one or more chemicals is desired, an additional assessment of potential effects to slickspot peppergrass must be made with the assumption that effects of the herbicides are at a minimum additive. Larger buffers may be warranted.

On-going spot treatment of target species can occur within buffers if the herbicide application method would not result in drift to slickspot peppergrass. Accepted methods would include direct spray, painting, wicking, dipping, or injection. BLM will educate weed treatment staff annually, including weed management cooperators, regarding slickspot peppergrass identification and conservation measures for weed control.

Table 3 – Herbicide-specific spatial buffers for broadcast spray application in the vicinity of slickspot peppergrass occupied and unsurveyed potential habitat.

Herbicide	Spatial Buffer
2,4-D	• Do not spray within ½ mile of slickspot peppergrass occupied or unsurveyed potential habitat.
Aminopyralid	Ground Application • If using a low boom at the typical application rate, do not apply within 100 feet of slickspot peppergrass occupied or unsurveyed potential habitat. • If using a low boom at the maximum application rate or a high boom at the typical application rate, do not apply within 400 feet of slickspot peppergrass occupied or unsurveyed potential habitat. • If using a high boom at the maximum application rate, do not apply within 600 feet of slickspot peppergrass occupied or unsurveyed potential habitat. Aerial Application • Do not apply by airplane at the typical application rate within 1,800 feet of slickspot peppergrass occupied or unsurveyed potential habitat. • Do not apply by airplane at the maximum application rate within 2,000 feet of slickspot peppergrass occupied or unsurveyed potential habitat. • Do not apply by helicopter at the typical application rate within 1,600 feet of slickspot peppergrass occupied or unsurveyed potential habitat. • Do not apply by helicopter at the maximum application rate within 1,700 feet of slickspot peppergrass occupied or unsurveyed potential habitat. General • In areas with severe or very severe potential for wind erosion, do not apply within 1.2 miles of slickspot peppergrass occupied or unsurveyed potential habitat.
Bromacil	• No aerial application. • Do not apply within 1,200 feet of slickspot peppergrass occupied or unsurveyed potential habitat. • In areas with severe or very severe potential for wind erosion, do not apply within ½ mile of slickspot peppergrass occupied or unsurveyed potential habitat.
Chlorsulfuron	• No aerial application. • Do not apply by ground methods within 1,200 feet of slickspot peppergrass occupied or unsurveyed potential habitat. • In areas with severe or very severe potential for wind erosion, do not apply within ½ mile of slickspot peppergrass occupied or unsurveyed potential habitat.
Clopyralid	• Use only a low boom during ground applications of this herbicide within ½ mile of slickspot peppergrass occupied or unsurveyed potential habitat. • Do not apply by ground methods at the typical application rate within 900 feet of slickspot peppergrass occupied or unsurveyed potential habitat. • Do not apply by aerial methods within ½ mile of slickspot peppergrass occupied or unsurveyed potential habitat • In areas with severe or very severe potential for wind erosion, do not apply within ½ mile of slickspot peppergrass occupied or unsurveyed potential habitat.

Herbicide	Spatial Buffer
Dicamba	• If using a low boom at the typical or maximum application rate or high boom at typical application rate, do not apply within 1,050 feet of slickspot peppergrass occupied or unsurveyed potential habitat. • In areas with severe or very severe potential for wind erosion, do not apply within ½ mile of slickspot peppergrass occupied or unsurveyed potential habitat.
Diquat	• This herbicide is used for aquatic treatments only and would not be used in or near slickspot peppergrass habitats.
Diuron	• No aerial application. • Do not apply within 1,100 feet of terrestrial TEP species. • If using a low boom at the typical application rate, do not apply within 900 feet of aquatic habitats where TEP aquatic plant species occur. • If using a high boom, or a low boom at the maximum application rate, do not apply within 1,100 feet of aquatic habitats where TEP aquatic plant species occur. • In areas where wind erosion is likely, do not apply within ½ mile of TEP plant species.
Fluridone	• This herbicide is used for aquatic treatments only and would not be used in or near slickspot peppergrass habitats.
Fluroxypyr	Ground Application • If using a low boom at the typical application rate, do not apply within 100 feet of slickspot peppergrass occupied or unsurveyed potential habitat. • If using a low boom at the maximum application rate, do not apply within 600 feet of slickspot peppergrass occupied or unsurveyed potential habitat. • If using a high boom at the typical application rate, do not apply within 400 feet of slickspot peppergrass occupied or unsurveyed potential habitat. • If using a high boom at the maximum application rate, do not apply within 700 feet of slickspot peppergrass occupied or unsurveyed potential habitat. Aerial Application • Do not apply by airplane at the typical application rate within 1,100 feet of slickspot peppergrass occupied or unsurveyed potential habitat. • Do not apply by helicopter at the typical application rate within 900 feet of slickspot peppergrass occupied or unsurveyed potential habitat. • Do not apply by airplane or helicopter at the maximum application rate within 1,500 feet of slickspot peppergrass occupied or unsurveyed potential habitat. General • In areas with severe or very severe potential for wind erosion, do not apply within 1.2 miles of slickspot peppergrass occupied or unsurveyed potential habitat.
Glyphosate	• Use only a low boom during ground applications of this herbicide within ½ mile of slickspot peppergrass occupied or unsurveyed potential habitat. • Do not apply by ground methods at the typical application rate within 50 feet of terrestrial slickspot peppergrass occupied or unsurveyed potential habitat. • Do not apply by ground methods at the maximum application rate within 300 feet of terrestrial slickspot peppergrass occupied or unsurveyed potential habitat. • Do not apply by aerial methods within 300 feet of slickspot peppergrass occupied or unsurveyed potential habitat.

Herbicide	Spatial Buffer
Hexazinone	• Only apply this herbicide by ground methods using a low boom within ½ mile of slickspot peppergrass occupied or unsurveyed potential habitat. • Do not apply by ground methods at the typical application rate within 300 feet of slickspot peppergrass occupied or unsurveyed potential habitat. • Do not apply by ground methods at the maximum application rate within 900 feet of slickspot peppergrass occupied or unsurveyed potential habitat. • In areas with severe or very severe potential for wind erosion, do not apply within ½ mile of slickspot peppergrass occupied or unsurveyed potential habitat.
Imazapic	• Do not apply by ground methods within 25 feet of slickspot peppergrass occupied or unsurveyed potential habitat. • Do not apply by helicopter at the typical application rate within 25 feet of slickspot peppergrass occupied or unsurveyed potential habitat. • Do not apply by helicopter at the maximum application rate, or by plane at the typical application rate, within 300 feet of slickspot peppergrass occupied or unsurveyed potential habitat. • Do not apply by plane at the maximum application rate within 900 feet of slickspot peppergrass occupied or unsurveyed potential habitat. • In areas where wind erosion is likely, do not apply within ½ mile of slickspot peppergrass occupied or unsurveyed potential habitat.
Imazapyr	• Use only a low boom for ground applications of this herbicide within ½ mile of slickspot peppergrass occupied or unsurveyed potential habitat. • Do not apply at the typical application rate, by ground or aerial methods, within 900 feet of slickspot peppergrass occupied or unsurveyed potential habitat. • Do not apply at the maximum application rate, by ground or aerial methods, within ½ mile of slickspot peppergrass occupied or unsurveyed potential habitat. • In areas with severe or very severe potential for wind erosion, do not apply within ½ mile of slickspot peppergrass occupied or unsurveyed potential habitat.
Metsulfuron Methyl	• No aerial application. • Use only a low boom for ground applications of this herbicide within ½ mile of slickspot peppergrass occupied or unsurveyed potential habitat. • Do not apply at the typical application rate by ground methods within 900 feet of slickspot peppergrass occupied or unsurveyed potential habitat. • Do not apply at the maximum application rate, by ground methods within ½ mile of slickspot peppergrass occupied or unsurveyed potential habitat. • In areas with severe or very severe potential for wind erosion, do not apply within ½ mile of slickspot peppergrass occupied or unsurveyed potential habitat.
Overdrive® ***(Diflufenzopyr + Dicamba)***	• No aerial application. • If using a low boom at the typical application rate, do not apply within 100 feet of slickspot peppergrass occupied or unsurveyed potential habitat. • If using a low boom at the maximum application rate, do not apply within 900 feet of slickspot peppergrass occupied or unsurveyed potential habitat. • If using a high boom, do not apply within 900 feet of slickspot peppergrass occupied or unsurveyed potential habitat. • In areas with severe or very severe potential for wind erosion, do not apply within ½ mile of slickspot peppergrass occupied or unsurveyed potential habitat.
Picloram	• Do not apply by ground or aerial methods, at any application rate, within ½ mile of slickspot peppergrass occupied or unsurveyed potential habitat. • In areas with severe or very severe potential for wind erosion, do not apply within ½ mile of TEP plant species.

Herbicide	Spatial Buffer
Rimsulfuron	Ground Application • If using a low boom at the typical application rate, do not apply within 200 feet of TEP terrestrial plants. • If using a low boom at the maximum application rate or a high boom at the typical application rate, do not apply within 400 feet of TEP terrestrial plants. • If using a high boom at the maximum application rate, do not apply within 700 feet of slickspot peppergrass occupied or unsurveyed potential habitat. Aerial Application • Do not apply by airplane at the typical application rate within 1,600 feet of slickspot peppergrass occupied or unsurveyed potential habitat. • Do not apply by airplane at the maximum application rate within 1,900 feet of slickspot peppergrass occupied or unsurveyed potential habitat. • Do not apply by helicopter at the typical application rate within 1,400 feet of slickspot peppergrass occupied or unsurveyed potential habitat. • Do not apply by airplane or helicopter at the maximum application rate within 1,600 feet of slickspot peppergrass occupied or unsurveyed potential habitat. General • In areas with severe or very severe potential for wind erosion, do not apply within 1.2 miles of slickspot peppergrass occupied or unsurveyed potential habitat.
Tebuthiuron	• If using a low boom at the typical application rate, do not apply within 25 feet of terrestrial slickspot peppergrass occupied or unsurveyed potential habitat. • If using a low boom at the maximum application rate or a high boom at the typical application rate, do not apply within 50 feet of slickspot peppergrass occupied or unsurveyed potential habitat. • If using a high boom at the maximum application rate, do not apply within 900 feet of slickspot peppergrass occupied or unsurveyed potential habitat. • In areas with severe or very severe potential for wind erosion, do not apply within ½ mile of slickspot peppergrass occupied or unsurveyed potential habitat.
Triclopyr Acid	• Use only a low boom during ground applications of this herbicide within ½ mile of slickspot peppergrass occupied or unsurveyed potential habitat. • Do not apply by ground methods at the typical application rate within 300 feet of slickspot peppergrass occupied or unsurveyed potential habitat. • Do not apply by aerial methods at the typical application rate within 500 feet of slickspot peppergrass occupied or unsurveyed potential habitat. • Do not apply by ground or aerial methods at the maximum application rate within ½ mile of slickspot peppergrass occupied or unsurveyed potential habitat. • In areas with severe or very severe potential for wind erosion, do not apply within ½ mile of slickspot peppergrass occupied or unsurveyed potential habitat.
Triclopyr BEE	• Use only a low boom for ground applications of this herbicide within ½ mile of slickspot peppergrass occupied or unsurveyed potential habitat. • Do not apply by ground methods at the typical application rate within 300 feet of slickspot peppergrass occupied or unsurveyed potential habitat. • Do not apply by aerial methods at the typical application rate within 500 feet of slickspot peppergrass occupied or unsurveyed potential habitat. • Do not apply by ground or aerial methods at the maximum application rate within ½ mile of slickspot peppergrass occupied or unsurveyed potential habitat. • In areas with severe to very severe potential for wind erosion, do not apply within ½ mile of slickspot peppergrass occupied or unsurveyed potential habitat.

Where needed and feasible, coordinate with adjacent land owners and local governments regarding control of invasive plants in upland areas through cooperative weed management programs.

- Take advantage of cooperative weed management opportunities as they arise.

Restore wildlife habitat while promoting slickspot peppergrass conservation.

- Any restoration efforts for wildlife within habitat categories for slickspot peppergrass will be compatible with slickspot peppergrass habitat requirements.

Prescribed fire projects will be designed to conserve and enhance slickspot peppergrass habitat.

- Prescribed fire in slickspot peppergrass habitat will only be used as a tool for assisting with species conservation (e.g., a burn in preparation to decrease cheatgrass litter before herbicide application, or to clear fence lines of accumulated windblown weeds).

Fuels management projects conducted in habitat categories for slickspot peppergrass should have long-term benefits to slickspot peppergrass.

- Avoid fuels management projects in occupied habitat, unless such projects would enhance species conservation or are necessary for hazardous fuels reduction near the urban interface. Implement protection measures to avoid or minimize negative impacts to the species. In habitat categories for slickspot peppergrass, design native seed mixtures that emphasize local stock and will promote species conservation.
    - Because of potential negative impacts to habitat categories for slickspot peppergrass from linear fuel breaks, which can act as weed dispersal corridors, the following measures will be applied in or adjacent to habitat categories for slickspot peppergrass:
        - BLM will evaluate the effectiveness of existing fuel breaks (location, dry fuel load, and noxious weed and invasive plant composition) in protecting habitat categories for slickspot peppergrass.
        - BLM may create and maintain fuel breaks where frequent fires can threaten habitat categories for slickspot peppergrass. New fuel breaks in habitat categories for slickspot peppergrass will be designed to conserve and enhance species habitat. Where appropriate and where objectives will be met, native vegetation should be emphasized in the creation of new fuel breaks. If native vegetation or seed is not available or if objectives would be met through their use, fuel breaks may include non-native, non-invasive, species that will not invade slickspots. In areas adjacent to habitat categories for slickspot peppergrass, fuel breaks may include potentially invasive non-native species such as intermediate wheatgrass (*Thinopyrum intermedium*) and forage kochia (*Kochia* or *Bassia prostrata*) as a last resort if the benefits of their use are demonstrated to outweigh the risks to slickspot peppergrass and its habitat. If potentially invasive non-native species are used, monitoring for spread will occur. If spread is found to occur outside the original treatment area, control measures will be applied to eliminate further spread.

        - Consider actions to repair or restore existing fuel breaks so they function as desired.

    - BLM may create fuel breaks using techniques such as mowing to strategically reduce fuel loads where frequent fires can threaten habitat categories for slickspot peppergrass if the benefit of these actions can be demonstrated to outweigh the risks to slickspot peppergrass and its habitat.

Provide adequate rest from livestock use for areas treated after major disturbances in habitat categories for slickspot peppergrass. Major disturbances include fire, fire rehabilitation, or other soil-disturbing occurrences.

- Protect treated areas by using temporary livestock closures or other measures. The length of rest will be determined by achieving certain goals associated with plant establishment outlined in the restoration, fire rehabilitation, or other plan.

Site-specific larger-scale vegetation treatment plans will use *A Framework to Assist in Making Endangered Species Act Determinations of Effect for Slickspot Peppergrass* or current analysis methods to analyze potential effects of proposed treatments on slickspot peppergrass and/or proposed critical habitat. If proposed vegetation treatments would result in long-term adverse effects to slickspot peppergrass or adverse modification or destruction of proposed critical habitat, additional consultation with the USFWS may be required.

<u>Goose Creek Milkvetch (*Astragalus anserinus*), Type 2 BLM Sensitive Species</u>

Goose Creek milkvetch is a narrowly endemic plant known from the Goose Creek drainage near the Idaho/Utah/Nevada border. The BLM and USFWS signed a Conservation Agreement and Strategy (agreement) for protection of the species and its habitat in July 2015 (USDI BLM & USFWS, 2015). Applicable conservation actions contained in the agreement are listed below:

Fire Prevention

BLM fire prevention activities will be conducted to reduce the threat of fire within Goose Creek milkvetch occupied habitat and throughout the range of the species. A high priority will be placed on protecting Goose Creek milkvetch occupied habitat from fire.

- Fuel breaks may be beneficial to reduce the spread of wildfire to Goose Creek milkvetch occupied habitat; however, there may be potential negative impacts to Goose Creek milkvetch because fuel breaks may facilitate weed dispersal. Use of existing roads as fire breaks is encouraged. BLM proposed fuel breaks within the Goose Creek milkvetch pollinator buffer [500 m (1,640 ft.)] will be discussed with the conservation team prior to implementation.
- New fuel breaks will be prohibited within Goose Creek milkvetch habitat.
    - If new fuel breaks are planned within the pollinator buffer of Goose Creek milkvetch occupied habitat, targeted surveys to detect and control invasive species will be performed on a regular basis.

- The seeding or use of highly competitive, non-native species, such as crested wheatgrass (*Agropyron cristatum*), intermediate wheatgrass, and kochia species will not be used in fuel breaks within the pollinator buffer of Goose Creek milkvetch occupied habitat.
- Where site-specific modifications or conditions warrant changes to this conservation action, changes will occur in coordination with the conservation team. Any modification will include a documented rationale or justification.

- Cheatgrass control by herbicide application or other methods will be considered within Goose Creek milkvetch occupied habitat and the pollinator buffer if and when the level of cheatgrass significantly increases the risk of wildfire or habitat alteration. Control methods and monitoring will be developed by the BLM in coordination with the conservation team.

Re-vegetation

The use of native forbs in seed mixtures, with a variety of blooming times, and preferably found within the range of Goose Creek milkvetch occupied habitat, is encouraged in order to benefit Goose Creek milkvetch insect pollinators and pollinator enhancement in restoration projects. Seeding should only be used when there is a documented high mortality of native grasses and forbs, or a documented need to improve diversity within Goose Creek milkvetch occupied habitat or the pollinator buffer.

- Within Goose Creek milkvetch occupied habitat, the BLM will use native forbs and grasses in seed mixtures as needed. Native plants and seeds that originate from local sources and/or from existing provisional seed zones for target native species are preferred. If native plants are not available, non-highly competitive, non-native or native cultivar plant species will be used.
- Within Goose Creek milkvetch occupied habitat, the BLM will exclude the seeding of highly competitive, non-native plant species including crested wheatgrass, intermediate wheatgrass, and kochia species. The seeding density of non-native grasses should be calibrated based upon the native grass survival so as not to exceed the target or pre-disturbance grass canopy cover of the site.
- Within the Goose Creek milkvetch pollinator buffer, the conservation actions for re-vegetation above will generally apply. Exceptions to the exclusion of seeding highly competitive, non-native plant species including crested wheatgrass, intermediate wheatgrass, and kochia species within the pollinator buffer will be considered where site-specific modifications or conditions warrant their use. The BLM will notify the conservation team if an exception is necessary. Additional monitoring and control measures may be incorporated into the project design, as recommended by the conservation team. Control measures will be informed by monitoring and based upon thresholds or triggers that are exceeded.
- Within Goose Creek milkvetch occupied habitat, the use of aerial seeding only (without accompanying soil surface disturbance activities), back-pack seeders, and hand planting will be utilized to reduce surface disturbance from seeding activities.

- Within Goose Creek milkvetch occupied habitat, drill seeding is prohibited. Exceptions will be considered if drill seeding may be beneficial to reduce another threat to Goose Creek milkvetch. Where site-specific modifications or conditions warrant drill seeding within Goose Creek milkvetch occupied habitat, the BLM will notify the conservation team. Drill seeding within Goose Creek milkvetch occupied habitat will require a rationale for the benefits of drill seeding as well as a monitoring and adaptive management plan that is developed by the BLM in coordination with the conservation team.
- Within the Goose Creek milkvetch pollinator buffer, drill seeding is permitted. Goose Creek milkvetch occupied habitat will be flagged and clearly visible prior to drill seeding activities so drill seeding activities do not occur within Goose Creek milkvetch occupied habitat. Equipment operators will have GPS polygons delineating Goose Creek milkvetch occupied habitat to avoid them. A biological monitor (which includes trained personnel familiar with Goose Creek milkvetch) is required to be on-site during drill-seeding activities within the pollinator buffer to ensure compliance.
- BLM Field Office staff, in coordination with and agreement from the conservation team, will examine and modify the actions identified here in order to accommodate changes necessary to improve the effectiveness of re-vegetation treatments within Goose Creek milkvetch occupied habitat.

Leafy Spurge Management

Leafy spurge control will be conducted throughout the range of Goose Creek milkvetch through integrated pest management (chemical, biological, mechanical, and manual control methods). A high priority will be placed on controlling leafy spurge within Goose Creek milkvetch occupied habitat.

- The BLM will include Goose Creek milkvetch populations and Goose Creek milkvetch occupied habitat on leafy spurge weed control planning maps and regularly inform weed crews and new staff regarding current conservation actions.
- Annual funding of leafy spurge control will be prioritized and actively pursued by the BLM at each respective field office. Leafy spurge within Goose Creek milkvetch occupied habitat will be a high priority for treatment.
- Effective BLM approved chemical and biological methods will be used to control leafy spurge within Goose Creek milkvetch occupied habitat as identified in the 2007 PEIS or other BLM District specific vegetation treatments plans.
- The BLM in Idaho and Utah will closely coordinate with Cassia County and Box Elder County in the treatment and monitoring of leafy spurge in the Goose Creek drainage. The BLM will remain an active partner in established weed management areas (WMAs): Goose Creek, Raft River, Elko County, and Tri State WMAs.
- On BLM lands, leafy spurge control will occur on an annual basis at known locations within Goose Creek milkvetch occupied habitat and adjacent areas in Idaho, Nevada, and Utah, as funding allows.
- Within Goose Creek milkvetch occupied habitat, leafy spurge treatment 2 times per year is recommended for post-fire years 1, 2, and 3.

- In accordance with the Conservation Agreement and Strategy, BLM staff in coordination with the conservation team will develop a schedule of repeated surveys in Goose Creek milkvetch occupied habitat to detect new invasions of leafy spurge or other invasive species, as well as monitor leafy spurge treatment effectiveness within Goose Creek milkvetch occupied habitat. Leafy spurge surveys and monitoring within Goose Creek milkvetch occupied habitat can be incorporated as part of the range-wide monitoring plan.
    - The schedule of repeated surveys for new leafy spurge infestations will ensure that surveys will be performed within Goose Creek milkvetch occupied habitat on an annual or biennial basis within each BLM field office.
    - Until additional monitoring protocols are developed in coordination with the conservation team, the BLM will implement the existing leafy spurge monitoring protocols from the Idaho BLM which include: a) installation of monitoring plots around leafy spurge plants in Goose Creek milkvetch occupied habitat; b) counting the number of leafy spurge stems within the plot on a regular basis.
- BLM Field Office staff, in coordination with and agreement from the conservation team, will use an adaptive management process to examine and modify the actions identified here in order to accommodate changes necessary to improve the effectiveness of weed control activities within Goose Creek milkvetch occupied habitat.

General Noxious Weed Management

Weed control will be conducted within Goose Creek milkvetch occupied habitat through integrated pest management (chemical, biological, mechanical, and manual control methods). A high priority will be placed on controlling weeds within Goose Creek milkvetch occupied habitat. A proactive approach is recommended to monitor invasions in nearby areas and to select the appropriate treatment methods that conserve Goose Creek milkvetch.

- The BLM will include Goose Creek milkvetch populations and sites on weed control planning maps and regularly inform weed crews and new staff on current conservation actions and treatment protocols for Goose Creek milkvetch occupied habitat.
- In accordance with the Conservation Agreement and Strategy, BLM staff and the conservation team will develop a schedule of repeated surveys in Goose Creek milkvetch occupied habitat to detect new invasions of weeds in addition to leafy spurge. Weed surveys and monitoring within Goose Creek milkvetch occupied habitat can be incorporated as part of the range-wide monitoring plan.
- As invasions of noxious weeds occur within Goose Creek milkvetch occupied habitat and the presence and or density of such weeds is determined to be a risk to Goose Creek milkvetch habitat, BLM staff will develop treatment protocols that identify treatment options as appropriate for each known weed species and the most appropriate control methods within Goose Creek milkvetch occupied habitat, in coordination with the conservation team.
- The BLM and the conservation team will develop a monitoring protocol to evaluate the effectiveness of control methods within Goose Creek milkvetch occupied habitat. This

will occur on an as needed basis. The BLM will provide weed control and weed invasion updates to the conservation team on an annual basis.

- Until additional treatment protocols are developed in coordination with the conservation team, the BLM will implement the following measures within Goose Creek milkvetch occupied habitat: a) herbicide treatments are limited to back-pack sprayers, animal-pack sprayers or ATV/UTV sprayers; and b) ATV/UTV use on steep slopes or Salt Lake Formation “ashy” outcrops within Goose Creek milkvetch occupied habitat will be prohibited.
- The BLM Field Offices, in coordination with the conservation team, will use an adaptive management process to examine and modify the treatment methods to accommodate changes necessary to improve the effectiveness of weed control activities within Goose Creek milkvetch occupied habitat.
- When and where feasible, the BLM will cooperate to control noxious weeds in established cooperative weed management programs.

Special Status Wildlife Species

<u>Yellow-billed Cuckoo (*Coccycus americanus*), Threatened</u>

- Conduct surveys of suitable habitat prior to vegetation inventory or treatments that may impact yellow-billed cuckoo during the nesting season (May 1 through August 31). Surveys would be performed by a qualified biologist holding a current survey permit.
- Conduct inventory and spot treatments for noxious weeds or invasive plants, including manual, biological, and herbicide treatments, prior to May 1 or after August 31 in occupied, proposed critical, or unsurveyed suitable habitats.
- If manual, biological control, or spot herbicide treatments of noxious weeds or invasive plants prior to May 1 or after August 31 would not result in desired outcomes for containment or control, coordinate with the local biologist to determine measures that would minimize disturbance to potentially nesting birds. This could include limiting the number of people implementing treatments and the amount of time present in the habitat. Use only non-motorized access and spot herbicide application with backpack sprayers, manual, or biological control methods in occupied, proposed critical, or unsurveyed suitable habitat. Spot application methods include direct spray, painting, wicking, wiping, or injecting herbicide on or into individual plants. Refer to design features and conservation measures for water quality and RCAs for herbicide application restrictions in riparian areas.
- Mechanical treatments, ground-based broadcast application of herbicides, or cutting of noxious or invasive woody species would not occur from May 1 to August 31 within 200 feet of occupied, proposed critical, or unsurveyed suitable yellow-billed cuckoo habitat.
- Aerial application of chemicals would not occur from May 1 to August 31 within 0.5 miles of occupied, proposed critical, or unsurveyed suitable yellow-billed cuckoo habitat.
- Prescribed fire would not be used within 0.5 miles of occupied, proposed critical, or suitable yellow-billed cuckoo habitats.

- Following noxious weed or invasive plant control treatments, replant or reseed treated areas with native species, if natural recovery is not meeting management and/or habitat objectives. Planting of shrubs or trees within the area of fluvial influence would not occur from May 1 to August 31 in occupied, proposed critical, or unsurveyed suitable habitat.

Canada Lynx (*Lynx Canadensis*), Threatened

In order to minimize or avoid impacts to lynx, the BLM must follow, at a minimum, the conservation measures listed below:

- Prior to vegetation treatments, map lynx habitat within areas in which treatments are proposed to occur. Identify potential denning and foraging habitat, and topographic features that may be important for lynx movement (major ridge systems, prominent saddles, and riparian corridors).
- Design vegetation treatments in lynx habitat to approximate historical landscape patterns and disturbance processes.
- Ensure that no more than 30% of lynx habitat within a Lynx Analysis Unit (as defined in Ruediger et al., 2000) would be in an unsuitable condition at any time.
- If deemed necessary, defer livestock grazing following vegetation treatments to ensure the re-establishment of key plant species. BLM personnel should use resource goals and objectives to determine the need for this restriction and the length of deferment on a case by case basis.
- Give particular consideration to amounts of denning habitat, condition of summer and winter foraging habitat, as well as habitat linkages, to ensure that treatments do not negatively impact lynx. If there is less than 10% lynx habitat in a Lynx Analysis Unit, defer vegetation treatments that would delay development of denning habitat structure. Protect habitat connectivity within and between Lynx Analysis Units.
- Do not use *2,4-D* in Canada lynx habitat; do not broadcast spray *2,4-D* within ¼ mile of Canada lynx habitat.
- Where feasible, avoid use of the following herbicides in Canada lynx habitat: *bromacil, clopyralid, diquat, diuron, glyphosate, hexazinone, imazapyr, metsulfuron methyl, picloram*, and *triclopyr*.
- Do not broadcast spray *clopyralid, diuron, glyphosate, hexazinone, picloram*, or triclopyr in Canada lynx habitat; do not broadcast spray these herbicides in areas adjacent to Canada lynx habitat under conditions when spray drift onto the habitat is likely.
- If broadcast spraying *bromacil, diquat, imazapyr*, or *metsulfuron methyl* in or near Canada lynx habitat, apply at the typical, rather than the maximum, application rate.
- If conducting manual spot applications of *glyphosate, hexazinone*, or *triclopyr* to vegetation in Canada lynx habitat, utilize the typical, rather than the maximum, application rate.

Greater Sage-grouse (*Centrocercus urophasianus*), Type 2 BLM

The ROD for the Idaho and Southwestern Montana, Nevada and Northwestern California, Oregon, and Utah Greater Sage-Grouse ARMPAs/Final EISs provided greater sage-grouse management decisions that are applicable to individual projects occurring in sage-grouse habitat management areas (see Appendix L). Greater sage-grouse habitat within proposed project areas would be assessed during project-level planning within the management area designations including PHMA, IHMA, General Habitat Management Area (GHMA), and Other Habitat Management Area (OHMA). Project proposals and their effects would be evaluated based on the existing habitat and values affected. Required Design Features found in both applicable ARMPAs/Final EISs are incorporated below. Seasonal dates may be modified due to documented local variations (e.g. higher/lower elevations) or annual climatic fluctuations (e.g. early/late spring, long/heavy winter) in coordination with state wildlife agencies in order to better protect sage-grouse and their habitats.

- Sage-grouse would be used as an umbrella species when planning vegetation treatments in sagebrush steppe (Noss, 1990; Rich & Altman, 2001; Rowland, Wisdom, Suring, & Meinke, 2006). 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. Adjustments to dates may occur based on land use plan guidance and local conditions.
- Avoid constructing fences (temporary or permanent) within two kilometers of occupied sage-grouse leks. If fencing cannot be avoided, fences should be marked or flagged.
- Temporary protection fences would not be constructed within 400 yards of an active sage-grouse lek.
- No repeated or sustained behavioral disturbance (e.g., visual, noise over 10 dbA at lek, etc.) to lekking birds from 6:00 pm to 9:00 am within 2 miles (3.2 kilometers) of leks during the lekking season.
- Vegetation treatments within 0.6 miles 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 mid-February through mid-May.
- Treatments in areas supporting sage-grouse nesting habitat would be limited from March 1 through June 30.
- Treatments in brood-rearing habitat would be limited from May 15 to September 15 (early brood-rearing – May 15 to June 15; late brood-rearing June 15 to September 15).
- Treatments in close proximity to sage-grouse wintering habitats would be limited from November 1 through March 15.
- Within vegetation treatment areas, standing dead juniper trees that are potential raptor perches may be felled as needed to protect pygmy rabbits and sage-grouse from excessive predation.

- Solicit and consider expertise and ideas from local landowners, working groups, and other federal, state, county, and private organizations during development of projects.
- Avoid mechanized anthropogenic disturbance, in nesting habitat during the nesting season when implementing: 1) fuels/vegetation/habitat restoration management projects, 2) infrastructure construction or maintenance, 3) geophysical exploration activities; 4) organized motorized recreational events.
- Where applicable, design fuels treatment objectives to protect existing sagebrush ecosystems, modify fire behavior, restore native plants, and create landscape patterns which most benefit sage-grouse habitat.
- Use burning prescriptions which minimize undesirable effects on vegetation or soils (e.g., minimize mortality of desirable perennial plant species and reduce risk of annual grass invasion).
- Where appropriate, ensure that treatments are configured in a manner that promotes use by sage-grouse.
- Power-wash all vehicles and equipment involved in fuels management activities, prior to entering the area, to minimize the introduction of undesirable and/or invasive plant species.
- Load and unload all equipment on existing roads to minimize disturbance to vegetation and soils.
- Design vegetation treatments in areas of high fire frequency which facilitate firefighter safety, reduce the potential acres burned, and reduce the fire risk to sage-grouse habitat.
- Reduce the risk of vehicle or human-caused wildfires and the spread of invasive species by planting perennial vegetation (e.g. green-strips) paralleling road rights-of-way.
- Give higher priority to vegetation rehabilitation or manipulation projects that include:
    - Sites where environmental variables contribute to improved chances for project success (Meinke, Knick, & Pyke, 2009).
    - Areas where seasonal habitat is limiting sage-grouse distribution and/or abundance (wintering areas, wet meadows and riparian areas, nesting areas, leks, etc.).
    - Cooperative efforts that may improve sage-grouse habitat quality over multiple ownerships.
    - Projects that may provide connectivity between suitable habitats or expand existing good quality habitats.
    - Where desirable perennial bunchgrasses and/or forbs are deficient in existing sagebrush stands, use appropriate mechanical, aerial or other techniques to re-establish them. Examples include but are not limited to, use of a Lawson aerator with seeding, harrow or chain with seeding, drill seeding, hand planting plugs, aerial seeding or other appropriate technique.
    - Replace stands of annual grasses within otherwise good quality habitats with desirable perennial species. Other factors that contribute to the importance of the restoration project in maintaining or improving sage-grouse habitat.
    - Sage-grouse preferred forbs would be seeded in projects occurring in IHMA and PHMA when appropriate and available.

- Re-establish sagebrush cover in otherwise suitable sage-grouse habitat with consideration to local needs and conditions using the general priorities in the following order:
  - Recently burned native areas
  - Native grassland with suitable forb component
  - Nonnative grassland with suitable forb component
  - Recently converted annual grass areas
  - Native grassland
  - Nonnative grassland

Sage Grouse Habitat Project Prioritization

The Fire and Invasives Assessment Tool (FIAT) provides the BLM and other land management agencies with a framework for prioritizing wildfire management and greater habitat conservation (Appendix H, ARMPA, 2015). Supported by U.S. Forest Service General Technical Report 326 (Chambers et al., 2014), FIAT provides the BLM with a mechanism to identify and prioritize areas within sage-grouse habitat for potential treatment based on their resistance and resilience characteristics. Areas will likely respond differently to fuels management, wildfire, and subsequent rehabilitation dependent on a variety of factors identified in Chambers et al. (2014).

FIAT will be used at the field level as one of multiple factors to help prioritize projects in sage-grouse habitat. Policy and annual directives also influence project priorities related to sage-grouse habitat. Local priorities may be influenced by past wildfire disturbance, proximity to intact habitat, and past restoration and rehabilitation projects. Projects would be prioritized that would link intact or recovering habitats. For additional prioritization guidance, see Appendix L.

Idaho Dunes Tiger Beetles (*Cicindela arenicola*), (*Cicindela waynei waynei*), Type 2 BLM

Stabilization projects would not occur in Idaho Dunes Tiger beetle habitats (i.e. sand dunes). Vegetation treatments to control noxious weeds and invasive plants would preserve the natural integrity and character of sand dune habitats to the greatest extent possible.

Columbian sharp-tail grouse (*Tympanuchus phasianellus columbianus*), Type 2 BLM

- Treatments within 0.6 miles of occupied Columbian sharp-tail grouse leks that results in or could likely result in disturbance to displaying birds would be avoided from approximately 6:00 pm to 9:00 am. This guideline would be applied from mid-March through June.
- Treatments in nesting habitat would be limited in May through mid-July. Adjustments to these dates may occur based on land use plan guidance and local conditions.

Migratory Bird Species of Conservation Concern

Proposed vegetation treatment areas would be assessed for presence or absence of birds protected by the Migratory Bird Treaty Act. Some of the birds classified as Migratory Bird Species of Conservation Concern (Appendix J) are also designated as BLM sensitive species.

If migratory birds are known or suspected to occur within a proposed project area, life-cycle and habitat requirements of these birds would be considered when designing vegetation treatments. This would include all treatment types including but not limited to prescribed fire, ground-disturbing activities, chemical herbicide use and seed mixtures. Treatments would be designed to minimize potential impacts to migratory birds and their habitats.

Specific design features such as avoidance of occupied areas by timing or distance would be outlined in the project plan. In general, treatments in areas with known breeding populations of migratory birds would be avoided during the nesting season, generally February 1 – July 31. Specific avoidance dates and distances would be determined based on location and species present.

Raptors

Seasonal restrictions for potentially disruptive construction or other human activities will generally apply for raptors from February 1 through July 31 unless an exception is granted by the BLM field office manager or designated line officer. Spatial buffers are listed in Table 4.

Temporary exceptions can be granted in situations where the raptor nest has been destroyed, such as by wind, wildfire, or lightning. Exceptions can also be granted if the nest is inactive due to young having fledged or the nest being unused in the current nesting season. Exceptions or temporal deviations from the established February 1 - July 31 timeframe may also be granted based on species, variations in nesting chronology of particular species locally, topographic considerations (e.g., an intervening ridge between treatment activities and a nest) or other factors that are biologically reasonable.

Table 4 –Spatial Buffers for Nesting Raptors

Species	Spatial Buffer in Non-Urban Areas (Miles)
Ferruginous hawk	1.0
Northern goshawk	0.5
Peregrine falcon	1.0
Prairie falcon	0.5
Red-tailed hawk	0.33
Swainson’s hawk	0.25
Burrowing owl	0.25

Bald and Golden Eagles

- Aerial seeding treatments (e.g. sagebrush) within 1,000 feet of active American bald (*Haliaeetus leucocephalus)* and golden eagle (*Aquila hrysaetos*) nests would be avoided between January 1 and January 31.
- Aerial seeding treatments and aerial application of herbicides would be avoided within 0.5 miles 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.
- On-the-ground vegetation treatments would be avoided within 0.5 mile of direct line of sight or within 0.25 miles of bald eagle winter concentration sites during the winter roosting season from November 1 through March 1.
- Aerial treatment applications will be avoided within 0.5 mile of bald eagle winter concentration sites during November 1 through March 1.
- If treatments are necessary to meet vegetation treatment objectives outside of the temporal and spatial restrictions for bald or golden eagles, the BLM may apply for a Non-Purposeful Take Permit from the USFWS. The BLM would not conduct such treatments until a permit is acquired.

Livestock

See Wildlife (General) section for Design Features to minimize potential risks for forage contamination.

Wild Horses

Do not apply *bromacil* or *diuron* in grazing lands within the HMA, and use appropriate buffer zones identified in Appendix D to limit contamination of vegetation in off-site foraging areas.

Minimize potential risks to wild horses by applying *glyphosate*, *hexazinone, tebuthiuron*, and *triclopyr* at the typical application rate, where feasible, in areas associated with wild horse use.

Limit the size of larger-scale broadcast applications of *2,4-D, dicamba*, Overdrive®, *picloram,* and *triclopyr* in order to reduce potential impacts to wild horses.

Apply herbicide label grazing restrictions for livestock to herbicide treatment areas that support populations of wild horses.

Do not apply *2,4-D* in the HMA during the peak foaling season (March through June, and especially in May and June), and do not exceed the typical application rate of Overdrive® or *hexazinone* in the HMA during the peak foaling season in areas where foaling is known to take place.

Native American Traditional Use Areas

Do not exceed the typical application rate when applying *2,4-D*, *bromacil*, *diquat*, *diuron*, *fluridone*, *hexazinone, tebuthiuron*, and *triclopyr* in known traditional use areas.

Avoid applying *bromacil* or *tebuthiuron* aerially in known traditional use areas.

Limit *diquat* applications to areas away from high residential and traditional use areas to reduce risks to Native Americans.

Human Health and Safety

Use the typical application rate, where feasible, when applying *2,4-D, bromacil, diquat, diuron, fluridone, hexazinone, tebuthiuron*, and *triclopyr* to reduce risk to occupational and public receptors. Occupational receptors include workers that mix, load, and apply herbicides and operate transport vehicles as well as operating equipment used for vegetation treatments or prescribed fire. Public receptors include those members of the public most likely to come into contact with applied herbicides or smoke from prescribed fire.

Bromacil and *diuron* would not be applied aerially.

Limit application of *chlorsulfuron* via ground broadcast applications at the maximum application rate.

Limit *diquat* application to ATV/UTV, truck spraying, and boat applications to reduce risks to occupational receptors; limit *diquat* applications to areas away from high residential and subsistence use to reduce risks to public receptors.

Evaluate *diuron* applications on a site-by-site basis to avoid risks to humans. There appear to be few scenarios where *diuron* can be applied without risk to occupational receptors.

Do not apply *hexazinone* with an over-the-shoulder broadcast applicator.

Special Management Areas

National Conservation Lands

The National Conservation Lands include Wilderness, Wild and Scenic Rivers, Wilderness Study Areas, National Scenic and Historic Trails, National Monuments, and National Conservation Areas. The TFD contains a Wilderness, three designated Wild and Scenic Rivers, several Wilderness Study Areas, two National Historic Trails, and one National Monument and Preserve.

Wilderness and Wild and Scenic Rivers

Sections 1503 and 1504 of the Omnibus Public Land Management Act (OPLMA) of 2009 (123 Stat. 1032-1040) established the Bruneau-Jarbidge Rivers Wilderness and Bruneau, Jarbidge, and West Fork of the Bruneau Wild and Scenic Rivers (WSRs). Vegetation treatment activities within the Bruneau-Jarbidge Rivers Wilderness and WSR corridors would be applied following the management considerations and vegetation treatment guidelines approved in the final DR of the Owyhee Canyonlands Wilderness and Wild and Scenic Rivers Management Plan (MP) and Environmental Assessment (DOI-BLM-ID-B000-2011-0001-EA), signed April 10, 2015. Specifically:

- All proposals involving potential soil or vegetation disturbance will be developed in accordance with the Owyhee Canyonlands Wilderness and Wild and Scenic Rivers MP, the Wilderness Act, andother applicable laws and regulations.
- BLM will preserve wilderness character by managing noxious weeds and non-native invasive plants, with an emphasis on treating small (<0.1 acre) infestations that have the potential to spread and displace native plants. Larger infestations will be managed separately, since they could involve several treatment applications or associated tactics.
- All proposed treatments will be evaluated through a Minimum Requirements Analysis (MRA) for the purpose of protecting and preserving wilderness character. The MRA will determine whether the proposal is consistent and compatible with requirements of the Wilderness Act, the OPLMA, and House Report 101-405.

Wilderness Study Areas

Vegetation treatments and design features in wilderness study areas (WSAs) would be designed consistent with BLM Manual 6330–Management of Wilderness Study Areas (2012b).

National Historic Trails

Portions of the Oregon and California NHT pass through the TFD. New or revised design features would be incorporated in the event of new NHT management plans.

- 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 and California 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 as a feasible alternative to rangeland drills, or a combination of methods with drills that reduce the appearance of drill rows.
- Mechanized equipment for seeding (both wheeled and tracked) would not be used on the Oregon or California NHT.
- Seeding treatments along the Oregon and California NHT would use native plant species or cultivars and aerial or ground broadcast application methods. Seed cover methods that do not result in the appearance of rows (e.g. harrow) can be used.
- Visual Resource Management guidelines and specifications of the NHTs and other scenic values would be protected within the NHTs protective zone, a 0.25 mile corridor on either side of the NHTs.

Craters of the Moon National Monument and Preserve

Design features relevant to specific resources are identified in those sections of the Craters MP. The following features are identified in the MP and only apply to vegetation treatment 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 noxious weeds and invasive plants. 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.

Areas of Critical Environmental Concern

Areas of Critical Environmental Concern (ACEC) are 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. Vegetation treatments in ACECs would protect the values for which the area was established and would be in conformance with applicable management direction contained in the land use plans and activity plans.

Travel Management

Motorized off-highway vehicle travel is limited to existing roads, primitive roads, and trails except areas designated as open or closed through a land use plan decision (Appendix L, MD TTM 1). Exceptions are:

- Any vehicle whose use is expressly authorized by the authorized officer or otherwise officially approved.
- Vehicles in official use where official use is by an employee, agent, or designated representative of the federal government or one of its contractors, in the course of employment, agency, or representation.

For vegetation treatment implementation:

- Apply appropriate seasonal restrictions for sage-grouse and other wildlife.
- Avoid travel through known special status plant habitats during conditions (e.g. saturated soils) that would result in damage to the special status plants or their habitat.
- Use different ingress and egress routes when using off-road vehicles for treatment application (e.g. spraying noxious weeds) or transporting supplies (e.g. shrub seedlings for large planting projects) to avoid route creation.
- Utilize hardened or previously disturbed areas for staging equipment.

Monitoring

For herbicide use, implementation monitoring is accomplished through the use of pesticide use proposals (PUPs) and Pesticide Application Records. Both documents are required by the BLM in order to track pesticide use annually. The PUP requires reporting of the pesticide proposed for use and the maximum application rate. It also requires reporting of the number and timing of applications. Targeted and non-targeted species at the treatment site are described, as well as the other site characteristics. A description of sensitive resources and mitigation measures to protect these resources is also required. Most importantly, a description of the integrated weed management treatment or combination of treatments employed is required. Pertinent NEPA documents and decisions must also be referenced. The PUP must be signed by a certified weed applicator, the field office manager, state coordinator, and deputy state director before the treatment can go forward. The Pesticide Application Record, which must be completed within 24 hours after completion of the application, documents the actual rate of application and that all the above factors have been taken into account. Pesticide Application Records are used to develop annual state summaries of herbicide use for BLM.

Invasive plant implementation monitoring for non-herbicide treatments is accomplished through pre- and post-treatment site visits. Monitoring would determine if treatments were effective and if additional treatments are necessary.

Monitoring should address the following questions:

- What changes in the distribution, amount, and proportion of invasive plant infestations have resulted due to treatments?
- Has infestation size been reduced at the project level or larger scale (such as a watershed)?
- Which treatment methods, separate or in combination, are most successful for a particular species? (USDA FS, 2005).

Monitoring of noxious weed, non-native invasive plant, or other vegetation treatment effectiveness can be qualitative or quantitative and should include comparisons of pre- and post-treatment information. Baseline vegetation inventories would be conducted to determine pre-treatment conditions and to determine needed treatments. Post-treatment monitoring would occur to evaluate treatment effects and success. Methods used to monitor treatments could include field observations, photo plots, and quantitative methods such as vegetation cover, density, or belt transects. Short-term post-treatment monitoring would occur annually for three years. Long-term monitoring for successful treatments would occur at five years post-treatment, then at five year intervals, dependent on available funding.

Monitoring activities will be conducted according to the Twin Falls District Land Treatment Monitoring Guidelines outlined in Instruction Memorandum IDIMT000-2012-001 (Appendix K).

No Action Alternative - Continue Present Herbicide Use

Under this alternative, the BLM would continue to implement the existing decisions for noxious weed and invasive plant treatments in each field office. Proposed hazardous fuel reduction and invasive plant community treatments would continue to be implemented and analyzed in separate site-specific EAs. Herbicides approved by the ROD of the 2007 and 2016 PEISs but not included in the existing EAs could be utilized if analyzed in site-specific project level EAs. On-going activities and spot treatments of noxious weeds would continue under existing noxious weed and project level EAs.

Alternatives Considered But Eliminated From Detailed Analysis

No Use of Herbicides

Herbicide use would not be allowed under this alternative. This alternative was not chosen in the 2007 PEIS and was considered but not analyzed further in the 2016 PEIS for the following reasons. This alternative would not provide avenues for integrating all vegetation methods; research has shown that the integration of all available methods provides the soundest approach to addressing invasive plant control. Also, there would be negative impacts associated with an increased use of non-chemical treatments such as increased disturbance to soil and reduction in the ability to selectively treat for specific species.

As shown in the 2007 PEIS, risks from herbicide use are minor if the BLM follows SOP and mitigation measures identified in the ROD. Other treatment methods also have risks, may not be appropriate for large-scale treatments, may result in greater environmental effects, and are 2 to 4 times more costly than herbicide treatments.

Although there would be no risks to humans and the environment from herbicides under this alternative, the risk of environmental damage from the spread of weeds and other invasive vegetation, and increased risk of wildfire, especially due to cheatgrass, would be greater under this alternative compared to the other action alternatives considered in the 2007 PEIS and the Proposed Action and No Action Alternative in this EA. The BLM did not select this alternative for the 2007 ROD and did not consider this alternative to be the environmentally preferred alternative. This decision was carried into the development and analysis of alternatives for the 2016 PEIS. This alternative was considered but eliminated from detailed analysis based on analysis contained in the 2007 and 2016 PEISs and rationale presented in the 2007 and 2016 RODs.

No Aerial Application of Herbicides

This alternative was considered to address concerns regarding aerial herbicide spray drift impacting non-target areas. Aerial herbicide applications allow for timely, efficient and cost effective treatment of large expanses of noxious weeds and non-native invasive plants. Since 2005, approximately 170,000 total acres within the TFD have been treated aerially to reduce noxious weeds and non-native invasive plants. Ground-based methods of herbicide treatment are an important application tool for spot and broadcast treatment of noxious weeds and non-native invasive plants. Ground-based methods have limited treatment utility on species that can dominate large landscapes, such as cheatgrass, medusahead wildrye and rush skeletonweed. Ground-based methods utilized across large landscapes can expose ground crews to additional safety concerns when utilized in rugged or steep terrain. Aerial herbicide application addresses the need to treat large landscapes dominated by noxious weeds and non-native invasive plants in a safe and efficient manner. Cost of aerial application can also be significantly lower than ground-based treatment dependent on the amount of acres to be treated, terrain and access. Mitigation measures, including buffers, are also prescribed to reduce the incidence of spray drift on non-target areas (See Appendix F). Because of efficiency and safety reasons, the BLM did not consider this alternative for further analysis.

CHAPTER 3 – AFFECTED ENVIRONMENT AND ANALYSIS OF IMPACTS

The TFD manages approximately 3.9 million acres of public land in south-central Idaho. The District lies within 12 counties in Idaho (Blaine, Camas, Cassia, Elmore, Gooding, Jerome, Lincoln, Minidoka, Oneida, Owyhee, Power and Twin Falls), and in Elko County in northern Nevada. The TFD 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 River Basin. The Snake River, which is a major tributary to the Columbia River, flows through the center of the TFD.

There are a variety of natural landscapes within the field offices, differing in elevation and precipitation. Average elevations range from a low of about 3,000 feet 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 and along the Snake River to 22 inches or more 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 -20 degrees Fahrenheit to greater than 100 degrees Fahrenheit can occur for short periods.

The Shoshone and Burley field office boundaries occur in areas close to or contain population centers including the towns of Gooding, Wendell, 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.

The no-action alternative reflects the current situation within the project area and will serve as the baseline for comparing the environmental effects of the analyzed alternatives.

During the analysis process, the interdisciplinary team considered comments from the public and other entities, professional knowledge of resources, and supplemental authorities. Based on this information the interdisciplinary team found that the resources discussed in this chapter would be affected by the Proposed Action and No Action Alternative. Several resources were determined to not be affected by the proposed action or alternatives including: Environmental Justice, Prime or Unique Farmlands, Cave Resources, Engineering, Geology/Mineral Resources/Energy Production, Lands/Access, and Water Rights.

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

- Proposed vegetation treatments would move vegetation to a more desirable condition.
- Short-term impacts are defined as <5 years and long-term impacts are defined as >5 years.
- Herbicides would be applied at typical application rates according to label.
- Treatments would be successful.

Cumulative effects describe impacts of the Proposed Action and No Action Alternative when added with other past, present, and reasonably foreseeable future actions (40 CFR 1508.7). The cumulative effects analysis considers actions on federal, state, and private lands within the analysis area that would affect resources that could also be affected by the Proposed Action and the No Action Alternative in this EA. Past, present, and reasonably foreseeable future actions that may contribute to cumulative effects are discussed below for each potentially affected element of the human environment. The cumulative effects analysis area is the TFD boundary.

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

- Treatments identified in this environmental assessment would be implemented over the next 10-15 years.
- Treatments, although determined to be successful, may not reach desired vegetation or habitat conditions within 10-15 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 TFD. These treatments would reduce fuels that 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 (chaining, masticating, blading, disking, drill seeding), 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.

For analysis purposes of actions potentially affecting BLM managed public lands, the cumulative effects analysis area includes federal and non-federal lands, including public, military, state, and private lands within the BLM TFD administrative boundary. Unless otherwise stated, the temporal scope of the cumulative effect analysis is 10-15 years (i.e. temporal boundaries vary from one affected resource to another and may exceed 10 years).

Soils

Affected Environment

Soils in the TFD are affected by several physical properties, including topography, and parent materials. The topography is characterized by rolling basalt and alluvial plains with slopes ranging from 1 to 12 percent. The following soil orders are found within the TFD: Aridisols, Mollisols, Entisols, Vertisols, Inceptisols, Alfisols, Andisols and Ultisols. The two most commonly occurring soil orders are Ardisols and Mollisols which are briefly described below.

1) 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.
2) Mollisols are generally found in grasslands, shrub-steppe, mountain shrublands, and along riparian zones; within a wide range of precipitation 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.

Biological soil crusts have a significant influence on soil quality in the arid and semi-arid lands that comprise much of the TFD. Biological soil crusts consist of a variety of cyanobacteria, green algae, lichens, mosses, microfungi, and other bacteria. They positively affect the soil environment by reducing erosion (both wind and water), fixing atmospheric nitrogen, retaining soil moisture, and providing a living organic surface mulch (Belnap & Phillips, 2001). Annual invasive plant expansion and associated increased fire frequency reduces biological soil crust, which in turn affects cycling, water infiltration, and potential soil erosion.

Environmental Impacts

Proposed Action Impacts – Soils

Effects of Manual Treatments

Manual treatments would involve pulling, cutting, grubbing, and digging vegetation with non-motorized hand equipment or chainsaws. Manual treatments would have less direct effect on soil than the other proposed treatments. Laborers and vehicles accessing the site could disturb topsoil and/or surface organic matter, providing prime conditions for re-invasion by weedy species; however, the extent of this disturbance should be limited. Coarse-textured soils and steep slopes would be the most fragile, and extensive areas of disturbance could result in increased erosion rates. There is the potential for some contamination of the soil from petroleum products used in hand-held power equipment, but these effects would be extremely localized.

Leaving vegetation residues on the soil surface, or mulching and spreading them after a manual treatment, would help protect the soil surface. Pulling weeds out of the ground slowly and carefully, and replacing soil in disturbed areas where possible, would further minimize effects to soil at manual treatment sites. Furthermore, limiting the number of people and the amount of time spent in each site would help minimize trampling (Tu, Hurd, & Randall, 2001).

Although manual treatments would help reduce fuel loads and populations of invasive species, the associated benefits to soil on public lands would be limited. Since manual labor is slower and more expensive than other forms of treatment, the amount of area treated using this method is generally limited.

Effects of Mechanical Treatments

Seedbed preparation techniques that would directly affect soils are drilling, 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.

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.

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 seeding methods include a land imprint seeder. This seeder imprints small impressions in the soil surface and presses seed into the soil profile.

Mechanical seeding techniques would disturb the soil surface further increasing the potential for soil erosion the first year following a fire treatment. 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 biological soil crust. However, undisturbed areas between the furrows remain intact and can provide a source for future recolonization of the disturbed areas. 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. Use of a no-till drill would reduce disturbance to biological soil crusts due to decreased furrow size. 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 biological soil 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 biological soil crust (Hilty, Eldridge, Rosentreter, Wicklow-Howard, & Pellant, 2004). The presence of biological soil crust on burned sites may prevent invasive plants such as cheatgrass from germinating (Kaltenecker, Wicklow-Howard, & Rosentreter, 1999). In general, biological soil 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.

Effects of Prescribed Fire Treatments

Plant communities dominated by noxious weeds or invasive plants would be targeted for treatment to prepare a site for seeding or herbicide application. Prescribed fire is one treatment method, in combination with others, which could be utilized to reduce the dominance of these exotic species. These communities generally have limited native species cover. Fire severity is generally low in these communities. Low-intensity prescribed fires have minimal effects on soil properties due to reduced heating in the upper most layers. Typically, broadcast burns have a slightly short-term positive effect of increasing available nutrients to vegetation, with a slight negative effect three to five years post burning, due to decreases in nitrogen. Soil productivity would improve due to the positive flush of post-treatment nutrients. Because of the low severity fires impacts to soils from prescribed fire would be low. However, many of these target plant communities have experienced repeated high intensity fires which may have altered soil stability and structure.

Depending on fuel type, prescribed fire treatments could potentially alter the physical properties of soil by consuming organic matter, modifying soil structure, and harming soil organisms. Because organic matter contributes to surface soil structure and porosity, burning of organic matter during fire treatments could result in soil structure degradation. Such degradation can persist from a year to decades, depending on the severity of the fire and post-fire ecosystem conditions. Persistent soil structure deterioration following fire would be greatest in cold and arid climates (Neary, Klopatek, DeBano, & Folliott, 1999). Surface runoff and soil erosion would increase after a severe fire as a result of these physical changes. These impacts would typically be expected for areas with heavy fuels. However, prescribed fire treatments would be implemented in areas dominated by fine fuels resulting from non-native invasive annual plants. Therefore, impacts would likely be less severe than those described above due to lighter fuels and short burn duration.

Effects of Biological Control Treatments

Biological control treatments would have few direct effects to soils. Treatments may reduce vegetation cover provided by noxious weeds. Reducing noxious weeds dominance would allow native plants to increase providing increased soil stability.

Biological control of vegetation using domestic goats or sheep would result in some small scale effects to soil on public lands. The effects would be dependent on the intensity and duration of the treatment in a particular area. The effects would be minor and could include some disturbance, shearing, and compaction of soil, increasing susceptibility to both water and wind erosion. If containment of domestic goats or sheep is used specifically to control unwanted vegetation, the BLM would closely monitor animal stocking rates, activities, and time of use to minimize the adverse effects to soil resources.

Effects of Herbicide Treatments

Herbicides may indirectly affect soil through plant removal resulting in changes in physical and biological soil parameters. As vegetation is removed, there is less plant material to intercept rainfall and less to contribute organic material to the soil. Loss of plant material and soil organic matter can increase the risk of soil susceptibility to wind and water erosion. The risk for increased erosion would be temporary, lasting only until vegetation was reestablished. If herbicide treatments lead to re-vegetation with perennial plants, soil stability may be improved relative to sites dominated by invasive plants.

Large-scale (>100 acres) aerial herbicide treatments of annual vegetation would temporarily 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 vulnerable to erosion may vary depending on the herbicide used and the cover of perennial vegetation at the time of application. 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.

Herbicide applications inevitably result in contact with soils, either intentionally for systemic treatments, or unintentionally as spills, overspray, spray drift, or windblown dust. In addition to direct application, transmission to soil may occur when an herbicide is transported through the plant from sprayed aboveground portions to roots, where it may be released into soil. Also, some herbicides remain active in plant tissue and can be released into the soil during plant decay and result in residual herbicide activity.

Adsorption to soil surfaces is probably the most influential factor on the fate and transport of herbicides in soils (Chiou & Kile, 2000). Herbicide transport includes movement with water or wind. Wind can transport herbicides that have adsorbed to particles. The potential for wind-blown transport depends on the weather and condition of the soil. Fine sand or silty textured soils, low soil stability, soil disturbance, and dryness all increase the risk for wind erosion of herbicide-containing particles. The following criteria would be utilized in determining the application of herbicide to bare soils. The criteria would be implemented to minimize the potential impacts to resources.

Herbicides used for pre-emergent control of noxious weeds or invasive plants would not be applied to bare soil where there is potential for off-site soil movement that may negatively impact sensitive resources or private agricultural crop land. Site factors to consider in this determination are topography, soil type and erosion potential, treatment location relative to sensitive resources or private agricultural crop land, project size, wildfire or prescribed fire intensity, and residual vegetation and litter cover. Appropriate SOP would also be applied in the determination (See Appendix E).

Effects of Re-vegetation Treatments

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

Soil recovery times vary depending on a variety of factors including site conditions and management approaches. Hilty, Eldridge, Rosentreter, & Wicklow-Howard (2003) determined that the benefits of post-fire re-vegetation and subsequent recovery of soil surfaces conducive to germination and establishment of perennial grass and shrub communities outweighed the initial short-term disturbance associated with vegetation treatment activities.

Overall, re-vegetation with a perennial plant community would benefit soil quality by reducing noxious weeds and invasive plants dominance and the risk of repeated high frequency wildfire. Wildfires occur more frequently in plant communities dominated by invasives and generally occur when soils are the driest, resulting in hot soil temperatures, loss of nutrients, and consumption of soil organic matter. Given the potential for frequent, unplanned, uncontrolled, severe wildfires in invasive dominated plant communities to cover large geographic areas, the detrimental effects of wildfire on soil quality is high. Re-vegetation treatments reduce this risk and would be beneficial to soil resources on public lands. When fire does return to these treated areas, the more discontinuous fuels associated with perennial plant communities often results in lower fire intensity. Additionally, perennial grasses quickly re-sprout, providing soil stability and competing effectively with annual weeds.

No Action Alternative Impacts – Soils

Under this alternative, the BLM would continue to implement the existing decisions for noxious weeds and invasive plants treatments in each field office. On-going actions would be implemented utilizing the herbicides approved for use under those decisions. The majority of noxious weeds and invasive plants vegetation treatments would be implemented primarily under Emergency Stabilization and Burned Area Rehabilitation treatments following wildfire. Larger scale proactive vegetation treatments could be implemented if analyzed in a site-specific project level EA. New herbicides approved by the ROD of the 2007 and 2016 PEISs could be utilized if analyzed as part of the site-specific project level EA.

Impacts to soils from treatments implemented under the No Action Alternative would be similar to those described for the Proposed Action. On-going actions would continue to be implemented, but treatments could be less effective due to the smaller number of herbicides authorized for use.

Cumulative Effects – Soils

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

Proposed Action Cumulative Effects

The cumulative impact to soils is usually in the form of accelerated soil erosion. Prescribed fire removes or reduces 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 & 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.

Under the Proposed Action, vegetation treatments would occur primarily in the spring, summer, and fall months. Prescribed fire treatments followed by fall drill seeding treatments would temporarily increase soil erosion and loss. Spot or larger scale herbicide treatments would extend the time of increased soil erosion and loss. Similar treatments implemented after wildfire would add to the potential soil erosion and loss. Within two growing seasons following a seeding treatment, established vegetation cover would provide for long-term soil stabilization thus decreasing the potential soil erosion and loss. Areas disturbed during wildfire suppression would receive stabilization treatments, reducing the future potential of soil erosion and loss. Vegetation treatments would be designed to establish a resilient plant community that would stabilize soils and reduce erosion.

In some areas, vegetation treatments such as prescribed fire, seeding, and herbicide application 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). Proposed vegetation treatments actions would reduce the time disturbed 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 treatments would cause a temporary incremental increase in acreage across the landscape that is vulnerable to accelerated soil erosion.

No Action Cumulative Effects

Similar past, present, and foreseeable future actions and their effects would occur as previously described under the Proposed Action cumulative effects section. The No Action Alternative would have short-term cumulative effects to soils similar to those described for the Proposed Action. However, there may be slightly fewer effects from management actions if the increased time for project planning results in fewer vegetation treatments being implemented. The No Action Alternative would have fewer cumulative effects to soils from management actions, but more effects from noxious weeds and invasive plants and wildland fire than for the Proposed Action.

Water Quality

Affected Environment

The Snake River is the primary river within the TFD. The major tributaries to the Snake River include: Bruneau River, Big Wood River, Camas Creek, Clover Creek, Goose Creek, Jarbidge River, Little Wood River, Malad River, Raft River, and Salmon Falls Creek. Some of the TFD managed lands in these watersheds occur in Nevada (e.g., portions of the Bruneau and Jarbidge Rivers) and Utah (e.g., portions of the Raft River and Goose Creek).

Peak flows of the Snake River and its tributaries occur between mid-April and mid-June as a result of snowmelt and rainfall. Spring and early summer run off may be 20 to 50 times greater than base flows. 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. Base flows are maintained during the remainder of the year by ground water and spring discharges. Stream flows in the Snake River are managed by a series of dams within and upstream of the TFD.

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

Land management practices on both BLM and non-BLM administered lands may have direct and indirect affects to water quality. Streams impaired by pollutants (303d listed streams) and streams not supporting designated beneficial uses (305b streams) are identified by the Idaho DEQ in Idaho’s 2012 Integrated Report (Idaho DEQ, 2014) and in the Nevada Division of Environmental Protection’s (NDEP) 2008 to 2010 Integrated Report (NDEP, 2010). These reports can be found at: http://deq.idaho.gov/water-quality/surface-water/monitoring-assessment/integrated-report.aspx and http://ndep.nv.gov/bwqp/303dlist.htm, for Idaho and Nevada, respectively. The pollutants causing water quality impairment vary by water body and may include: bacteria, nutrients, sediment, suspended solids, and temperature. The most common causes of water quality impairment for streams within the TFD are sediment, nutrients, and elevated water temperature. Designated beneficial uses include water uses such as agricultural, domestic, or industrial water supply, primary or secondary contact recreation, aquatic life, wildlife and aesthetics.

Environmental Impacts

The potential for impacts to water quality were considered over time and/or the area affected. Short-term impacts of a management action were considered to be five years or less, while long-term impacts were greater than five years. Impacts are described as direct (e.g., impacts that occur at the same time and location where a management action(s) occurs or indirect (e.g., impacts that occur at a later time or in a different location as a management action(s). Impacts are also described as negative (e.g., decrease in the amount, extent, or quality of the resource) or as beneficial (e.g., increase in the amount, extent, or quality of the resource).

Proposed Action Impacts – Water Quality

Effects of Manual Treatments

Treatments using manual methods involve the use of hand tools and hand-operated power tools to cut, clear, or prune non-native vegetation or hand pulling individual noxious weeds and invasive plants. Manual treatments are highly selective in how they are applied which allows for avoiding actions in areas that could have direct or indirect negative impacts to water quality. Manual treatments outside of the RCA would not have direct or indirect impacts to water quality because the treatments would not occur in areas where surface water is present. Any soil disturbance from these treatments would be localized and contained to the immediate treatment area which would ensure water quality would not be affected. The fueling or servicing of power tools used for manual treatments would not occur in RCAs or other areas where petroleum products would negatively impact water quality.

Manual vegetation treatments within RCAs would be done to reduce the effects of noxious weeds and invasive plants on native riparian vegetation. For these treatments, the potential for localized, short-term negative impacts to water quality is increased. These impacts would be from sediment due to localized ground disturbance during the treatment (removal) of noxious and invasive vegetation. Manual treatments within 15 feet of surface water pose the greatest risk for sediment related effects to water quality. However, using manual methods can avoid undesirable impacts to RCAs or water quality through the use of design features and conservation measures. Incorporating these measures into treatments would either avoid or reduce the potential for affects to water quality due to sediment to amounts that are not meaningfully measured, detected, or evaluated and are unlikely to occur. Manual treatments within RCAs would result in fewer negative impacts to water quality than if noxious weeds and invasive plants increased to levels that reduce the abundance or diversity of the deep-rooted hydric herbaceous and woody vegetation that is necessary to stabilize streambanks and maintain functional riparian areas. Water quality would benefit from manual treatments within RCAs in the long-term due to the reduced occurrence of noxious weeds and invasive plants in the RCA. Measurable short-term and long-term impacts to water quality are not expected from manual treatments to remove noxious weeds and invasive plants from RCAs.

Effects of Mechanical Treatments

Treatment using mechanical methods involve the use of wheeled or crawler-type tractors with attachments (e.g., disk plow, drills, harrow/aerator implement, chains, and/or mowing or mastication tools) to cut, uproot, mulch, or chop noxious weeds and invasive plants. These treatments would be focused in upland vegetation types where large areas are identified for treatment. Mechanical treatments would not be applied in riparian areas or areas with hydric vegetation (e.g., carex, sedge, willow, or dogwood). The design features and conservation measures for mechanical treatments, which include avoidance of RCAs, would prevent direct negative impacts to water quality. Where these treatments occur in upland areas that are not adjacent to RCAs, they would have no potential for direct or indirect effects to water quality.

A limited use of mechanical treatment methods may be used in RCAs in areas with upland vegetation (slopes less than 20 percent) as a pre-treatment for restoring upland vegetation (e.g., Snake River). Using mechanical methods in upland vegetation types within the RCA would increase the likelihood of achieving the objective of removing noxious weeds and invasive plants from large areas where they are pose a risk for spreading into hydric vegetation. The potential effects from these treatments would be an increased risk for short-term indirect effects to water quality from sediment entering an area with surface water. Direct effects to water quality due to sediment would likely be at amounts that are not meaningfully measured because treatments would not occur in areas with hydric vegetation. This would provide a vegetative buffer between the treatment area and surface water. Because these treatments would reduce or eliminate noxious weeds and invasive plants within RCAs, the risk to water quality from using herbicides to remove noxious and invasive plants would likely be less within the mechanically treated areas. Over the long-term, the potential risk for indirect negative impacts to water quality from treatments using mechanical methods would be less than if noxious weeds and invasive plants were to invade or expand in RCAs and displace the native hydric vegetation that is essential to maintain water quality. Measurable short-term and long-term impacts to water quality are not expected from treatments using mechanical methods in RCAs.

Effects of Prescribed Fire Treatments

Prescribed fire would be used in upland areas as an initial seedbed treatment to reduce the occurrence of non-native invasive plants across a broad area. These treatments would occur in upland plant communities or non-perennial drainages. Prescribed burning would also be proposed along fence lines, in drainages or ravines, or along wildlife corridors to treat accumulations of noxious weeds or invasive plant materials. Prescribed fire would not be used as a treatment method in riparian areas with perennial streams. A project-level prescribed burn plan would be developed to define burning parameters, site-specific treatment objectives, and design features and conservation measures to avoid negative impacts to water quality.

The use of prescribed fire in upland areas would not result in direct or indirect negative impacts to water quality. The use of a burn plan, which includes project specific design features and containment measures, would be used to prevent fire from escaping outside of the prescribed fire treatment area. The potential direct and indirect negative impacts to water quality from re-vegetation treatments within prescribed fire treatment areas are described below in the Effects from Re-vegetation Treatments section. In the long-term, prescribed fire treatments followed by seedings and plantings to restore desirable upland vegetation would likely have indirect benefits to water quality as the threat to RCAs from noxious weeds and invasive plants and risk for wildland fire is reduced over time at the watershed level.

Effects of Biological Control Treatments

Approved biological control agents would be used to reduce noxious weeds and invasive plants in uplands and riparian areas on an estimated 100 acres per year throughout the TFD. The use of biological control agents (e.g., insects, nematodes, mites, or pathogens) is strictly controlled and permitted by the USDA – APHIS following rigorous testing to ensure that agents are host-specific (USDI BLM, 2007c). Based on this testing, use of biological controls would be effective in reducing noxious weeds and invasive plants in and adjacent to RCAs without having negative impacts to hydric vegetation (e.g., carex, sedges, willows, and dogwood). Direct or indirect negative impacts to water quality are not expected from the use of biological controls within uplands or RCAs. In the long-term, the use of biological controls for noxious weed and invasive plant treatments would result in benefits to water quality from eliminating noxious weeds and invasive plants within and adjacent to RCAs.

Domestic goats or sheep may be used as a biological control in areas where herbicide use is not desirable due to high human use or sensitive resources, or where manual treatment is impractical due to difficult access. This could include the use of domestic goats or sheep in recreation sites (e.g., campsites, trailheads, and along trails), near public/private land boundaries, and in areas with steep terrain. Design features, such as the use of fences and placement of water, would be used to contain livestock within the identified treatment area. Where this treatment is used in upland areas (outside of RCAs) no direct or indirect negative impacts to water quality are expected. Domestic goats or sheep would not be used as a treatment method in riparian areas and therefore would not result in direct or indirect impacts to water quality.

Effects of Herbicide Treatments

The Proposed Action allows for using the 21 herbicide active ingredients and surfactants approved for use on public lands by the RODs for the 2007 and 2016 PEISs (USDI BLM, 2007b; USDI BLM, 2016). A list of the chemicals approved for use on BLM land is provided in Appendix C and the application criteria are in Appendix D. Selection of an herbicide and timing of application would depend on its chemical effectiveness on a particular weed species, habitat types present, proximity to water, and presence or absence of sensitive plant, wildlife, fish, and other aquatic species. All herbicide treatments would be applied according to manufacture label requirements by a certified applicator and consistent with the application criteria identified in Chapter 2. Treatment methods would include both aerial and ground-based applications.

Herbicide treatments in watersheds occupied by ESA-listed fish and aquatic invertebrates would be implemented using the design features and conservation measures that were developed with the USFWS during the ESA Section 7 consultation on the Proposed Action for this EA (USFWS, 2016b) which are identical to the protection measures that are identified in this EA. For consistency, these same measures will be applied to watersheds containing special status aquatic species that are not federally listed under the ESA (e.g., Redband trout, Yellowstone cutthroat trout, Wood River sculpin, and others). Collectively, the design features and conservation measures (Chapter 2), Prevention Measures (Appendix B), Herbicide Application Criteria (Appendix D), and Standard Operating Procedures (Appendix E) would avoid or reduce the potential for direct and indirect negative impacts to water quality due to accidental chemical exposure to amounts that are not meaningfully measured, detected, or evaluated. However, the potential exists for localized, short-term accidental effects to water quality from herbicide treatments within RCAs due to unforeseen circumstances (i.e., herbicide drift or spills of chemicals/adjuvants). With the conservation measures for RCAs and special status aquatic species, long-term negative impacts to water quality are not expected for the herbicide treatments described in the Proposed Action.

Ground-based herbicide treatments outside of RCAs would not have direct impacts to water quality. The design features and conservation measures would avoid any herbicide drift or surface run-off from entering streams where water quality could be affected.

Ground-based herbicide treatments in the RCAs pose an increased risk for accidental chemical exposure or indirect exposure due to herbicide drift to enter surface water. However, the use of design features and conservation measures which identify the herbicide treatment method, weather conditions, herbicide use, and distance from hydric vegetation or surface live water (e.g., 100 feet and 50 feet from hydric vegetation using high boom and low boom methods, respectively) would avoid or reduce the potential for affects to water quality to levels that are not meaningfully measured, detected, or evaluated. Although the potential for short-term negative direct or indirect impacts cannot be completely discounted, the impacts would be less than if noxious weeds and invasive plants were to invade and expand in RCAs and displaced hydric vegetation necessary to maintain streambank stability and riparian condition.

Herbicide treatments using aerial methods would be implemented using the design features and conservation measures that were developed with the USFWS during the ESA Section 7 consultation on the proposed action for this EA (USFWS, 2016b). These species-specific conservation measures (i.e., no aerial applications within 0.5 mile of the Snake River or the lower Bruneau River (Bruneau hot springsnail Recovery Area); no aerial treatments within 300 feet of the canyon rim for the Bruneau or the Jarbidge River and its tributaries and other RCAs within the TFD) are also intended to reduce or avoid impacts to water quality. With these conservation measures, combined with other general RCA conservation measures (i.e., wind speed, precipitation) and Standard Operating Procedures (Appendix E), it is expected the applied herbicides would remain within the treatment area and not drift into adjacent areas where water quality would be indirectly negatively affected. However, the potential for localized, short-term indirect effects to water quality due to herbicide drift or from an accidental spill cannot be completely discounted. Any potential indirect effects to water quality would be at amounts that are not meaningfully measured, detected, or evaluated. Design features for helicopter landings, fueling, and fuel storage would also be consistent with ESA consultation requirements (USFWS, 2016b) and would be applied for all aerial noxious weed and invasive plant treatments within the TFD. This would avoid or reduce the potential for direct and indirect impacts to water quality at helicopter landings.

Aquatic herbicides such as *diquat* and *fluridone* may be used to treat infestations of aquatic invasive plants on BLM lands within the TFD. Treatments would focus on closed water systems (e.g., stock ponds, small impounded waters) or reservoirs (e.g. Salmon Falls, Magic, Wilson Lake, or Lower Goose Creek Reservoirs) that are not occupied by special status aquatic species. Aquatic herbicides would only be used on a case-by-case basis after alternative aquatic vegetation treatments (e.g., mechanical, biological, or alternative approved aquatic herbicides) have been demonstrated as ineffective. Where these treatments are applied, localized, short-term direct and indirect impacts to water quality would be expected. The requirements for aquatic approved herbicides, design features, and application criteria would be effective in avoiding any long-term negative impacts to water quality due to noxious weed and invasive plant treatments using these aquatic approved herbicides.

Effects of Re-vegetation Treatments

Re-vegetation treatments using manual and mechanical methods would be used to restore native and site appropriate non-native plant species within noxious weeds and invasive plants treatment areas. Treatments would include seedings using ground-based and aerial methods and planting of shrub seedlings using manual and mechanical methods. In RCAs, manual methods would be used to restore native hydric vegetation. Mechanical methods would not be used in areas with hydric vegetation.

Aerial seedings would be focused in areas with upland vegetation and would be limited to seed mixes with no added chemicals or fertilizers. Equipment fueling would not occur in RCAs or areas with hydric vegetation where water quality (surface or groundwater) could be directly or indirectly affected. Based on these design features and conservation measures for RCAs, there would be no direct or indirect negative impacts to water quality from seedings in upland area using aerial methods.

In upland areas, re-vegetation treatments would include using mechanical methods for seed-bed preparation (e.g., prescribed fire, disk plowing, and/or herbicide treatments) followed by the use of a tractor and broadcast seeder. The seed would be lightly covered by a rubber-tired packer or drag chains. These treatments cause ground disturbance which may have direct or indirect sediment-related impacts to water quality. Where these actions occur outside of (not adjacent to) RCA, there would be no direct or indirect negative impacts to water quality because surface water would not be present in or adjacent to the treatment area. Manual and mechanical planting of bare root or containerized shrub or tree seedlings would be done to expedite the establishment of vegetation, stabilize soils, and/or restore wildlife habitat in upland areas. The ground disturbance from using manual treatment methods would be very localized, short-term, and limited only to the immediate planting site. There would be no direct or indirect negative impacts to water quality from manual treatments to restore upland vegetation. Shrub plantings using mechanical methods would only be used in upland areas and therefore would not have any direct or indirect negative impacts to water quality in the short- or long-term.

In RCAs, re-vegetation treatments using manual methods would be used to improve or restore hydric vegetation where noxious weeds and invasive plants have reduced hydric plant diversity or abundance. Seedings of hydric plants would be conducted from the streambank using manual methods which are not ground disturbing and therefore can be implemented in a manner that results in no short-term direct or indirect effects to water quality or hydric vegetation occupied RCAs. Over time, the result of these localized treatments would be an increase in the diversity and/or abundance of hydric vegetation within the treatment area which would also improve water quality in the long-term. Mechanical methods would not be used as a treatment method to restore hydric vegetation and therefore would not result in direct or indirect effects to water quality.

Planting seedlings of hydric plants would occur in areas with surface or groundwater influence between the outer edge of the stream channel to the outer edge of the hydric vegetation (Figure 4). Seedling plantings within15 feet of the stream channel (along the streambank) would have some potential for impacts to water quality due to sediment. The risk for impacts would be localized, short-term and primarily limited to the time during actual planting. The use of manual methods would allow for refinement of how re-vegetation treatments are applied and would reduce the potential for short-term direct and indirect effects to water quality to amounts that are that are not meaningfully measured, detected, or evaluated and would be unlikely to occur. Seedling plantings in areas more than 15 feet from the stream channel would result in no short-term direct or indirect effects to water quality because the use of manual methods would allow for avoiding affects to water quality in the short and long-term.

Treatments to restore hydric vegetation would have beneficial effects to water quality (surface and groundwater) in the long-term. The benefits for planting of woody species would be related to increases in streamside shading (thermal insulation), reduced water temperatures, and restored woody debris and nutrient contributions to the stream channel. The benefits from seedings or plantings of herbaceous hydric species would be related to streambank stabilization and floodplain function (i.e., dissipate energy and fine deposition during high flow events), and narrowing of the stream channel, all of which are necessary to maintain and improve water quality in the short-and long-term.

No Action Alternative Impacts – Water Quality

The BLM would continue to implement the existing decisions for noxious weed and invasive plant treatments under the existing weed treatment documents for each field office. Proposed hazardous fuel reduction and invasive plant community treatments would continue to be implemented and analyzed in separate site-specific EAs. Herbicides approved by the RODs for the 2007 PEIS and the 2016 PEIS but not included in the existing EAs could be used if analyzed in site-specific project level EAs. On-going activities and spot treatments of noxious weeds would continue under existing noxious weed and project level EAs.

The management actions to reduce noxious weeds and invasive plants and their potential for negative impacts to water quality would be the same as described for the Proposed Action. However, the increased time for planning and analysis at the individual project level could result in fewer acres of on the ground treatment than would occur under a comprehensive, program level design and analysis such as is provided in the Proposed Action. The potential for fewer acres of treatments could result in more negative impacts to water quality due to increases in noxious weeds and invasive plants than would be expected for the Proposed Action. If fewer acres are treated, the risk for additional noxious weeds and invasive plants infestations is increased in both upland and riparian areas. As noxious and invasive vegetation increases, the risk for wildland fire also increases, posing an additional risk to hydric vegetation and water quality. Over the long-term, the No Action Alternative may result in fewer negative impacts to water quality due to implementing fewer management actions, but more risk for negative impacts to water quality due to the displacement of native hydric vegetation with less desirable non-native vegetation. There also would be an increased risk for short and long-term, direct and indirect negative impacts to water quality from wildland fire than for the Proposed Action.

Cumulative Effects – Water Quality

The cumulative effects assessment for water quality considers the effects from past, present, and reasonably foreseeable future actions on federal, state, and private lands within and adjacent to the TFD in addition to the impacts from management actions for the Proposed Action and No Action Alternatives.

The primary factors affecting water quality are related to human uses and activities within and adjacent to the TFD. Consumptive and non-consumptive uses have occurred since the turn of the 20th century and include livestock watering, crop irrigation, hydroelectric power generation, fish hatcheries, reservoirs, and other impounded waters for recreation and private irrigation water. All of these uses have placed an increased demand on surface and groundwater resources within and adjacent to the TFD. These activities have also contributed to streams being designated by Idaho DEQ and NDEP as water quality impaired and/or not meeting the designated beneficial uses. Negative impacts to water quality would continue on federal, state, and private lands within and adjacent to the TFD in the short and long-term as human demands for water increase over time. Actions on state and private land will continue to affect water quality on BLM-managed land.

The occurrence and frequency of large wildland fires have also increased on federal, state, and private land throughout the TFD, partially as a result of the increase in noxious weeds and invasive plants and increases in motorized recreational use. Wildland fires and motorized recreational uses would continue to have short and long-term effects on water quality in the future.

The Proposed Action includes design features and conservation measures (Chapter 2), Prevention Measures (Appendix B), Herbicide Application Criteria (Appendix C) and Standard Operating Procedures (Appendix E) to reduce impacts to fish and other aquatic species. These same measures also reduce the risk for negative impacts to water quality. These measures would not be applied on other federal, state, or private lands. Cumulative effects to water quality from some of the proposed BLM management actions (e.g., ground disturbing activities and chemical applications) would be short-term and below levels that would result in long-term measurable impacts to water quality. Design features for other actions (e.g., manual methods, biological agents) would not result in any cumulative effects to water quality. Noxious weeds and invasive plants treatments would reduce the spread of undesirable vegetation from BLM managed lands to federal, state, and private lands and vice versa. The Proposed Action would have more potential for cumulative effects to water quality due to noxious weeds and invasive plant treatments, but fewer effects from increases in noxious weeds and invasive plants and wildland fire than for the No Action Alternative.

The No Action Alternative also includes design features to reduce impacts to fish and other aquatic species which reduce cumulative effects to water quality. The No Action Alternative would have the potential for short-term cumulative effects to water quality similar to those described for the Proposed Action. However, there may be slightly fewer effects from management actions under the No Action Alternative if the increased time for project planning results in fewer vegetation treatments being implemented. The No Action Alternative would have fewer cumulative effects to water quality from noxious weeds and invasive plant treatments, but more effects from increases in noxious weeds and invasive plants and wildland fire than for the Proposed Action.

Air Quality

Affected Environment

Particulate matter (PM) also known as particle pollution, is a complex mixture of extremely small particles and liquid droplets. PM is made up of a number of components, including acids (such as nitrates and sulfates), organic chemicals, metals, smoke, and soil or dust particles. The size of particles is directly linked to their potential for causing health problems. The EPA is concerned about particles that are 10 micrometers in diameter or smaller because those particles pose concerns to human health since it can enter a person's respiratory system and is associated with numerous health effects. PM can be grouped into two categories:

- PM_{10} "inhalable coarse particles," such as those found near roadways and dusty industries. They are larger than 2.5 micrometers and smaller than 10 micrometers in diameter.

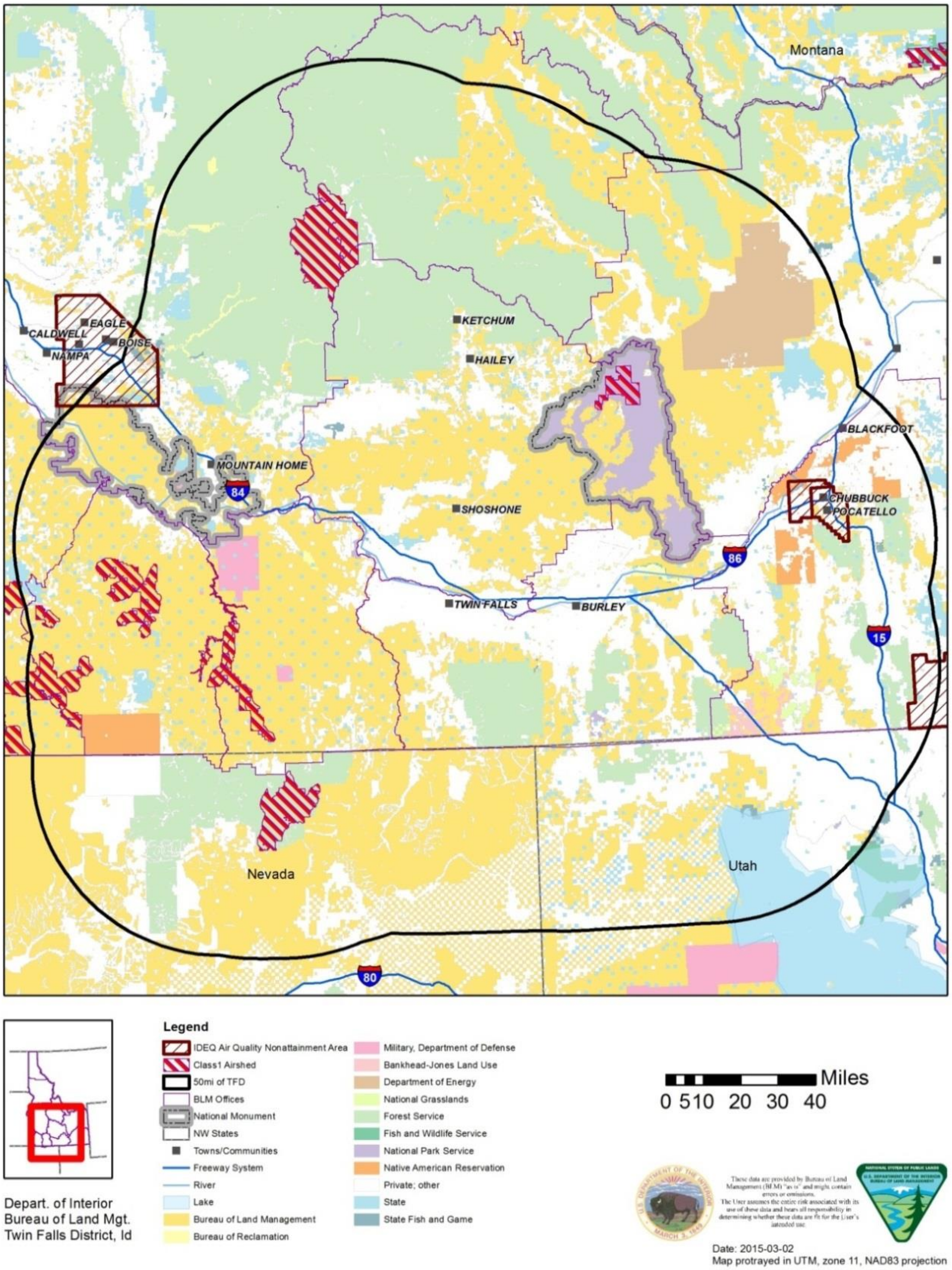
- $PM_{2.5}$ "fine particles," such as those found in smoke and haze and are 2.5 micrometers in diameter and smaller. These particles can be directly emitted from sources such as wildland fires, or they can form when gases emitted from power plants, industries and automobiles react in the air (USEPA, 2015).

The primary air quality pollutants of concern in Idaho are fine particles which are the only pollutant monitored by the Idaho DEQ in the TFD. Fine particulate matter generally comes from wood burning; agricultural burning; wildfires, and BLM's fire management activities; vehicle exhausts; and some industrial processes. Private farming operations adjacent to BLM lands also contribute particulate matter, which may contribute to decline in air quality on a periodic basis as soils are tilled, plowed, and planted. The amount of particulate matter depends on the time of year. Generally, the highest levels occur during the summer and early fall, when soils are dry and wildfire activity is high. Other times of the year are typically wetter, helping to keep soils and particulate matter in place. Also, weather conditions are less suitable for wildfire. Periodic air inversions make high levels of these pollutants worse, especially during the winter months. However, inhalable coarse particles, which include wind erosion on open, exposed soils and unpaved roads, are known to aggravate respiratory conditions such as asthma.

Nonattainment areas or areas with persistent air quality problems have not been identified within the TFD. Idaho DEQ 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 per 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.” Idaho DEQ attributed the cause of the high particulate matter on this day to smoke from wildfires and/or dust in the air (Idaho DEQ, 2012). Moderate air quality index is defined by Idaho DEQ 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.”

The Clean Air Act assigned airshed “classes” to indicate the criteria for pollutants with Class 1 areas given the highest protection to air quality by restricting the level of degradation allowed. Nearly all BLM-administered lands in the TFD were designated as Class 2 airsheds (See Figure 5). Class 2 airsheds allow moderate deterioration associated with moderate, well-controlled industrial and population growth. Class 1 airsheds within 50 miles of the TFD include Craters of the Moon National Monument and Preserve, the Jarbidge Wilderness, and the Sawtooth Wilderness. The Idaho DEQ routinely monitors air quality but does not regulate fugitive dust emissions. This area is meeting air quality standards. Within 50 miles of the TFD there are four nonattainment areas. These areas consist of Fort Hall, Portneuf Valley, Northern Ada County and Cache Valley.

Figure 5 – EPA Airshed Classification for the Twin Falls District



Environmental Impacts

Proposed Action Impacts – Air Quality

Activities associated with vegetation treatments such as prescribed fire, plowing/disking, seeding and weed treatments would increase the amount of ambient smoke and 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 would 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 re-established. Prescribed fire would add particulate matter and smoke for the duration of the burn. Prescribed burn plans would be developed to address safety and prescriptions to minimize the impacts of smoke to the general public.

Smoke management permits would be required anytime prescribed fire is being proposed. Carefully planned and implemented prescribed fire should produce far less smoke impact to air quality than uncontrolled wildfires (USDI BLM, 2007c). Re-establishment of perennial vegetative cover would benefit air quality because exposed soil from prescribed fire would be stabilized and would not become airborne. On-going actions such as manual treatments, spot chemical treatments and biological control would not have any long-term impacts to air quality. Short-lived increases in particulate matter would not substantially increase the total amount of particulate matter; therefore, annual air quality standards would not be exceeded.

Particulate matter associated with operation and use of mechanical and manual treatment methods (power tools), would be the primary factors that affect air quality. Power equipment and machinery exhaust would emit CO and other small pollutants. However, emissions would generally be small, localized, and temporary.

Aerial and ground application of herbicides may transport herbicides through drift, allowing airborne herbicides to move beyond the intended target. The primary factors that influence drift are droplet size, wind speed, humidity, formulation of the herbicide, height of emission, equipment and application techniques, and the size of the area treated with the herbicides. The factor that has the greatest influence on downwind movement is droplet size. Procedures that can be employed to reduce drift include: 1) using a lower spray nozzle height, 2) using the lower end of the pressure range, 3) increasing the spray nozzle size, 4) using drift-reducing nozzles, 5) using drift control additives, and 6) using sprayer shields (Hofman & Solseng, 2001).

Biological control would have little to no direct effects to air quality. Domestic goats or sheep would generate odors and dust, but these emissions would be minor, localized, and short term in duration. All treatments would have effects from vehicle emissions during transportation to and from project sites. However, emissions would generally be small, localized, and temporary.

No Action Alternative Impacts – Air Quality

Impacts to soils from treatments implemented under the No Action Alternative would be similar to those described for the Proposed Action. On-going actions would continue to be implemented, but treatments could be less effective due to the smaller number of herbicides authorized for use.

Vegetation treatments, primarily under ESR actions, would continue to be implemented, affecting air quality. There would be no foreseeable long-term impacts to air quality under this alternative. Effects to air quality would primarily be from particulate matter (smoke, soil particles and ash) caused by wildfires, prescribed fire, and soil erosion, similar to the Proposed Action. Smoke, dust and ash in the air from wildfires and individual vegetation treatments could cause reduced visibility on roads and respiratory irritation to people who are sensitive to air pollutants.

Cumulative Effects – Air Quality

The cumulative effects assessment for air quality considers from past, present, and reasonably foreseeable future actions on federal, state, and private lands within and adjacent to the TFD in addition to the impacts from management actions for the Proposed Action and No Action Alternatives.

Actions that could cumulatively affect air quality include smoke from wildfires; agricultural activities, including burning and tilling; travel management including use of unpaved and primitive roads and OHV use and construction activities. These actions produce smoke and dust. Other than smoke production by wildfires and agricultural burning, the effects of the other actions would be small in scale, temporary, and quickly dispersed throughout the treatment area.

Dust and smoke from these activities would also disperse within a few hours of the activity being halted. The occurrence and frequency of large wildland fires have continued to increase on federal, state, and private land throughout the TFD. 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 and could overlap vegetation treatment actions. This would occur primarily in summer. Dust or smoke produced by vegetation treatments would overlap with production from agricultural activities for short periods in spring through fall. These short-term decreases in air quality would not cumulatively result in non-attainment of air quality.

General Vegetation, Fuels and Fire Management

Affected Environment

Vegetation

Vegetation in the TFD is primarily classified as Semi-Desert Shrubland and Grassland with a small amount of Forest and Woodland occurring at the northern and southern extremes. These broad vegetation types are further divided into 14 sub-divisions, per BLM national vegetation classification standards (NVCS) (USDI BLM, 2013; Table 5). Vegetation mapping of plant communities is based on on-the-ground inventory, remote imagery with field verification, and vegetation treatment data. Plant communities were aggregated into sub-divisions and macrogroups. Table 5 is followed by a more detailed description of sub-divisions where vegetation is present; recent burn, sparse vegetation, agriculture, and developed sub-divisions are not included. Acreages of some vegetation types are dynamic and may vary year-to-year dependent on acres burned in wildland fire, vegetation treatments implemented, and rates of natural recovery and seeding establishment. Therefore, Table 5 shows general proportions for vegetation sub-divisions throughout the district.

Table 5 – Vegetation Sub-divisions Found in the TFD

Sub-Division	Description	BLM Acres	% of Total BLM Acres
Conifer	Conifers are the dominant life-form with ≥30% canopy cover. Shrubs, if present, are a minor component of the community with < 10% cover.	97,600	2
Deciduous Woodland	Deciduous tree species are the dominant life-form with ≥30% canopy cover and <25% conifer cover. Areas with conifer encroachment have with ≥25% and <30% conifer cover.	22,700	<1
Shrub/Tree Mix	Areas with ≥10% shrub cover and <30% tree cover.	11,000	<1
Shrub/Native Understory	Areas with ≥10% shrub overstory and dominant native herbaceous understory.	1,571,600	40
Shrub/Non-Native Perennial Understory	Areas with ≥10% shrub overstory and understory dominated by non-native perennial vegetation.	95,000	2
Shrub/Non-Native Annual Understory	Areas with ≥10% shrub overstory and an understory dominated by non-native annual vegetation.	1,600	<1
Native Perennial Grass	Areas with ≥50% cover of native perennial grass cover and <10% shrub cover. If the area is a seeding, may include non-native perennial grasses and forbs with cover of <50%.	774,300	20
Non-Native Perennial Grass	Areas with ≥50% cover of non-native perennial grass and <10% shrub cover. These seeded areas may have seeded or naturally-occurring native perennial grasses with cover of <50%.	428,300	11

Sub-Division	Description	BLM Acres	% of Total BLM Acres
Non-Native Annual	Areas with 50% cover of non-native annual vegetation.	468,700	12
Recent Burn	Areas are reviewed yearly following the disturbance event. Burned areas may be a result of wildfire or prescribed fire.	332,000	8
Sparse Vegetation	Areas with <10% vegetation cover. This sub-division includes sand dunes, canyon walls, rock outcrops, or other areas lacking vegetation through natural or man-caused means.	53,300	1
Agriculture	Land that has been converted to cropland and is dominated by agricultural species.	15,400	<1
Developed	Area converted by human development.	1,100	<1
No Data	Areas that have been modified from the potential native vegetation, but have not been mapped.	55,500	1
Totals		**3,928,100**	

The Conifer, Deciduous Woodland, Shrub/Tree Mix, Shrub/Non-Native Perennial Understory, and Shrub/Non-Native Annual Understory contribute to a low percentage of the overall acreages of vegetation sub-divisions. Although these communities provide potentially critical values and may receive vegetation treatments to enhance or modify the vegetation composition, the bulk of the vegetation treatments would occur in the sub-divisions that comprise nearly two-thirds of the landscape in the TFD. These main vegetation sub-divisions include Shrub/Native Understory, Shrub/Non-Native Perennial Understory, Shrub/Non-Native Annual Understory, Native Perennial Grass, Non-Native Perennial Grass, and Non-Native Annual.

Conifer

The Conifer sub-division comprises about 3 percent of the total BLM acreage in the TFD and occurs primarily at the northern and southern extremes. It includes plant communities dominated by Rocky Mountain juniper (*Juniperus scopulorum*), Utah juniper (*Juniperus osteosperma*), singleleaf pinyon pine (*Pinus monophylla*), Douglas-fir (*Pseudotsuga menziesii*), limber pine (*Pinus flexilis*), ponderosa pine (*Pinus ponderosa* var. *scopulorum*), lodgepole pine (*Pinus contorta*), Engelmann spruce (*Picea engelmanii*), and sub-alpine fir (*Abies lasiocarpa*).

Juniper plant communities occur primarily at mid-elevations between 4,500 and 6,000 feet elevation on a wide variety of soils and in areas with 10-15 inches average annual precipitation. These plant communities consist of natural juniper stands, as well as areas where juniper has encroached into riparian, mid-elevation shrub steppe, aspen, and mountain shrub vegetation types. Natural juniper stands occur in fire-safe habitats such as shallow soil, rocky areas, and lava flows. Singleleaf pinyon pine sometimes occurs with juniper at the southernmost extent of the Burley Field Office.

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 encroachment areas in the southern portion of the Burley Field Office. Juniper is less common in the southern end of the Jarbidge Field Office and occurs primarily in the Jarbidge River canyon and tributaries. Encroachment areas are much smaller and tend to be concentrated in riparian and aspen communities.

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

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 primarily on vegetated lava and ridge tops. 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.

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. Spruce/fir communities occur above 7,000 feet elevation on shallow soils in 30 to 40 inch precipitation zones. 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. All these communities tend to be uncommon in the TFD and limited to relatively small micro-sites.

Non-native annual invasive plants such as cheatgrass are uncommon in conifer communities at elevations of greater than 5,500 feet. However, non-native annual invasive plants can occur in the understory of juniper communities and can become dominant following fire. Large scale treatments could include broadcast herbicide application, followed by drill or aerial seeding. Mechanical methods could be used to remove standing dead tree skeletons and cover seed.

All conifer communities have the potential for introduction and spread of noxious weeds. Noxious weeds commonly found in this vegetation type include Canada thistle, dalmation toadflax, diffuse knapweed, and spotted knapweed. Methods used to control noxious weeds in conifer vegetation types include biological control, manual removal, and spot herbicide applications.

Deciduous Woodlands

Deciduous woodlands comprise less than 1 percent of the total BLM acreage. These areas also occur at the northern and southern ends of the TFD, primarily at mid-elevations above 5,000 feet. Deciduous woodlands primarily consist of communities dominated by aspen (*Populus tremuloides*) and mountain mahogany (*Cercocarpus ledifolius*). Aspen occurs as pure communities in a mosaic with sagebrush steppe, mountain shrub, or conifer vegetation types.

Mountain mahogany is restricted to the southern portion of the Burley and Jarbidge Field Offices and occurs on rocky sites, usually intermixed with sagebrush, juniper, or singleaf pinyon pine/juniper communities.

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 (e.g., diseased trees, insect infestations, canopy fires).

Mountain mahogany communities encroached with conifer is less common. Some juniper-encroachment situations in mountain mahogany can occur, primarily due to fire suppression and unnaturally long fire return intervals.

Non-native annual invasive plants such as cheatgrass are relatively uncommon in deciduous woodlands but can occur, primarily at elevations of less than 5,500 feet. Localized dominance could occur following fire, particularly on south-facing slopes. Methods of control include spot herbicide applications and re-vegetation following a disturbance.

All deciduous woodland communities have the potential for introduction and spread of noxious weeds. Species that are regularly found in these areas include Canada thistle, spotted knapweed, and diffuse knapweed. Methods of control include biological control, manual removal, and spot herbicide application.

Shrub/Tree Mix

This sub-division comprises less than 1 percent of the total BLM acreage and occurs primarily at mid- to high-elevations where sagebrush or mountain shrub communities occur in a mosaic with deciduous or coniferous trees including aspen, juniper, or Douglas-fir, or where trees have encroached into shrub stands due to unnaturally long fire return intervals.

Non-native annual invasive plants such as cheatgrass are relatively uncommon in mixed shrub/tree communities, but can occur, primarily at elevations of less than 5,500 feet. Localized dominance could occur following fire, particularly on south-facing slopes. Methods of control include spot herbicide applications and re-vegetation following a disturbance.

All communities have the potential for introduction and spread of noxious weeds. Species found in shrub/tree mix communities could include Canada thistle, dalmation toadflax, and spotted knapweed. Biocontrol, manual removal, and spot herbicide treatments are commonly applied methods of control.

Shrub/Native Understory

This sub-division comprises about 40 percent of the BLM acreage in the district. It includes all native shrub communities that have an understory dominated by native herbaceous plants. This includes low-, mid-, and high-elevation shrub steppe plant communities dominated by one or more shrubs, including Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*), basin big sagebrush (*Artemisia tridentata* ssp. *tridentata*)**,** mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*), three-tip sagebrush (*Artemisia tripartita*), low sagebrush *(Artemisia* *arbuscula*), black sagebrush (*Artemisia nova*), antelope bitterbrush (*Purshia tridenata*), gray rabbitbrush (*Ericameria nauseosus*), and green rabbitbrush (*Chrysothamnus viscidiflorus*). This sub-division also includes low-elevation salt desert shrub communities with four-wing saltbush (*Atriplex canescens*), shadscale (*Atriplex confertifolia*), winterfat (*Krascheninnikovia lanata*), bud sage (*Artemisia spinescens*), and greasewood (*Sarcobatus vermiculatus*), and diverse mountain shrub communities that include chokecherry (*Prunus virginiana*), serviceberry (*Amelanchier alnifolia*), ceanothus (*Ceanothus* spp.), currant (*Ribes* spp.), mountain snowberry (*Symphoricarpos oreophilus*), and elderberry (*Sambucus racemosa*).

Diversity in shrub overstory and understory herbaceous species tends to increase with elevation. Understory plants include Idaho fescue (*Festuca idahoensis*), bluebunch wheatgrass (*Pseudoroegneria spicata*), western wheatgrass (*Pascopyrum smithii*), thickspike wheatgrass (*Elymus lanceolatus*), Thurber's needlegrass (*Achnatherum thurberianum*), Sandberg bluegrass, needle-and-thread grass (*Hesperostipa comata*), Great Basin wildrye (*Leymus cinereus*), Indian ricegrass (*Achnatherum hymenoides*), and common understory forbs such as 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- and some mid-elevation plant communities also may contain biological soil crusts in the interspaces. The composition of biological soil crusts is dependent on soil texture and chemistry, but is usually dominated by lichens, mosses, and cyanobacteria. Biological soil crust cover in interspaces decrease as plant cover and densities increase. This tends to occur with increased elevation and average annual precipitation (Rosentreter & Belnap, 2001).

Cheatgrass or other non-native annual invasive plants may be present in the Shrub/Native Understory sub-division, but at sub-dominant cover levels. Low-, and to some extent, mid-elevation plant communities in this sub-division are the most vulnerable to invasion, spread, and dominance by non-native annual invasive plants following disturbance such as wildfire.

All communities in this sub-division have the potential for introduction and spread of noxious weeds. Rush skeletonweed, diffuse knapweed, leafy spurge, and scotch thistle are examples of noxious weeds found in this sub-division. Control methods for noxious weeds in the shrub/native grass sub-division include biological control, manual removal, and herbicide application.

Shrub/Non-Native Perennial Understory

The Shrub/Non-Native Perennial understory sub-division comprises about 2 percent of the total BLM acreage in the TFD and occurs where native herbaceous vegetation was replaced by non-native species following wildfire or as the result of past vegetation treatments. Shrubs were seeded, planted, or reestablished through natural means. These plant communities occur primarily at low- and mid-elevations. Dominant shrubs include Wyoming, basin, or mountain big sagebrush; gray or green rabbitbrush; low sagebrush; black sagebrush; antelope bitterbrush; and, less frequently, salt desert shrubs such as winterfat and four-wing saltbush. Common understory species include seeded perennial grass cultivars such as crested wheatgrass and Siberian wheatgrass (*Agropyron fragile*). Plant communities in this sub-division tend to be less diverse than their native counterparts due to past disturbance and competition from seeded species.

However, non-native seeded forbs such as blue flax (*Linum perenne*), sainfoin (*Onobrychis sativa*) and alfalfa (*Medicago sativa*) as well as native forbs can be present. Biological soil crusts may also be present.

In some cases residual native understory grasses, primarily Sandberg bluegrass, have greater cover than seeded species. Therefore, acreages for this sub-division may not accurately reflect the extent of older seedings that currently have a shrub overstory.

Non-native annual invasive plants can be present at sub-dominant levels, particularly at lower elevations. Disturbance such as wildfire can increase the potential for establishment and increase of non-native annual invasive plants. Fire may result in conversion to the Non-Native Perennial sub-division for a period of time until shrubs re-establish and become a dominant component.

All communities in this sub-division have the potential for introduction and spread of noxious weeds. Species that regularly occur in this sub-division include rush skeletonweed, diffuse knapweed, and scotch thistle. Methods to control noxious weeds in this sub-division include biological control and spot herbicide application.

Shrub/Non-Native Annual Understory

This sub-division comprises less than 1 percent of the total BLM acreage and consists of salt desert shrub and low- and mid-elevation shrub steppe communities where the native understory vegetation has been replaced by non-native annual invasive plants such as cheatgrass and medusahead wildrye. Disturbances resulting in shrub/non-native annual understory communities are primarily fire and historic livestock use. Plant communities in this sub-division tend to be prone to burning by wildfire due to density and continuity of understory fine fuels. Once burned these plant communities tend to convert to the Non-Native Annual sub-division, unless vegetation treatments intervene, resulting in conversion to Native or Non-Native Perennial Grass.

In some cases native or non-native perennial understory grasses may have greater cover than non-native annual invasive species, which may be abundant, but present in subdominant amounts. Therefore, acreages for this sub-division may not accurately reflect the extent of shrub communities with substantial amounts of non-native annual invasive plants in the understory.

Shrub/non-native annual understory communities typically have a measurable amount of non-native annual invasive plants present. Species include medusahead wildrye and cheatgrass. Control methods include broadcast herbicide application, prescribed fire, and seeding to establish desirable plant species.

The shrub/non-native annual understory sub-division is at risk for introduction and expansion of noxious weeds. Rush skeletonweed, diffuse knapweed, scotch thistle, and leafy spurge are some of the most prevalent species found in this sub-division. Treatments to target noxious weeds in these communities include biological control and spot herbicide application.

Native Perennial Grass

This sub-division comprises about 20 percent of the total BLM acreage. Vegetation found in native perennial grasslands includes Idaho fescue, bluebunch wheatgrass, western wheatgrass, thickspike wheatgrass, Thurber's needlegrass, Sandberg bluegrass, needle-and-thread grass, Great Basin wildrye, and Indian ricegrass. 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.

Currently, the native perennial grass sub-division can be the result of seeding where native cultivars or wildland collected seed were used, typically at low- or mid-elevations, or post-fire natural recovery in more resilient vegetation types. Some areas classified as native perennial grass may be the result of seeding with a combination of native and non-native grasses where the native species comprise 50 percent or more of the cover. In addition, areas mapped as native perennial grass can include non-native perennial grass seedings where residual native perennial grasses, such as Sandberg bluegrass, dominate.

The native perennial grass sub-division is considered an early to intermediate seral stage. Low cover of shrubs (<10%) may be present due to seeding, resprouting, or gradual natural spread. Perennial grasslands can eventually develop into diverse sagebrush steppe habitat if undisturbed for 20 to 70 years.

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

Cheatgrass or other non-native annual invasives may be present in these plant communities but at sub-dominant cover levels. Control methods for non-native annual invasives in native perennial grass communities could include ground or aerial broadcast herbicide application and re-vegetation through seeding into the existing plant community.

This sub-division has the potential for introduction and spread of noxious weeds. Diffuse knapweed and rush skeletonweed are the most prevalent noxious weeds in this sub-division. Commonly applied control methods include biological control and herbicide application.

Non-Native Perennial Grass

This sub-division comprises about 11 percent of the total BLM acreage. Non-native perennial grasslands typically include cultivars such as crested wheatgrass, Siberian wheatgrass, and tall wheatgrass. Plant communities in this sub-division are a result of post-fire seeding or vegetation treatment projects and typically occur at low- or mid-elevations. Non-native perennial grasslands can also include areas seeded with a combination of non-native and native grass cultivars where non-native species comprise the dominant cover, or areas where naturally occurring native perennial grasses are present in addition to non-native perennials. Low cover of shrubs may be present due to seeding, resprouting, or gradual natural spread. Non-native perennial grasslands eventually develop into shrub/non-native perennial understory plant communities if undisturbed for 20 to 70 years.

As with native perennial grasslands, 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 et al., 2004).

Cheatgrass or other non-native annual invasive plants may be present in these plant communities but at sub-dominant cover levels. Control methods for non-native annual invasives in the non-native perennial grass sub-division could include ground or aerial broadcast herbicide application.

Diversification of non-native perennial grass communities could include seeding into the existing vegetation with a select seed mixture and planting shrubs.

This sub-division has the potential for establishment and spread of noxious weeds. Diffuse knapweed and rush skeletonweed are the most prevalent noxious weeds in this vegetation type. Control methods commonly applied in non-native perennial grass communities include biological control and herbicide application.

Non-Native Annual, Including Invasive Plants

This sub-division comprises about 12 percent of the total BLM acreage. It may be underrepresented in the classification due to yearly variation in cover values for annual vegetation. The non-native annual sub-division is not part of the historical vegetation found in the TFD and is primarily dominated by cheatgrass and medusahead wildrye, and may include invasive forbs such as Russian thistle (*Salsola* sp.), tumble mustard (*Sisymbrium altissimum*), and prickly lettuce (*Lactuca serriola*). Invasive plants occurring in the TFD are listed in Appendix A, Table A-4.

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 with methods that may include chemical application 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 non-native annual invasive grasses and perennial grasses gives the annuals 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 non-native annual invasive grass expansion and dominance after disturbance. An abundance of non-native annual invasive grasses such as cheatgrass in the understory enhances the likelihood of fire spread and conversion of sagebrush steppe to annual grassland.

Biological soil crusts may be present in this sub-division; however, they 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).

Plant communities dominated by non-native annuals and other invasive plants are those most likely to be treated using multiple methods including prescribed fire, aerial or ground broadcast herbicide application, mechanical disking, and seeding or planting to establish perennial vegetation using drill, broadcast, or other methods.

Annual-dominated plant communities 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*), scotch thistle, leafy spurge (*Euphorbia esul*a), white-top, and rush skeletonweed (*Chondrilla juncea*). Control methods for noxious weeds in non-native annual plant communities include herbicide application, biological control, and manual methods of removal.

Wetlands and Riparian Areas

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 vegetation such as cottonwoods (*Populus* spp.), willow (*Salix* spp.), sedges (*Carex* spp.), and rushes (*Juncus* spp.). 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 TFD and occur at all elevations. Ephemeral streams, washes, or playas are excluded from the riparian type, as they do not support riparian vegetation.

Approximately 618 miles of streams in the TFD have been classified as follows: 198 miles are in properly functioning condition, 275 miles are in functioning at risk condition, 54 miles are nonfunctioning, and 91 miles are in unknown condition. Approximately 311 acres of wetlands in the TFD have been classified as follows: 55 acres are in proper functioning condition, 99 acres are functioning at risk condition, 10 acres are nonfunctioning, and 147 acres are in unknown condition (BLM GIS data, 2013).

Invasive plant species include Russian olive, reed canary grass, and ventenata. Treatments could include manual removal and spot herbicide application.

Noxious weeds include saltcedar, Canada thistle, Russian knapweed, white-top, purple loosestrife, and Dalmatian toadflax. On-going treatments have included manual removal combined with herbicide application, and biological control.

Fuels and Fire Management

The current ecological situation in southern Idaho and elsewhere in the Intermountain Sagebrush Province is complex. Prior to European settlement, the vegetation was largely dominated by a complex of sagebrush communities with a perennial grass and forb understory. Infrequent and patchy fires occurred in late summer and fall after native grasses and forbs had gone to seed and entered summer dormancy.

In low-to mid- elevation shrub types (<5,500 ft.) across the TFD, the perennial grass and forb cover has been replaced over extensive areas by non-native invasive plants, such as cheatgrass and medusahead wildrye. These invasive plants cure earlier, provide more continuous fuel, and are vulnerable to ignition for a longer period of time than the native perennial grasses and forbs. As a result, the frequency and scale in which natural fires occur has increased (West, 1999; Whisenant, 1990).

Increased public use due to population growth and improved access in the vicinity of the TFD can result in a greater number of human-caused fires. Between 2005 and 2014 the average number of human starts in the TFD was 67 per year; the average number of natural starts was 44 per year. The 10-year average number of human versus natural starts varies by field office:

- Burley Field Office – 19 human starts, 16 natural starts
- Jarbidge Field Office – 8 human starts, 12 natural starts
- Shoshone Field Office – 40 human starts, 16 natural starts

In 2009, Congress passed the Federal Land Assistance, Management, and Enhancement Act (FLAME Act) in response to a rapid escalation of extreme wildfire behavior, accompanied by significant increases in risk to responders and citizens, home and property losses, costs, and threats to communities and landscapes. The FLAME Act mandated development of a national cohesive wildland fire management strategy to comprehensively address wildland fire management across all lands in the United States. A three-phased, intergovernmental planning and analysis process involving stakeholders and the public was initiated shortly after enactment of the FLAME Act. The culmination of three-phases of planning and analysis is the National Strategy and a companion National Action Plan. The National Strategy is the result of a collaborative effort by federal, state, local, and tribal governments and non-governmental partners and public stakeholders, in conjunction with scientific data analysis. The National Strategy and National Action Plan are available online at http://www.forestsandrangelands.gov (accessed May 29, 2014).

The National Strategy is defined by three primary goals:

- **Restore and maintain landscapes:** Landscapes across all jurisdictions are resilient to fire-related disturbances in accordance with management objectives.
- **Fire-adapted communities:** Human populations and infrastructure can withstand a wildfire without loss of life and property.
- **Wildfire response:** All jurisdictions participate in making and implementing safe, effective, efficient risk-based wildfire management decisions.

The National Strategy was further defined to address regional contexts for the northeast, southeast, and western United States.

The National Strategy also directs use of information regarding vegetation and fire regime groups to better understand the historic and current roles of fire on the landscape. This utilizes a classification system known as Fire Regime Condition Class (FRCC) (Barrett et al., 2010), which describes current condition of an area or landscape based on the amount of departure from the historic vegetation condition. This departure from the natural state may be a result of changes in one or more ecosystem components such as fuel composition, fire frequency, or other ecological disturbances. FRCC is defined as follows:

Fire Regime Condition Class 1 (FRCC1): Fire regimes and vegetation composition on lands classified as FRCC1 are within historical (pre-settlement) ranges. Thus, the risk of losing key ecosystem components from the occurrence of fire remains relatively low. Vegetation management activities such as prescribed fire, mechanical treatments, and preventing introduction and spread of noxious weeds and invasive non-native annual plants, are required to prevent these lands from becoming degraded.

Fire Regime Condition Class 2 (FRCC 2): Fire regimes and vegetation composition on lands classified as FRCC2 have been moderately altered from their historical ranges by either increased or decreased fire frequency. These lands have a moderate risk of losing key ecosystem components due to these altered fire regimes. To restore their historical fire regimes, these lands may require some level of restoration through prescribed fire, mechanical, or chemical treatments, and the subsequent reintroduction of native plants.

Fire Regime Condition Class 3 (FRCC 3): Fire regimes and vegetation composition on lands classified as FRCC3 have been substantially altered from their historical range. Because fire regimes have been extensively altered, risk of losing key ecosystem components from wildland fire is high. Consequently, these lands are at greatest risk of ecological collapse. These lands may require multiple mechanical or chemical restoration treatments and/or reseeding to restore their historical fire regimes. Noxious weed and invasive plant reduction treatments across the TFD would be primarily implemented on lands classified as FRCC2 or FRCC 3. The ecological condition has deviated from natural conditions due to the altered fire regimes indicated by the high presence of annual invasive plants such as cheatgrass, medusahead wildrye and noxious weeds.

While long-range regional changes might include the TFD, it is impossible to predict precisely when they could occur. Measurable change may occur beyond the life of this EA. Indicators of climate change include temperature, precipitation, snowpack, stream flow, stream temperature, plant phenology, wildfire, and vegetation dynamics (Gillis et al., 2010), all of which continue to change throughout Idaho. A recent study of Idaho meteorological data collected from 1968 to 2008 shows a decrease in precipitation and an increase in temperature across the state (Sohrabi, Ryu, Abatzoglou, & Tracy, 2012). Within the TFD, trends in temperature and precipitation generally appear to fall within the historical range of variability (1901–2012), although temperature extremes (extreme warm) have occurred (USDI NPS, 2014; Monahan & Fisichelli, 2014). And while the impacts of climate change are somewhat speculative, it is possible that climate warming could result in longer periods during which fire can occur (Liu, Stanturf, & Goodrick, 2010; McKenzie, Heinsch, & Heilman, 2011). This means that the trend of frequent and potentially large fires is likely to continue for the foreseeable future.

Environmental Impacts

Effects of Noxious Weeds and Invasive Plants on General Vegetation

Noxious weeds and invasive plants are present across the TFD at levels that vary with the level of resistance and resilience of the vegetation sub-divisions and the levels of disturbance history, both from natural and anthropogenic causes. The establishment and expansion of noxious weeds and invasive plants impact the continued health of the plant communities present. These invaders decrease community diversity, affect natural disturbance regimes, and can lead to monocultures of undesirable vegetation. These changes, in turn, impact the spatial distribution of plants in the system and change nutrient cycling processes (Belnap, 1995), as compared to an intact, natural plant community. The degree of impacts to the overall health of the general vegetation is proportional to the amount of noxious weeds and invasive plants present in the community. The presence of noxious weeds and invasive plants also threatens currently intact landscapes, unless curtailed through management.

Proposed Action Impacts – General Vegetation, Fuels and Fire Management

The Proposed Action would implement vegetation treatments across the TFD to control, contain, or eliminate noxious weeds and invasive plants, as well as restore natural plant communities to healthy, resilient vegetation. These actions would be achieved by continuing on-going treatments, as well as introducing an array of treatment methods. Overall, the Proposed Action would improve the ecological health and resiliency of the current general vegetation in the TFD. The following methods could be used individually or in combination. Selection of the proper method for individual projects should weigh potential impacts with the desired outcomes to derive the most effective treatment.

Wildfire starts across the district are likely to continue, whether through natural or anthropogenic causes. However, the Proposed Action presents a suite of tools that could be used to proactively reduce hazardous fuels and aid in fire management.

Shorter fire return intervals threaten the integrity of native plant communities and established vegetation treatments by creating a positive environment for the establishment of noxious weeds and invasive plants. Breaking the fire cycle must be done at a landscape level, through a multitude of treatments, both for restoration of plant communities and for protection of those projects. The Proposed Action would enable the use of treatments that, either individually or combined, can achieve both of those outcomes.

Effects of Manual Treatments

Manual treatments involving pulling, cutting, grubbing, and digging vegetation with non-motorized hand equipment or chainsaws would have localized effects resulting in removal of all or part of targeted plants. This method would be most effective for removal of individual annual or taprooted plants or small populations, but not for deep-rooted perennials that could re-sprout from roots or underground stems, such as rush skeletonweed. Effectiveness could be increased if manual treatments are combined with other techniques. For example, woody plants such as saltcedar can be cut, and then treated with herbicide to kill the plant without disturbing the roots and substrate. Acreage treated using manual methods would be small since manual labor is slower and more expensive than other forms of treatment. However, due to small scale, targeting of individual plants, and ability to control the level of disturbance, manual methods would tend to minimize the potential for damage or mortality of non-target vegetation in the treatment area. On-going use of manual treatments in TFD has shown that it can effectively control small areas of infestations, such as Dyer's woad.

Some disturbance to non-target vegetation would result from foot or vehicle traffic during access of treatment locations. This would typically result in damage or mortality of non-target plants due to crushing, and would be a short-term impact. Treatment-related disturbance could also create conditions favorable for re-invasion by the same or other weeds. These impacts would be minimized by restricting vehicles to existing roads and minimize trampling by limiting the number of people and the amount of time spent in each site (Tu, Hurd, & Randall, 2001).

Effects of Mechanical Treatments

Mechanical treatments would have greater impacts to existing vegetation than manual treatments due to the size of the affected area, amount of soil surface disruption, and continuity of the disturbed area. Mechanical treatments would be used primarily where non-native invasive plants are or have the potential to be dominant and these treatments are needed for seedbed preparation and seeding of desired plant materials. Tilling or disk plowing, drill or broadcast seeding, harrowing, chaining, mowing, and mastication could be used in conjunction with prescribed fire and/or chemical treatments to eliminate existing non-native invasive vegetation and establish a native or native-like plant community. Impacts to non-target species may vary dependent on the type of mechanical treatment, but are anticipated to be minor short-term due to the dominance of non-native invasive plants. Treatment type would be selected based on relative proportions of desirable and undesirable vegetation. Some crushing of non-target vegetation by equipment tires or treads could occur regardless of mechanical method used. However, this generally would not result in plant mortality.

Tillage or disk plowing can result in mortality of most or all of the plants in a treated area, including deep-rooted species (Stevens & Monsen, 2004b). This method is most effective against annuals and shallow-rooted perennials, prior to seed set of targeted plants, and when soil moisture is low to prevent resprouting. Germination of undesirable plants can occur if a large seed bank is present and moisture occurs following treatment. In addition, plants that reproduce from root fragments can resprout after tillage (Tu, Hurd, & Randall, 2001). For example, tillage spreads root fragments of rush skeletonweed and may increase infestation size. Therefore, repeated treatments or a combination of methods may be necessary for control of some target species (Jacobs, Goodwin, & Ogle, 2009). Cox and Anderson (2004) found that adequate seedbed preparation and reduction of existing, competing vegetation were important factors to establish a seeded species. In order to achieve the desired outcome of controlling noxious weeds or invasive plants by establishing desirable vegetation, it is necessary to remove or greatly reduce the existing vegetation to achieve proper seedbed preparation. This will reduce competition for resources between seeded species and noxious weeds and invasive plants.

Various seeding methods could be considered. Each method has particular strengths dependent on site conditions. For all methods, desirable plant cover would increase over one to five years post-seeding. Diversity of the resulting plant community would depend on the type and relative amounts of seed used. However, diversity would also likely increase compared to a plant community dominated by non-native annual invasive plants such as cheatgrass following seeding.

Drill seeding is the primary method for re-establishment of desirable vegetation. As with disk plowing, treatment can result in damage or mortality of remnant, non-target plants that remain following other seedbed preparation treatments such as prescribed fire, chemical, or other mechanical treatments. This effect would be less than for disk plowing due to row spacing. Plants between rows would generally not be disturbed. Disturbance of remnant vegetation would be lower when using no-till or minimum till methods, including use of depth bands. However, success can be lower for these methods if used in areas with uneven soil surfaces, surface rock, or presence of a sod forming grass such as Sandberg bluegrass, which contributes to uneven soil microtopography. Minimum till and no-till methods are less effective at cutting furrows in uneven surfaces compared to a traditional rangeland drill, which was developed specifically for these conditions. This can result in inadequate seed burial and lower germination and establishment rates. In addition, treatments using depth bands that occur when soils are moist can be less effective due to accumulation of fine soil particles on the depth bands. This can result in greater soil surface disturbance and incomplete, inconsistent seed burial. Site conditions and environmental factors should be considered to ensure proper method selection.

Broadcast seeding by ground or aerial application would have little or no impact to non-target vegetation. However, broadcast seeding is normally followed by another mechanical treatment to cover seed or press it into the soil. These would result in variable disturbance to existing vegetation. A tined harrow, used to broadcast seed in areas lacking live or dead woody cover, could disturb or uproot annual or shallow-rooted perennial plants, if present in the seeded area.

The Dixie harrow and Lawson aerator are typically used to enhance existing plant communities and could ultimately result in greater vegetation species diversity (dependent on seed mixtures used) and understory cover. A Dixie harrow would thin existing vegetation by uprooting plants, primarily shrubs. The degree of thinning would depend on the number of passes. The Lawson aerator would crush vegetation resulting in damage, some thinning, and possibly mortality of existing plants. Both methods would leave plant debris on site which could function as a mulch to maintain soil moisture and nutrients.

Chaining would typically be used in areas where remnant shrub or tree skeletons impede the use of drills. Depending on the size and type of chain used, this method can result in low disturbance to residual vegetation and soils. In general, the amount of disturbance increases with link size. Chaining can result in disturbance to existing vegetation and litter, but can enhance establishment of broadcast seedings. This method can also leave plant debris in place to serve as mulch. (Stevens & Monsen, 2004a & 2004b).

Chaining provides a variety of seeding depths and microsites, as well as improved ground cover and forage production. Recent studies have shown improved seedling establishment on chained sites and less cheatgrass establishment 3 years after fire in chained sagebrush and pinyon-juniper habitats (Ott, McArthur, & Roundy, 2003). Chaining can also be adjusted by the appropriate season to benefit soil stability and plant seeding, and reduce the invasion of weeds (Monsen et al., 2004).

Mowing would impact vegetation by reducing heights and possibly affecting growth form of plants, if regrowth occurs following the treatment. Typically, mowing would be combined with another treatment such as herbicide application. Since mowing reduces plant heights and exposes more plant materials to herbicide application, the treatment effectiveness and plant mortality would increase by utilizing this treatment method.

Mowing could also be utilized to reduce the risk of fire to implemented treatments. By protecting a vegetation treatment, such as a shrub planting, mowing would provide the opportunity for desirable vegetation to mature and become more resilient to disturbances. Mowing acts to reduce plant growth and height, which in turn would reduce the rate of spread and flame lengths associated with fires. However, this would require repeat applications, up to twice per year. Fuel breaks would utilize a variety of treatments to achieve the most effective and long-term outcome, and may be combined with other vegetation treatments to create a shift to the desired vegetation type of short-statured, low fuel loading plants. Utilizing these types of plant materials in fuel breaks would also reduce the amount of mowing required to maintain a fuel break. The level of impacts to the plant community from mowing is related to the condition, composition, and health of the plant species present (Davies, 2012a and b). The more noxious weeds and invasive annuals present in a vegetation type, the more likely the potential is for increase, establishment, and expansion in the treatment area. The level of risk of expansion of noxious weeds and invasive annuals should be considered when implementing mowing as a treatment; these threats could be reduced by combining mowing with other treatments, such as herbicide application.

Mastication would be used to shred large woody debris from invasive plants, such as Russian olives. Short-term impacts to vegetation include crushing and possible disturbance to the roots of plants, depending on soil moisture conditions. However, the mulch created from mastication helps create a positive environment for seedling growth, as well as for recovery of desirable vegetation that may have been crushed in the process. These areas are typically seeded aerially prior to the mastication work.

Successful vegetation establishment resulting from effective seedbed preparation and seed burial using mechanical methods would reduce the proportion of invasive non-native vegetation on the landscape and increase the proportion of desirable perennial vegetation.

Effects of Prescribed Fire Treatments

Prescribed fire is a tool that can assist in creating an optimal seedbed, and when used as part of a suite of other treatments can improve the successful implementation of vegetation treatments. Prescribed fire would be used primarily to reduce live plant and residual litter cover in communities dominated by non-native invasive plants such as cheatgrass. Properly timed and implemented prescribed fire could result in invasive plant mortality and seed consumption. Little to no additional seedbed preparation would be necessary with a high level of plant and seed mortality. However, in areas where non-native invasive plants are dominant and have accumulated a heavy seed bank and plant materials are not entirely consumed during the prescribed fire, then additional chemical or mechanical treatments may be necessary for control. Various environmental factors, such as soil type, topography, proximity to private agricultural lands, and residual cover would be considered on a site specific basis prior to applying herbicide after a prescribed fire.

Non-target plants could be damaged or killed by prescribed fire and subsequent treatments. Damage to herbaceous species is greatest if it occurs during periods of active growth. Some plants tend to be fire resistant. These include grasses such as bottlebrush squirreltail and rhizomatous species such as western wheatgrass, as well as re-sprouting shrubs such as rabbitbrush and three-tip sagebrush. Typically, shrubs, such as most sagebrush species and antelope bitterbrush, have a high mortality rate following fires in the TFD. Non-sprouting shrubs such as big sagebrush are killed by fire (Whisenant, 2004). Therefore, prescribed fire would be most appropriate in areas where desirable, fire-intolerant vegetation is a minor community component.

Prescribed fire could be used to burn tumbleweeds off fencelines. This action would have short-term impacts to any desirable vegetation in immediate proximity to the fenceline from burning, and could include mortality to plants or seed and reduced vigor. However, the outcome of this treatment includes reductions in litter accumulations for invasive plants that would otherwise hinder the establishment, persistence, and growth of desirable plants.

Prescribed fire could be used in degraded sagebrush habitats to meet objectives that would protect sagebrush-obligate species habitats. Short-term impacts include the consumption of some non-target vegetation. However, in the long-term, the overall objective would be to protect intact, healthy sagebrush systems from large wildfires, increased expansion and establishment of noxious weeds and invasive annuals, and restore vegetation to a desirable composition.

Effects of Biological Control Treatments

The majority of biological control treatments that would occur in the TFD would utilize insects. It is estimated 10 to 30 agent releases would be made per year under the Proposed Action. Biological control treatments may reduce vegetation cover provided by noxious weeds. Reduction in cover is not expected to be complete. However, it may be enough to create an opportunity for an increase of desirable vegetation cover. This could include native species and/or plants from established seedings.

Domestic goats or sheep are proposed for use to eradicate or control specific noxious weed populations. Biological control of vegetation using domestic goats or sheep would result in small scale (<500 acres) removal of noxious weed cover. The effects would be dependent on the intensity and duration of the treatment in a particular area. If containment of domestic goats or sheep is used specifically to control unwanted vegetation, the BLM would closely monitor animal stocking rates, activities, and timing and duration of use to minimize the impacts to vegetation resources. These impacts could include reduction in cover or mortality of non-target, desirable plants and the opportunity for establishment of the same or new noxious weeds or invasive plants. Biological control of noxious weeds and invasive plants through grazing can reduce overall plant community diversity; timing determines this effect and overall effectiveness against the target species (Nader, 2007). The quarantine of goats or sheep prior to moving into a new area would eliminate the unintended potential transfer of undesirable plant materials.

Effects of Herbicide Treatments

Herbicide treatments are implemented with the intention of controlling the establishment or eliminating the presence of a target vegetation type. These treatments provide either selective or general control of vegetation either through reduction of overall vigor or complete kill of the target plants. Herbicide application can provide an effective method of seedbed preparation in combination with mechanical methods or in areas with limited access by ground implements (Cox & Anderson, 2004). It could also be used as a maintenance tool to reduce invasive annuals or noxious weeds in established vegetation treatments.

A limited array of herbicides is currently used as part of the on-going actions in the TFD. Broadcast applications may incidentally reduce residual desirable plant species; however, the overall treatment effectiveness is enhanced by reducing the existing vegetation competition. Spot treatments result in controlled applications that may cause short-term, isolated reductions of vigor to non-target plant species. Long-term effects from spot treatments include improved plant community health by removing or reducing the presence of noxious weeds from the community.

Off-site movement is a risk associated with herbicide application, particularly from pre-emergent herbicides, and may impact non-target vegetation by reducing vigor, stunting growth, or causing plant mortality. Criteria to reduce the potential for off-site movement would be applied, including evaluation of topography, soil type and erosion potential, treatment location relative to sensitive resources or private agricultural crop land, project size, wildfire or prescribed fire intensity, and residual vegetation and litter cover. Project specific design measures would be used to reduce risks associated with herbicide application to the general vegetation on a case-by-case basis. Label restrictions would be followed to reduce risks to non-target vegetation and resources.

Although 20 herbicides are proposed for use in the TFD, the active ingredients fall into seven different groups determined by the mode or mechanism of action (MOA). Table 6 lists the herbicide active ingredients by MOA (Weed Science Society of America, 2016). The unique properties associated with each MOA leads to different impacts to the general vegetation. Further, the herbicides are discussed by impacts to target and non-target vegetation.

Group 2 (Acetolactate synthase (ALS) or Acetohydroxy Acid Synthase (AHAS) inhibitors) works by inhibiting ALS and low branched-chain amino acid production. This group is a selective weed control, and is effective in controlling broadleaf weeds and invasive annual grasses. Although this group is typically applied as a pre-emergent control method, plants can exhibit reduced symptoms when applied post-emergent. Since this group is a selective control MOA, it could be combined with other herbicides, such as Group 9 (*glyphosate*) to target post-emergent vegetation. This class affects seedling growth, and to a lesser degree can impact mature plant seed production and growth (Whitcomb, 1999). Timing of application can affect the degree of impacts to both target and non-target vegetation. Fall applications would typically be utilized, which would control both the already germinated seed and keep seed from germinating. As such, timing of post-treatment seedings would need to be appropriately scheduled to promote the establishment of desired vegetation. Broadcast applications of herbicides in this group would be used for both site preparation for restoration and rehabilitation work, and also to reduce competition of invasive annual plants and noxious weeds in already established desirable plant communities. Residual impacts from this group vary from several months to years, dependent on environmental conditions that may speed or slow the rate of decay. The impacts related to this delayed breakdown include a longer control of target plants, as well as delayed germination and establishment of desirable plants. As such, timing of collaborative treatments, such as drill seeding, would need to be considered to coincide with the most effective time of target plant control and breakdown of the herbicide enough to allow for maximum germination of seeded species.

Groups 4 (Synthetic Auxins) and 19 (Auxin Transport Inhibitors) disrupt growth regulation in broadleaf plants, although trees and shrubs are less susceptible to damage than annuals (University of California, 2016). These groups are effective at post-emergence, particularly on dicots (broadleaf plants). Younger plants are typically more susceptible. However, regrowth can occur at low application levels, which can minimize the impacts to non-target plants, but also reduces effectiveness of control in target plants. Synthetic auxins can be combined with other herbicides to improve efficacy of control of target species. This group could be particularly effective at controlling perennial noxious weeds on both isolated, spot applications and on broadcast, larger-scale applications with minimal impacts to the natural diversity of a project area (2007 PEIS). *Diflufenzopyr* is the single active ingredient proposed for use that is part of Group 19 (Peachey et al., 2016). It is applied postemergence to control broadleaf weeds, although it may be weakly effective when used alone. However, when combined with *dicamba* (Group 4), *diflufenzopyr* can improve the effectiveness and lower the application rate required to control noxious weeds. This combination of herbicides is trademarked as Overdrive, and is effective at controlling invasive broadleaf weeds, such as knapweeds and thistles, which makes it an effective tool to utilize in areas with good perennial grass composition.

Groups 5, 6, and 7 (Photosystem II Inhibitors) control a range of broadleaf species and some grass species. Typically, the herbicides proposed for use in these groups are applied either to the soil or during early postemergence. These groups can impact both target and non-target vegetation, due to non-selective qualities. However, these groups would most likely be applied to near monoculture stands of the target plants, which would minimize the potential impacts to non-target species.

Group 9 (Enolpyruzyl Shikimate-3-Phosphate (EPSP) Synthase Inhibitors) is a non-selective, post-emergent herbicide, and can cause death at high application rates to all plants. *Glyphosate* is the only active ingredient proposed for use in this group. Typically, rangeland application rates for this group would target invasive annuals, and may cause some short-term damage to perennial plant species. However, higher rates and timing could be used to kill target perennial vegetation, such as non-native perennials, when active restoration to a natural plant community is the desired outcome. *Glyphosate* could be combined with other herbicides, such as *imazapic* (Journey®) to provide immediate control of emergent and growing plants, as well as longer residual pre-emergent control. *Glyphosate* has virtually no impact to any plants it is not directly applied to, as it is a post-emergent and is not taken up through the roots or actively reside in the soil.

Group 12 (Carotenoid Biosynthesis Inhibitors) inhibits pigment synthesis at different sites of action. *Fluridone* is the only active ingredient proposed for use in this group, and is intended to target aquatic weeds (Cornell University, 2008). An appropriate contact time must be maintained with the target plants to ensure that sufficient uptake occurs to kill plants.

Group 22 (Photosystem I Inhibitors) also provides non-selective weed control, and activates through contact with the plant. *Diquat* is the only active ingredient proposed for use in this group. It would be used to target aquatic weed species, such as Eurasian watermilfoil. Non-target aquatic vegetation is likely to be impacted by *fluridone* and *diquat*; however, general vegetation at sites where these herbicides are applied is typically already at risk from the invasive and noxious weeds being targeted for elimination or control. *Diquat* is applied to the plants themselves to increase effective uptake, as opposed to *fluridone*, which is dispersed through the water system.

Table 6 – Mechanism of Action for Active Ingredients

Group #	Mechanism Of Action	Active Ingredient
2	ALS or AHAS inhibitors	*Chlorsulfuron, Imazapic, Imazapyr, Metsulfuron-methyl, Rimsulfuron*
4	Synthetic Auxins (Growth Regulators)	*2,4-D, Aminopyralid, Clopyralid, Dicamba, Fluroxypyr, Picloram, Triclopyr*
5,6,7	Photosystem II Inhibitors	*Bromacil, Hexazione, Diuron, Tebuthiuron*
9	EPSP Synthase Inhibitors	*Glyphosate*
12	Carotenoid Biosynthesis Inhibitors	*Fluridone*
19	Auxin Transport Inhibitors	*Diflufenzopyr*
22	Photosystem I Inhibitors	*Diquat*

Several of the herbicides proposed for use are effective at temporarily reducing annual grasses. Use of these herbicides in conjunction with seeding treatments would reduce fine fuels. The level of fine fuels corresponds to increased fire frequency (Whisenant, 1990). A reduction could help to reduce fire intensity and frequency. In turn, this reduces the need for reactive projects, either because the damage sustained from wildfires would be reduced, or because the actual occurrence of wildfires would be reduced. Proactively targeting annual plant communities reduces hazardous fuels in these areas, as well as reduces potential fire size. Early season fire potential may also be reduced, if fine fuels become a reduced component of the landscape.

Pollinators are an integral component of all the general vegetation sub-divisions present in the TFD. Although the more diverse sub-divisions provide improved habitat for pollinators, all of the vegetation communities benefit from the presence of pollinators. Noxious weeds and invasive plant species displace the desirable vegetation types that provide the best conditions for pollinators (Cane, 2011). Herbicides impact pollinators by removing non-target vegetation that may be providing either food or habitat. Timing of treatments to coincide with pre-bloom or low activity times can reduce the impacts to pollinators from herbicide applications. The quality of the habitat present, as well as certain plant species presence, can aid in assessing the level of impacts that may be seen following herbicide application.

Effects of Re-vegetation Treatments

Seeding or planting would be used to restore or rehabilitate a project area with the desired plant species. This could include seed, seedlings, and other plant materials, such as pole cuttings. Site adapted native plant materials are becoming more readily available and at a lower cost than in the past. Science and research have also combined to create more tools for land managers to select appropriate plant materials for re-vegetation projects at a site level, which improves the opportunity for establishing the desired vegetation type. Proper selection of plant materials, whether native or non-native, will have a long-term impact by establishing a healthy, resilient plant community.

Non-native plant materials would be utilized on sites that are particularly difficult to establish desired plant communities, such as competition in monocultures of invasive annual grasses or difficult growing conditions. Using the appropriate plant materials for the treatment objectives will improve the successful establishment of desired plant materials, and can create a pathway to facilitate succession and improve natural system functions (Cox & Anderson, 2004). Establishment of shrub plantings, such as big sagebrush, is improved in perennial grass communities, as opposed to areas dominated by non-native annual grasses (McAdoo, Boyd, & Sheley, 2013).

Establishing the desired vegetation to a project area is a critical component to achieve project objectives, such as to stabilize soils, reduce the potential of establishment and expansion of noxious weeds and invasive plant species, and improve plant community diversity and structure. Efforts and methods used to re-vegetate an area could lead to short-term impacts to the general vegetation such as a change in plant community composition, and disturbance or mortality of the existing vegetation. Re-vegetation would be utilized when attempting to establish new vegetation in the existing vegetation, so these impacts would have a desirable overall effect on the health of the general vegetation, and long-term would create a shift to the desired plant community. Re-vegetation could have an additive effect on the overall landscape impacts of individual treatments; for instance, shrub plantings in established perennial grass areas would enhance the cover and forage values present by adding shrubs. Increasing and maintaining plant species richness can help improve community resistance to invasive plant expansion (Anderson & Inouye, 2001).

Plant selection in seed mixtures could also improve pollinator habitats. Plant materials are becoming more readily available that can provide a range of bloom times and structural habitat needs for pollinators. Establishment of diverse plant communities and control of noxious weeds and invasive plant species can also improve overall community health and pollinator presence (Cane, 2011). In turn, pollinator presence improves overall plant community health.

Over the long-term, a potential decrease in the number and complexity of ESR projects could occur. Short-term, ESR treatments would also have an increased range of options (i.e. herbicides), which would improve the successful establishment of reactive vegetation treatments. Overall, increased implementation of pro-active vegetation treatments would positively impact the overall health of the general vegetation.

No Action Alternative Impacts – General Vegetation, Fuels and Fire Management

Under the no action alternative, on-going actions would continue in the TFD. Project by project NEPA would need to be completed for each new vegetation treatment in order to utilize the herbicides analyzed under the 2007 and 2016 PEIS, as well as to authorize use of any other vegetation treatments, such as those listed under the Proposed Action. The Proposed Action is adding a suite of tools currently not available, and will improve efficiency of implementation of projects. Collaborative efforts would also increase across landscapes through partnerships. The No Action Alternative would result in a slower response to project planning and implementation, which may increase the risk to general vegetation through continued establishment and expansion of noxious weeds and invasive plants, and would reduce the ability of management to implement broad-scale, comprehensive treatments in a timely fashion, as well as to quickly respond to new infestations of noxious weeds in the most effective manner possible.

Noxious weeds and invasive plant species treatment acreages would likely decrease over the next ten years under the no action alternative. Pro-active restoration acreages and success would be reduced from the Proposed Action because the amount of tools available to complete vegetation projects would be diminished. Planning for each project would need to be completed, which would extend the amount of time required for project completion. As new noxious weeds and invasive plant species appear and resistances increase, an integrated approach to vegetation treatments is necessary to improve success, provide for timely treatment, and increase amount of acreage that can be efficiently treated each year.

Conversion to cheatgrass, which would increase the fine fuels present and threaten sagebrush communities, would likely continue at a similar rate under the No Action Alternative. Pro-active fuels reduction projects would be analyzed on a case-by-case basis. The No Action Alternative would present difficulties in creating comprehensive, landscape-level projects that could impact the fire cycle across the TFD. Higher fire frequency lowers the sites ability to resist noxious weeds and invasive plants and reduces the potential for desirable plants, like sagebrush, to reach maturity and provide for seedling recruitment.

Reactive treatments would continue to be implemented under ESR, and would achieve the objective of site stabilization; however, the ability to establish and protect existing and new treatments that would create diverse, resilient, and resistant communities would be diminished. Broad scale vegetation treatments implemented in a timely, strategic fashion to reduce fine fuels and establish diverse communities is diminished by the No Action Alternative.

Cumulative Effects – General Vegetation, Fuels and Fire Management

Actions that could cumulatively affect the general vegetation include anthropogenic disturbances, agricultural practices on lands adjacent to BLM, historic livestock grazing practices, and wildland fires and related suppression activities. These practices have impacted vegetation through the introduction of noxious weeds and invasive plants species. Uses are likely to continue in the future on or near BLM lands in the TFD, including agriculture, development, travel and transportation planning, livestock grazing, and recreation.

Proposed Action Cumulative Effects

The cumulative impact to vegetation is conversion to undesirable vegetation types. Anthropogenic disturbances, such as right-of-way grants, historic livestock grazing practices, travel planning, and wildland fires/suppression have in the past and could continue to remove vegetation, creating a potential niche for the establishment and expansion of noxious weeds and invasive plants. In some areas, vegetation treatments such as prescribed fire, seeding, and herbicide application would overlap or be adjacent with other past actions. These actions include past ESR and proactive vegetation treatments. These past land treatments have stabilized soils, established perennial vegetation, and reduced noxious and invasive plant species in areas of successful establishment. Proposed vegetation treatments would reduce the time in which disturbed areas, which overlap other actions, would be susceptible to noxious weeds and invasive plant establishment or expansion. The Proposed Action treatments would cause a temporary incremental increase in acreage across the landscape that is vulnerable to conversion.

Current land uses in and around BLM lands in the TFD area likely to continue at roughly the same level as in the past, continuing to impact intact natural plant communities. Vegetation treatments, such as herbicide use, is likely to continue on lands adjacent to or near BLM, With the Proposed Action, however, some coordination of efforts across land ownerships are more likely to occur, which could aid in rehabilitating or restoring certain areas to better ecological condition.

Two landscape-scale programmatic environmental impact statements (PEIS's) to analyze potential effects of constructing fuel breaks, reducing fuel loading, and rehabilitating or restoring habitat within the Great Basin region are being considered in the foreseeable future. Actions within these proposed PEIS's are expected to overlap the vegetation treatment actions analyzed in this EA. The PEIS's would have similar vegetation management goals as proposed in this EA and both would follow ARMPA management decisions. Proposed vegetation management actions in the PEIS's to reduce fuel loading and restore habitat are not expected to be appreciably different than the vegetation management actions proposed under this EA; however, the scale of the treatments would extend beyond the TFD boundary, potentially enhancing the effectiveness of treatments implemented through this EA. Therefore, there would be no further cumulative effects to consider under this proposed action.

No Action Cumulative Effects

Similar past, present, and foreseeable future actions and their effects would occur as previously described under the Proposed Action cumulative effects section. The No Action Alternative would have short-term cumulative effects to vegetation similar to those described for the Proposed Action. However, there may be slightly fewer effects from management actions if the increased time for project planning results in fewer vegetation treatments being implemented. The No Action Alternative would have more effects from noxious weeds and invasive plants and wildland fire than for the Proposed Action.

Special Status Plants

Affected Environment

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. Slickspot peppergrass is listed as threatened. The remaining special status plants in the TFD are classified as BLM sensitive.

Forty-one special status plants occur in a variety of vegetation cover types in the TFD. Appendix I contains the most recent special status plant list including conservation status, type category definitions, and the field office where each species is known or suspected to occur. Detailed information is presented below for slickspot peppergrass and Goose Creek milkvetch, as these species are managed under conservation agreements with the USFWS and there are specific design features for each species incorporated into the Proposed Action. General habitat information for all other BLM sensitive plants is presented in Table 7 below.

Slickspot peppergrass (Threatened)

Slickspot peppergrass is listed as threatened under the ESA (81 FR 55058-55084).

Slickspot peppergrass is endemic to the sagebrush-steppe ecosystem of southwestern Idaho (Mancuso, 2000). Menke and Kaye (2006) describe high-quality conditions for slickspot peppergrass as “sagebrush-steppe habitat in late seral condition.” The known population in the TFD occurs in the Jarbidge Field Office and is known as the Northern Basin and Range population (formerly referred to as the Owyhee Plateau population). This population is found in sagebrush-steppe communities as well as areas dominated by rabbitbrush, crested wheatgrass, and intermediate wheatgrass. The primary threat to slickspot peppergrass is destruction, modification, or curtailment of its habitat and range due to increased wildfire frequency and extent under a wildfire regime modified and exacerbated by the spread of non-native invasive plants such as cheatgrass (81 FR 55058).

Slickspot peppergrass grows in small, sparsely vegetated, visually distinct, edaphically determined openings within the larger plant community. 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.

Slickspot peppergrass has two potential life-history strategies – it can occur as 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, Murphy, & Moseley, 1998; Mancuso, 2001; Meyer, Quinney, & Weaver, 2005). Mancuso et al. (1998) noted 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, particularly those that live in environments where good growing conditions, such as adequate soil moisture, are unpredictable (Baskin & Baskin, 2001).

Slickspot peppergrass is primarily an outcrossing species requiring pollen from separate plants for more successful fruit production, and has a low seed set in the absence of insect pollinators (Robertson, 2003; Robertson & Klemash, 2003; Robertson & Ulappa, 2004; Billinge & Robertson, 2008). Slickspot peppergrass is able to self-pollinate; however, the selfing rate is only 12 to 18 percent (Billinge, 2006; Robertson, Leavitt, & Billinge, 2006). Known slickspot peppergrass insect pollinators include several families of bees (Hymenoptera), including Apidae, Halictidae, Sphecidae, and Vespidae; beetles (Coleoptera), including Dermestidae, Meloidae, and Melyridae; flies (Diptera), including Bombyliidae, Syrphidae, and Tachinidae; and others (Robertson & Klemash, 2003; Robertson, Novak, Leavitt, Stillman, & White, 2006).

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).

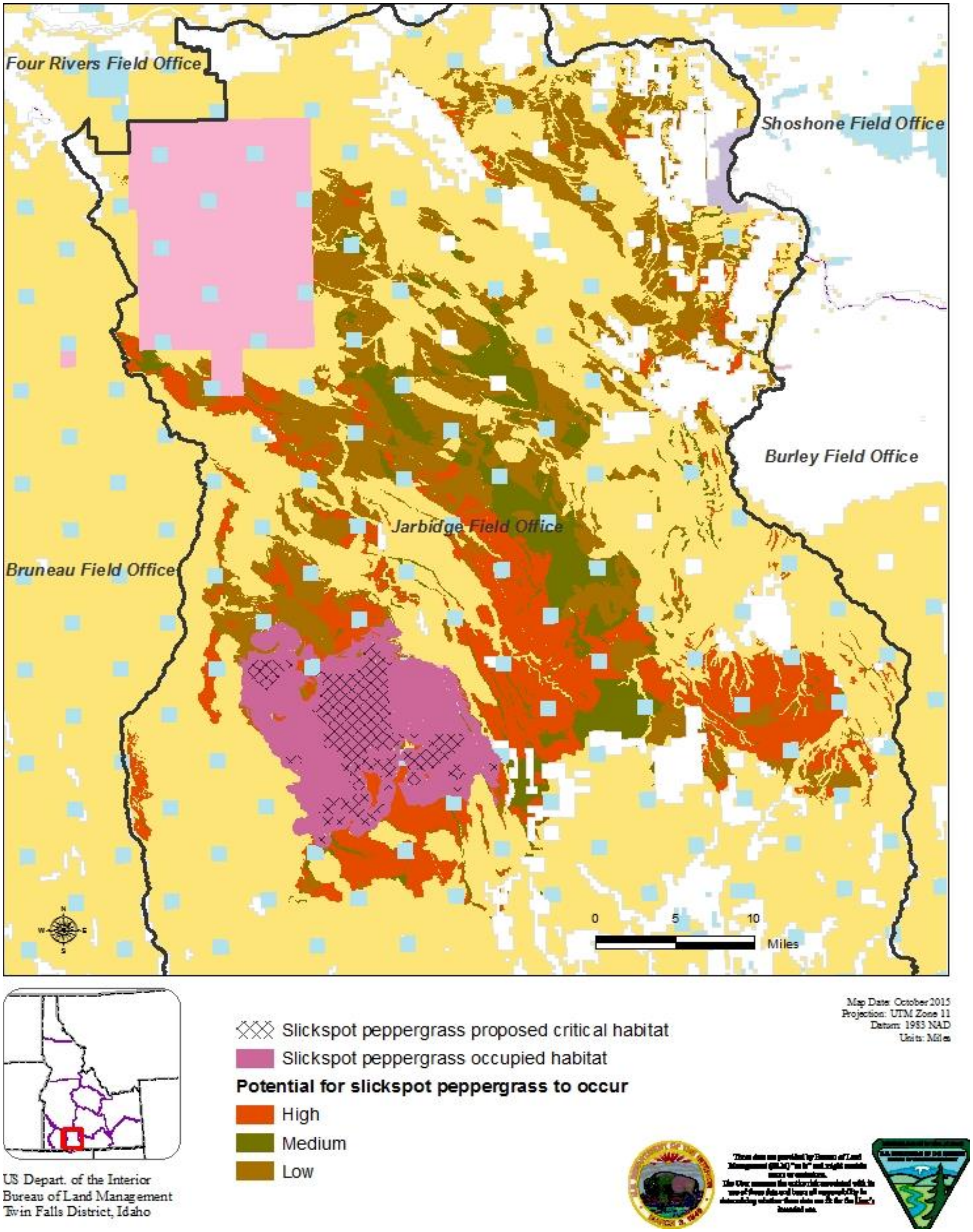
The Northern Great Basin and Range population of slickspot peppergrass occurs in the Inside Desert area of the Jarbidge Field Office on approximately 69,750 acres of occupied habitat, which includes individual sub-populations (element occurrences) plus a surrounding 0.5 mile insect pollinator buffer. Approximately 55,350 acres of this occupied habitat is managed by BLM (USFWS, 2015a). Proposed critical habitat for the species is limited to portions of the occupied habitat in the Inside Desert and covers 11,213 BLM-managed acres (79 FR 8405). The remainder of the occupied and proposed critical habitat is on land managed by the U.S. Air Force in the Juniper Butte Training Range and the State of Idaho. Within the area identified as occupied habitat, 41element occurrences (or subpopulations) occur on 2,696 acres. Of this area, 614 acres are managed by BLM, 1,948 acres are managed by the U.S. Air Force, and 133 acres are managed by the State of Idaho. There is no private land occupied by slickspot peppergrass in the Northern Basin and Range physiographic region (Kinter, 2016).

Potential habitat for the species occurs over about 421,000 BLM-managed acres, or about 31% of the Jarbidge Field Office area (Figure 6). Potential habitat was broadly defined by a GIS model utilizing soil type, elevation, and potential plant community. In order to better address the needs of the species, BLM developed a GIS model to focus inventory efforts on areas that would have a higher probability of finding slickspot peppergrass plants. This model used updated information for soils, existing vegetation communities, fire frequency, slope, and elevation to further refine potential habitat and to categorize the habitat into potential categories for finding the species. As a result of this model, about 152,000 acres of the potential habitat are rated as having high potential for slickspot peppergrass to occur; about 69,000 acres have medium potential; and about 200,000 acres have low potential (BLM GIS data, 2015). Habitats with the highest potential for slickspot peppergrass to occur are remnant native shrub stands (USFWS, 2015a).

Surveys are on-going to determine if potential habitat has slickspots and if those slickspots are occupied by the species. As of October, 2015, about 197,000 acres of potential habitat have been inventoried for presence of slickspots and slickspot peppergrass plants. No new occurrences of slickspot peppergrass have been found outside of the previously documented occupied area in the Inside Desert.

Part of the area supporting the Northern Basin and Range population burned in the 2007 Murphy Complex and Inside Desert fires and the 2013 Bruneau Fire, affecting 11 element occurrences (79 FR 8421). Slickspot peppergrass is known to persist in grass-dominated sites following wildfire. However, studies have shown that slickspot peppergrass abundance goes down as the number of wildfires in an area increase. Abundance also declines with increased non-native invasive annual plant cover (i.e. cheatgrass) within and adjacent to slickspot microsites (Sullivan & Nations, 2009). Much of the slickspot peppergrass potential habitat in the TFD has burned one or more times in past fires, further threatening the plant and its habitat. Efforts to restore sagebrush to both occupied and potential habitat are on-going via post-fire rehabilitation and proactive shrub planting projects.

Figure 6 – Twin Falls District Slickspot Peppergrass Habitats



Goose Creek Milkvetch

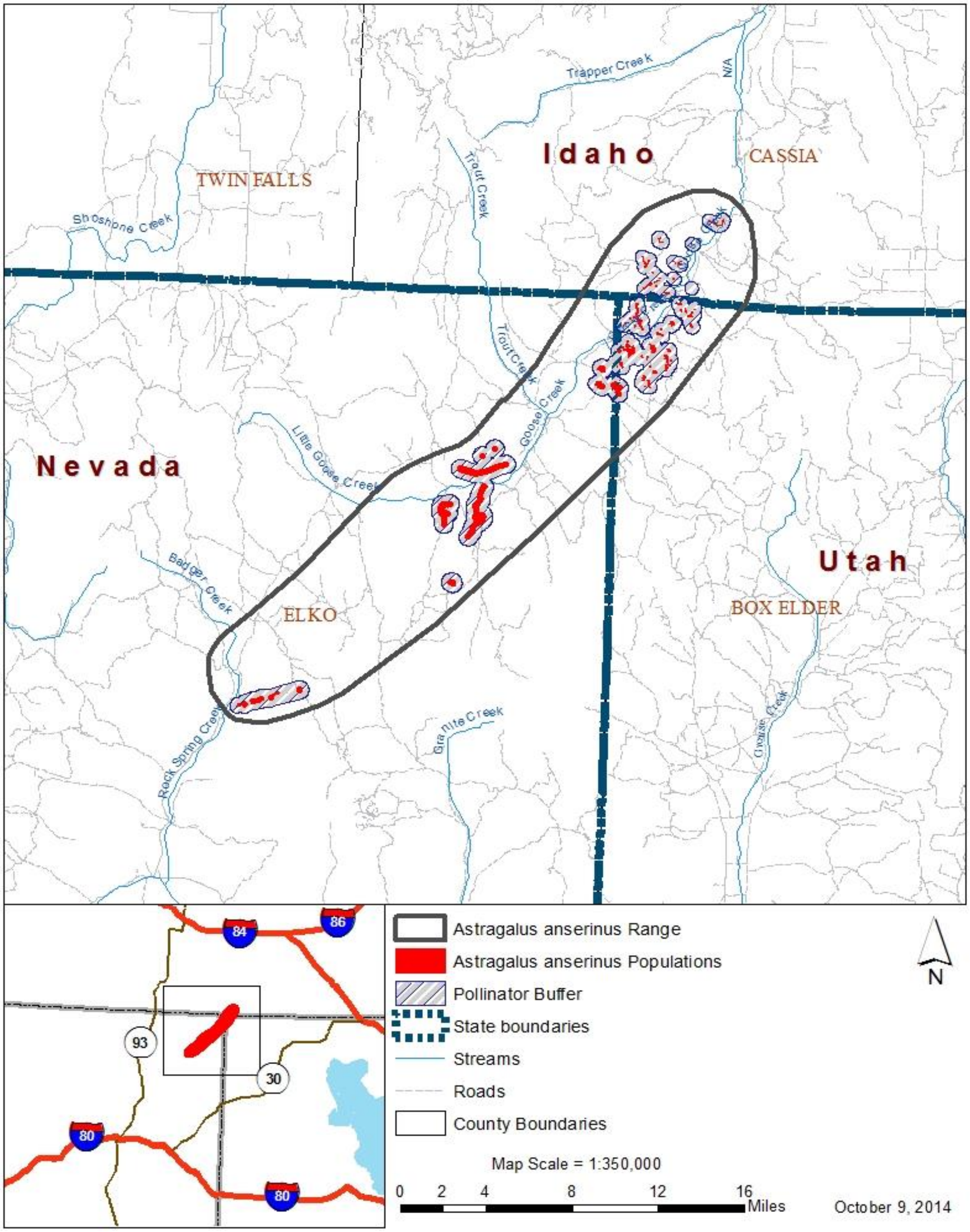
Goose Creek milkvetch was classified as a candidate for listing under the ESA on September 10, 2009 (74 FR 46521). On October 8, 2015, the USFWS determined that the species is not warranted for listing under the ESA, as implementation the 2015 conservation agreement between BLM and USFWS (USDI BLM & USFWS, 2015) sufficiently reduced or eliminated threats to the species (80 FR 60834) . These threats were wildfire, wildfire management, post-wildfire emergency stabilization and restoration, unseeded and seeded non-native plants, livestock use, and mining. Restoration actions and management of non-native plants are addressed in design features and conservation measures (Chapter 2) for this species.

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 (Figure 7). Goose Creek milkvetch is restricted to relatively sparsely vegetated outcrops and dry, sandy, light-colored tuffaceous sediments within sagebrush or juniper habitats.

Current total population estimate (rangewide) for Goose Creek milkvetch is 31,252 individuals distributed across 19 element occurrences (subpopulations) in Idaho, Nevada, and Utah in an area about 35 miles long and 6 miles wide, or about 2,101 acres in size. About 93% (1,974 acres) of the habitat occurs on public lands managed by the BLM (USDI BLM & USFWS, 2015).

The breeding system and specific pollinators of Goose Creek milkvetch are not known at this time. However, it is assumed that pollinators are important to support maximum reproduction for the species based upon research of other milkvetches (Watrous & Cane, 2011). Because of the similar flower morphology within the *Astragalus* genus, solitary bees are likely important pollinators of the species, since they are common pollinators for the entire *Astragalus* genus (Geer, Tepedino, Griswold, & Bowlin, 1995; Watrous & Cane, 2011). Additionally, at least two different bumblebee species (*Bombus* spp.) were documented on Goose Creek milkvetch flowers (USDI BLM & USFWS, 2015).

Figure 7 – Twin Falls District Goose Creek Milkvetch Habitat



BLM Sensitive Plants

BLM sensitive plants occur in varied habitats throughout the TFD. Complete inventories do not exist for any of these plants, although some were well inventoried in the past and general distributions and habitats are known (Table 7). Annual species are difficult to 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. Data for known populations of most BLM sensitive plants are maintained by Idaho Department of Fish and Game's Natural Heritage Program.

Sensitive plants sometimes occur in an unusual habitat, opening, or inclusion within a broader vegetation type, which results, in whole or in part, in their rarity. For example, Davis' peppergrass occurs only in hard-bottom playas surrounded by plant communities dominated by Wyoming big sagebrush and salt desert shrubs. This is noted in Table 7 where applicable. Potential sub-divisions noted as N/A are areas where the plant community is an inclusion too small to be mapped (<20 acres) such as riparian areas and wet meadows.

Habitats for some plants have been modified by past wildfires, vegetation treatments, and/or land uses. For example, plants potentially occurring in big sagebrush and juniper habitats within the Shrub/Native Understory, Conifer, and Shrub/Tree Mix sub-divisions can currently occur in the Shrub/Non-Native Perennial Understory, Shrub/Non-Native Annual Understory, Native Perennial Grass, Non-Native Perennial Grass, Native/Non-Native Mix, and Annual Grass sub-divisions.

As discussed for Goose Creek milkvetch above, breeding mechanisms and pollinators for most BLM sensitive plants have not been studied.

Table 7 – BLM Sensitive Plants by Potential Plant Community and Vegetation Sub-division

Scientific Name	Common Name	Potential Plant Communities	Potential Sub-division(s)
Allium anceps	two-headed onion	Low sagebrush	Shrub/Native Understory
Astragalus astratus var. *inseptus*	mourning milkvetch	Wyoming big sagebrush, low sagebrush early low sagebrush	Shrub/Native Understory
Astragalus newberry var. *castoreus*	Newberry's milkvetch	Wyoming big sagebrush, salt desert shrub	Shrub/Native Understory
Astragalus oniciformis	Picabo milkvetch	Wyoming big sagebrush, basin big sagebrush, three-tip sagebrush	Shrub/Native Understory

Scientific Name	Common Name	Potential Plant Communities	Potential Sub-division(s)
Astragalus purshii var. *ophiogenes*	Snake River milkvetch	Barren sites within Wyoming big sagebrush	Shrub/Native Understory
Astragalus tetrapterus	Four-wing milkvetch	Barren sites surrounded by sagebrush or pinyon-juniper woodland	Shrub/Native Understory Conifer
Astragalus yoder-williamsii	mudflat milkvetch	Low sagebrush, mountain big sagebrush	Shrub/Native Understory
Calandrinia ciliata (annual)	fringed redmaids	Grassy meadows, roadside, agricultural field edges	N/A
Catapyrenium congestum	earth lichen	Wyoming big sagebrush, salt desert shrub	Shrub/Native Understory
Chaenactis stevioides (annual)	desert pincushion	Wyoming big sagebrush, salt desert shrub	Shrub/Native Understory
Cleomella plocasperma	twisted cleomella alkali cleomella	Wet alkaline meadows, greasewood flats, thermal springs	N/A
Cymopterus acaulis, var. *greeleyorum*	Greeley's wavewing	Wyoming big sagebrush, salt desert shrub	Shrub/Native Understory
Damasonium californicum	fringed waterplantain	Riparian, vernal pools, wetlands	N/A
Downingia bacigalupii	Bacigalupi's downingia	Riparian	N/A
Eatonella nivea (annual)	white eatonella false tickhead	Basin big sagebrush, antelope bitterbrush, salt desert shrub	Shrub/Native Understory
Epipactus gigantea	chatterbox orchid or stream orchid	Riparian - cold and hot water springs	N/A
Erigeron latus	broad fleabane	Big sagebrush, low sagebrush, juniper	Shrub/Native Understory
Eriogonum lewisii	Lewis buckwheat	Low sagebrush	Shrub/Native Understory
Eriogonum shockleyi var. *packardiae*	Packard's buckwheat	Wyoming big sagebrush, salt desert shrub	Shrub/Native Understory

Scientific Name	Common Name	Potential Plant Communities	Potential Sub-division(s)
Eriogonum shockleyi var. *shockleyi*	Shockey's buckwheat matted cowpie buckwheat	Wyoming big sagebrush, salt desert shrub	Shrub/Native Understory
Glyptopleura marginata (annual)	white-margined wax plant	Big sagebrush, salt desert shrub	Shrub/Native Understory
Ipomopsis polycladon (annual)	spreading gilia	Big sagebrush, salt desert shrub	Shrub/Native Understory
Lepidium davisii	Davis' peppergrass	Large hard-bottom playas surrounded by Wyoming big sagebrush and salt desert shrub	Shrub/Native Understory
Leptodactylon glabrum	Bruneau River prickly phlox	Canyon walls	N/A
Mentzelia congesta (annual)	united blazingstar ventana stickleaf	Low- and mid-elevation sagebrush, juniper	Shrub/Native Understory Conifer Shrub/Tree Mix
Nemacladus rigidus (annual)	rigid threadbush	Wyoming big sagebrush, salt desert shrub	Shrub/Native Understory
Pediocactus simpsonii	Simpson's hedgehog cactus	Low sagebrush, juniper	Shrub/Native Understory Conifer Shrub/Tree Mix
Penstemon idahoensis	Idaho penstemon	Wyoming big sagebrush, juniper	Shrub/Native Understory Conifer Shrub/Tree Mix
Penstemon janishiae	Janish's penstemon	Wyoming big sagebrush, salt desert shrub	Shrub/Native Understory
Peteria thompsoniae	spine-noded milkvetch	Wyoming big sagebrush, salt desert shrub	Shrub/Native Understory

Scientific Name	Common Name	Potential Plant Communities	Potential Sub-division(s)
Phacelia inconspicua (annual)	obscure phacelia	Mountain shrub and aspen	Deciduous Woodland Shrub/Tree mix Shrub/Native Understory
Phacelia minutissima (annual)	least phacelia	Riparian and moist meadows	N/A
Primula cusickiana complex	Cusick's primula	Mountain mahogany woodland, mountain big sagebrush	Deciduous Woodland Shrub/Native Understory
Pyrrocoma insecticruris	bug-leg goldenweed	Seasonally wet meadows, sometimes surrounded by big or low sagebrush	N/A
Sporobolus compositus var. *compositus*	tall dropseed	Basalt terraces surrounded by big sagebrush	Shrub/Native Understory
Stanleya confertiflora	Malheur prince's plume	Low sagebrush	Shrub/Native Understory
Teucrium canadense var. *occidentale*	American wood sage	Riparian – streambanks and moist bottoms	N/A
Townsendia scapigera	scapose daisy tufted Townsend daisy	Wyoming big sagebrush	Shrub/Native Understory

Threats to most BLM sensitive plants include habitat modification by fire or other means. This includes modified fire return intervals resulting in too much or too little fire on the landscape. As discussed under General Vegetation, too much or too little fire can change plant community structure and composition, including introduction and spread of noxious weeds and invasive plants. Fire-resistant plant communities can be affected by changes in surrounding vegetation that result in destabilization of sensitive plant habitats. In addition, changes in plant community structure and diversity could influence the composition and/or abundance of pollinator communities and affect reproductive capability of BLM sensitive plants.

Environmental Impacts

Proposed Action Impacts – Special Status Plants

One of the key threats to some special status plants, particularly those occurring below 6,000 feet elevation, is competition with noxious weeds and invasive plants. Control or elimination of noxious weeds and invasive plants in special status plant habitats could enhance the potential for population persistence by reducing competition and improving habitat quality. However, substantial risks exist from direct and indirect effects of vegetation treatments. Design features and conservation measures based in conservation agreements, land use plans, prior and current ESA consultations, and Bureau policy, as well as the Herbicide Application Criteria (Appendix D) and SOP (Appendix E), are incorporated into the Proposed Action to substantially reduce or eliminate potential impacts to special status plants during project implementation. Impacts would be due primarily to lack of detection of special status plants or their seed banks during pre-project planning and inventory. This potential could be greater for landscape-scale projects that would be implemented using mechanical, prescribed fire, aerial or ground applied herbicide, and re-vegetation treatments. The potential for impacts would also be greater for annual plants such as slickspot peppergrass, that do not reliably appear every year and, in some cases, the majority of the population occurs in the seed bank (Mancuso et al., 1998; Baskin & Baskin, 2001; Meyer et al., 2005). The potential for impacts would be less for long lived perennials, such as Packard's buckwheat or Simpson's hedgehog cactus, as they tend to be easier to detect reliably. In addition, species that occur in unique habitats, such as slickspot peppergrass, Davis' peppergrass, Idaho penstemon, or Goose Creek milkvetch are also less likely to be impacted as their habitats are more easily detected and avoided.

Treatments can occur singly or in combination. Potential impacts to special status plants are described for discrete treatments. However, the potential for damage to or mortality of special status plants could increase if multiple types of treatments are used for noxious weed and/or invasive plant control, seedbed preparation, and re-vegetation in the same location. Refer to the *General Vegetation* section above for detailed information regarding potential treatment effects on plant communities. Detailed information regarding treatment effects to slickspot peppergrass is contained in the Biological and Conference Opinion (USFWS, 2016b). Those impacts are summarized below.

Effects of Manual Treatments

Manual treatments involving pulling, cutting, grubbing, and digging vegetation with non-motorized hand equipment or chainsaws would have localized effects resulting in removal of all or part of targeted plants. Impacts to special status plants due to manual treatments are anticipated to be non-existent to minor due to small project size, targeting of individual plants, and ability to control the level of disturbance. This would tend to eliminate or minimize the potential for damage or mortality of special status plants in treatment areas.

Some disturbance to special status plants or their habitat could result from foot or vehicle traffic during access of treatment locations. This could result in damage or mortality of special status plants due to crushing. Hand pulling around special status plants could dislodge stems or seeds, resulting in mortality of individuals or failure of seeds to germinate. Treatment-related disturbance could also create conditions favorable to re-invasion by the same or other weeds, resulting in competition to special status plants. These impacts could be minimized by restricting vehicles to existing roads and limiting the number of people and the amount of time spent in each site (Tu et al., 2001). In addition, conservation measures also include vehicle washing to reduce the potential for weed transfer from one treatment location to another. The potential for impacts to seed banks, such as burial too deep for germination, is small for manual treatments due to limited and localized soil surface disturbance and the ability to avoid known populations and habitats.

Effects of Mechanical Treatments

Mechanical treatments would have greater potential for impacts to undetected special status plants or seed banks than manual treatments due the size of the affected area, amount of soil surface disruption, and continuity of the disturbed area. Use of wheeled or tracked vehicles to pull implements would result in crushing of plants. Seedbed preparation and seeding methods that result in deep soil surface disruption such as tilling, disk plowing, and seeding using a traditional rangeland drill would have the greatest potential impact to undetected plants or seed banks. These methods could result in plant mortality, seed burial too deep for germination, or in the case of slickspots, long-term or permanent habitat destruction. These methods would likely be used where non-native annual invasive plants are dominant and habitat quality for special status plants is likely to be low. Methods that are less disruptive to surface soils and residual vegetation, such as use of minimum till or no-till drills, Dixie harrow, Lawson aerator, chaining, harrowing, mowing, or mastication could result in plant damage, but have lower potential for mortality. These methods could leave seed banks at a depth that does not impede germination, although deposition of plant materials removed by the treatment on the soil surface could create barriers to seed emergence.

The amount of soil surface disturbance is also dependent on the type and weight of equipment and soil moisture conditions during treatment. Local observations during drill seeding treatments indicated that soils tend to accumulate on equipment, especially if depth bands are present (J. Hilty, pers. observation). Soils with high amounts of silt or clay (such as those found in slickspots) tend to adhere more than coarse-textured soils, causing more soil surface disturbance.

Mechanical treatments performed when the soils are dry would tend to generate dust. Transported dust could accumulate on habitats such as slickspots, or plants. However, given requirements for treatment buffers around known populations and the low habitat conditions where treatments generating high amounts of dust would occur, the probability of airborne particles modifying habitats or causing physiological disruption would likely be low. This would be dependent on proximity of the treatment area to occupied habitat, as well as the direction and speed of wind during events that could cause sediment transport.

Effects of Prescribed Fire Treatments

As with mechanical treatments, large-scale prescribed fire would be used primarily in areas where non-native annual invasive plants are dominant and additional chemical and mechanical seedbed preparation and seeding treatments would be needed for vegetation restoration. Impacts of prescribed fire treatments would depend on species' fire tolerance. Species that tend to tolerate fire disturbance are typically early seral (some annuals) or short-lived perennials, if fire does not kill seeds. Some milkvetches, including Picabo milkvetch and mourning milkvetch, have been observed to tolerate fire. Some long-lived perennials such as Packard's buckwheat, Simpson's hedgehog cactus, and Davis peppergrass are not tolerant of fire. These, as well as species that occupy unique habitats are less likely to be impacted as their habitats are more easily detected.

Fire would remove all or part of the above-ground biomass of special status plants and other surrounding vegetation. Prescribed fire could result in a flush of non-native annual invasive plants due to release of minerals such as nitrogen resulting from the combustion of plant material and litter. This could result in additional competition with special status plants, especially annuals. However, as noted above for mechanical treatments, this treatment would typically be used in areas where non-native annual invasive plants are dominant and therefore habitat quality for special status plants would be low.

Use of prescribed fire requires development of a site-specific burn plan to address human health and sensitive resource issues. This includes smoke generation and control mechanisms to reduce or eliminate the potential for fire escape. Fire lines for large-scale prescribed fire are typically implemented using a disk or dozer, with the intent of removing all vegetation from the treatment area perimeter or around sensitive areas inside the perimeter such as residual sagebrush stands. Therefore, impacts of fire line establishment to undetected special status plants or seed banks would be the same as for disking treatments described above.

As with mechanical treatments, prescribed fire could result in airborne dust or ash that could accumulate on habitats or plants. However, given requirements for buffers around populations and the low habitat conditions where treatments generating high amounts of dust or ash would occur, the probability of air-borne deposition modifying habitats or settling on individual plants and causing physiological disruption is likely to be low. This would be dependent on proximity of the treatment area to occupied habitats, as well as the direction and speed of wind during events that could cause sediment and ash transport.

Over the long term, use of prescribed fire in concert with other treatments could have indirect beneficial impacts to special status plants. This would occur by reducing or removal of noxious weed and invasive plant seed sources that could spread to higher quality occupied or potential habitats. In addition, restoration of greater vegetation diversity, especially forbs, could result in beneficial indirect effects for special status plants through support for pollinator insects.

Effects of Biological Control Treatments

Current biological controls approved for Idaho consist of insect pests and two fungal pathogens. Current protocols and regulations require rigorous testing of biological controls, other than domestic livestock, prior to release to insure that they do not adversely impact non-target plants. In addition, Section 7 consultation occurs for biological controls that could potentially impact species listed as threatened or endangered, or those that are proposed for listing under the ESA (USFWS, 2016a). Special status plant biology, including pollinator mechanisms, within the dispersal range for biological controls would need to be considered prior to initiation of treatment to avoid adverse impacts to special status plants which could include foliar damage, inability to reproduce, or death.

Insect pests can attack non-target species in the same genus as the targeted plant. Biological controls can also be so effective as to decimate weed populations. Without careful monitoring and re-vegetation with desired species, the target plants could be replaced by another pest species and continue the downward ecological trend of the plant community (Tu et al., 2001). This could impact special status plants through increased competition or modification of plant community structure and composition. The Proposed Action contains design features and conservation measures that direct consideration of TEP plant biology and ecology prior to use of a biological control agent. None of the species currently used target either mustards in general or the genus *Lepidium*. Therefore direct adverse impacts to slickspot peppergrass are unlikely.

Biological controls are unlikely to completely eliminate populations; however, spatial or temporal reductions in noxious weed or invasive plant populations could reduce competition with native species, including special status plants. This could result in increased fitness for special status plants including greater numbers of individuals and/or more robust plants and greater reproductive potential.

Use of goats or sheep for small scale herbivory of targeted plants could result in consumption of special status plants, resulting in foliar damage, inability to reproduce, or death. However, this method of control would be used in areas where special status plants are unlikely to occur due to prior project level assessment (e.g. campsites, trailheads, and trails); otherwise areas would need to be evaluated for the presence of special status plants or their habitats prior to authorization for this activity to occur. In addition, conservation measures prohibit use of livestock for biological control within 330 feet of special status plants unless the treatment is specifically designed to maintain or improve the existing population. Therefore the potential for damage or death of special status plants by goats or sheep is unlikely.

Effects of Herbicide Treatments

Herbicide use to contain or control noxious weeds and invasive plants poses potential risks to special status plants and their pollinators. Incorporation of design features, conservation measures, and SOP (Appendix E) substantially reduce, but may not fully eliminate these risks. The following management efforts were listed in the 2007 and 2016 PEISs (pp. 4-73 and 4-39 to 4-40, respectively) to help protect both plants and their pollinators and are addressed by the design features, conservation measures, and SOPs:

- Designating buffer zones around rare plants.
- Managing herbicide drift especially to nearby blooming plants.
- Using typical rather than maximum rates of herbicides in areas with rare plants.
- Choosing herbicide formulations that are not easily carried by social insects to hives, hills, nests, and other "homes" in areas with rare plants.
- Choosing herbicides that degrade quickly in the environment when herbicides must be used in rare plant habitat.
- Timing the herbicide applications when pollinators are least active, such as in the evenings or after blooming has occurred in rare plant habitat, and if necessary dividing the habitat into several treatments rather than one large treatment to keep from treating all blooming species at one time.

Detailed information regarding herbicide effects is contained in the *General Vegetation* section above (See Table 6 and associated discussion). Impacts of specific herbicides on special status plants would be dependent on selectivity; whether the chemical acts as a pre-emergent or post-emergent herbicide or both; whether application occurs during growth, bloom, or dormant periods for special status plants; and the length of time that the chemical persists in the soil. According to the 2007 PEIS (p. 4-72), herbicides that would pose the greatest risk to special status plants from direct spray at typical application rates include *bromacil*, *chlorsulfuron*, *clopyralid*, *diflufenzopyr*, *diquat*, *imazapyr*, *metsulfuron methyl*, Overdrive®, *picloram*, and *triclopyr*. These herbicides would also present the most risk to special status plant species as a result of drift from a nearby application site. In addition, the 2016 PEIS (p. 4-39) states that *aminopyralid*, *fluroxypyr*, and *rimsulfuron* also pose risks to special status plants from direct spray or off-site drift. The herbicide with the lowest risk to terrestrial plants is *imazapic*. Conservation measures include spatial buffers for broadcast spraying Table 3 to reduce the potential for impacts from off-site drift.

Special status plants can also be affected by surface runoff from upslope applications. According to the 2007 and 2016 PEISs (pp. 4-72 and 4-39, respectively), herbicides with the greatest likelihood of affecting special status plant species via surface runoff include *imazapyr*, *metsulfuron methyl*, *picloram*, and *triclopyr*. Of these herbicides, *picloram* has the longest soil half-life and therefore would have greater potential for downslope impacts due to surface runoff.

On-going noxious weed treatments would primarily be done through spot application, which would reduce the potential for direct or indirect accidental herbicide treatment of special status plants. However, damage or death of special status plants could occur due to accidental direct spray or drift. This potential is considered to be low due to adherence to design features, conservation measures, SOPs, and label requirements as well as small treatment scale. Over the long-term, reduction of noxious weeds in special status plant occupied or potential habitats could increase population persistence and recruitment into adjacent habitat.

Larger scale projects that are not on-going noxious weed treatments pose a greater risk of damage to or death of special status plants. This would occur due to non-detection during pre-treatment inventories and inadvertent treatment of plants, particularly with non-selective herbicides, or direct or indirect application of pre-emergent herbicides to habitats with seed banks but no visible plants. This risk would be reduced by incorporation of design features, conservation measures, and SOP in project planning and implementation, include spatial buffers (Table 3). Application of herbicides for control of non-native annual invasive plants could, if done in conjunction with treatments to enhance resident native vegetation and/or seeding to re-establish perennial grasses, forbs, and shrubs, have the long-term effect of enhancing special status plant habitats. This could increase the potential for recruitment of special status plant seed banks and provide more stable and diverse habitat for pollinators.

Off-site movement is a risk associated with herbicide application, particularly from pre-emergent herbicides, and may impact non-target vegetation, including special status plants, by inhibiting seed germination, reducing vigor, stunting growth, or causing plant mortality. Criteria to reduce the potential for off-site movement would be applied, including buffers (Table 3), evaluation of topography, soil type and erosion potential, project size, wildfire or prescribed fire intensity, and residual vegetation and litter cover. Conservation measures would be used to reduce risks associated with herbicide application to special status plants on a case-by-case basis. Label restrictions would be followed to reduce risks to non-target vegetation, including special status plants.

Application of Group 2 herbicides when plants are not dormant could directly affect undetected special status plants and result in foliage damage, failure to reproduce, or death. Treatments applied for pre-emergent control of target vegetation could terminate germination of vulnerable special status plants, especially for herbicides that remain active in the soil for a period greater than one growing season. This would reduce or eliminate recruitment of individuals from the seed bank for the period during which the herbicide is active. However, seed banks rarely germinate all at once. For example, only about 6% of slickspot peppergrass seeds germinate annually (Meyer et al., 2005). Therefore, seed banks could ensure persistence of special status plants, allowing for habitat restoration and increased potential for recruitment in the long-term. This would be more likely for herbicides with short residual times.

Application of Group 4 and 19 herbicides to special status plants would result in foliar damage, reproductive suppression, or death of affected plants. These herbicides are typically used for spot application; therefore risks to special status plants are likely to be low. Spot treatments using *Picloram* and *2,4-D* to control leafy spurge have occurred in population areas for Goose Creek milkvetch and Idaho penstemon for several years. These treatments have resulted in a decrease in leafy spurge. Foliar damage to Goose Creek milkvetch was occasionally observed, but incidence has decreased over time with education of applicators regarding identification of the special status plants (S. Sayer and J. Tharp, BFO, pers. comm., July 8, 2016).

Broadcast applications of Group 4 and 19 herbicides could be used where noxious weeds occupy a large area. Potential habitat quality in these areas would likely be low due to noxious weed abundance and impacts would occur only to undetected special status plants. Incorporation of design features, conservation measures, and SOPs, including buffers around known populations or habitats with high potential for occupation by special status plants, would reduce the potential for inadvertent adverse effects. Over the long-term, reduction in competition from noxious weeds and invasive plants from spot or broadcast applications could enhance occupied and surrounding habitats, thus increasing the potential for persistence and recruitment of special status plant populations. Broadcast treatments in low quality habitats would reduce or remove noxious weeds and invasive plant seed sources that could spread to higher quality occupied or potential habitats.

Herbicides in Groups 5, 6, and 7 could impact special status plants due to non-selectivity and the fact that they act via both pre-emergent or early post-emergent control. This would increase the potential for application to undetected individuals that occur either in the seed bank or as very young plants. Limiting use to spot applications would reduce the potential for mortality due to small treatment area and specificity of target plants. Broadcast applications could impact undetected plants or seedbanks. However, this application method would most likely be used for control in areas with high number and density of target species. Therefore, habitat quality for species status plants would likely be low.

Glyphosate (Group 9) application would result in damage or death of special status plants if applied directly or if drift occurred during active growing periods. The degree of damage would depend on rate and timing. *Glyphosate* was broadcast applied at 16 ounces/acre during early spring, 2003, to degraded habitat containing Picabo milkvetch populations in the Shoshone Field Office. Application occurred prior to emergence of the milkvetch. No plants were observed the following growing season; however, numerous robust individuals were present during the second year post-treatment. Since *glyphosate* does not persist in the soil, special status plant populations could persist by germinating from seed banks or root resprout. Combination of *glyphosate* with *imazapic* (Journey®) would have a pre-emergent impact and therefore could result in short-term population suppression due to impacts to both plants and germinating seeds. Over the long-term, use of *glyphosate* could enhance special status plant habitat through control of invasive plants, if combined with re-vegetation treatments.

Use of *fluridone* (Group 12) or *diquat* (Group 22) could impact undetected special status plants that occur in wetland or streambank habitats. Fluridone would be more likely to cause impacts as it is dispersed through the water system as opposed to direct application to target species. Design features, conservation measures, and SOP for special status plants as well as aquatic habitats would reduce the potential for inadvertent impacts.

Effects of Re-vegetation Treatments

Impacts of seedbed preparation for re-vegetation treatments are discussed for manual, mechanical, prescribed fire, and chemical treatments above. Re-vegetation treatments would range from seeding or planting shrubs in areas that have desirable understories but which lack shrub cover, to planting seed of native and/or non-native species to re-establish vegetation in areas where noxious weeds and invasive plants have been removed by mechanical, prescribed fire, and/or chemical means. Design features and conservation measures direct the use of minimum-impact seeding or planting methods and plant materials that would not compete with special status plants in re-vegetation projects.

Aerial seeding of small-seeded shrubs, grasses, or forbs would have the least impact on special status plants due to the lack of soil surface disturbance and would have the effect of increasing plant community structure, species diversity, and resilience to disturbance. However, this method may not be effective if there is existing vegetation or high cover of litter on the soil surface.

Hand planting native shrubs such as sagebrush or antelope bitterbrush typically results in little disturbance to special status species. Disturbance from hand planting methods such as a planting bar, hoedad, or auger is less than 6 inches in diameter and occurs in interspaces of existing plant communities. Disturbance to undetected special status plants would be primarily due to trampling, crushing, or disruption of seed banks or plants due to digging activities, but would likely be small in scale. Treatment impacts would be similar to those described for manual treatments above.

Mechanical shrub planting includes the creation of a scalped area and planting holes. This method would typically not be used in areas where special status plants are present due to the level of soil surface disturbance. Impacts to undetected plants or seed banks include damage to or death of undetected plants due to the scalping and digging activities. This method could also disrupt seed banks and result in seed buried too deep for germination.

Seed mixtures for re-vegetation would be developed based on objectives and resource constraints for individual projects. Design features and conservation measures direct the use of plant materials that would not compete with special status plants, with an emphasis on the use of native species. Over the long-term, treatments that would re-establish a more natural plant community structure and reduce or eliminate noxious weeds and invasive plants that compete with special status plants would enhance the potential for population persistence. In addition, restoration of greater vegetation diversity, especially forbs, could result in beneficial indirect effects for special status plants through support for pollinator insects. Hand or mechanical planting or seeding projects that re-establish sagebrush in habitats occupied by slickspot peppergrass may reduce available habitat for Owyhee harvester ants and the potential for fruit and seed predation by that species (Robertson, 2011).

No Action Alternative Impacts – Special Status Plants

Under the No Action Alternative, special status plants would be protected by existing policy, law, and conservation agreements. On-going actions would continue for the treatment of noxious weeds; however, the number and type of available treatments would be fewer under existing authorizations. Therefore, opportunities for integrated treatment would be more limited, particularly in the BFO and SFO, which have fewer herbicides authorized for use.

Project-level analyses, ESA consultations, and decisions for use of treatments authorized for use by the RODs for the 2007 and 2016 PEISs would be required. Therefore, opportunities for habitat restoration and the ability to respond to new situations such as new weeds or disturbances would be limited by the time and staffing required to complete NEPA documents and associated ESA consultations as appropriate. Improvement of special status plant habitats would occur, albeit more slowly compared to the Proposed Action. For these reasons, the No Action Alternative could result in increased threats to special status plants due to competition and habitat degradation resulting from the presence of noxious weeds and invasive plants.

Cumulative Effects – Special Status Plants

Proposed Action Cumulative Effects

Past, present, and foreseeable future management actions that could result in cumulative impacts to special status plants include wildfire suppression activities, post-fire ESR treatments, livestock use, rights-of-way, dispersed recreation, mineral extraction, and travel management. All authorized activities can result in habitat fragmentation, but require design features and management considerations for special status plants. Any activity potentially affecting slickspot peppergrass requires ESA conference. As with the Proposed Action, it is anticipated that impacts to special status plants would result primarily as a result of non-detection of plants or seed banks, particularly due to emergency actions such as wildfire suppression and ESR treatments. However, the Proposed Action would enhance the potential for fuels reduction and habitat restoration for special status plants, which, in turn, could improve population persistence and recruitment over the long-term. Cumulatively, treatments implemented under the Proposed Action could counter the habitat fragmentation resulting from other past, present, and foreseeable future management actions and therefore, over the long-term, could result in increased population numbers and greater acreages of potential habitat.

No Action Cumulative Effects

The same past, present, and foreseeable future management actions and their effects would occur as described for the Proposed Action above. The No Action Alternative would have short-term cumulative effects similar to those described for the Proposed Action. However, the potential for fuels reduction and habitat restoration is less under the No Action Alternative. Therefore, cumulative effects to special status plants under the No Action Alternative would result in slower positive change in population numbers and habitat availability.

Wildlife

Affected Environment

General wildlife species which may occur in the project area or be affected by the project include a variety of big and small game, as well as numerous non-game wildlife species. Big game species include black bear (*Ursus americanus*), gray wolf (*Canis lupus*), elk, mule deer, California bighorn sheep, pronghorn antelope, and moose (*Alces alces*). 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 TFD. These large wide-ranging species avoid degraded habitats for the majority of the year, but may feed in areas dominated by non-native invasive annual vegetation in early spring.

Small game species occurring in the TFD include mourning dove (*Zenaida macroura*), ring-necked pheasant (*Phasianus colchicus*), wild turkey (*Meleagris gallopavo*), chukar (*Alectoris* *chukar*), gray partridge (*Perdix perdix*), sandhill crane (*Grus canadensis*), blue and ruffed grouse (*Dendragapus obscurus* and *Bonasa umbellus*, respectively), and cottontail (*Sylvilagus* sp.). These species may use habitats dominated by non-native invasive annual vegetation, but also use native habitats. Mourning doves nest throughout the TFD 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 areas in the Burley Field Office. Chukar and gray partridge are present throughout the lower elevations of the TFD, 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 TFD. 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.

Non-game general wildlife includes all the other species of wildlife not hunted and not considered sensitive including a variety of species of rodents, carnivores, bats, birds, and reptiles. Movements of small ground-dwelling wildlife, such as reptiles, amphibians, and small mammals, can be restricted by dense stands of cheatgrass or other invasive plants. Some wildlife species having small home ranges and could be extirpated from large areas of cheatgrass or medusahead infestations, while others may benefit from increased cover.

Birds and bats may also be affected by noxious weeds and invasive plants. Reduced vegetation diversity may lower insect diversity and abundance, which subsequently impact insectivorous bats and birds. Where invasive plant communities dominate, the distribution and abundance of insectivorous bats and birds may be reduced.

Wildlife habitats in the TFD generally fall into one of two categories. The first condition is degraded habitats dominated by noxious weeds and/or non-native invasive annual plants. The second condition is areas with relatively intact native or other desirable vegetation containing dispersed noxious weeds and/or invasive plants. Wildlife diversity in degraded habitats is generally poor due to the lack of vegetation necessary to support seasonal habitat needs. Wildlife diversity is higher in areas with good habitat condition. However, these areas and the associated wildlife diversity may be threatened by potential expansion of noxious weeds and invasive plants.

Environmental Impacts

Impacts to wildlife are somewhat dependent on impacts to the vegetation that provides for food and habitat. Refer to the *General Vegetation* section above for detailed information regarding impacts of the Proposed Action and No Action alternatives to vegetation.

Proposed Action Impacts – Wildlife

Effects of Manual Method Treatments

The use of manual treatment methods potentially could disturb or injure small wildlife species living in targeted vegetation or under the soil surface. Animals could be frightened by the presence of workers and respond by either hiding or leaving the immediate area. Some nesting birds could abandon their young. Some animals could be accidentally injured by hand tools. Although there is potential for harm, injuries are not likely because manual techniques would be applied in small weed infestation areas where there is adequate surrounding habitat for escape and hiding. In addition, work crews performing manual treatments would more easily spot and avoid animals in their path than heavy equipment operators.

Wildlife may indirectly benefit from manual treatments. The removal of undesirable noxious weeds or invasive plants may curtail habitat loss by reducing spread. Treatments would improve habitat, particularly for small wildlife by releasing and expanding desirable vegetation.

Effects of Mechanical Method Treatments

Direct effects from the use of mechanical treatments would vary between treatment methods. There is a potential for wildlife to be disturbed or injured by mechanical methods. However numerous design features would minimize adverse effects to wildlife. Restricting activities in big game habitats during sensitive periods, such as winter or calving/fawning/lambing periods, would minimize adverse effects due to presence of humans and machinery. Mechanical methods would not likely result in injuries to big game.

Direct effects on migratory birds would be minimized by design features that prohibit treatments during breeding seasons. Mechanical treatments would typically occur in degraded habitats supporting low wildlife numbers and species diversity. Therefore, the potential for direct effects resulting in disturbance or injury to wildlife is low. Some disturbance or injury and disturbance may occur, primarily to animals that are small or move slowly, or burrowing animals residing at shallow depths.

Habitat restoration resulting from mechanical treatments, when combined with re-vegetation treatments, would indirectly benefit most wildlife species. Habitat enhancements could increase plant species and structural diversity, which would improve cover and food for seasonal wildlife needs.

Effects of Prescribed Fire Treatments

Prescribed fire operations may injure or kill some wildlife through creation of fire-control lines using heavy equipment, as well as burning operations. Implementation of design features for migratory birds would reduce the potential for injury or death during breeding seasons. Larger animals are likely to leave areas where prescribed burning operations occur, although burrowing animals may seek refuge underground and remain unharmed. Wildlife presence in treatment areas would be minimal following prescribed fire due to lack of vegetation cover.

Effects of Biological Control Treatments

Direct effects to wildlife from biological control methods may occur in projects which include domestic goats or sheep as the controlling agent. These effects may include disturbance and potential injury to small animals, such as ground nesting birds, living within or adjacent to weed infested areas. There would be few direct effects from the use of insect biological controls since the agents being used are host-specific herbivores (USDI BLM, 2007b). Biological controls could reduce cover of noxious weeds or invasive plants, but this would not likely effect native wildlife habitats.

Indirectly, reduction of noxious weeds and invasive plants and recovery of native vegetation due to use of biological control agents would improve wildlife habitat. In addition, biological controls could protect remaining intact wildlife habitat from potential invasions by undesirable vegetation.

Effects of Herbicide Treatments

Direct effects of herbicides on wildlife vary depending on the species and chemical type and concentration, season of application, and exposure rate and method. Possible adverse direct effects to individual animals include death, damage to vital organs, change in body weight, decrease in healthy offspring and increased susceptibility to predation. Direct effects resulting in injury or mortality of wildlife are unlikely since the targeted vegetation is not expected to support large populations of native wildlife. However, the proposed herbicides have low toxicity to wildlife (USDI BLM, 2007b). The 2007 PEIS ecological risk assessments (ERAs) for direct spray and spills, indirect contact with foliage after direct spray, and ingestion of contaminated food items after direct spray indicate that impacts are generally low or non-existent for terrestrial fauna. Birds, mammals, or insects consuming grass sprayed with herbicides have relatively greater risk for harm than animals foraging on other vegetative material, because herbicide residue is higher on grass. However, harmful herbicide doses are not likely unless the animal forages exclusively in the treatment area for an entire day (USDI BLM, 2007b).

Indirectly, herbicide treatments may temporarily reduce wildlife habitat and food in treatment areas. Spot noxious weed treatments would not likely have measurable indirect effects on wildlife habitat due to small treatment size. Large-scale treatments using *imazapic* or other selective herbicides to reduce cover of noxious weeds and invasive plants could temporarily reduce some desirable grasses and forbs, but shrub cover would not likely be affected. Large-scale herbicide treatments could reduce plant diversity, which could impact wildlife habitat values. However, diversity in these treatment areas is likely low to begin with and would increase over time due to reduced competition and re-vegetation treatments. Use of non-selective herbicides such as *glyphosate* (dependent on timing and rate) would kill or injure most actively growing vegetation within treatment areas. Subsequent to treatment, these areas would not likely provide useable habitat to most wildlife species until vegetation becomes re-established through seeding or planting. Overall, this temporary loss would not affect the majority of native wildlife species because areas chosen for treatment are in a degraded habitat condition.

Effects of Re-vegetation Treatments

Direct effects from re-vegetation treatments would depend on treatment type and season. Re-vegetation treatments would only occur during the day. Noise from aircraft or presence of aerial seeding project crews could frighten animals, causing them to leave the area or hide. This impact would last for a few hours to a few days. Some treatments such as winter aerial sagebrush seedings would occur when many small mammals, reptiles, or amphibians are hibernating; therefore no direct effect would occur. Large-scale ground seeding could take a longer period of time – a few days to weeks. During this time period, noise and the presence of people and equipment could cause animals to hide or flee. Smaller species could be injured or killed if ground seeding equipment crushes their burrows or rolls over them. Hand planting projects may disturb animals during the period when people are present, typically a few hours to a few days, but injury or death of animals would not likely occur.

Indirectly, re-vegetation projects would result in increased perennial plant cover as well as species and structural diversity. These projects would benefit wildlife populations in the form of increased food and habitat availability and quality.

No Action Alternative Impacts – Wildlife

The No Action Alternative would continue on-going noxious weed and invasive plant treatments. Treatments would be implemented using the limited number of herbicides currently authorized for use. Large-scale treatments would take longer to plan and implement due to analysis requirements for site-specific treatment proposals. Therefore, habitat loss due to expansion of noxious weeds and invasive plants would continue at a faster rate compared to the Proposed Action. Habitat quality and extent would decrease at the periphery of degraded areas due to intrusion of noxious weeds and invasive plants. Wildlife species numbers and diversity could decline over time due to habitat loss.

Cumulative Effects – Wildlife

The cumulative effects assessment for wildlife consider the effects from past, present, and reasonably foreseeable future actions on federal, state, and private lands within and adjacent to the TFD in addition to the impacts from management actions for the Proposed and No Action Alternatives. Actions that could cumulatively affect wildlife include residential and agricultural development, ROWs (including Gateway West and the Southwest Intertie Project), wildfire and associated ESR treatments, livestock grazing, range improvement projects, mining, and transportation management.

Proposed Action Cumulative Effects

Private land residential and agricultural development, ROWs, mining operations, and transportation management all contribute to habitat fragmentation through introduction and spread of noxious weeds and invasive plants. Cumulatively, the Proposed Action could off-set these impacts through enhanced control and habitat restoration potential. These actions also result in some limited, short-term disturbances to wildlife due to noise or presence of humans, vehicles, or equipment. There could be some cumulative disturbance to wildlife due to implementation of the Proposed Action. However, these cumulative impacts would be short in duration and small in scale.

Large-scale habitat fragmentation and degradation occurs as the result of wildfire. Past ESR treatments were implemented to remedy wildfire damage to wildlife habitats. Wildfire will continue to occur on the landscape. Cumulatively, treatments implemented under the Proposed Action could combine with ESR treatments to counter the habitat fragmentation and degradation resulting from other past, present, and foreseeable fires and therefore, over the long-term, could result in increased population numbers and habitat.

On-going livestock grazing occurs in most areas of the TFD. Range improvements associated with on-going livestock grazing include wells, pipelines, and water troughs, fences, and corrals. Concentrated livestock use associated with some facilities results in reduced vegetation cover and areas susceptible to noxious weed and invasive plant dominance. Although small, these areas continue to be a source of noxious weeds and invasive plants to adjacent areas, especially those areas where perennial vegetation is sparse. Cumulatively, treatments implemented under the Proposed Action would enhance noxious weed and invasive plant control in these areas, which would reduce impacts to wildlife and their habitats.

No Action Cumulative Effects

The same past, present, and foreseeable future management actions and their effects would occur as described for the Proposed Action above. The No Action Alternative would have short-term cumulative effects similar to those described for the Proposed Action. However, the potential for fuels reduction and habitat restoration is less under the No Action Alternative. Therefore, cumulative effects to wildlife under the No Action Alternative would result in slower positive change in population numbers and habitat availability.

Special Status Wildlife Species

Affected Environment

Special status terrestrial wildlife includes all ESA listed, proposed, and candidate species; BLM sensitive wildlife, and Migratory Birds of Conservation Concern (BCC). Appendix I lists all special status species in the TFD and their conservation status. Appendix J lists Migratory BCCs and their status. Table 8 lists the general habitats for special status species potentially affected by the Proposed Action and No Action alternatives.

Yellow-billed cuckoo and Canada lynx (*Lynx canadensis*) are listed as threatened under the ESA; wolverines (*Gulo gulo luscus*) are currently proposed for listing. Descriptions of habitat requirements for these species follow. In addition, sage-grouse are managed under the 2015 ARMPA, and are discussed in detail below.

Table 8 – BLM Special Status Wildlife Species Potentially Affected By Proposed Treatments

Type	Scientific Name	Common Name	General Habitat
Mammals	*Antrozous pallidus*	Pallid bat	Generalist
	Brachylagus idahoensis	Pygmy rabbit	Low-elevation shrub steppe, Mid-elevation shrub steppe
	Canis lupus	Gray wolf	Generalist
	Corynorhinus townsendii	Townsend's big-eared bat	Low-elevation shrub steppe
	Eptesicus fuscus	Big brown bat	Generalist
	Euderma maculatum	Spotted bat	Low-elevation shrub steppe, Riparian
	Gulo gulo luscus	Wolverine	Generalist
	Lasionycteris noctivagans	Silver-haired bat	Forest
	Lasiurus cinereus	Hoary bat	Forest
	Lynx canadensis	Canada lynx	Forest
	Myotis ciliolabrum	Western small-footed myotis	Generalist
	Myotis evotis	Long-eared myotis	Generalist
	Myotis lucifugus	Little brown bat	Generalist
	Myotis Volans	Long-legged myotis	Generalist
	Myotis yumanensis	Yuma myotis	Generalist
	Ovis canadensis californiana	California bighorn sheep	Low-elevation shrub steppe, Mid-elevation shrub steppe
	Parastrellus hesperus	Canyon bat	Canyon

Type	Scientific Name	Common Name	General Habitat
	Urocitellus mollis	Piute ground squirrel	Low-elevation shrub steppe
	Vulpes velox	Kit fox	Low-elevation shrub steppe, Salt desert
Birds	*Accipiter gentilis*	Northern goshawk	Riparian, Mixed coniferous forest, Mountain shrub
	Ammodramus savannarum	Grasshopper sparrow	Grassland, low elevation shrub steppe
	Amphispiza belli	Sage sparrow	Low-elevation shrub steppe, Mid-elevation shrub steppe
	Amphispiza bilineata	Black-throated sparrow	Low-elevation shrub steppe, Mid-elevation shrub steppe
	Aquila chrysaetos	Golden eagle	Low-elevation shrub steppe, Mid-elevation shrub steppe
	Asio flammeus	Short-eared owl	Grassland, low elevation shrub steppe
	Athene cunicularia	Burrowing owl	Grassland, low elevation shrub steppe
	Buteo regalis	Ferruginous hawk	Low-elevation shrub steppe, Mid-elevation shrub steppe
	Carpodacus cassinii	Cassin’s finch	Mixed coniferous forest, riparian
	Centrocercus urophasianus	Greater sage-grouse	Low-elevation shrub steppe, Mid-elevation shrub steppe, Riparian
	Coccyzus americanus	Yellow-billed cuckoo	Riparian
	Contopus cooperi	Olive-sided flyctacher	Mixed coniferous forest
	Empidonax trailii	Willow flycatcher	Riparian
	Falco mexicanus	Prairie falcon	Low-elevation shrub steppe, Mid-elevation shrub steppe
	Gymnorhinus cyanocephalus	Pinyon jay	Pinyon-juniper woodland

Type	Scientific Name	Common Name	General Habitat
	Haliaeetus leucocephalus	Bald eagle	Riparian
	Lanius ludovicianus	Loggerhead shrike	Low-elevation shrub steppe, Mid-elevation shrub steppe
	Melanerpes lewis	Lewis woodpecker	Riparian
	Numenius americanus	Long-billed curlew	Grassland
	Oreoscoptes montanus	Sage thrasher	Low-elevation shrub steppe
	Oreotyx pictus	Mountain quail	Low-elevation shrub steppe
	Otus flammeolus	Flammulated owl	Riparian, Mixed coniferous forest
	Pipilo chlorurus	Green-tailed towhee	Mixed coniferous forest, Mountain shrub
	Sphyrapicus throideus	Williamson's sapsucker	Riparian
	Spizella breweri	Brewer's sparrow	Low-elevation shrub steppe, Mid-elevation shrub steppe
	Stellula calliope	Calliope hummingbird	Riparian, Mixed coniferous forest
	Tympanuchus phasianellus columbianus	Columbian sharp-tailed grouse	Low-elevation shrub steppe, Mid-elevation shrub steppe, Mountain shrub
	Vermivora virginae	Virginia's warbler	Low-elevation shrub steppe, mid-elevation shrub, pinyon-juniper woodland
Amphibians	*Bufo boreas*	Western toad	Riparian
	Rana luteiventris	Columbia spotted frog	Riparian
	Rana pipiens	Northern leopard frog	Riparian
Invertebrates	*Cicindela arenicola*	St. Anthony Sand Dunes tiger beetle	Sand dunes

Type	Scientific Name	Common Name	General Habitat
	Cicindela waynei waynei	Bruneau Dunes tiger beetle	Sand dunes

Yellow-billed Cuckoo

The yellow-billed cuckoo is listed as a Threatened 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. Results of a 2005 survey (Reynolds & Hinkley, 2005) concluded that yellow-billed cuckoos have never been particularly abundant in Idaho, with only 64 recorded observations of the cuckoo for the state. The most recent statewide assessment estimated the breeding population in Idaho is likely limited to no more than 10 to 20 breeding pairs in the Snake River Basin (Reynolds & Hinkley, 2005).

Historical observations of the yellow-billed cuckoo have been documented in the Twin Falls and Rupert areas, 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 (Reynolds & Hinkley, 2005). A single bird was also observed during a 2005 survey at the Minidoka National Wildlife Refuge (Reynolds & Hinkley, 2005). More recently, a single bird was heard near Stanton Crossing during June of 2014 (Reynolds, 2014).

Yellow-billed cuckoos nest in riparian willow/cottonwood complexes. Birds require at least five acres of prime riparian habitat (Reynolds & Hinkley, 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). Critical habitat is proposed along the Big Wood River in Blaine County near U.S. Highway 20 at Stanton Crossing. The proposed critical habitat contains a total of 1,129 acres. Eighty-eight acres (8%) are public lands managed by BLM; 85 acres (8%) are State lands managed by Idaho Department of Transportation, Idaho Department of Fish and Game, and Idaho Department of Lands; and 956 acres (85%) are privately owned (79 FR 48569).

Canada Lynx

The Canada lynx is listed as a threatened species under the ESA. The species is found in boreal and mesic forests, and is closely associated with its primary prey, the snowshoe hare (USDA FS, 2007). Alternate prey, including many small mammals and grouse, are also important to lynx diets. In Idaho, lynx primarily occur in high elevation, cold forest habitats that support spruce, subalpine fir, whitebark pine, lodgepole pine, or moist Douglas-fir habitat. Dry forests do not provide lynx habitat (USDA FS, 2007, p. 371). Shrub-steppe habitats that occur adjacent to, or are intermixed with, cold forest habitats in Idaho are used to a limited extent by lynx for foraging and dispersal activities. Although Canada lynx have been documented throughout northern portions of the BLM SFO, none of the field office is designated as lynx critical habitat. Therefore, use of BLM-managed lands in the TFD is largely incidental and primarily for foraging and dispersal activities.

Wolverine

Wolverine is proposed for listing as threatened under the ESA. In the contiguous United States, wolverines occur within a wide variety of alpine and boreal habitats, including high-elevation alpine portions of western mountain ranges in Idaho. Wolverines do not appear to specialize on specific vegetation or geological habitat aspects, but instead select areas that are cold and receive enough winter precipitation to reliably maintain deep persistent snow late into the warm season (Copeland et al., 2010). The requirement of cold, snowy conditions means that, in the southern portion of the species' range, wolverine distribution is restricted to high elevations (Copeland et al., 2010). Wolverine year-round habitat is found at high elevations centered near the tree line in conifer forests (below tree line) and rocky alpine habitat (above tree line) and in cirque basins and avalanche chutes that have food sources such as marmots, voles, and carrion (Copeland, 1996; Hornocker & Hash, 1981).

A snow-persistence model developed by Copeland et al. (2010) has been used to form the basis of the likely areas that may contain conditions suitable for wolverine denning activities. In an effort to capture the most likely areas containing suitable wolverine denning habitat, areas predicted by the model to contain persistent snow for the greatest length of time were selected. Based on this model, there is no suitable wolverine denning habitat in the TFD.

Wolverines have large spatial requirements; the availability and distribution of food is likely the primary factor in determining wolverine movements and home range (Banci, 1994; Hornocker & Hash 1981). Wolverines can travel long distances over rough terrain and deep snow, with adult males generally covering greater distances than females (Banci, 1994; Hornocker & Hash, 1981). Home ranges of wolverines are generally extremely large, but vary greatly depending on availability of food, gender, age, and differences in habitat. Home ranges of adult wolverines range from less than 100 square kilometers (km^2) to over 900 km^2 (38.5 square miles [mi^2] to 348 mi^2) (Banci, 1994). Copeland (1996) found that annual home ranges of resident adult females in central Idaho averaged 384 km^2 (148 mi^2), while the annual home ranges of resident adult males averaged 1,522 km^2 (588 mi^2).

Habitats used by wolverines for foraging and transitory movements occur in the far northern portion of the SFO, north of State Highway 20 and includes areas in the Soldier, Pioneer, Smoky, and Boulder Mountains.

Greater Sage-grouse

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 (Connelly, Schroeder, Sands, & Braun, 2000; Drut, Pyle, & Crawford, 1994). 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, & 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.

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 sagebrush-steppe. High wildfire frequency and expansion of annual grasslands have helped to perpetuate the loss of sagebrush, leading to a reduction in suitable habitat.

Treatment areas would most often occur in unsuitable or marginal habitats. These areas lack components considered critical to providing suitable sage-grouse habitat. Sage-grouse historically occupied these areas and still may utilize them locally to some degree or during seasonal movements. However, these habitats do not provide for seasonal food and habitat needs.

ARMPA directs field offices to implement appropriate conservation actions in priority sage-grouse habitat (Sagebrush Focal Areas (SFA), PHMA and IHMA) and provides guidance on conservation measures for use within the different habitat management areas. There are approximately 1,795,737 acres PHMA; 1,328,748 acres IHMA; 1,409,043 acres of GHMA; and 900 acres of OHMA (Nevada only) in the TFD.

Environmental Impacts

Impacts to special status wildlife are somewhat dependent on impacts to the vegetation that provides for food and habitat. Refer to the *General Vegetation* section above for detailed information regarding impacts of the Proposed Action and No Action alternatives to vegetation.

Proposed Action Impacts – Special Status Wildlife Species

Effects of Manual Method Treatments

The use of manual treatment methods could disturb or injure small special status species such as tiger beetles, spotted frogs, western toad, or the young of ground-nesting birds. Animals could be frightened by the presence of workers and respond by either hiding or leaving the immediate area. Shrub- and ground-nesting birds, such as sage-grouse, ferruginous hawk, mountain quail, loggerhead shrike, sage thrasher and long-billed curlew, could abandon their young. Some animals could be accidentally injured by hand tools. Although there is potential for harm, manual techniques would be applied in small weed infestations in native habitats. Although special status animals may occur in treatment areas, duration of treatments would be short and the probability of directly encountering special status wildlife is low. Animals with the ability to avoid or hide from workers would not be subject to injury. Animals with large home ranges such as Canada lynx or wolverine would not likely be present in treatment areas.

Yellow-billed cuckoo may be disturbed by the presence of field crews if manual noxious weed treatment overlaps yellow-billed cuckoo nesting season. Direct disturbance of nesting adults or young could occur if crews walk through or work in close proximity to shrub or tree patches containing nests. Conservation measures preclude treatments during the nesting season.

Special status species would indirectly benefit from manual treatments. The removal of noxious weeds or invasive plants is expected to curtail habitat loss by reducing any further spread. Also, removal of noxious weeds and invasive plants would reduce competition with native vegetation.

This would improve or increase available food sources and habitat for special status wildlife and their prey.

Effects of Mechanical Method Treatments

Direct effects from the use of mechanical treatments could result in disturbance, injury, or death of some special status animals, such as burrowing rodents. This could result from disking or drill seeding or other methods that could disturb burrows or kill animals that are present in the treatment area. Animals could be disturbed by noise and the presence of humans, vehicles, and machinery and could be forced to flee or hide. However, design features and conservation measures, including pre-treatment inventory and habitat evaluation, and spatial, temporal, and seasonal avoidance, would reduce or eliminate the potential for adverse effects. Most mechanical treatments that would be implemented under the Proposed Action would occur in degraded habitats, which tend to support low numbers of special status animals. Some injury and disturbance may occur, primarily to slower or burrowing animals residing at shallow depths.

Mechanical treatments would not likely affect Canada lynx or wolverine, as treatments are not expect to occur in their habitats. Characteristically steep, rough terrain in lynx and wolverine habitats would preclude use of mechanical treatments.

Mechanical treatments near yellow-bill cuckoo habitats would likely be limited to mowing. These treatments could result in disturbance to nesting birds due to noise. However, conservation measures impose spatial and temporal constraints on mowing activities to reduce or eliminate the potential for disturbance.

Habitat restoration from mechanical treatments, combined with other vegetation treatments, would benefit special status species by increasing perennial plant cover, and plant community species and structural diversity. This would expand available areas that meet forage and seasonal habitat needs.

Effects of Prescribed Fire Treatments

Prescribed fire operations may injure or kill some wildlife through creation of fire-control lines using heavy equipment, as well as burning operations. However, design features and conservation measures, including pre-treatment inventory and spatial, temporal, and seasonal avoidance, would reduce or eliminate the potential for adverse effects. Migratory birds are expected to be unharmed through avoidance measures. Larger, more mobile species would likely leave the area, while burrowing animals would likely hide in burrows and remain safe for the duration of the treatment. Prescribed fire would not be used in habitats occupied by nesting yellow-billed cuckoos. Prescribed fire would also not be used in the higher elevation habitats utilized by Canada lynx and wolverines. Prescribed fire treatments would only occur in degraded habitats, which tend to support low numbers of special status animals. Therefore, impacts to special status animals should be minimal to negligible.

Prescribed fire could be used to meet management objectives to protect and/or enhance greater sage-grouse habitat in Priority Habitat Management Areas (PHMA) and Important Habitat Management Areas (IHMA). Design features, conservation measures, and criteria for prescribed fire use would reduce or eliminate the potential for disturbance to breeding or wintering sage-grouse. Typically, habitats treated with prescribed fire would be degraded and considered unsuitable for sage-grouse. Left untreated, these degraded habitats could expand and further fragment suitable habitats. Habitat restoration would benefit sage-grouse in the long-term by improving structural and species diversity to meet seasonal habitat and food requirements.

Effects of Biological Control Treatments

Yellow-billed cuckoo may be disturbed by the presence of field crews during release of biological controls. Direct disturbance of nesting adults or young could occur if crews walk through or work in close proximity to shrub or tree patches containing nests. Conservation measures preclude treatments during the nesting season. Implementation of biological control treatments would not likely affect Canada lynx or wolverine due to the small scale and short duration of treatments and the associated very low potential for encounter with crews.

Direct effects to special status wildlife from biological control methods may occur in projects which include domestic goats or sheep as the controlling agent. These effects may include disturbance and potential injury to small animals, such as ground nesting birds, living within or adjacent to weed infested areas. Domestic goats or sheep would not be used within 9 miles of California bighorn sheep along the Bruneau and Jarbidge river canyons, thus reducing the potential for disease transfer. Goats or sheep would not be used in yellow-billed cuckoo habitats or in areas typically used by Canada lynx or wolverine.

There would be few direct effects from the use of insect biological controls since the agents being used are host-specific herbivores (USDI BLM, 2007b). Biological controls could reduce cover of noxious weeds or invasive plants, but this would not likely adversely affect special status species habitats. Indirectly reduction of noxious weeds and invasive plants would reduce competition with native plants, potentially resulting in improved habitat conditions for special status wildlife and their prey.

Effects of Herbicide Treatments

General direct and indirect effects of herbicide treatments on special status wildlife would be similar to those described for general wildlife above. Design features, conservation measures, and SOP would be implemented for projects using herbicides to reduce or eliminate adverse impacts to special status wildlife. These include pre-treatment inventory and habitat evaluation, as well as spatial, temporal, and seasonal avoidance.

Special status species with the highest potential for direct effects from herbicides in large-scale treatments include small reptiles, amphibians, birds, or rodents. Rodents may be exposed to herbicides through the consumption of vegetation treated with herbicides. Injury and potential mortality is possible, but few special status species are likely to occur in degraded habitats. Long-billed curlew and burrowing owl, which can occur in cheatgrass-dominated areas, could be exposed to herbicides through contact during the treatment and potentially by consuming insects which have been exposed to herbicides. Little harm is expected to these species because of the low toxicity of proposed chemicals. Little to no exposure is expected from spot treatments on most special status wildlife.

Larger-scale, broadcast herbicide treatments would not occur in yellow-billed cuckoo habitats. Spot treatments during the nesting season could expose prey to herbicides and could reduce prey abundance. Yellow-billed cuckoo could also ingest exposed prey, resulting in injury; however, mortality is not likely to occur. In addition, adult cuckoos or their young could be disturbed by the presence of weed treatment crews. However, conservation measures preclude treatments during the breeding season, reducing or eliminating potential impacts to yellow-billed cuckoos.

Larger-scale, broadcast herbicide treatments would not be used in the higher elevation areas where Canada lynx or wolverine may occur. Animals could be disturbed by crews implementing spot treatments; however, due to the small scale and short duration of treatments potential for encounter with crews is very low. In addition, potential for exposure to herbicides from treated vegetation or exposed prey is also very low due to the species' large ranges.

Effects of Re-vegetation Treatments

General direct and indirect effects of re-vegetation treatments on special status wildlife would be similar to those described for general wildlife above. Special status species most at risk of injury or death from mechanical seeding would be small ground-dwelling reptiles, amphibians, birds, or mammals. However, these species would not likely be present in areas with mechanical re-vegetation treatments due to elimination of vegetation using other methods for seedbed preparation. An exception would be the use of mechanical shrub or tree planters, as these methods would likely be used where a perennial understory that may serve as habitat is present. However, incorporation of design features and conservation measures into project designs, including pre-treatment inventory and habitat evaluation, should reduce the potential for harm.

Mechanical re-vegetation treatments would not be used in suitable or occupied yellow-billed cuckoo habitats. Hand planting or seeding to restore riparian vegetation could be used in suitable or occupied habitat, but occur in fall outside of critical breeding periods. Re-vegetation treatments would not occur in the higher elevation areas where Canada lynx and wolverine may occur.

No Action Alternative Impacts – Special Status Wildlife Species

Effects of the No Action Alternative on special status wildlife would be similar to those described for general wildlife above. Impacts of the No Action Alternative to special status wildlife could be reduced by implementation of mechanisms, as required by law and policy.

Cumulative Effects – Special Status Wildlife Species

Cumulative effects of the Proposed Action and No Action alternatives would be similar to those described for general wildlife above. Adverse cumulative effects could be more severe to some species which have limited numbers and distribution and highly specific habitat needs. However, adverse effects of the Proposed Action would be minimized or eliminated by applying design features, conservation measures, and SOP. Other federal actions would likely have similar mechanisms, as required by law and policy, to avoid or reduce impacts to special status wildlife.

Two landscape-scale programmatic environmental impact statements (PEIS's) to analyze potential effects of constructing fuel breaks, reducing fuel loading, and rehabilitating or restoring special status species habitat within the Great Basin region are being considered in the foreseeable future. Actions within these proposed PEIS's are expected to overlap the vegetation treatment actions analyzed in this EA. The PEIS's would have similar vegetation management goals as proposed in this EA and both would follow ARMPA management decisions. Proposed vegetation management actions in the PEIS's to reduce fuel loading and restore habitat are not expected to be appreciably different than the vegetation management actions proposed under this EA; however, the scale of the treatments would extend beyond the TFD boundary, potentially enhancing the effectiveness of treatments implemented through this EA. Therefore, there would be no further cumulative effects to consider under this proposed action.

Special Status Fish and Aquatic Invertebrates

The special status fish and aquatic invertebrates include those species that are federally listed under the ESA of 1973 and the aquatic species included on the Idaho BLM's Sensitive Species List (Appendix I) (USDI BLM, 2015b). These species are collectively referred to as special status aquatic species. The potential for noxious weed and invasive plant treatments to have short or long-term direct or indirect effects (i.e., adverse or beneficial) to special status fish and aquatic invertebrates are discussed in this section.

Affected Environment

Type 1 Federally Listed Threatened and Endangered Fish and Aquatic Invertebrates

Jarbidge River Bull Trout

The Jarbidge River bull trout is the only ESA-listed fish that occurs within the TFD. On June 10, 1998, the USFWS listed the Columbia River and Klamath River populations of bull trout (*Salvelinus confluentus*) as a threatened species (63 FR 31647). The Jarbidge River watershed contains fluvial (migratory) and resident populations of bull trout on BLM managed land within the following tributaries: Jarbidge River, East Fork Jarbidge River, Dave Creek, West Fork Jarbidge River, and Jack Creek. Migratory bull trout have been documented in the Jarbidge River (canyon) and may also use the Bruneau River for foraging, migration, and overwintering. Bull trout have not been documented in the Bruneau River (USFWS, 2004). However, there are no known physical barriers preventing bull trout from moving between the Jarbidge River and Bruneau River. The occurrence of bull trout in the headwater tributaries to the Jarbidge River indicate they were historically present, at least seasonally, in the Bruneau River.

In May 2004, the USFWS released a Draft Recovery Plan for the Jarbidge River Distinct Population Segment of Bull Trout. Since that time, additional bull trout data has been collected by the U.S. Geological Survey (USGS) (Allen, Connolly, Mesa, Charrier, & Dixon, 2010). The USGS found robust bull trout populations in the upper portions of the East Fork Jarbidge River, the West Fork Jarbidge River, and in Pine, Jack, Dave, and Fall Creeks. The USGS study indicates there are almost four times the numbers of bull trout present in the Jarbidge River Watershed than was estimated in the 2004 Draft Recovery Plan. These bull trout show substantial movements between the upper tributaries and are found in increased numbers at elevations above 6,890 feet. The Jarbidge River bull trout have growth rates comparable to other bull trout populations which is indicative of high-quality habitat (Allen et al., 2010).

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 USFWS completed a reassessment of the initial critical habitat designation. The revised critical habitat designation was effective on October 18, 2010 (75 FR 63898) and included 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. The tributaries on BLM-managed lands that are designated bull trout critical habitat include the Bruneau River, Jarbidge River (canyon), portions of the East Fork Jarbidge River and its tributary Dave Creek, and the West Fork Jarbidge River and its tributary Deer Creek.

In 2014, the USFWS renewed its efforts to complete recovery planning for coterminous United States population of the bull trout. The revised recovery plan uses a geographic classification that lists bull trout as a single Distinct Population Segment (DPS) within the five-state area of the coterminous United States (USFWS, 2015b). This single DPS is subdivided into six biologically-based recovery units which are necessary to both the survival and recovery of the species. The Jarbidge population of bull trout is included in the Upper Snake Recovery Unit. The Upper Snake Recovery Unit contains 22 bull trout core areas, one of which is the Jarbidge Core Area. Core areas represent a combination of suitable habitat and one or more local populations that function as one demographic unit due to occasional gene flow between them. There are six local populations of bull trout within the Jarbidge Core Area. These local populations include: the East Fork Jarbidge River (including the East Fork headwaters, Cougar Creek, and Fall Creek), the West Fork Jarbidge River (including Sawmill Creek); Dave Creek, Jack Creek, Pine Creek, and Slide Creek.

Bruneau Hot Springsnail

The Bruneau hot springsnail was listed as endangered in 1993 (58 FR 5938). It is found in warm water springs, seeps and geothermal upwelling areas along a 5.2 mile reach of the lower Bruneau River near Hot Creek. This aquatic snail has specific habitat requirements that include a water temperature tolerance between 11^{o}C to 35^{o}C (52 to 95^{o}F) (Mladenka, 1992). There are no known surveys that have identified *P. bruneauensis* outside of geothermal springs or upwelling zones in or along the Bruneau River (USFWS, 2007). In May 2007, the USFWS completed a 5-year status review for the Bruneau hot springsnail and found that threats to this species such as groundwater withdrawals, livestock grazing, surface water withdrawals, recreation, predation by exotic fish, groundwater management and water quality, continue to result in a decline in this species' numbers and habitat. Although concerns related to livestock grazing have been addressed with fencing, the other factors affecting this species have not been fully resolved.

Banbury Springs lanx

The Banbury Springs lanx (*lanx* sp.- undescribed) was listed as endangered in 1992 (57 FR 59247). 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 along the middle Snake River 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 USFWS completed a 5-year status review for the Banbury Springs lanx and found it to be subjected to a high degree of threat due to reduced water quality, the amount of water available due to reduced flows, invasive species, and habitat modification.

Snake River Physa

The Snake River physa (*Physa natricina*) was listed as endangered in 1992 (57 FR 59244). In 1995, the USFWS reported the known range of the Snake River Physa to be from Grandview, Idaho, to the Hagerman Reach of the Snake River. Surveys conducted by the Idaho Power Company (Keebaugh, 2009) and the Bureau of Reclamation (Gates & Kerans, 2010), confirmed its current distribution is from near Ontario, Oregon (128 miles downstream from its previously recognized range), upstream to Minidoka Dam. While the current range for this species is estimated to be over 300 river miles, it 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. Gates and Kerans (2010) characterize the preferred habitat for Snake River physa as a run, glide, or pool, with eighty percent of samples containing live Snake River physa located in the middle 50 percent of the river channel. Other life cycle information (e.g., reproduction, food habits) are largely unknown for this species.

Bliss Rapids Snail

The Bliss Rapids snail (*Taylorconcha serpenticola*) was listed as threatened in 1992 (57 FR 59249). 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 is typically found on the lateral and undersides of clean cobbles in pools, eddies, runs, and riffles, though it may occasionally be found on submerged woody debris (Hershler, Prest, Johannes, Bowler, & Thompson, 1994). This snail avoids fine depositional sediment and surfaces with attached macrophytes (USFWS, 1995). It has not been found in the impounded reaches of the Snake River (Richards, Falter, & Steinhorst, 2006) or in sediment laden habitats (USFWS, 2012). The greatest abundance values for Bliss Rapids snails are in spring habitats, where they frequently reach localized densities in the tens to thousands per square meter (Richards, 2004; Richards & Arrington, 2009). While Bliss Rapids snails may reach moderate densities (10s to 100s per m^2) at some river locations, they are more frequently found at low densities (<10 per m^2) (Richards & Arrington, 2009; Richards, Van Winkle, & Arrington, 2009).

On September 16, 2009 (74 FR 47536), the USFWS 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 USFWS found the species continued to meet the definition of a threatened species given its restricted range and the persistence of threats due to human development and habitat modification.

Type 2 Rangewide/Globally Imperiled Fish and Aquatic Invertebrates

Redband Trout

The Interior Columbia River redband trout (*Oncorhynchus mykiss gairdneri*), a subspecies of the rainbow trout, is native to most of Idaho. In the TFD, redband trout are found in the Bruneau River watershed, Salmon Falls Creek watershed, King Hill Creek, and Wood River watersheds and other suitable tributaries to the Snake River below Shoshone Falls. Redband trout are considered present in the Snake River in areas associated with groundwater upwelling or springwater influence. 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. In all cases they prefer cool streams with water temperatures less than 69^{o} F; however, they can survive daily cyclic temperatures up to 80^{o}F for a short period of time (Wallace & Zaroban, 2013). To date, no formal assessment of redband trout in Idaho has been completed. However, habitat fragmentation and alteration, the introduction of non-native species, and over-harvest of populations are the primary threats to this species (Wallace & Zaroban, 2013).

Yellowstone Cutthroat Trout

In Idaho, Yellowstone cutthroat trout (*Oncorhynchus clarki bouvieri*) originally occurred in the Snake River watershed from the headwaters downstream to Shoshone Falls (Wallace & Zaroban, 2013). 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.

In the TFD, this species occurs in the Goose Creek and Raft River watersheds (Wallace & Zaroban, 2013). Yellowstone cutthroat trout occupy diverse habitats, ranging from small headwater streams to large rivers and lakes. They exhibit multiple life history forms, such as adfluvial (migrate from lake to streams and rivers), fluvial (migrate within a river system), and resident (little or no migratory behavior) to take advantage of a variety of spawning and rearing habitats. These fish typically utilize large deep pools, beaver ponds and other slow velocity areas, especially during the winter. Yellowstone cutthroat trout are opportunistic feeders, consuming aquatic and terrestrial food items as they become available (Wallace & Zaroban, 2013). Their abundance and distribution has been greatly reduced due to stream dewatering, habitat degradation (and fragmentation) introduction of non-native salmonids, exploitation and disease (Wallace & Zaroban, 2013).

Wood River Sculpin

The Wood River sculpin (*Cottus leiopomus*) is a small native fish that only occurs within streams and rivers in the Wood River watershed. In the Little Wood River watershed, they currently occur above the Little Wood Reservoir and in the Silver Creek watershed. In the Big Wood River watershed, they occur above Magic Reservoir. In the Camas Creek watershed, they are restricted to north side tributaries, primarily in Soldier Creek and Willow Creek (Wallace & Zaroban, 2013). Typically, Wood River sculpin are found in greatest abundance in riffles and runs with cobble or rubble substrate. They may also be found in reduced numbers in pools, beneath undercut streambanks and in areas of submerged vegetation when cobbles and rubble are not present. They are typically found in cool water (59°F or less) and in moderate current. Wood River sculpin are a benthic (bottom-dwelling) species that primarily feeds on aquatic invertebrates (Wallace & Zaroban, 2013). Due to its restricted range, Wood River sculpin are considered a sensitive species by the BLM, IDFG, and the U.S. Forest Service. The IDFG classifies this sculpin as a protected non-game species. Potential threats to Wood River sculpin include land development, stream channelization, water diversions, and introduced predators (Wallace & Zaroban, 2013).

Shoshone Sculpin

The Shoshone sculpin (*Cottus greenei*) is endemic to the springs and spring-fed creeks within the Thousand Springs formation along the north bank of the Snake River in Gooding County between Kanaka Rapids and Bliss, Idaho. One population occurs in a spring within the main Snake River (Wallace & Zaroban, 2013). They have also been established upriver at Crystal Springs in Jerome County. Shoshone sculpin occur in the headwaters of cool (55-57°F), clear, springs and spring-fed streams with relatively constant temperatures and abundant food. Shoshone sculpin feed mostly on benthic aquatic insects, small crustaceans, snails and clams (Wallace & Zaroban, 2013). Due to its restricted range, this fish is considered a protected non-game species by IDFG. Reductions in population numbers and distribution from historic levels are attributed to increased diversion of water, poor quality of water returned to the springs after use, and an increase in sediment in spawning areas. The major threat to Shoshone sculpin is habitat destruction through land and water use practices such as irrigation, aquaculture, and hydroelectric projects (Wallace & Zaroban, 2013).

Northern Leatherside Chub

The Northern Leatherside chub (*Lepidomeda copei*) historically occurred within the Bonneville basin of Utah, Idaho and Wyoming and in the upper Snake River of Wyoming and Idaho. In Idaho, this species is reported from the Bear River system, the Snake River above Shoshone Falls, and the Wood River system (Wallace & Zaroban 2013). Within the TFD, this small, native fish only occurs in a few reaches of Goose Creek and its tributaries Trapper Creek and Beaverdam Creek. Northern Leatherside was documented in the Little Wood River in 1934 and is considered to be within the historic range for the species (UDWR, 2009). Northern leatherside chub are found in cool to cold streams, in riffles and pools, although they tend to prefer pools. They prefer moderate velocity (15-32 cm/sec) and water that is 1.0 meter deep or less. These fish are commonly misidentified as a redside shiner.

Snake River White Sturgeon

The white sturgeon (*Acipenser transmontanus*) is the largest freshwater fish in North America and has been reported to grow to total lengths in excess of 19 feet and weigh up to 1,700 pounds (Wallace & Zaroban, 2013). In the TFD, the historic occurrence of white sturgeon is in the Snake River below Shoshone Falls. They have been introduced into the Snake River above Shoshone Falls upstream as far as Idaho Falls (Wallace & Zaroban, 2013). White sturgeon are a benthic species living in deep holes in large, cool rivers. They are a bottom feeder, eating any available organism, mostly fish, dead or alive. They are a long-lived species with documented ages exceeding 100 years (Wallace & Zaroban, 2013). Once abundant, populations of this species are now greatly reduced due to habitat fragmentation from the construction of dams for power, irrigation, and flood control. The Snake River populations of white sturgeon are considered a species of concern by IDFG (Wallace & Zaroban, 2013).

Short-face lanx

The short-face lanx (*Fisherola nuttalli*) is a cone-shaped, freshwater mollusk that is found in the Snake River from the Rupert, Idaho area downstream to near King Hill. The short-face lanx lives in steady to strong currents on the underside of large rocks (Taylor, 1985). The numerous dams on the Snake River have altered the natural flow regime of the Snake River, fragmenting the fast-water habitats used by this mollusk. In general, there is little information on the life cycle or habitat requirements for this species.

Environmental Impacts

This assessment of direct and indirect effects to special status aquatic species used the INFISH RCAs (USDA FS, 1995) to identify areas where vegetation treatments may affect special status aquatic species or their habitat. The INFISH buffers are identified in Chapter 2, Design Features and Conservation Measures. INFISH identifies these RCA buffers as sufficient to protect streams from non-channelized sediment and maintain riparian function. INFISH acknowledges that actions within RCAs may be needed to improve riparian and instream conditions and meet recovery objectives for special status fish and other aquatic species. The discussion of impacts to special status aquatic species includes consideration for direct, indirect, short-term and long-term impacts to the species and their habitat. The potential for treatments to result in negative or beneficial effects to the species or their habitat are also identified.

Noxious weed and invasive plant treatments under the Proposed Action and No Action alternatives include design features and conservation measures to reduce the potential for negative direct or indirect impacts to special status aquatic species and habitats. Collectively, the design features were developed during ESA consultation with the USFWS and adopted by the BLM as standard practices to reduce the potential for direct or indirect negative impacts to aquatic species and their habitats. Although the design features may not completely eliminate all direct or indirect impacts, they would reduce impacts below levels that would have a long-term measurable affect to special status aquatic species. All vegetation treatments implemented under this EA will be consistent with current ESA consultation requirements (USFWS, 2016b).

Aquatic species are most sensitive to disturbance during reproduction. To assist with planning vegetation treatments in RCAs, a table displaying the sensitive periods for special status aquatic species is included in Appendix G.

Proposed Action Impacts – Special Status Fish and Aquatic Invertebrates

Effects of Manual Treatments

Treatments using manual methods to remove noxious weeds and invasive plants from upland and riparian areas would include the use of hand tools and hand-operated power tools to cut, clear, or prune non-native herbaceous and woody vegetation or hand pulling individual noxious weeds and invasive plants. Treatments to remove invasive hydric vegetation within the stream channel are beyond the scope of the Proposed Action and would not be conducted under this EA.

Treatments using manual methods can be applied in a manner that avoids actions that could result in direct or indirect effects to special status aquatic species or their habitats. Manual methods are the preferred treatment method in sensitive habitats such as riparian areas because they are not ground disturbing and the type and amount of vegetation removed is completely controllable. Manual treatments in mixed upland and riparian vegetation types within 300 feet of occupied streams but away from the waters' edge can be applied in a manner that results in no direct or indirect effects to water quality (i.e., sediment, water temperature) or hydric vegetation due to work crews being present in RCAs. Manual treatments within 15 feet of occupied streams pose the greatest risk for sediment related effects to water quality in special status aquatic species habitat. However, using manual methods allows for refinement of how treatments are applied so the potential for direct and indirect effects can be avoided or reduced to amounts that are not meaningfully measured, detected, or evaluated and are unlikely to occur. Some short-term localized soil disturbance would occur during the hand removal (i.e., pulling) of noxious weeds and invasive plants from the soil, but it would not be widespread and would not have a major effect on water quality in occupied RCAs. Manual treatments would reduce the potential for noxious weeds and invasive plants to invade or expand in occupied RCAs and displace the native hydric vegetation that is essential to maintain suitable habitat conditions for special status aquatic species. Manual treatments would reduce the occurrence of noxious weeds and invasive plants in and adjacent to occupied RCAs which would benefit special status aquatic species and their habitats in the long-term.

Effects of Mechanical Treatments

Mechanical treatments involve the use of wheeled or crawler-type tractors with attachments (e.g., disk plow, drills, harrow/aerator implement, chains, and/or mowing or mastication tools) to cut, uproot, mulch, or chop noxious weeds and invasive plants. These treatments would be focused in upland vegetation types where large areas are identified for treatment. Mechanical treatment methods would not be used in areas with hydric vegetation (e.g., carex, sedge, willow, or dogwood). Mechanical treatments in upland areas that are outside of (not adjacent to) occupied RCAs would have no potential for direct or indirect effects to special status aquatic species or their habitats. Due to rough and steep terrain, mechanical treatments would not be used in RCAs containing bull trout habitat. Therefore, bull trout and their habitat would not be affected by mechanical treatments.

A limited use of mechanical treatment methods may be used in occupied RCAs in areas with upland vegetation (slopes less than 20 percent) to restore site-appropriate upland vegetation. Conservation measures for occupied RCAs limit seeding methods to those that minimize soil disturbance and include broadcast seeding with a light weight smooth or tined harrow, smooth chain, or no-till drill.The potential effects from these treatments would be an increased risk for short-term, indirect effects to water quality from sediment. Direct effects due to sediment would likely be below amounts that are meaningfully measured, detected, or evaluated and are unlikely to occur because treatments would not occur in areas with hydric vegetation. This would provide a vegetative buffer between the treatment area and the occupied habitat. Direct effects to individual special status aquatic species or their habitat due to sediment would be below levels that are measurable and unlikely to occur because treatments would not occur in areas with hydric vegetation in occupied RCAs. Because these treatments would reduce or eliminate noxious weeds and invasive plants within RCAs, the need for using herbicides in RCAs would likely be less within the mechanically treated areas. Mechanical treatments would reduce the occurrence of noxious weeds and invasive plants in and adjacent to occupied RCAs which would benefit special status aquatic species and their habitat in the long-term.

Effects of Prescribed Fire Treatments

Prescribed fire would be used in upland areas as an initial seedbed treatment to reduce the occurrence of non-native invasive plants such as cheatgrass across a broad area. These treatments would occur in upland plant communities or non-perennial drainages. Prescribed burning would also be proposed along fence lines, in drainages or ravines, or along wildlife corridors to treat accumulations of noxious weeds or invasive plant materials. Prescribed fire would not be used as a treatment method in riparian areas with perennial streams. A project-level prescribed burn plan would be developed to describe burning parameters, site-specific treatment objectives, and design features and conservation measures to avoid direct and indirect negative impacts to special status aquatic species or their habitat. Prescribed fire treatments would not occur in occupied RCAs, so direct negative impacts to special status aquatic species would not occur.

The project-level prescribed burn plan, which includes project specific design features and containment measures, would prevent indirect negative impacts to RCAs containing special status aquatic species from upland prescribed fire treatments. The potential direct and indirect impacts from re-vegetation treatments within prescribed fire treatment areas are described below in the Effects from Re-vegetation Treatments section. In the long-term, prescribed fire treatments followed by seedings and plantings to restore more desirable upland vegetation would likely benefit special status aquatic species as the threat to occupied RCAs from noxious weeds and invasive plants is reduced. However, these benefits may or may not be measurable.

Effects of Biological Control Treatments

Approved biological control agents would be used to reduce the occurrence of noxious weeds and invasive plants in uplands and in occupied. Domestic livestock (i.e., goats or sheep) would not be used as a biological control in RCAs containing special status aquatic species.

The use of biological controls is strictly controlled and permitted by the USDA – APHIS following rigorous testing to ensure controls are host-specific (USDI BLM, 2007c). Based on this testing, biological controls would be effective in reducing noxious weeds and invasive plants in and adjacent to RCAs containing special status aquatic species and habitats without having direct or indirect effects to native hydric vegetation or aquatic species. Use of biological controls would result in a gradual loss of noxious weeds and invasive plants, and therefore is not likely to have a measureable decrease in vegetative cover within occupied RCAs. Soil disturbance from workers releasing biological controls is not expected. The release of biological controls would not have measurable short-term direct or indirect effect to water quality or hydric vegetation in occupied RCAs and therefore any potential affects to special status aquatic species or habitats would be below levels that are measurable or detectable and would be unlikely to occur. In the long-term, beneficial effects to special status aquatic species and their habitat are expected as noxious weeds and invasive plants are reduced in and adjacent to occupied RCAs over time.

Domestic goats or sheep may be used as a biological control in areas where herbicide use is not desirable due to high human use or sensitive resources, or where manual treatment is impractical due to difficult access. This could include the use of domestic goats or sheep in recreation sites (e.g., campsites, trailheads, and along trails), near public/private land boundaries, and in areas with steep terrain. Design features, such as the use of fences and placement of water, would be used to contain livestock within the identified treatment area. Where this treatment method is used in upland areas (outside of the RCA buffers) no direct or indirect impacts to special status aquatic species or their habitats are expected. Domestic goats or sheep would not be used as a treatment method in riparian areas and therefore would not result in direct or indirect effects to special status aquatic species or habitat.

Effects of Herbicide Treatments

The Proposed Action allows for using the 21 herbicide active ingredients and surfactants approved for use on public lands by the RODs for the 2007 and 2016 PEISs (USDI BLM, 2007b; USDI BLM, 2016). A list of the chemicals approved for use on BLM land is provided in Appendix C and the application criteria are in Appendix D. Herbicide treatments would include both aerial and ground-based methods. A helicopter or fixed wing aircraft would be used for larger-scale treatments and would include use restrictions for some herbicides (i.e., no aerial application of *bromacil, chlorsulfuron, diquat, diuron, metsulfuron methyl*). All herbicide treatments would include conservation measures to reduce the potential for direct and indirect effects to special status aquatic species and their habitats (Chapter 2).

Herbicide treatments in watersheds occupied by special status aquatic species would be implemented using the design features and conservation measures that were developed with the USFWS during the ESA Section 7 consultation on the proposed action in this EA (USFWS, 2016b). These measures would avoid or reduce the potential for direct and indirect negative impacts to special status aquatic species to amounts that are not meaningfully measured, detected, or evaluated. However, the potential exists for localized, short-term effects to special status aquatic species and habitats due to unforeseen circumstances (i.e., herbicide drift or accidental spills of chemicals/adjuvants). With the conservation measures for RCAs and special status aquatic species, long-term negative impacts to the listed species and their habitats are not expected for the herbicide treatments described in the Proposed Action.

Ground-based herbicide treatments outside of and not adjacent to occupied RCAs would not have direct impacts to special status aquatic species or their habitat. The RCA buffers combined with the design features and conservation measures would avoid any accidental chemical exposure due to herbicide drift, surface run-off, or accidental spills from entering streams containing special status aquatic species.

Ground-based herbicide treatments in occupied RCAs pose an increased risk for herbicide drift to enter streams, but the use of design features and conservation measures that limit the herbicide treatment method, weather conditions, chemical use, and identify distances from live water would avoid or reduce the potential for herbicides to enter occupied streams. Although the potential for short-term negative direct or indirect impacts cannot be completely discounted, the impacts would be below levels that are measurable and would be unlikely to occur. In the long-term, beneficial effects to special status aquatic species and their habitat are expected as noxious weeds and invasive plants are reduced in and adjacent to occupied RCAs over time.

The Proposed Action allows for applying terrestrial herbicide formulations in RCAs containing special status aquatic species or their habitat. These upland herbicides can be used for spot treatments (manual methods) in upland vegetation types within RCAs but cannot be used within 15 feet of areas with hydric vegetation (Figure 4). Treatments would be used on a limited basis (on-going, small scale treatment) to control or eradicate an existing or new infestation in upland vegetation types in RCAs. With the design features and conservation measures for RCAs, the potential indirect effects to hydric vegetation from these on-going spot treatments would primarily be limited to the margins along the outer edge of the RCA in the transition zone between upland and hydric vegetation. Potential effects to special status aquatic species and habitats would be due to herbicide drift would be in amounts that are not meaningfully measured, detected, or evaluate and unlikely to occur. No direct or indirect effects to special status aquatic species or habitats would occur from applying these herbicides in upland vegetation types in RCAs containing special status aquatic species.

Aerial herbicide treatments would be implemented using the design features and conservation measures that were developed with the USFWS during the ESA Section 7 consultation on the proposed action for this EA (USFWS, 2016b). These conservation measures include: no aerial herbicide treatments within 300 feet of the canyon rim for the Bruneau River or Jarbidge River and its tributaries; within 0.5 mile of the Bruneau River in the Bruneau hot springsnail Recovery Area; or within 0.5 mile of the Snake River. With these conservation measures, combined with other general RCA conservation measures (i.e., wind speed, precipitation) and Standard Operating Procedures (Appendix E), it is expected the applied herbicides would remain within the treatments area and not drift into adjacent areas where occupied RCAs could be affected. However, the potential for localized, short-term indirect effects to water quality or hydric vegetation within the occupied RCAs due to herbicide drift cannot be completely discounted. Any potential indirect effects to hydric vegetation in RCAs containing special status aquatic species or habitat are expected to be amounts that are not meaningfully measured, detected, or evaluated and would be unlikely to occur. In the long-term, special status aquatic species would benefit from aerial treatments because the threat for weeds to invade occupied RCAs would be reduced over a broad area.

Design features for helicopter landings, fueling, or fuel storage would also be consistent with ESA consultation requirements (USFWS, 2016b). This would minimize or eliminate the potential for direct and indirect negative impacts to water quality and hydric vegetation in RCAs containing special status aquatic species and their habitat due to helicopter landings.

Aquatic herbicides such as *diquat* and *fluridone* may be used to treat infestations of aquatic invasive plants on BLM lands within the TFD. Treatments would focus on closed water systems (e.g., stock ponds, small impounded waters) or reservoirs (e.g. Salmon Falls, Magic, Wilson Lake, or Lower Goose Creek Reservoirs) that are not occupied by special status aquatic species. Because these treatments would not occur in riparian systems connected to RCAs containing special status aquatic species, no direct or indirect effects to the species or habitats are expected.

Effects of Re-vegetation Treatments

Actions to restore desirable plant species within noxious weeds and invasive plants treatment areas would include seeding and planting of shrubs using ground and aerial methods. Aerial seedings would be limited to seed mixtures with no added chemicals or fertilizers. Aerial seedings to restore herbaceous vegetation or shrubs would not have any direct or indirect impacts to streams containing special status aquatic species or their habitat. Design features for helicopter landings, fueling, or fuel storage would be consistent with ESA consultation requirements (USFWS, 2016b) and would further minimize the potential for direct and indirect negative impacts to streams containing special status aquatic species or their habitat.

Actions to prepare for ground-based seedings would include using mechanical and other methods for seed-bed preparation followed by the use of a tractor and broadcast seeder. The seed would be lightly covered by a rubber-tired packer or drag chains. These methods create ground disturbance which may have direct or indirect sediment-related impacts to streams containing special status aquatic species. Where these actions occur outside of occupied RCAs, direct or indirect impacts to special status aquatic species are not expected due to the application of design features and conservation measures (Chapter 2), Prevention Measures (Appendix B), and Standard Operating Procedures (Appendix E). Because the use of mechanical methods would not be applied in RCAs, direct impacts to special status species and habitats would not occur.

In upland areas, manual and mechanical planting of bare root or containerized shrub or tree seedlings would be done to re-establish vegetation, stabilize soils, and restore wildlife habitat. The ground disturbance from using manual treatment methods would be very localized, short-term, and limited only to the immediate planting site. No direct or indirect impacts to special status aquatic species or habitat would occur from manual treatments to restore upland vegetation (outside of RCAs). A mechanical tree planter would be used to restore upland vegetation on large areas in a short time period. This method would create a linear scalp in which a narrow furrow is cut and the shrub planted, and then pressed into the ground. With the application of the design features and conservation measures, no direct or indirect impacts to special status aquatic species are expected from these upland treatments.

Manual plantings to restore native hydric vegetation in occupied RCAs would not have measurable negative direct or indirect effects to special status aquatic species or habitats because manual (hand) methods allow for any undesirable impacts to occupied streams to be avoided. Where these treatments occur in the RCA, long-term beneficial effects to special status aquatic species would occur as riparian shrub plantings restore the deep rooted vegetation needed to maintain stable streambanks, narrow stream channels, and provide streamside shading.

No Action Alternative Impacts – Special Status Fish and Aquatic Invertebrates

The BLM would continue to implement the existing decisions for noxious weed and invasive plant treatments under the existing weed treatment documents for each field office. Proposed hazardous fuel reduction and invasive plant community treatments would continue to be implemented and analyzed in separate site-specific EAs and ESA consultations where required. Herbicides approved by the RODs for the 2007 PEIS and 2016 PEISs but not included in the existing EAs could be utilized if analyzed in site-specific project level EAs. On-going activities and spot treatments of noxious weeds would continue under existing noxious weed and project level EAs.

The direct and indirect impacts to special status aquatic species for the No Action Alternative would be the same as described for the Proposed Action, except the increased time for project planning and analysis at the project level may result in fewer acres of on-the-ground treatment than could be accomplished under a comprehensive, program level design and analysis such as is provided in the Proposed Action. The potential for fewer acres of treatments would result in fewer negative impacts from treatments but more risk for impacts due to increases in noxious weeds and invasive plants over time. If fewer acres are treated, the risk for new infestations is increased in both upland and riparian areas. As undesirable vegetation increases, the risk for wildland fire also increases, posing a further risk to upland and riparian vegetation. Over the long-term, the No Action Alternative would result in more risks to special status aquatic species due to noxious weeds, invasive plants, and wildland fire than would be expected for the Proposed Action.

Cumulative Effects – Special Status Fish and Aquatic Invertebrates

This cumulative effects assessment considers the effects to special status aquatic species from past, present, and reasonably foreseeable actions on federal, state, and private lands in addition to the impacts from the BLM management actions in the Proposed Action and No Action Alternatives. Special status aquatic species are directly influenced by riparian condition and the quality and quantity of water in the streams they occupy. Actions that reduce riparian condition and water quality also reduce habitat conditions for special status aquatic species. Therefore, the human uses, activities and management actions identified in the cumulative effects sections for

Water Quality and for General Vegetation (Riparian and Wetland Areas), would also have cumulative effects to special status aquatic species.

Proposed Action Cumulative Effects

The Proposed Action includes design features (Chapter 2), Prevention Measures (Appendix B), Herbicide Application Criteria (Appendix C) and Standard Operating Procedures (Appendix E) to reduce impacts to special status aquatic species and their habitat. These same measures would not be applied on other federal, state, or private lands. Cumulative effects to special status aquatic species from some of the proposed BLM management actions (e.g., ground disturbing activities and chemical treatments) would be short-term and below levels that are measurable or detectable in the long-term. Design features for other actions (e.g., manual methods, biological agents) would not result in any cumulative effects to special status aquatic species or habitats. Noxious weeds and invasive plants treatments would reduce the spread of non-native vegetation from BLM managed lands to federal, state, and private lands and vice versa. The Proposed Action would have more potential for cumulative effects to special status aquatic species due to noxious weed and invasive plant treatments, but fewer cumulative effects due to noxious weeds and invasive plants and wildland fire than for the No Action Alternative.

No Action Cumulative Effects

The No Action Alternative would have short-term cumulative effects to special status aquatic species and habitats similar to those described for the Proposed Action. However, there may be slightly fewer effects from management actions if the increased time for project planning results in fewer vegetation treatments being implemented. The No Action Alternative would have fewer cumulative effects to special status aquatic species and habitats from noxious weeds and invasive plant treatments, but more effects from increases in noxious weeds and invasive plants and wildland fire than for the Proposed Action.

Fish and Aquatic Invertebrates

Affected Environment

There is a variety of native and non-native fish and aquatic species that can be found in the streams, rivers, and reservoirs within the TFD. Generally, these aquatic species can be categorized as special status fish or aquatic species or non-special status fish and aquatic species. The special status aquatic species (i.e., federally listed under the ESA of 1973 and BLM sensitive aquatic species) are discussed under *Special Status Fish and Aquatic Invertebrates*. The non-special status fish and aquatic invertebrates are discussed in this section. These species are collectively referred to as non-special status aquatic species.

Native non-special status fish within the TFD include three species of sculpin (mottled sculpin (*C. bairdii*), Paiute sculpin (*C. beldingii*), shorthead sculpin (*C. confusus*)), four species of sucker (large-scale sucker (*Catostomus macrocheilus*)**,** mountain sucker (*C. platyrhynchus*), bluehead sucker (*C. discobolus*), and bridgelip sucker (*C. columbianus*)), and numerous minnows. The minnow family represents the largest component of the native non-special status fish resource in the TFD. These species include chiselmouth (*Acrocheilus alutaceus),* redside shiner (*Richardsonius balteatus*), speckled dace (*Rhinichthys osculus*), longnose dace (*R. cataractae*), leopard dace (*R.falcatus*), peamouth chub (*Mylocheilus spp.*), northern pikeminnow (*Ptychocheilus oregonensis*), Utah chub (*Gila atraria*), and the Northern leatherside chub (*Lepidomeda copei*). Salmonids, such as rainbow trout (*Oncorhynchus mykiss*) and mountain whitefish (*Prosopium williamsoni*) are also present within the TFD. In general, the habitat requirements for native non-special status fish 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 chemical and nutrient contamination.

Non-native fish within the TFD 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*), and Kokanee (*Oncorhynchus nerka*). These fish are present in rivers, streams, and various reservoirs throughout the TFD due to hatchery supplementation to provide a recreational sport fishery.

The rivers, streams, and reservoirs within the TFD are also occupied by a wide variety of native aquatic invertebrate species such as freshwater snails, clams, and aquatic insects (e.g., stoneflies, mayflies, and caddisflies). These species, which also require cool water with low levels of fine sediment and minimal chemical and nutrient contamination, provide forage for numerous fish and wildlife species.

Environmental Impacts

Proposed Action Impacts – Fish and Aquatic Invertebrates

For a majority of the streams and rivers within the TFD, the non-special status aquatic species occupy the same rivers and streams as the special status aquatic species. The design features, conservation measures, and other measures developed to reduce impacts to special status aquatic species would also reduce impacts to non-special status aquatic species to the extent possible. Therefore, the analysis assumes the impacts to non-special status aquatic species would be the same as described for the special status aquatic species. No additional impacts beyond those identified for special status aquatic species were identified for the non-special status aquatic species.

No Action Alternative Impacts – Fish and Aquatic Invertebrates

In the No Action Alternative, the BLM would continue to implement the existing decisions for noxious weeds and invasive plants treatment in each field office. Proposed hazardous fuel reduction and invasive plant treatments would continue to be analyzed in separate site-specific EAs. Herbicides approved by the ROD of the 2007 and 2016 PEISs but not included in the existing EAs could be utilized if analyzed in site-specific project level EAs. On-going activities and spot treatments of noxious weeds would continue under existing noxious weed and project level EAs.

The No Action Alternative would have the same general impacts to non-special status aquatic species as described for special status aquatic species. No additional impacts beyond those identified for special status aquatic species are expected.

Cumulative Effects – Fish and Aquatic Invertebrates

The past, present, and reasonably foreseeable future actions described under the cumulative effects section for Water Quality would also occur under the No Action Alternative. The actions that impact water quality also impact the aquatic species that depend upon cool, clean water.

The cumulative impacts analysis for non-special status aquatic species assumes the human activities and actions that affect special status aquatic species also affect non-special status aquatic species. No additional cumulative impacts beyond those identified for the special status aquatic species are expected.

Grazing Management

Affected Environment

Livestock

Livestock grazing in the TFD is composed of cattle, sheep and to a lesser extent, horses. There are 538 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 527,447 AUMs. Table 9 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 9 – Twin Falls District Permitted Active Use

Field Office	Number of Allotments	Permitted AUMs
Jarbidge	95	184,183
Burley	228	141,091
Shoshone	215	202,173
Total	**538**	**527,447**

Livestock trailing occurs throughout the TFD and is authorized through the issuance of a crossing permit. In 2012, the Jarbidge, Shoshone, and Burley field offices completed environmental assessments disclosing potential effects of livestock trailing events. Each office subsequently issued decisions identifying routes and conditions for authorizing livestock trailing in the TFD.

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.

Environmental Impacts

Proposed Action Impacts – Grazing Management

Livestock

Noxious weed and invasive plant treatments would create long-term forage stability as well as improve forage quality. Conversion from cheatgrass or medusahead to desired perennial vegetation would decrease the risk of large wildfires, further stabilizing the forage base and increasing forage productivity and sustainability. Short-term increases in AUMS would not occur from implementing invasive plant treatments. Such changes are typically long-term and are outside the scope of this plan.

The Proposed Action alternative will increase treatment options and flexibility to best achieve treatment goals while minimizing risks to animal health. Effects of herbicide use on livestock depend on how sensitive they are to the herbicides being used, as well as the type of exposure. Exposure can occur from direct contact with the herbicide or indirectly through contact or ingestion of treated vegetation. Livestock would typically be removed from an area during large scale vegetation treatment, reducing potential risks. Generally, spot treatments of herbicide could be applied with livestock present. However, if needed proposed spot treatments could be done when livestock are not present, eliminating exposure to herbicides.

Ten of the 17 herbicides proposed for use pose some level of risk to livestock. They are *2 4-D, dicamba, diquat, diuron, glyphosate, hexazinone, Overdrive®, tebuthiuron, imazapic,* and *triclopyr*. Livestock would typically not be present during large scale herbicide treatments. Therefore, any exposure to these herbicides would likely occur from livestock eating vegetation that has been sprayed. In general, risks associated with consuming treated forage increase when these herbicides are used at the maximum application rates.

Design features limiting herbicides use to typical application rates reduce potential risks to livestock. Localized use of chemicals such as spot spraying limits the chance livestock will be exposed. Some of these chemicals will not be used in large scale treatments to avoid widespread contamination of forage. A detailed discussion regarding specific herbicides and their effects on livestock is found in the 2007 PEIS, pages 4-126 through 4-133. Following herbicide labels and using design features should minimize potential effects to livestock.

Temporary grazing closures or adjustments would decrease access to livestock forage. Depending on the length of the closure or adjustment, some economic loss to livestock permittees is expected. They would need to find other feed sources such as purchasing hay or leasing private pasture for their livestock. The amount of time a closure is in effect generally depends on the time needed to meet treatment objectives. This can be influenced by treatment type, habitat recovery considerations for special status species, and weather. Pre-treatment AUMs would be available once treatment and livestock closure objectives are met.

Temporary protection fences would assist BLM in managing public lands by keeping livestock from grazing treated areas. Grazing would continue in untreated portions of pastures. Considerations given prior to authorizing a temporary fence would include: 1) funding availability, 2) size of the pasture, 3) percent of pasture treated, 4) cost of the fence relative to the forage that would be made available, 5) special status plant and wildlife habitats, and 6) the location of water.

Treatments that fail, such as seedings, would either be redone or left alone. If retreated, temporary closures would continue, extending the time permittees must locate or purchase other feed for their livestock. If the 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

Effects from herbicide treatments on wild horses would depend on the extent and method of treatment; chemicals used; physical features of the terrain; weather; and time of year treatments are done. For example, during the foaling season newborn horses would likely be more susceptible to herbicides that pose a risk to adult animals based on their small stature. Herbicides that could potentially pose a risk to wild horses are *diuron, glyphosate, hexazinone, tebuthiuron, triclopyr*, *2,4-D*, *bromacil*, *dicamba*, *Overdrive®*, and *picloram*. Per the design features, *diuron* and *bromacil* would not be applied to grazing lands in the HMA.

Effects from eating vegetation sprayed with herbicides are similar to those described for livestock. Design features and label instructions will further reduce potential impacts from herbicide use on wild horses. Further, horses would most likely be excluded in areas where large blocks of land are treated. Spot spraying would be localized; thereby, minimizing any potential contact with horses.

Temporary disruptions to horses would occur during treatment efforts. Horses may be excluded from treated areas to lessen impacts to them as well as to allow for treatment success. They would be excluded through temporary fencing or moved to another field(s) in the HMA. Treatments would be designed so not to remove horses from the area. Horses may experience some stress when moved from one area of the HMA to another area. However, stress quickly diminishes as the horses become accustomed to their new surroundings.

The success of controlling target plants and promoting desired perennial vegetation would result in healthy rangelands. Healthy rangelands will better ensure forage stability for the Saylor Creek wild horse herd. Protective fences constructed in wild horse herd management areas would be visibly marked to reduce the chance for collision and entanglement.

No Action Alternative Impacts – Grazing Management

Livestock

Effects on livestock under this alternative would be similar to those identified for the Proposed Action. However, fewer herbicides would be available when treating noxious weeds and invasive plants. This could reduce options for on-going and large-scale noxious weed and invasive plant treatments and livestock forage quality and annual availability.

Wild Horses

Fewer herbicides would be used under the No Action Alternative. As such, treatments may not pose the same level of risk as the Proposed Action. However, limited treatment options may result in less success in controlling noxious weeds and invasive plants in the HMA. Generally speaking, effects to wild horses will be similar to those describe in the Proposed Action.

Cumulative Effects – Grazing Management

Actions that could cumulatively affect livestock grazing management include anthropogenic disturbances, agricultural practices on lands adjacent to BLM, and wildland fires and related suppression and ESR activities. These practices have impacted vegetation through the introduction of noxious weeds and invasive plants species. Uses are likely to continue in the future on or near BLM lands in the TFD, including agriculture, development, travel and transportation management, and recreation.

Proposed Action Cumulative Effects

Livestock

Anthropogenic disturbances and wildfire-related activities may temporarily displace livestock grazing or reduce available livestock forage. Livestock closures or adjustment could impose an additional financial and operational cost on permittees who are affected by implementation of these projects. Cumulatively, the Proposed Action would reduce some of the vegetation fragmentation or degradation that could occur due to other anthropogenic uses and wildfire, resulting in improved forage availability and quality.

Wild Horses

Cumulative impacts of the Proposed Action would be similar to impacts described for livestock above. Anthropogenic uses and wildfire-related activities result in displacement of individuals or the herd, especially if they occur within preferred use areas. Cumulatively, the Proposed Action would reduce vegetation fragmentation or degradation that results in decreased forage availability or quality. This would create a more sustainable environment for the wild horse herd.

No Action Alternative Cumulative Effects

Livestock/Wild Horses

Similar past, present, and foreseeable future actions and their effects would occur as those described under the Proposed Action. However, fewer treatment options would be available under the No Action Alternative. Fewer options could result in more weed infestations on public lands if not successful. An increased presence of weeds could also affect the amount of forage available for both livestock and wild horses.

Cultural and Historical Resources

Affected Environment

Cultural resources are a fragile, non-renewable resource, subject to impacts and degradation from many sources, both natural and human caused. The National Historic Preservation Act outlines the methods by which federal agencies are to determine cultural resource significance and preservation requirements. The TFD contains a wide variety of cultural resources. Native American Tribes used this region continuously for at least the last 12,000 years. Euro-American trappers and explorers first entered the region in the early 1800s, followed by thousands of immigrants on the Oregon and California Trails. Between 1845 and 1865, emigrants passed through Idaho on the way to Oregon and California.

The discovery of gold and other valuable minerals brought many people to Idaho, including Chinese immigrants in the 1880s. The resulting conflict between Native Americans and the newcomers precipitated the removal of Native Americans to reservations at Fort Hall and Duck Valley. Several key events in the Bannock War over Camas Prairie took place within the District boundaries. Railroads, such as the Oregon Short Line, were built and towns were founded across the area. Overland stage coach lines and freight roads, such as the Kelton Road and the Toana Road, were established. After the mining boom faded in the early 1900s, agricultural projects were built, such as Magic Dam, Milner Dam and many associated irrigation canals, and livestock grazing became more prevalent. Numerous Basque immigrated to Idaho to work in the sheep industry and settled in Idaho. Traces of all these activities still remain on the landscape.

Environmental Impacts

Proposed Action Impacts – Cultural and Historical Resources

Under the Proposed Action, the greatest source of impacts to cultural resources would still be in areas with aggressive weed treatment activities that involve burning and mechanical seeding. Prescribed fire can temporarily remove surface vegetation, making site surfaces vulnerable to erosion and artifact collection by vandals (Ryan, Jones, Koerner, & Lee, 2012). Vehicles used in noxious weed control or restoration efforts, including tractors and seeding equipment, can break or move surface artifacts. To mitigate the effects of seeding, intensive Class III cultural resource surveys would be completed to identify any sites for avoidance by the drill seeders. In and of themselves, chemical and biological weed treatments have little effect on cultural resources. The addition of new chemicals to the treatment toolbox would pose no new effects to cultural resources.

No Action Alternative Impacts – Cultural and Historical Resources

The No Action Alternative would not authorize the use of any new noxious weed control methods, but would continue the use of existing methods and chemicals. The amount of weed control activity would remain about the same, depending upon funding availability. Impacts such as potential site surface erosion, excavation, and the potential for artifact collection/removal could still occur. The greatest source of impacts to cultural resources would be in areas with aggressive weed treatment activities that involve burning and/or mechanical seeding. Prescribed fire can temporarily remove surface vegetation, making site surfaces vulnerable to erosion and artifact collection by vandals (Ryan et al., 2012). Vehicles used in noxious weed control or restoration efforts, including tractors and seeding equipment, can break or move surface artifacts. To mitigate the effects of seeding, intensive Class III cultural resource surveys would be completed to identify any sites for avoidance by the drill seeders. In and of themselves, chemical and biological weed treatments have little effect on cultural resources.

Cumulative Effects – Cultural and Historical Resources

Other past, present, and reasonably foreseeable future actions within the planning area include dispersed recreation, OHV use, rights-of-way, livestock grazing, wildland fires, and vegetation treatments, including burn-and-seed projects and post-fire rehabilitation seedings. Restoring native plants should decrease exposure of surface artifacts and decrease surface erosion which will benefit cultural resources in the long term. Dispersed recreation and OHV use could increase soil erosion and compaction, which in turn reduces site stability. Wildfires and the subsequent restoration efforts have the potential to reduce site stability and damage site surfaces in the short term. Historic livestock grazing may have increased soil erosion in some portions of the District, as well. Current livestock grazing is less than historic levels and is not anticipated to continue the effects of historic grazing to the same extent. Vandalism of cultural resources is a continual threat to site integrity, although there seems to be a trend away from large scale looting events as the public becomes more aware of cultural resource preservation laws. There will be no substantial cumulative effects to cultural resources from the Proposed Action and No Action Alternative.

Native American Treaty Rights and Interests

Affected Environment

Native American Indians inhabited southern Idaho, including the present day BLM lands, for thousands of years prior to European contact. This ancient way of life was dismantled by settlement of America when large numbers of immigrants seeking land sought to displace the tribes. During the 1850s and 1860s treaties were negotiated with the tribes in the northwestern United States in order to acquire Indian lands for homesteading. The settlement of the northwestern United States by non-Indians led to the collapse of the Tribal Nations as they were previously known, including their economic, social, cultural, religious, and governmental systems.

The federal government has a special trust responsibility to American Indian Tribes that is defined by treaties, statues, and executive orders. According to the Department of the Interior Secretarial Order 321, the trust responsibility covers lands, natural resources, money, or other assets held by the federal government in trust or that are restricted against alienation for Indian Tribes and Indian individuals. Proper discharge of the trust responsibility requires BLM to protect treaty-based fishing, hunting gathering and similar rights of access and resource use on traditional Tribal lands.

Within the planning area, the Shoshone-Bannock Tribes of the Fort Hall Reservation have rights to hunt (and by extension, to fish and gather plant foods) on the unoccupied lands of the United States; these right are reserved in the Fort Bridger Treaty of 1868. The BLM is also responsible under statue, regulation and executive order to consult with Tribes, with or without treaties, whose interests might be affected by land use decisions. On-going consultation with the Shoshone-Paiute Tribes of the Duck Valley Reservation and the Shoshone-Bannock Tribes of the Fort Hall Reservation indicates that Tribal interests include a wide range of natural and cultural resources. Effective collaboration and coordination, including government-to-government consultation, throughout the planning process are the keys to achieving the management goals of the BLM, while preserving Tribal rights and interests in public land resources.

The BLM conducts government-to-government consultation with the Shoshone-Paiute and Shoshone-Bannock Tribes in accordance with the National Historic Preservation Act, the Native American Graves Protection and Repatriation Act, the Archaeological Resource Protection Act, the American Indian Religious Freedom Act, Executive Order 13007, BLM Manual 8120 and Manual Handbook H-8120-1.

Environmental Impacts

Proposed Action Impacts – Native American Treaty Rights and Interests

The integrated weed program proposed has some potential to affect tribal rights and interests on public lands. Some methods of weed control, specifically mechanical, manual and prescribed fire, could potentially disturb non-target species of traditionally used native plants. However, most treatment areas would be selected for treatment specifically due to the lack of native species and the overabundance of exotic species. Through consultation and coordination with Tribes, the TFD would develop stipulations for weed treatment methods to lessen any potential impacts to native species and cultural resources from the Proposed Action.

No Action Alternative Impacts – Native American Treaty Rights and Interests

The current integrated weed program proposed has some potential to affect tribal rights and interests on public lands. Some methods of weed control, specifically mechanical, manual and prescribed fire, could potentially disturb non-target species of traditionally used native plants. However, most treatment areas are selected for treatment specifically due to the lack of native species and the overabundance of exotic species. The impacts to tribal rights and interests would be mitigated to some extent by compliance with Section 106 of the Historic Preservation Act, which requires identifying and avoiding cultural resources on prescribed fires and seedings, and by regular consultation and coordination with Tribes

Cumulative Effects – Native American Treaty Rights and Interests

Other past, present, and reasonably foreseeable future actions within the planning area include dispersed recreation, OHV use, rights-of-way, livestock grazing, wildland fires, and vegetation treatments, including burn-and-seed projects and post-fire rehabilitation seedings. The invasion of exotic plant species and the cyclical wildfires in the TFD have eroded the viability of native plant populations in certain areas over time. The proposed integrated weed management program would slow the spread of invasive species and help reduce the occurrence of wild fires by reducing fine fuels. Over time, the cumulative effect of the Proposed Action should be a reduction of noxious weeds and invasive plants, and reestablishment of native plant species to the benefit of Native American rights and interests. The No Action Alternative would also reduce noxious weed and invasive plant spread, but at a slower rate.

Paleontological Resources

Affected Environment

The TFD contains a variety of paleontological resources, some possibly as old as 23 million years. The bulk of the material is found in association with the Glenns Ferry formation along the Snake River, but Miocene (23 – 5.3 million years old) ash deposits bearing fossil material have been discovered much further south in the Burley Field Office as well. Pliocene age fossil material (5.3-2.5 million years old) is present in the Burley and Jarbidge Field offices, and Pleistocene age fossil material (younger than 2.5 million years old) is found in Shoshone and Burley Field offices (Winterfeld & Rapp, 2009). In the Shoshone Field Office where volcanic geology predominates, Pleistocene fossils can be found in lava tubes where they were likely deposited by carnivore activity.

Paleontological resources are managed to maintain or enhance significant scientific and educational values. Paleontological resources are managed pursuant to BLM Manual 8270 and Manual Handbook H-8270-1.

Environmental Impacts

Proposed Action Impacts – Paleontological Resources

Under this alternative, the greatest source of impacts to paleontological resources would be in areas with aggressive weed treatment activities that involve burning and mechanical seeding. In and of themselves, chemical and biological weed treatments have little effect on paleontological resources. To mitigate the potential effects of seeding, paleontological resources would be identified during the intensive Class III cultural resource surveys. Any paleontological resources would be identified for avoidance by the drill seeders. The addition of new chemicals to the treatment toolbox would not pose any new effects to paleontological resources.

No Action Alternative Impacts – Paleontological Resources

The No Action Alternative would not authorize the use of any new noxious weed control methods, but would continue the use of existing methods and chemicals. The amount of weed control activity would remain about the same, depending upon funding availability. Impacts such as potential paleontological site surface erosion, excavation, and the potential for fossil collection/removal could still occur. The greatest source of impacts would be in areas with aggressive weed treatment activities that involve burning and/or mechanical seeding. Prescribed fire can temporarily remove surface vegetation, making fossil deposits vulnerable to erosion and collection by vandals. Vehicles used in noxious weed control or restoration efforts, including tractors and seeding equipment, could potentially break or move fossils. To mitigate the effects of seeding, paleontological locales would be identified during intensive Class III cultural resource surveys for avoidance by the drill seeders. In and of themselves, chemical and biological weed treatments have little effect on paleontological resources.

Cumulative Effects – Paleontological Resources

Other past, present, and reasonably foreseeable future actions within the proposed project area include dispersed recreation, OHV use, livestock grazing, wildland fires, and vegetation treatments, including burn-and-seed projects and post-fire rehabilitation seedings. Restoring native plants should decrease exposure of surface fossils and decrease surface erosion which will benefit paleontological resources. Dispersed recreation and OHV use could increase soil erosion and compaction, which in turn reduces site stability. Wildfires and the subsequent restoration efforts have the potential to reduce site stability and damage site surfaces. Historic livestock grazing may have increased soil erosion in some portions of the District, as well. Current livestock grazing is less than historic levels and is not anticipated to continue the effects of historic grazing to the same extent. There will be no substantial cumulative effects to paleontological resources from the Proposed Action and No Action Alternative.

Special Management Areas

Affected Environment

National Landscape Conservation System

Wilderness

The 2009 Owyhee Public Land Management Act designated portions of the Bruneau-Sheep Creek and Jarbidge WSAs as the Bruneau-Jarbidge Rivers Wilderness. However, not all of the acres in the two WSAs 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 TFD (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.

Pursuant to the Wilderness Act of 1964 and BLM policy, the area must be managed to maintain the degree of wilderness character that existed prior to its designation. Manipulation of vegetation through any one or a combination of treatments, including prescribed fire, chemical application, mechanical treatment, or introduced biological agents, may be permitted in the area only to preserve wilderness character and values. Any vegetation treatments conducted would be consistent with goals, objectives, and management actions detailed in the current Owyhee Canyonlands Wilderness and Wild & Scenic Rivers Management Plan (Owyhee Canyonlands Wilderness MP) (2014). Much of the wilderness consists of steep, high canyon walls and river bottom with limited accessibility. However, south of Sheepshead Draw, the wilderness boundary extends to encompass upland areas in the Inside, Diamond A, J-P, and Blackstone deserts. Past fires have resulted in encroachment of noxious weeds and invasive plants into these areas.

Current noxious weeds and invasive plants infestations in the Bruneau-Jarbidge Rivers Wilderness include, but are not limited to, perennial pepperweed, Scotch thistle, saltcedar, rush skeletonweed, Russian olive, and cheatgrass. The potential exists for further infestations of noxious weeds and invasive plants from surrounding areas. The Bruneau-Jarbidge Rivers Wilderness is configured along canyons that result in unusually long perimeters compared to the area within its boundaries. The long wilderness boundary increases the potential for the spread of noxious weeds and invasive plants from adjacent federal and non-federal lands.

Lands with Wilderness Characteristics

Lands with wilderness characteristics provide a range of uses and benefits in addition to their value as settings for solitude or primitive and unconfined recreation. BLM's policy and guidance for conducting wilderness characteristics inventories are set forth in Section 201 of FLPMA.

Inventory for lands with wilderness characteristics has been completed across roughly two-thirds of the TFD. These inventories have utilized GIS information, current travel maps, and resources specialists' knowledge.

Wilderness Study Areas

Bureau policy is to manage WSAs in a manner so as not to impair their suitability for preservation as wilderness. Table 10 lists the 18 WSAs found in the TFD. The Little Deer, Ravens Eye, Bear Den Butte, and Great Rift WSAs fall within Craters. The lava flow portions of these WSAs are managed by the 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 WSAs, 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 WSAs and islands of invasive plants have been created within perennial dominated communities.

Table 10 – 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

Field Office	Wilderness Study Areas	BLM Acres	NPS Acres	Primary Vegetation Cover Type
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 Acres		**230,282**	**396,696**	

Wild and Scenic Rivers

The 2009 Owyhee Public Lands 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. Noxious weed control actions are on-going along these rivers, primarily for control of saltcedar on the lower Bruneau River.

Federal land management agencies are responsible for evaluating stream segments to determine suitability for inclusion in the National Wild and Scenic Rivers System. Wild and scenic rivers are rivers or river sections designated by Congress or the Secretary of the Interior, under the authority of the Wild and Scenic Rivers Act of 1968 (Public Law 90-542, as amended; 16 United States Code 1271-2287), to protect outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values and to preserve the river or river section in its free-flowing condition. The National Wild and Scenic Rivers System designation protects stream segments in their free-flowing state and protects 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 11 lists river and stream segments currently eligible or suitable for National Wild and Scenic Rivers System designation in the TFD.

Table 11 – 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
Snake River, Hagerman Reach	Lower Salmon Falls Dam to Bliss 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 congressionally designated trails that follow an extended, long-distance historic trail or route of travel of national significance. Designation identifies and protects historic routes, historic remnants, and artifacts for public use and enjoyment. A National Historic Trail is managed in a manner that protects the nationally significant resources, qualities, values, and associated settings of the areas through which such trails may pass.

The main route of the National Historic Oregon Trail used from 1841-1848, traverses the Burley and Jarbidge field offices for a total of 60 miles. Numerous cutoffs, alternate routes, and connecting trails were associated with the trail. Portions of the Goodale's Cutoff and the North Alternate of the Oregon Trail are located in the Shoshone Field Office, but are not currently designated as official National Historic Trails.

Approximately 20 miles of the California National Historic Trail and 15 miles of the California Trail - Salt Lake Alternate traverse the Burley Field Office. The California Trail followed most of the same route as the Oregon Trail until immigrants turned off in Idaho, Wyoming, or Utah to follow other trails leading to California. Most travel along the California National Historic Trail in Idaho 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 from 53,400 acres to 737,700 acres to include many of the area's volcanic features, including 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 Craters. 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 (NPS & BLM, 2007).

Areas of Critical Environmental Concern

ACECs require special management attention. This designation is needed 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, and 3) preserve natural processes that dominate the landscape for research and education. Some ACEC are also referred to as Research Natural Areas (RNAs). There are 18 ACECs in the TFD (See Table 12).

Table 12 – Areas of Critical Environmental Concern/Research Natural Areas in the Twin Falls District

Field Office	ACEC/Research Natural Areas	Acres	Vegetation Cover Type	Resource Values
Jarbidge	Upper Bruneau Canyon	17,700	Low-elevation shrub, riparian	Natural Features (habitat for California bighorn sheep, other special status fish, wildlife, and plants), scenic, and cultural resource values
Jarbidge	Lower Bruneau Canyon	1,000	Low-elevation shrub	Natural Features (special status plants), Paleontological

Field Office	ACEC/Research Natural Areas	Acres	Vegetation Cover Type	Resource Values
Jarbidge/ Burley	Salmon Falls Creek Canyon	5,100	Low-elevation shrub, riparian	Natural (special status fish and wildlife, vegetation), Paleontological, Geologic, Scenic, and Cultural Features
Jarbidge	Sand Point	1,000	Low-elevation shrub, riparian	Paleontological, Geologic, and Cultural Features
Burley	Jim Sage Canyon	650	Mid-elevation shrub, Juniper	Natural Features (Vegetation)
Burley	Goose Creek Mesa	100	Mid-elevation shrub	Natural Features (Vegetation)
Burley	Substation Tract	440	Low-elevation shrub	Natural Features (Vegetation)
Burley	Oregon-California Trail	500	Low-elevation shrub	Historic and Cultural Features
Burley	Granite Pass	300	Mid-elevation shrub	Historic and Cultural Features
Burley	Playas	40	Low-elevation shrub	Natural Features (Davis Peppergrass)
Shoshone	Big Beaver/Little Beaver Elk Winter Range	6,800	Mountain shrub, Dry conifer, Aspen	Natural Features (Elk Habitat)
Shoshone	Elk Mountain Elk Winter Range	12,700	Mountain shrub, Dry conifer, Aspen	Natural Features (Elk Habitat)
Shoshone	Sun Peak	550	Mountain shrub, Aspen	Natural Features (Vegetation)
Shoshone	King Hill Creek RNA	2,870	Low-elevation shrub	Scenic and Natural Features (Redband Trout and Riparian)
Shoshone	McKinney Butte RNA	3,800	Low-elevation shrub	Geological, Scenic, and Natural Features (Wildlife)
Shoshone	Tee-Maze RNA	10,700	Low-elevation shrub	Geological, Scenic, and Natural Features (Wildlife)

Field Office	ACEC/Research Natural Areas	Acres	Vegetation Cover Type	Resource Values
Shoshone	Box Canyon/Blue Heart Springs	120	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		**64,720**		

Environmental Impacts

Proposed Action Impacts – Special Management Areas

Wilderness

Vegetation treatments are allowed under the 2014 Owyhee Canyonlands Wilderness MP if the actions preserve wilderness character and values. All noxious weed and invasive plant treatments must be implemented pursuant to BLM Manual 6340 – Management of Designated Wilderness Areas (USDI BLM, 2012a) and the Owyhee Canyonlands Wilderness MP and associated EA. The Owyhee Canyonlands Wilderness MP analyzed the effects of managing noxious weeds and invasive plants, and allows a step-down procedure for weed control, containment, or elimination (See Section 1.5.3.3 of the Owyhee Canyonlands Wilderness MP for prioritization and allowances). Although the Owyhee Canyonlands Wilderness MP delineates a hierarchy of treatment types, it is also acknowledged that effective treatment may require a combination of various methods. Treatment of noxious weeds and invasive plants is in conformance with the Owyhee Canyonlands Wilderness MP, as an objective described to achieve the goal of providing "long-term protection and preservation of wilderness character." The use of motorized equipment for vegetation treatments requires a Minimum Requirement Analysis (MRA).

Impacts were listed in the Owyhee Canyonlands Wilderness MP, and would include short-term, temporary impacts to wilderness characteristics, with long-term benefits through control, containment, or elimination of noxious weeds and invasive plants in the Wilderness. Effects of Manual Treatments

Manual treatments of noxious weeds and invasive plants are identified in the Owyhee Canyonlands Wilderness MP as the top priority for selection of treatments. Manual treatments would limit ground disturbance and impacts to vegetation other than the target species, and would have the lowest impact on wilderness characteristics.

Effects of Mechanical Treatments

BLM Manual 6340 (2012a) notes that although the most desirable method of re-vegetation is natural processes, it also recognizes that in some cases active restoration may be required to enhance wilderness character. Mechanical treatments would require an MRA to be completed prior to use. Preservation of wilderness character is of paramount importance in the Owyhee Canyonlands Wilderness MP, so final work would need to comply with visual reductions of impacts. Small scale, localized, incremental treatments would have less impact on wilderness characteristics than large-scale, aggressive treatments.

Effects of Prescribed Fire Treatments

Prescribed fire is allowed to reestablish the natural role of fire in the ecosystem (See Owyhee Canyonlands Wilderness MP Section 2.2.3.1 and 2.2.3.3). However, fire use is limited in WSRs and motorized/mechanized methods are allowed only under very specific situations. Prescribed fire would create short-term impact to Wilderness, but would provide long-term beneficial impacts by restoring natural fire regimes and would assist in achieving objectives of the Owyhee Canyonlands Wilderness MP for enhancing natural conditions in conjunction with other treatments.

Effects of Biological Treatments

Biological control, including targeted grazing, is allowed in the Wilderness, although this method is a lower implementation priority than manual treatments or herbicides applied via backpack or pack stock. The most common biological control in the TFD has been insects. Typically, impacts are minimal, and specific to a reduction in the target plant species, so little to no effects are anticipated on wilderness characteristics. If livestock, such as goats or sheep, were used to reduce weeds, this would also result in a general short-term reduction in vegetation cover across the area. However, the expected result in the long-term would be a reduction in the target plant species, allowing for an increase in the natural vegetation community, blending into the landscape, and conforming to wilderness characteristics.

Effects of Herbicide Treatments

As noted in the Owyhee Canyonlands Wilderness MP, aerial applications would have the least impact to wilderness character. Restoration following herbicide application may be necessary to reduce impacts to wilderness character by reestablishing natural vegetative communities in areas where natural recovery is impossible.

Effects of Re-Vegetation Treatments

Re-vegetation treatments would have short-term, temporary impacts to wilderness characteristics, including visual soil disturbance and short-term visual changes in plant communities until the treatment successfully establishes. The degree of disturbance depends on the tool used to complete the treatment. For instance, a seed drill would have more visual soil disturbance and create rows than broadcast and harrowing. However, treatment success is typically higher when utilizing a drill to plant seed and the visual impact can be minimized, while maintaining the success of the treatment. These methods include irregular patterns of treatments to reduce continuity, placement of drill rows to correspond with existing visual characteristics, and harrowing to reduce standing dead vegetation and reduce the visual effect of the treatments.

Wilderness Study Areas and Lands with Wilderness Characteristics

All noxious weed and invasive plant treatments must be accomplished pursuant to BLM policy and guidance as listed in BLM Manual 6330 – Management of Wilderness Study Areas (2012b). All treatment methods would be managed so as not to impair WSA suitability for preservation as a wilderness. Therefore, an exception to non-impairment actions that clearly benefit a WSA by protecting or enhancing wilderness characteristics are allowable even if they are impairing, though they must still be carried out in the manner that is least disturbing to the site. Design features to protect and preserve WSA values would be used during implementation, so minimal short-term impacts would be apparent until establishment of the treatment. Long-term impacts would include improvement of the health and diversity of the general vegetation, which would improve the overall protection and enhancement of the wilderness characteristics present.

Impacts to Lands with Wilderness Characteristics are anticipated to be identical to impacts to WSAs.

Effects of Manual Treatments

Manual treatments may be selected in a WSA for small acreage projects. Given the remote nature and low accessibility of most WSAs, manual treatments may provide the most effective means of achieving goals and objectives through vegetation treatments. Manual treatments would limit ground disturbance and impacts to vegetation other than the target species, and would have the least impact on wilderness characteristics. Manual treatment is most effective for treatment of isolated occurrences of noxious weeds and invasive plants, and also for restoration of site-specific disturbances.

Effects of Mechanical Treatments

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.

Effects of Prescribed Fire Treatments

Prescribed fire is allowed to reestablish the natural role of fire in the ecosystem (USDI BLM, 2012b). However, fire use is limited in WSAs and motorized/mechanized methods are allowed only under very specific situations. Prescribed fire is intended for use to restore natural vegetation and ecological functions in WSA, including natural wildfire (USDI BLM, 2012b). Prescribed fire use would create short-term impact to WSA values, but would provide long-term beneficial impacts by restoring natural fire regimes and would assist in enhancing natural conditions and wilderness characteristics in conjunction with other treatments.

Effects of Biological Treatments

Biological control, including targeted grazing, would have little to no effect on wilderness characteristics. The most common biological control utilized in the TFD has been insects. Typically, impacts are minimal, and specific to a reduction in the target plant species, so little to no effects are anticipated on wilderness characteristics. If livestock, such as goats or sheep, were used to reduce weeds, this would also result in a general short-term reduction in vegetation cover across the area. However, the expected result in the long-term would be a reduction in the target plant species, allowing for an increase in the natural vegetation community, blending into the landscape, and would not impair wilderness characteristics.

Effects of Herbicide Treatments

Chemical treatments applied to control noxious weeds and invasive plants could result in short-term loss of cover from perennial vegetation in the treatment area. However, in most cases 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, chain) during the first year or two after treatment. Scenic and visual resources would be temporarily impaired from the placement of any temporary protective fences. In time, treatments that replace noxious weeds and invasive plants with heathy native perennial plant communities would further enhance wilderness values and satisfy the non-impairment criteria.

Effects of Re-Vegetation Treatments

Re-vegetation treatments would be done in an irregular or staggered pattern thereby maintaining the appearance of naturalness. Design features to protect water quality, viewsheds, airshed, and native plant and animal habitats by preventing soil erosion, water quality degradation, spread of noxious weeds and invasive plants, and maintaining vegetation cover, native ecosystems, and pristine landscapes would preserve the values associated with wilderness study areas.

Re-vegetation methods have varying degree of impact to the wilderness resource. The primary effect would be visual based on the selected seed 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 of a drill would leave a visual imprint. The no-trill 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. The use of native plant materials is the most desirable method of re-vegetation to not impair wilderness characteristics.

Wild and Scenic Rivers

The Wild and Scenic Rivers Act of 1968 (16 U.S.C. 127-1287) is intended to protect select rivers in their free-flowing condition. The Bruneau River WSR and the Jarbidge River WSR were designated under the OPLMA, and management for these units is included under the Owyhee

Canyonlands Wilderness MP (See Wilderness section for impacts description). Designated WSRs have the same restrictions in place as for Wilderness.

Other WSRs in the TFD that have not been officially designated yet are being managed in the interim to not impair suitability for inclusion in the National Wild and Scenic River System, if designated as such by Congress (See Table 11). Design features to protect and preserve WSR values would be used during implementation through the development of an MRA, as described in the Owyhee Canyonlands Wilderness MP. SOP are also described in the 2007 EIS, and include timing of herbicides, use of the minimum tool (also described in the Owyhee Canyonlands Wilderness MP), and maintaining a ¼ mile buffer for WSRs, as related to herbicide application.

Effects of Manual Treatments

Manual treatments of noxious weeds and invasive plants are identified in the Owyhee Canyonlands Wilderness MP as the top priority for selection of treatments, which also applies to the Bruneau River and Jarbidge River WSRs. This prioritization is also applicable to other WSR segments in the TFD. Manual treatments would limit ground disturbance and impacts to vegetation other than the target species, and would have the lowest impact on WSR characteristics, and are consistent with Manual 6400 (2012c), which allows for eradication of invasive species. Manual treatments would have short-term impacts to small areas, although re-vegetation to mask those impacts would occur quickly, either through natural re-vegetation or seeding. Long-term impacts would be slight to none because of the small size of the impact and expected response to the treatment.

Effects of Mechanical Treatments

Implementing mechanical treatments in WSR corridors is limited by terrain and access. There would be little to no effect from mechanical treatments because they are not likely to occur in WSR corridors.

Effects of Prescribed Fire Treatments

Prescribed fire is intended for use to restore natural vegetation and ecological functions in WSRs, including natural wildfire (USDI BLM, 2012b). However, fire use is constrained in WSRs and motorized/mechanized methods are allowed only under very specific situations. Impacts of prescribed fire would create short-term impact to WSRs, including reduction in vegetation and potential sedimentation increases, but would provide long-term beneficial impacts by restoring natural fire regimes and would assist in enhancing natural conditions and characteristics in conjunction with other treatments.

Effects of Biological Treatments

Biological control, including targeted grazing, would have little to no effect on WSR values. The most common biological control used in the TFD has been insects. Typically, impacts are minimal, and specific to a reduction in the target plant species, so little to no effects are anticipated on wilderness values. If livestock, such as goats or sheep, were used to reduce weeds, this would also result in a general short-term reduction in target and non-target vegetation cover across the area. However, the expected result in the long-term would be a reduction in the target plant species, allowing for an increase in the natural vegetation community, blending into the landscape, and would not impair WSR values. Livestock would likely be of limited use in WSR corridors, due to accessibility, when compared to the use of insects as a biological control.

Effects of Herbicide Treatments

Herbicide use would be evaluated to not adversely affect water quality and outstandingly remarkable values in a WSR (USDI BLM, 2012b).

Effects of Re-Vegetation Treatments

Re-vegetation treatments would be done in an irregular or staggered pattern thereby maintaining the appearance of naturalness. Manual or aerial application of seed would be the most feasible method of re-vegetation in WSR corridors, due to accessibility and terrain, as well as limits to use of motorized vehicles in WSRs. Design features to protect water quality, viewsheds, airshed, and native plant and animal habitats by preventing soil erosion, water quality degradation, spread of noxious weeds and invasive plants, and maintaining vegetation cover, native ecosystems, and pristine landscapes would preserve the values associated with WSRs.

Re-vegetation methods have varying degree of impact to the resource. The primary effect would be visual based on the selected seed method. The use of native plant materials is the most desirable method of re-vegetation in order to not impair WSR scenic values.

National Historic Trails

Under the Proposed Action, the greatest source of impacts to National Historic Trails would be in areas with aggressive weed treatment activities that involve burning and mechanical seeding. Prescribed fire can temporarily remove surface vegetation, making trail ruts vulnerable to erosion and artifact collection by vandals (Ryan et al., 2012). Non-metal artifacts associated with the trail could be destroyed by fire. Vehicles used in noxious weed control or restoration efforts, including tractors and seeding equipment, can break or move surface artifacts, as well as obliterate trail ruts. These activities could also affect the visual setting of the National Historic Trail in the short term, until native vegetation can become reestablished.

To mitigate the effects of seeding, intensive Class III cultural resource surveys would be completed to identify any trail ruts and/or artifacts for avoidance by the drill seeders. Chemical and biological weed treatments have little effect on National Historic Trails as long as the vehicles used in this activity do not damage trail ruts by driving on them in wet conditions. The addition of new chemicals to the treatment toolbox would pose no new effects to National Historic Trails.

Craters of the Moon National Monument

Restoration areas were identified in the Craters MP, and treatment methods were identified to achieve those goals. The treatments identified below would aid in achieving the Desired Future Conditions identified in the Craters MP.

Effects of Manual Treatments

Mechanical treatments would be considered an appropriate method of weed control and vegetation treatment in the Monument as part of an integrated pest management program. Limited ground disturbance and targeted application of methods would help meet the objectives of the Craters MP.

Effects of Mechanical Treatments

The Craters MP has identified control of annual grasslands as a management action. Mechanical treatments would help to achieve this in an effective and timely fashion, with short-term impacts including visual impairment. However, long-term impacts would include meeting the Craters MP Desired Future Conditions (DFCs) of minimizing areas dominated by invasive annual species and providing a net gain in sagebrush steppe plant communities in the Monument.

Effects of Prescribed Fire Treatments

Prescribed fire would create short-term impact to Craters MP identified values, but would provide long-term beneficial impacts by restoring natural fire regimes and would assist in enhancing natural conditions and characteristics in conjunction with other treatments.

Prescribed fire was identified as a tool to invigorate plant communities, specifically in the Little Cottonwood watershed portion of Craters.

Effects of Biological Treatments

Biological treatments are considered part of an integrated pest management program. Non-chemical methods of weed control are allowed in the Monument, and are considered an appropriate application as part of integrated weed management principles.

Effects of Herbicide Treatments

Noxious weeds and invasive plants are identified as an issue in the Crtaers MP. Herbicide treatment can be an effective tool to treat infestations, and also can improve effectiveness when coupled with other treatment methods. The Craters MP identifies short-term impacts associated with herbicide treatments; however, long-term benefits are identified, including increased success of restoration activities.

Effects of Re-Vegetation Treatments

Re-vegetation treatments would be done in an irregular or staggered pattern thereby maintaining the appearance of naturalness. Design features to protect the Monument values would minimize short-term impacts.

Re-vegetation methods have varying degree of impact to the resource. The primary effect would be visual based on the selected seed method. The use of native plant materials is the most desirable method of re-vegetation in order to not impair the Monument values. The Craters MP identifies selection of native cultivars as preferable to non-native species; however, instances may prevail when non-native cultivars would meet the treatment objectives and achieve the DFCs of the Craters MP more effectively than natives.

Areas of Critical Environmental Concern

ACECs in the TFD have been designated for a variety of reasons, including natural or relic vegetation, cultural values, and unique features, such as caves and karsts. Actions taken under vegetation treatments would enhance the values of the ACEC. Short-term impairment to vegetation resources would be allowed in order to achieve long-term enhancement to the protected values and would benefit the ACEC. Design features to protect and preserve the values for which each ACEC was designated would be used during implementation.

Effects of Manual Treatments

Manual treatments may be selected in an ACEC for small acreage projects. Given the remote nature and low accessibility of some ACECs, manual treatments may provide the most effective means of achieving goals and objectives through vegetation treatments. Manual treatments would limit ground disturbance and impacts to vegetation other than the target species, and would have the least impact on the values for which an ACEC is identified. Manual treatment is most effective for treatment of isolated occurrences of noxious weeds and invasive plants, and also for restoration of site-specific disturbances.

Effects of Mechanical Treatments

Mechanical treatments are an acceptable method of vegetation treatment as long as ACEC values are not impaired. For instance, surface-disturbing activities in the Sand Point ACEC should be limited in order to reduce the potential of soil erosion in the ACEC. 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 as optimal as drilling because of reduced probability of seed germination. Terrain may limit accessibility of equipment.

Effects of Prescribed Fire Treatments

Prescribed fire is allowed to reestablish the natural role of fire in the ecosystem for many of the TFD ACECs, as long as the identified values are not negatively impacted. Prescribed fire is intended for use to restore natural vegetation and ecological functions in ACECs, including natural wildfire, such as in the Sun Peak ACEC. Prescribed fire use would create short-term impact to ACEC values, but would provide long-term beneficial impacts by restoring natural fire regimes and would assist in enhancing natural conditions in conjunction with other allowable treatments.

Prescribed fire is prohibited in Substation Tract ACEC, Vineyard Creek ACEC, and Box Canyon ACECs (Monument RMP, 1985).

Effects of Biological Treatments

Biological control, including targeted grazing, would have none to slight effects on ACEC values. The most common biological control in the TFD has been insects. Typically, impacts are minimal, and specific to a reduction in the target plant species. If livestock, such as goats, were used to reduce weeds, this would also result in a general short-term reduction in vegetation cover across the area. This treatment would be evaluated to ensure that ACEC values were not affected in the long-term. The expected result in the long-term would be a reduction in the target plant species, allowing for an increase in the natural vegetation community, blending into the landscape, and would not impair ACEC values in the long-term.

Effects of Herbicide Treatments

Chemical treatments applied to control noxious weeds and invasive plants could result in short-term loss of cover from perennial vegetation in the treatment 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 ACEC values. Ground herbicide applications and seeding methods would result in temporary ground disturbance from equipment noise and tracks (e.g. trucks, tractors, harrows, chain) during the first year or two after treatment. Scenic and visual resources would be temporarily impaired from the placement of any temporary protective fences. In time, treatments that replace noxious weeds and invasive plants with healthy native perennial plant communities would further enhance certain ACEC values, and reduce future threats to native plant communities.

Effects of Re-Vegetation Treatments

Re-vegetation treatments would be done in an irregular or staggered pattern thereby maintaining the appearance of naturalness. Design features would protect ACEC values, such as native plant and animal habitats by preventing soil erosion, water quality degradation, spread of noxious weeds and invasive plants, and maintaining vegetation cover and native ecosystems.

Re-vegetation methods have varying degree of impact to the ACEC values. The primary effect would be visual based on the selected seed method, as discussed under Effects of Mechanical Treatments.

No Action Alternative Impacts – Special Management Areas

The No Action Alternative would limit the range of tools available for vegetation treatments in the TFD Special Management Areas. Although certain tools are effective as a stand-alone method, effectiveness of treatments typically increases when one tool is bolstered with a secondary method. Multiple vegetation treatment techniques are not currently available across all Special Management Areas, which may limit the effectiveness of those tools that are available.

Wilderness

The No Action Alternative would limit the range of herbicides available for use in Wilderness. Control, containment, and eradication of noxious weeds and invasive plants would be limited to the herbicides listed under the current 2007 Boise District and Jarbidge Field Offices EA.

Wilderness Study Areas and Lands with Wilderness Characteristics

The No Action Alternative would continue the current plans in place for herbicide use. This limits the herbicides available for use to control noxious weed and invasive plant materials across the TFD, and chemicals available for use vary between field offices. Implementation effectiveness can be dependent on the availability of a broad toolset in order to adhere to WSA management by selecting the most effective tool with the least impact on the protected value. The No Action Alternative limits the toolbox to older methods that may not meet minimum impacts requirement or be as efficient and effective as newer, more diverse tools and may impact the health and resiliency of plant communities in WSAs over the long-term.

Wild and Scenic Rivers

The No Action Alternative would limit the range of herbicides available for use in WSRs. Control, containment, and eradication of noxious weeds and invasive plants would be limited to the listed under the current 2007 Boise District and Jarbidge Field Offices EA for the Bruneau River and Jarbidge River WSRs.

National Historic Trails

The No Action Alternative would not authorize the use of any new noxious weed control methods, but would continue the use of existing methods and chemicals. The amount of weed control activity would remain about the same, depending upon funding availability. Impacts such as potential site surface erosion, excavation, and the potential for artifact collection/removal could still occur. The greatest source of impacts to National Historic Trails would be in areas with aggressive weed treatment activities that involve burning and/or mechanical seeding. Prescribed fire can temporarily remove surface vegetation, making trail ruts vulnerable to erosion and artifact collection by vandals (Ryan et al., 2012). Vehicles used in noxious weed control or restoration efforts, including tractors and seeding equipment, can break or move surface artifacts. These activities could also affect the visual setting of the National Historic Trail in the short term, until native vegetation can become reestablished.

To mitigate the effects of seeding, intensive Class III cultural resource surveys would be completed to identify any sites for avoidance by the drill seeders. Chemical and biological weed treatments themselves have little effect on National Historic Trails.

Craters of the Moon National Monument

The No Action Alternative would continue the use of existing methods and chemicals in Craters of the Moon National Monument. BLM managers would not have the capacity to use the most technologically advanced herbicides and most effective manual, mechanical, or biological controls that may be best suited to a particular management situation. This could reduce the effectiveness of vegetation treatments and may not provide improved weed control while minimizing potential negative impacts to Craters of the Moon National Monument values.

Certain treatments are identified as management actions in the Craters MP, including prescribed fire and integrated pest management. However, specific implementation actions are described in the detail and with the array of tools as in the Proposed Action. This would possibly limit the ability of managers to implement an appropriate suite of treatments in the Monument.

Areas of Critical Environmental Concern

The No Action Alternative would continue the use of currently applied methods and chemicals in ACECs. BLM managers would not have the capacity to use the most technologically advanced herbicides or biological controls that may be best suited to a particular management situation and provide improved control of weeds while minimizing potential negative impacts to ACEC values.

Cumulative Effects – Special Management Areas

Proposed Action Cumulative Effects

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

Vegetation treatments that protect water quality, viewsheds, airsheds, plant and wildlife habitat, and recreational opportunities by reducing soil erosion, water quality degradation, spread of noxious weeds and invasive plant species, and maintaining vegetation cover, native ecosystems, and pristine landscapes would further preserve the character and features of most SMAs.

Other past, present, and reasonably foreseeable future actions within the planning area include dispersed recreation, OHV use, livestock grazing, wildland fires, vegetation treatments, and rights-of-ways for utility corridors. Restoring plant communities should decrease exposure of surface artifacts and decrease surface erosion which will benefit National Historic Trails in the long term.

Concentrated recreation and OHV use could increase soil erosion and compaction, which in turn reduces site stability. Historic livestock grazing may have increased soil erosion in some portions of the TFD, as well. Current livestock grazing is generally lower than historic levels and is not anticipated to continue the effects of historic grazing to the same extent. Vandalism and illegal collection of artifacts is a continual threat to site integrity as well.

Wildfires and the subsequent suppression efforts have the potential to reduce trail surface stability or even damage ruts in the short term, which can be mitigated to some degree by coordination with the Wildland Fire Management Program to identify these resources for avoidance before wildfires occur. Native seeding can improve the visual characteristics of NHTs in the long term.

The proposed Gateway West Transmission line right-of-way may have an adverse impact on the visual characteristics of “Parting of the Ways”, the point at which the California Trail diverges from the main Oregon Trail in the Burley FO. In the JFO, the Gateway West project may adversely affect the visual setting of the Oregon NHT in the vicinity of Big Pilgrim Gulch. Both on and off-site mitigation methods can be used to help reduce the cumulative effects of visual intrusion on NHTs.

No Action Cumulative Effects

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 Monument are designed to protect and maintain those 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 sight of these trails.

Vegetation conditions dominated by noxious weeds and invasive plant species or sparse vegetation can diminish the visual quality of the special management areas, increase the potential of soil erosion, and affect water quality; therefore further affecting the nature of special management areas.

The combined effects of all other past, present, and reasonably foreseeable future actions, in addition to the expected effects of not implementing vegetation treatments, would occur throughout the TFD. Overall, the effects of not implementing vegetation treatments could contribute to a cumulative decline in the quality and amount of features associated with SMAs.

Recreation

Affected Environment

Public lands provide a setting for dispersed as well as developed recreational opportunities, which in the TFD 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 TFD include the Craters of the Moon National Monument and Preserve, City of Rocks National Reserve, Bald Mountain Recreation Area, Bruneau-Jarbidge Rivers Wilderness, Jarbidge and Bruneau Wild and Scenic Rivers, Oregon and California National Historic Trails, Idaho Centennial Trail, and the Snake River. Most recreational activities in the TFD are dispersed in nature; however, there are some areas that, due to trail or facilities development, received more concentrated use. Much of the dispersed recreation use occurs during the fall hunting season.

Off-highway vehicle use occurs throughout the TFD, with some areas receiving substantially more use than others. Motorized travel is managed according to the following designations, depending on location.

- ***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.

Per the ARMPA, OHV travel is limited in sage-grouse habitats to existing roads, primitive roads, and trails except areas designated as open, limited to designated roads, primitive roads, and trails, or closed. The ARMPA allows for administrative cross-country OHV travel.

Environmental Impacts

Proposed Action Impacts – Recreation

For all treatment methods including manual, mechanical, prescribed fire, biological, herbicide, and re-vegetation, and for on-going and large-scale projects, the impacts to recreation resources are the same. Per SOPs, treatment areas could temporarily be excluded from human entry for health and safety reasons. Recreationists could be displaced from exclusion areas during active treatment times causing short-term negative impacts to recreational use. Long-term beneficial impacts to the recreation resources would occur as treated areas and landscapes are returned to more natural vegetation diversity and structure. This could enhance recreational experiences through improvement of scenic values and enhanced fish and wildlife habitat, which would benefit fishermen, hunters, birdwatchers, and other recreational users. Over the long term, recreationists could also benefit from a reduction in noxious weeds and invasive plants, especially poisonous plants, plants that cause skin irritation, or species such as cheatgrass that can harm domestic pets.

Exclusion of public use from developed facilities or high use or dispersed recreation areas would be short-term but could have the effect of displacing recreationists to other locations. This would be primarily as a result of mechanical, prescribed fire, or herbicide treatments, but not manual or biological treatments, which would have minimal impacts on recreation values. The highest potential for public exposure would occur during spraying at campgrounds. SOP dictate that herbicide application sites such as campgrounds be posted with signs warning of herbicide use, in order to minimize risks to public safety.

Recreational use of motorized vehicles on public lands is typically limited to designated routes and trails. Motorized and non-motorized use could be restricted following vegetation treatments to allow vegetation establishment or recovery.

Depending on the length of time that use exclusion occurs and amount of use an area has, there could be some temporary economic losses to local communities. However, treatment periods would be short and last anywhere from a few hours to a few days. Over time these effects will fade as vegetation recovers and healthy plant communities are established. Vegetation treatments that reduce wildfire risk would reduce the likelihood of recreationists being displaced from favorite hunting, fishing, and camping sites by wildfires.

Herbicide treatments can pose a risk to recreationists from exposure to chemicals. Herbicides would mainly be applied through spot spraying, limiting human exposure to chemicals. Potential for exposure could be greater for large-scale treatments in dispersed recreation use areas. Signs may be posted in high-use areas informing the public of herbicide use. Signs would increase public awareness and safety. SOP direct that herbicide treatments avoid peak recreational use times. Implementing appropriate design features, SOP, and label restrictions would minimize any potential risk to human health.

No Action Alternative Impacts – Recreation

Impacts to recreation from treatments implemented under the No Action Alternative would be similar to impacts described for the Proposed Action. On-going actions would continue to be implemented, but treatments could be less effective due to the smaller number of herbicides authorized for use.

Cumulative Effects – Recreation

Proposed Action Cumulative Effects

Past, present, and foreseeable future actions that could cumulatively affect recreation activities include historic and current livestock grazing practices, wildland fires and related suppression and ESR activities, and travel and transportation management. These actions potentially impact recreation by changing the experience due to encounters with operational activities, including livestock or herding animals or heavy equipment or limiting access. While implementation of the Proposed Action could cumulatively result in additional access restrictions, this would be temporary in nature. Vegetation improvement and fuels reduction resulting from implementation of the Proposed Action could cumulatively decrease hazards and access restrictions resulting from wildfire and associated activities.

No Action Cumulative Effects

The same past, present, and foreseeable future management actions and their effects would occur as described for the Proposed Action above. Cumulative effects to recreation are not likely to be substantially different for the No Action Alternative.

Visual Resources

Affected Environment

Visual resource management preserves or enhances scenic quality on public lands. Public lands in the TFD have been inventoried using the VRM inventory process and management classes have been designated in some areas in approved land use plans. Management class descriptions are as follows:

Management 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.

Management 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.

Management 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.

Management 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.

Per BLM policy, Wilderness and WSAs are managed as VRM Class I (BLM Instruction Memorandum No. 2000-096). Except for the WSAs, all BLM lands in the Craters of the Moon National Monument and Preserve are managed as VRM Class II.

Environmental Impacts

Proposed Action Impacts – Visual Resources

Invasive plant community and noxious weed treatment activities would temporarily disrupt scenic quality. Effects to visual resources in the form of contrast to surrounding landscapes would be greatest immediately following treatment, especially if multiple overlapping treatments are implemented. Successful establishment of more natural vegetation communities would reduce visual contrasts in the long-term. Implementation of design features and SOP would reduce impacts in visually sensitive areas.

No Action Alternative Impacts – Visual Resources

Impacts to visual resources from treatments implemented under the No Action Alternative would be similar to impacts described for the Proposed Action. On-going actions would continue to be implemented, but treatments could be less effective due to the smaller number of herbicides authorized for use.

Cumulative Effects – Visual Resources

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

Proposed Action

Past, present, and foreseeable future actions that could cumulatively affect visual resources include historic and current livestock grazing practices, including range improvement projects; wildland fires and related suppression and ESR activities; ROWs; mineral or gravel extraction; and travel and transportation management. These actions potentially impact visual resources by fragmenting vegetation and creating unnatural contrasts to the characteristic environment. Implementation of the Proposed Action could cumulatively result in additional short-term disruption of the visual resource. Vegetation improvement and fuels reduction resulting from implementation of the Proposed Action could cumulatively decrease visual contrast over the long-term that results from other management activities.

No Action

The same past, present, and foreseeable future management actions and their effects would occur as described for the Proposed Action above. Cumulative effects to visual are not likely to be substantially different for the No Action Alternative.

Social and Economic Values

Affected Environment

For purposes of socioeconomic values, the study area does not necessarily align with the planning area boundary. Due to issues related to data availability, county boundaries are used for demographic and economic data reporting and analysis[1].

Within the socioeconomic study area, which includes Blaine, Butte, Camas, Cassia, Custer, Elmore, Gooding, Jerome, Lincoln, Minidoka, Oneida, Owyhee, Power, and Twin Falls Counties in Idaho and Elko County in Nevada, agriculture plays a more important role in the economy than it does in the U.S. in general. In the study area in 2013, farm jobs made up 9% of all employment. In contrast, in the U.S. as a whole, 1.4% of jobs were farm-related. Since 1970, farm jobs in the study area have decreased by approximately 10%, while non-farm employment

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[1] Socioeconomic baseline data obtained using Headwaters Economics Economic Profile System online report generator. http://headwaterseconomics.org/tools/economic-profile-system/about/

has increased by around 154%. In spite of this long-term loss of farm jobs, from 1990 to 2013 there was an increase of farm employment to 15,827 jobs from 14,419 jobs within the study area.

Through the 1970s and into the mid-1980s, cash receipts from crops exceeded those from livestock and livestock-related products. Since the mid-1980s, growth in cash receipts from livestock has outpaced that of crops up to 2013, when receipts from livestock-related marketings were more than double those of crop-related marketings.

As is the case in other regions in the western U.S., service sector jobs in the study area have increased at a faster rate than non-services related and government jobs, increasing by 164%, 50%, and 55%, respectively.

Use of resources and recreational visitation on BLM lands generates employment and income in the surrounding communities and counties. Within the study area, 51.4% of lands, more than 16.2 million acres, are managed by BLM. From 1970 to 2013, population in the study area almost doubled, increasing to 297,771 from 155,534, an increase of 142,237 residents, or approximately 92%. In the same period, personal income in the region (in 2013 dollars) increased to $11.9 million from $3.6 million per year, an increase of more than $8 million and 234%. These increases in population and personal income combined have contributed to steadily increasing resource usage and visitation of public lands over time. Revenues generated from these uses are returned to the counties and federal treasury, or are used to fund additional activities to accomplish land management objectives. Similarly, resources flowing from BLM lands including water, fish, wildlife, and clean air affect surrounding communities and off-site resources. Additionally, less desirable elements like noxious weeds, invasive plants, and wildfire can also affect surrounding communities. Herbicide use and other vegetation treatment methods on BLM lands affect these area resources and opportunities, and thus affect the adjacent communities.

Wildfire suppression costs in the United States have increased steadily over the last decade (Calkin, Gebert, Jones, & Neilson, 2005) with related annual expenditures by the USFS and BLM exceeding a billion dollars in four out of the seven years leading up to 2006. Invasive plants have been identified as contributing to increased wildfire activity on rangelands in the western United States (McIver et al., 2010). Pre-fire fuels management treatment is recognized as an important tool to reduce the frequency of severe wildfires, and thus the expected costs of damages and wildfire suppression, and to maintain ecosystem health (United States GAO, 2007).

Some noxious weed treatments are accomplished using partnerships between BLM and the counties within the TFD boundary. Agreements allow county weed personnel to treat noxious weeds and invasive plants on BLM-managed land as well as non-federal lands. Labor and equipment costs are reduced if treatments are applied in conjunction with other treatments in the same geographic area.

Environmental Impacts

Proposed Action Impacts – Social and Economic Values

Coordinated treatment of noxious weeds and invasive plants would have a range of socioeconomic impacts. Decreased spread of invasives would reduce firefighting costs and direct economic losses associated with fires. Within the study area, 15,541,696 acres are classified as land types that are susceptible to range fires. If all of those acres were dominated by native plants, the expected total cost of fighting range fires over 20 years on those acres would be just under $41.5 million. Should all of those acres become dominated by cheatgrass, the cost over 20 years would reach more than $840 million, an increase of nearly $800 million in firefighting costs alone. Although this is a worst-case scenario and not necessarily a high-probability outcome, it does give a sense of the scale of the economic benefits that could be obtained by reducing the costs of fighting range fires through protection of native ecosystems and restoration where cheatgrass has already invaded.

Increased dependability and quality of forage would result in higher weight gain per day for grazing livestock and would also improve the quality of feed for livestock on the range.

No Action Alternative Impacts – Social and Economic Values

The dominance of noxious weeds and/or invasive plants would continue to impact the study area, and the potential economic benefits described in the section above would not be realized.

Cumulative Effects – Social and Economic Values

Actions that could cumulatively affect social and economic values include wildland fires and related suppression and ESR activities, livestock grazing, and recreation.

Proposed Action Cumulative Effects

The Proposed Action would streamline treatments of noxious weeds and invasive plants in the TFD. Successful vegetation treatments in combination with past, present, and future vegetation treatments would result in lower risk of catastrophic wildfires, and increase values for livestock grazing and recreation within the planning area. These benefits would be associated with improved vegetation quality, scenic values, and accessibility. Treatments could also reduce costs of wildfire suppression and associated ESR treatments by improving the resiliency and resistance of plant communities to invasion of noxious weeds and invasive plants.

No Action Cumulative Effects

Similar past, present, and foreseeable future actions and their effects would occur as previously described under the Proposed Action cumulative effects section for social and economic values. Cumulative impacts of the No Action alternative would be similar to those described under the Proposed Action. The projects completed would be more reactive than pro-active, and newly approved herbicides would not be authorized for use at the project level until further analysis was completed. Therefore, the cumulative impacts from the No Action alternative would result in fewer apparent benefits to users of BLM lands and adjoining lands in the planning area.

Human Health and Safety

Affected Environment

Vegetation treatments involve risk, or the perception of risk, to workers and members of the public living or engaging in activities in or near the planning area. An important goal of treatments is to manage vegetation to reduce hazardous fuels and restore fire adapted ecosystems to reduce the incidence of loss of life and injury to the public and firefighters resulting from catastrophic wildfires. There may also be a perception of risk, to workers and members of the public living or engaging in activities in or near treatment areas. Two categories of human receptors are generally utilized to represent the risk from herbicides. Occupational receptors include workers that mix, load, and apply herbicides and operate transport vehicles as well as operating equipment used for vegetation treatments or prescribed fire. Public receptors include those members of the public most likely to come into contact with applied herbicides or smoke from prescribed fire. Public receptors include individuals that may be hunting, hiking, or camping.

Numerous plants on the noxious weed list show some level of toxicity to humans. This impact could be a result of the plant being toxic if ingested, the plant having sap that can negatively impact the eyes or cause dermatitis if it comes in contact with the skin, or the plant having spines or other plant parts that can physically injure humans. Plants on the noxious weed list which are toxic to humans through some mechanism include black henbane, knapweeds, leafy spurge, poison hemlock, Scotch broom, and white bryony. The various thistles have thorns on the flowerheads which can puncture skin. In addition to causing physical discomfort and impacting recreational equipment these seed can be transported to unaffected areas by recreational users.

Environmental Impacts

The full range of treatments proposed under the Proposed Action pose a certain type of associated risk identified for this section. The use of manual, mechanical, prescribed fire, biological control and herbicide control with their accompanying activities all have potential for injury to workers. The spread of noxious weeds and invasive plants is primarily facilitated by public activities, so treatment areas necessarily correlate with public use areas.

Proposed Action Impacts – Human Health and Safety

Effects of Manual Treatments

Manual treatments can present health hazards to workers. Nearly all manual treatments would involve pulling or cutting vegetation with non-motorized equipment or chainsaws. Workers would be exposed to a variety of risks when using hand tools and pulling weeds. Physical contact with irritant weeds can cause blisters, dermatitis, and inflammation. Workers could also suffer allergic reactions to pollen from ragweed and other grasses and forbs. Workers would be at risk from biting and sucking insects, such as ticks and mosquitoes. Poisonous snakes could also be encountered during manual treatments as well as other dangerous wildlife that could pose a threat. Time required to obtain medical treatment in remote areas might complicate some injuries.

Workers implementing manual treatment should be in good physical condition. Nonetheless, physical exertion during hot weather could lead to heat stroke. Exertion could also exacerbate existing chronic health problems such as arthritis or tendonitis, or result in a stroke or heart attack. Falls or other accidents could also occur. Adverse weather and terrain commonly create unfavorable working conditions and increased hazards. Hazards associated with adverse weather conditions include extreme heat and cold, which can be exacerbated by very dry and very wet conditions. Other hazards include tripping or slipping on hazards on the ground, protruding objects such as branches and twigs. Tools and equipment present inherent hazards, such as sharp edges on the tools themselves, and the hazardous nature of fuels and lubricants used in mechanized equipment. Use of chainsaws and mowers in mechanical treatments can lead to injuries. Manual methods present potential ergonomic hazards related to lifting and carrying equipment, and when pulling vegetation. Injuries can vary from minor cuts, sprains, bruises, and abrasions to major arterial bleeding, compound bone fractures, serious brain concussions, and death. Workers are subject to heat-related illness or hypothermia when working in extreme weather conditions, and may incur musculoskeletal injuries related to improper body mechanics.

It is unlikely that the public would be at risk from manual treatments. It is possible that flying debris could accidentally hit a person, but safety zones around work areas should minimize this possibility.

Effects of Mechanical Treatments

Larger scale vegetation treatments would be treated using mechanical methods under the Proposed Action. Workers using mechanical equipment such as tractors and other heavy equipment would face the same types of risk as workers using similar equipment; however, risks of severe injuries from mechanical treatments would be low if workers adhered to standard safety procedures (Bonneville Power Association (BPA), 2000).

Contact with cutting blades, mulchers, shredders, drills or similar equipment during operation could hurt machinery workers. Operators could be injured or killed by losing control of their equipment, which would be most likely to occur during treatments on steep slopes, or other unstable slopes, or in dense foliage. Rocks and other flying debris kicked up by equipment could harm those around or engaged in implementation. Operators and nearby workers can suffer hearing damage due to the high noise levels during operations. Exhaust gases could be harmful to equipment operators working in tight spaces.

The public would be at a slight risk for injury from flying debris. Risks to the public would be greatest for vegetation treatment activities near public facilities and along right-of-ways. Maintaining a safety buffer around treatment areas would limit the risk of harm to the public from mechanical treatment operations.

Effects of Prescribed Fire Treatments

Larger scale vegetation treatments could be treated using prescribed fire. Workers and the public could be at risk from prescribed fire. Risks to workers and the public could include injury and fatality as a result of the fire itself and from inhalation exposure from combustion products.

Prescribed fire presents various hazards to ground crews, who could possibly receive injuries ranging from minor to severe burns resulting in permanent tissue damage. Risks to workers would be minimized by use of personal protective equipment (PPE) and by following standard safety procedures. The public could be exposed to similar risks if the fire escaped from the treatment area. The remoteness of most treatment areas and presence of fire crews and safety equipment would make the risk of injury to the public extremely low (USDI BLM, 1991).

Particulate matter from smoke is the principle pollutant of concern from prescribed fires, particularly for particles less than 10 microns in diameter (Sandberg & Dost, 1990; USEPA, 1996). Particulate matter affects pulmonary functions; and children, the elderly, and asthmatics are especially sensitive to exposure (Sandberg, Ottmar, Peterson, & Core, 2002). Smoke can cause highway safety problems when it impedes a driver's ability to see the roadway. This is a minor issue within the TFD where most of the public land is located. The gases emitted from the smoke such as carbon monoxide, carbon dioxide, and nitrogen oxides, generally diffuse into the atmosphere relatively quickly. Carbon monoxide from prescribed fires likely poses no risk to community air quality (Sandberg & Dost, 1990).

Safety criteria and concerns about potential risks would be addressed in project-specific burn plans, thereby reducing risks and concerns to human health and safety associated with prescribed burning.

Effects of Biological Control Treatments

Workers could be hurt during operation of equipment to transport and release insects and pathogens at treatment sites. Only biological control agents that have been studied and determined not to pose a risk to non-target or desirable species would be used to treat vegetation. Thus, it is unlikely that members of the public would come into contact with these organisms.

Livestock managers could be kicked, or bitten by livestock, or hurt while operating vehicles when transporting livestock to or from the treatment areas. Workers could also suffer minor discomfort from exposure to livestock fecal material and animal odors. Members of the public could experience similar effects if they were to come into contact with livestock.

Effects of Herbicide Treatments

Elements of human health potentially impacted by the Proposed Action include exposure to herbicides or exposure to poisonous or injurious plants. The risk to workers and the public from the use of 20 herbicides currently available or proposed for use by the TFD BLM were evaluated in the Human Health Risk Assessment (HHRA) prepared for the PEISs and are summarized below. Adherence to SOPs and label restrictions would reduce or eliminate the adverse impacts to workers and public from herbicide application.

Aerial applications of herbicides pose a greater risk to the public due to off-site drift than ground applications, as herbicides applied at greater distances from the ground are able to drift farther from the target application area. Therefore, public receptors within a larger radius of the treatment site would be at risk if the herbicide was applied aerially than if it was applied by a ground application method.

Spot applications would be less likely to pose a risk to downwind receptors than boom/broadcast applications. However, spot applications would be more likely to pose a risk to the worker charged with applying the herbicide; because these workers are more likely to come into contact with the herbicide, their exposure doses could be higher. In particular, there would be a low to moderate risk to workers applying *diquat* by backpack or horseback from exposure to the herbicide, whereas those applying *diquat* at the typical application rate by ATV or truck would not be at risk.

Most of the herbicides do not pose a risk to human receptors when applied at the typical application rate. At the maximum application rate, however, more herbicides, under more exposure scenarios, have the potential to adversely affect human health. Based on HHRAs, *fluridone*, *chlorsulfuron*, *clopyralid*, *glyphosate*, *picloram* and triclopyr would not pose a risk when applies at the typical rate, but would pose a risk under one or more exposure scenarios involving applications at the maximum application rate. There would not be risks associated with scenarios involving applications of *dicamba*, *diflufenzopyr*, *imazapic*, *imazapyr*, *metsulfuron methyl*, or sulfometuron methyl at the typical or maximum application rate.

No injuries to herbicide applicators from herbicide exposure have been recorded for at least the past ten years on BLM-administered lands in Idaho.

Effects of Re-Vegetation Treatments

Workers using re-vegetation equipment such as tractors and other heavy equipment would face the same types of risk as workers using similar equipment. However, risks of severe injuries from mechanical treatments would be low if workers adhered to standard safety procedures (BPA, 2000). Small scale re-vegetation treatments that would be performed manually have inherently the same risks as those described for manual treatments.

For large scale re-vegetation treatments, contact with rangeland drills or similar equipment during operation could hurt machinery workers. Operators could be injured or killed by losing control of their equipment, which would be most likely to occur during treatments on steep slopes, or other unstable slopes. Rocks and other flying debris kicked up by equipment could harm those around or engaged in operation. Operators and nearby workers can suffer hearing damage due to the high noise levels during operations. They could also be affected by dust from the soil or seed.

No Action Alternative Impacts – Human Health and Safety

Under the No Action Alternative, the BLM would continue to implement the existing decisions for noxious weed and invasive plant treatments in the TFD. On-going actions would continue to be implemented under existing decisions. These on-going actions would be implemented utilizing the herbicides approved for use under those decisions. Increased time for project planning could result in fewer acres treated than would occur under the Proposed Action. This would result in similar but fewer negative impacts from treatments but more negative impacts due to noxious weeds and invasive plants than would be expected for the Proposed Action. If fewer acres are treated, the risk for additional noxious weeds and invasive plants infestations is increased. As this undesirable vegetation increases, the risk for wildland fire also increases, posing an additional risk to public and firefighter safety. Over the long-term, the No Action Alternative would result in fewer negative impacts to human health and safety due to management actions, but more risk for negative impacts to human health and safety due to undesirable vegetation and wildland fire than for the Proposed Action.

Cumulative Effects – Human Health and Safety

The cumulative effects assessment for human health and safety considers the effects from past, present, and reasonably foreseeable future actions on federal, state, and private lands within and adjacent to the TFD in addition to the impacts from management actions for the Proposed Action and No Action Alternatives. These actions include exposure to similar chemicals, activities, and particulates from agriculture, recreational, and commercial practices in the area.

Proposed Action Cumulative Effects

Private lands within the boundary of and adjacent to the TFD are utilized for agricultural production or rangeland production. Herbicide and other pesticide use can be considered commonplace on private agricultural lands. Cumulatively, there is an increased risk to the public from accidental exposure to herbicides. Risk of physical injury from vegetation treatments on adjacent land ownerships is a similar level of risk as described in the Proposed Action above.

No Action Cumulative Effects

Similar past, present, and foreseeable future actions and their effects would occur as previously described under the Proposed Action cumulative effects section.

Table 13 – List of Preparers

Name	Position	Responsibilities
Dustin Smith	Fire Ecologist	Project lead; Air Quality, Human Health and Safety
Joe Russell	Fire Ecologist	Project co-lead; Soils; General Vegetation
Danelle Nance	Natural Resource Specialist	General Vegetation, Special Management Areas
Julie Hilty	Fire Ecologist	Section 7 Level 1 Team – Plants; General Vegetation, Special Status Plants
Jeremy Bisson	Wildlife Biologist	Section 7 Level 1 Team – Wildlife; Wildlife, Special Status Wildlife
Gary Wright	Wildlife Biologist	Section 7 Level 1 Team - Wildlife
Elena Shaw	Resource Coordinator	Grazing Management
David Freiberg	Outdoor Recreation Planner	Recreation, Visual Resources
Shane Wilson	Archaeologist	Recreation
Lisa Cresswell	Planning and Environmental Coordinator	Cultural and Historic Resources, Native American Treaty Rights and Interests, Paleontological Resources
Kate Crane	Fisheries Biologist	Section 7 Level 1 Team Lead; Water Quality, Special Status Fish and Aquatic Invertebrates, Fish and Aquatic Invertebrates
Julie Suhr Pierce	Great Basin Socioeconomic Specialist	Social and Economic Values

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APPENDICES

Appendix A – Noxious Weeds and Invasive Plants Known to Occur in the TFD

Noxious Weed Early Detection Rapid Response List

Common Name	Scientific Name	Known Counties of Occurrence in the TFD
Hydrilla	*Hydrilla verticillata*	Owyhee
Purple Starthistle	*Centauria calcitrapa*	Twin Falls
Squarrose Knapweed	*Centaurea trimfettii*	Elko
Sulphur Cinquefoil	*Potentilla recta*	Elko
Syrian Beancaper	*Zygophyllum fabago*	Blaine, Gooding, Minidoka

Noxious Weed Control List

Common Name	Scientific Name	Known Counties of Occurrence in the TFD
Black Henbane	*Hyoscyamus niger*	Blaine, Cassia, Elko, Elmore, Gooding, Minidoka, Owyhee, Twin Falls
Buffalobur	*Solanum rostratum*	Gooding, Minidoka
Common Reed	*Phragmites australis*	Elmore, Owyhee
Dyer's Woad	*Isatis tinctoria*	Blaine, Elko, Elmore, Jerome, Lincoln, Owyhee, Minidoka
Eurasian Watermilfoil	*Myriophyllum spicatum*	Gooding, Owyhee
Johnsongrass	*Sorghum halepense*	Twin Falls
Mediterranean Sage	*Salvia aethiopis*	Elko, Twin Falls, Lincoln, Cassia, Blaine, Owyhee
Musk Thistle	*Carduuss nutans*	Blaine, Cassia, Elko, Gooding, Jerome, Minidoka, Owyhee, Twin Falls
Orange Hawkweed	*Hieracium aurantiacum*	Elmore, Jerome
Parrotfeather Milfoil	*Myriophyllum aquaticum*	Jerome
Perennial Sowthistle	*Sonchus arvensis*	Twin Falls

Common Name	Scientific Name	Known Counties of Occurrence in the TFD
Russian Knapweed	*Acroptilon repens*	Blaine, Cassia, Elko, Elmore, Gooding, Jerome, Lincoln, Minidoka, Owyhee, Twin Falls
Scotch Broom	*Cytisus scoparius*	Gooding, Jerome, Lincoln
Viper's Bugloss	*Echium vulgare*	Blaine

Noxious Weed Containment List

Common Name	Scientific Name	Known Counties of Occurrence in the TFD
Canada Thistle	*Cirsium arvense*	Blaine, Camas, Cassia, Elko, Elmore, Gooding, Jerome, Lincoln, Minidoka, Owyhee, Twin Falls, Power
Curlyleaf Pondweed	*Potamogeton crispus*	Blaine, Cassia, Elmore, Gooding, Jerome, Minidoka, Owyhee, Twin Falls
Dalmatian Toadflax	*Linaria dalmatica ssp. dalmatica*	Blaine, Cassia, Elko, Elmore, Jerome, Owyhee
Diffuse Knapweed	*Centaurea diffusa*	Blaine, Camas, Cassia, Elko, Elmore, Gooding, Jerome, Lincoln, Minidoka, Owyhee, Twin Falls
Field Bindweed	*Convolvulus arvensis*	Blaine, Cassia, Elmore, Gooding, Jerome, Lincoln, Minidoka, Owyhee, Twin Falls
Hoary Alyssum	*Berteroa incana*	Blaine
Houndstongue	*Cynoglossum officinale*	Blaine, Cassia, Elko, Elmore, Twin Falls
Jointed Goatgrass	*Aegilops cylindrica*	Blaine, Cassia, Elko, Elmore
Leafy Spurge	*Euphorbia esula*	Blaine, Camas, Cassia, Elko, Lincoln, Minidoka, Owyhee
Oxeye Daisy	*Leucanthemum vulgare*	Blaine
Perennial Pepperweed	*Lepidium latifolium*	Cassia, Elko, Elmore, Jerome, Minidoka, Owyhee, Twin Falls
Poison Hemlock	*Conium maculatum*	Blaine, Cassia, Elko, Elmore, Gooding, Jerome, Lincoln, Owyhee, Twin Falls

Common Name	Scientific Name	Known Counties of Occurrence in the TFD
Puncturevine	*Tribulus terrestris*	Elko, Elmore, Gooding, Lincoln, Minidoka, Owyhee, Twin Falls
Purple Loosestrife	*Lythrum salicaria*	Elmore, Gooding, Lincoln, Minidoka, Owyhee, Twin Falls
Rush Skeletonweed	*Chondrilla juncea*	Blaine, Cassia, Elko, Elmore, Gooding, Jerome, Lincoln, Minidoka, Owyhee, Twin Falls
Tansy Ragwort	*Jacobaea vulgaris*	Blaine
Saltcedar	*Tamarix* spp.	Blaine, Cassia, Elko, Elmore, Gooding, Minidoka, Owyhee, Twin Falls
Scotch Thistle	*Onopordum acanthium*	Blaine, Cassia, Elko, Elmore, Gooding, Jerome, Lincoln, Minidoka, Owyhee, Twin Falls
Spotted Knapweed	*Centaurea stoebe*	Blaine, Camas, Cassia, Elko, Elmore, Gooding, Jerome, Lincoln, Minidoka, Owyhee, Twin Falls
Waterhemlock	*Cicuta maculata*	Elko
White Bryony	*Bryonia alba*	Cassia, Gooding
Whitetop	*Lepidium draba*	Blaine, Cassia, Elko, Elmore, Gooding, Jerome, Lincoln, Minidoka, Owyhee, Twin Falls
Yellow Flag Iris	*Iris pseudacorus*	Blaine, Owyhee, Twin Falls
Yellow Starthistle	*Centaurea solstitialis*	Elko, Elmore, Jerome, Twin Falls
Yellow Toadflax	*Linaria vulgaris*	Blaine, Elko

Invasive Plants List

Common Name	Scientific Name	Primary Habitat	Range[a]	Dominance[b]
Annual Wheatgrass	*Eremopyrum triticeum*	Upland	Numerous	Locally abundant
Barnyard Grass	*Echinochloa crus-galli*	Riparian	Rare	Uncommon

Common Name	Scientific Name	Primary Habitat	Range[a]	Dominance[b]
Bittersweet Nightshade	*Solanum dulcamara*	Riparian	Restricted	Uncommon
Bulbous Bluegrass	*Poa bulbosa*	Upland	Numerous	Locally abundant
Bull Thistle	*Cirsium vulgare*	Riparian	Numerous	Uncommon
Bur Buttercup	*Ranunculus testiculatus*	Upland	Widespread	Locally abundant
Burdock	*Arctium* spp.	Riparian	Numerous	Uncommon
Cheatgrass	*Bromus tectorum*	Upland	Widespread	Dominant
Clasping Pepperweed	*Lepidium perfoliatum*	Upland	Widespread	Locally abundant
Cocklebur	*Xanthium* spp.	Riparian	Numerous	Uncommon
Common Mullein	*Verbascum thapsus*	Upland	Restricted	Common
Field Pennycress	*Thlaspi arvense*	Upland	Restricted	Locally abundant
Flixweed	*Descurainia sophia*	Upland	Widespread	Common
Halogeton	*Halogeton glomeratus*	Upland	Widespread	Common
Japanese Brome	*Bromus japonicus*	Upland	Restricted	Common
Kentucky Bluegrass	*Poa pratensis*	Upland	Widespread	Locally abundant
Kochia	*Kochia scoparia*	Upland	Numerous	Locally abundant
Littlepod False Flax	*Camelina microcarpa*	Upland	Rare	Uncommon
Meadow Fescue	*Festuca pratensis*	Upland	Restricted	Uncommon
Medusahead (State-listed noxious Category B in Elko County)	*Taeniatherum caput-medusae*	Upland	Restricted	Locally abundant
Missouri Iris	*Iris missouriensis*	Riparian	Restricted	Uncommon
North Africa Grass	*Ventenata dubia*	Upland/Riparian	Numerous	Uncommon
Poverty Weed	*Iva axillaris*	Upland	Restricted	Locally abundant

Common Name	Scientific Name	Primary Habitat	Range[a]	Dominance[b]
Prickly Lettuce	*Lactuca serriola*	Upland	Widespread	Uncommon
Prostrate Knotweed	*Polygonum aviculare*	Upland	Widespread	Uncommon
Purple Mustard	*Chorispora tenella*	Upland	Numerous	Dominant
Rabbitfoot Grass	*Polypogon monspeliensis*	Riparian	Restricted	Locally abundant
Reed Canary Grass	*Phalaris arundinacea*	Riparian	Widespread	Dominant
Russian Olive	*Elaeagnus angustifolia*	Riparian	Widespread	Dominant
Russian Thistle	*Salsola* spp.	Upland	Widespread	Locally abundant
Smooth Brome[C]	*Bromus inermis*	Upland	Restricted	Locally abundant
Soft Brome	*Bromus hordeaceus*	Upland	Rare	Uncommon
Stork's Bill	*Erodium cicutarium*	Upland	Widespread	Locally abundant
Tall Oatgrass	*Arrhenatherum elatius*	Riparian	Rare	Uncommon
Teasel	*Dipsacus sylvestris*	Riparian	Numerous	Locally abundant
Tumble Mustard	*Sisymbrium altissimum*	Upland	Widespread	Locally abundant

[a] Range: Rare – species found only in one or two locations; Restricted – species limited to few areas; Numerous – species found in numerous areas; Wide spread – species found over large areas

[b] Dominance: Dominant – readily dominates sites; Locally abundant – abundant in patches and may dominate small sites; Common – numerous but scattered; Uncommon – present in low amounts.

[c] This species was seeded in the past by BLM in portions of the planning area.

Sources: http://plants.usda.gov/ and https://eplanning.blm.gov/epl-front-office/projects/nepa/39373/48273/52436/Appendix_H_-_Noxious_Weeds_.pdf . The list shown above was compiled by BLM staff based on observations in the field

Appendix B- Prevention Measures

BLM Activity	Prevention Measure
Project Planning	• Incorporate prevention measures into project layout and design, alternative evaluation, and project decisions to prevent the introduction or spread of weeds. • Determine prevention and maintenance needs, including the use of herbicides, at the onset of project planning. • Before ground-disturbing activities begin, inventory weed infestations and prioritize areas for treatment in project operating areas and along access routes. • Remove sources of weed seed and propagules to prevent the spread of existing weeds and new weed infestations. • Pre-treat high-risk sites for weed establishment and spread before implementing projects. • Post weed awareness messages and prevention practices at strategic locations such as trailheads, roads, boat launches, and public land kiosks. • Coordinate project activities with nearby herbicide applications to maximize the cost effectiveness of weed treatments.
Project Development	• Minimize soil disturbance to the extent practical, consistent with project objectives. • Avoid creating soil conditions that promote weed germination and establishment. • To prevent weed germination and establishment, retain native vegetation in and around project activity areas and keep soil disturbance to a minimum, consistent with project objectives. • Locate and use weed-free project staging areas. Avoid or minimize all types of travel through weed-infested areas, or restrict travel to periods when the spread of seeds or propagules is least likely. • Prevent the introduction and spread of weeds caused by moving weed-infested sand, gravel, borrow, and fill material. • Inspect material sources on site, and ensure that they are weed-free before use and transport. • Treat weed-infested sources to eradicate weed seed and plant parts, and strip and stockpile contaminated material before any use of pit material. • Survey the area where material from treated weed-infested sources is used for at least 3 years after project completion to ensure that any weeds transported to the site are promptly detected and controlled. • Prevent weed establishment by not driving through weed-infested areas. • Inspect and document weed establishment at access roads, cleaning sites, and all disturbed areas; control infestations to prevent weed spread within the project area. • Avoid acquiring water for dust abatement where access to the water is through weed-infested sites. • Identify sites where equipment can be cleaned. Clean equipment before entering public lands. • Clean all equipment before leaving the project site if operating in areas infested with weeds. • Inspect and treat weeds that establish at equipment cleaning sites. • Ensure that rental equipment is free of weed seed. • Inspect, remove, and properly dispose of weed seed and plant parts found on workers' clothing and equipment. Proper disposal entails bagging the seeds and plant parts and incinerating them.

BLM Activity	Prevention Measure
Re-vegetation	• Include weed prevention measures, including project inspection and documentation, in operation and reclamation plans. • Retain bonds until reclamation requirements, including weed treatments, are completed, based on inspection and documentation. • To prevent conditions favoring weed establishment, reestablish vegetation on bare ground caused by project disturbance as soon as possible using either natural recovery or artificial techniques. • Maintain stockpiled, uninfested material in a weed-free condition. • Revegetate disturbed soil (except travel ways on surfaced projects) in a manner that optimizes plant establishment for each specific project site. For each project, define what constitutes disturbed soil and objectives for plant cover re-vegetation. Re-vegetation may include topsoil replacement, planting, seeding, fertilization, liming, and weed-free mulching, as necessary. • Where practical, stockpile weed-seed-free topsoil and replace it on disturbed areas (e.g., road embankments or landings). • Assure that all straw mulch to be used for site rehabilitation (wattles, straw bales, dams etc.) is Idaho State Certified Weed-free. The use of certified weed-free seed, forage, and straw for permitted activities are required on all public lands in Idaho. • Inspect and document all limited term ground-disturbing operations in noxious weed infested areas for at least 3 growing seasons following completion of the project. • Use native material where appropriate and feasible. • Provide briefings that identify operational practices to reduce weed spread (e.g., avoiding known weed infestation areas when locating fire lines). • Evaluate options, including closure, to regulate the flow of traffic on sites where desired vegetation needs to be established. Sites could include road and trail rights-of-way (ROW), and other areas of disturbed soils.

Appendix C- Herbicides Approved for Use on BLM Rangelands in Idaho

The table below lists the approved herbicides that may be used on BLM lands in Idaho at this time and their general affects to vegetation. The list includes the four new herbicides approved for use in the 2007 and 2016 PEISs and included in this analysis: *diflufenzopyr plus dicamba, diquat, fluridone, and imazapic.* Under the action alternatives, the BLM would also be able to use *diflufenzopyr* as a stand-alone active ingredient at such time as the ingredient becomes registered for use by the EPA under the Federal Insecticide, Fungicide and Rodenticide Act. The BLM would also be able to use new active ingredients that are developed in the future if: 1) they are registered by the EPA for use on one or more land types (e.g., rangeland, aquatic, etc.) 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; and 3) they meet evaluation criteria to ensure that the decision to use the active ingredient is supported by scientific evaluation and NEPA documentation. These evaluation criteria are discussed in more detail in the PEIS (Appendix E of USDI BLM, 2007b).

Active Ingredient	Registered Trade Names	General Effects to Vegetation
Aminopyralid	Milestone®, Milestone VM®	*Aminopyralid is a post emergence, selective herbicide that is used to manage invasive annual, biennial, and perennial species.*
Amoinopyralid + *2,4-D*	Grazon Next, ForeFront HL, ForeFront RandP	See *Aminopyralid* and *2,4-D* for effects of these chemicals.
Aminopyralid + Metsulfuron Methyl	Opensight	See *Aminopyralid* and *Metsulfuron Methyl* for effects of these chemicals.
Aminopyralid + Triclopyr	Milestone VM Plus®	See *Aminopyralid* and *Triclopyr* for effects of these chemicals.
Bromacil	Hyvar X; Hyvar X-L; Bromacil 80DF; Bromacil 80WG; Ceannard Bromacil 80DF	*Bromacil* is a non-selective, "broad spectrum" systemic herbicide, which is most effective against annual and perennial weeds, brush, woody plants, and vines. Poses high risk to non-target species in the immediate area of treatment.
Bromacil + *Diuron*	Bromacil/Diuron 40/40; Kroval I DF; Weed Blast 4G; Weed Blast Res. Weed Cont.; DiBro 2+2; DiBro 4+2; DiBro 4+4; Ceannard Bromacil 80DF	See *bromacil* description of effects above for effects of this chemical. *Diuron* is a non-selective, broad-spectrum herbicide, effective as both pre- and post-emergent.

Active Ingredient	Registered Trade Names	General Effects to Vegetation
Chlorsulfuron	Telar DF; Telar XP; Alligare Chlorsulfuron; Nufarm Chlorsulf SPC 75 WDG Herbicide; Chlorsulfuron E-Pro 75 WDG; Chlorsulfuron 75	A selective herbicide used on perennial broadleaf weeds and grasses.
Clopyralid	Reclaim; Stinger; Transline; Spur; Pyramid RandP; Clopyralid 3; Cody Herbicide; CleanSlate	A selective post-emergence herbicide used to control broadleaf weeds.
Clopyralid + 2,4-D	Curtail; Commando; Cutback; Cody Herbicide	See *2,4-D* and *clopyralid* for effects of these chemicals.
2,4-D	Agrisolution 2,4-D LV6; Agrisolution 2,4-D Amine 4; Agrisolution 2,4-D LV4; 2,4-D Amine 4; 2,4-D LV 4; Solve 2,4-D; 2,4-D LV 6; Five Star; D-638; Alliagre 2,4-D Amine; 2,4-D LV6; 2,4-D Amine; 2,4-D Amine 4; Opti-Amine; Barrage HF; HardBall; Unison; Clean Amine; Low Vol 4 Ester Weed Killer; Low Vol 6 Ester Weed Killer; Saber; Salvo; Savage DS; Aqua-Kleen; Esteron 99C; Weedar 64; Weedone LV-4; Weedone LV-4 Solventless; Weedone LV-6; Formula 40; 2,4-D LV 6 Ester; Platoon; WEEDstroy AM-40; Hi-Dep; Barrage LV Ester; Clean Crop Amine 4; Clean Crop Low Vol 6 Ester; Salvo LV Ester; 2,4-D 4# Amine Weed Killer; Clean Crop LV-4 ES; Cornbelt 4 lb. Amine; Cornbelt 4# LoVol Ester; Cornbelt 6# LoVol Ester; Amine 4; Base Camp Amine 4; Broadrange 55; Lo Vol-4; Lo Vol-6 Ester; Alligare 2,4-D LV 6; Base Camp LV6; D-638; De-Amine 4; De-Amine 6; De-Ester LV4; De-Ester LV6; Five Star; Opti-Amine; Phenoxy 088; Rugged; Shredder 2,4-D LV4; Shredder Amine 4; Shredder E-99, Whiteout 2,4-D	*2,4-D* is a plant growth regulator and acts as a synthetic auxin hormone. Broad-leaved plants are more susceptible than narrow-leaved plants like grasses.
Dicamba	Dicamba DMA; Vision; Cruise Control; Banvel; Clarity; Rifle; Diablo; Vanquish Herbicide; Vanquish; Sterling Blue; Kam-Ba	A growth-regulating herbicide readily absorbed and translocated from either roots or foliage. This herbicide produces effects similar to those found with *2,4-D.*

Active Ingredient	Registered Trade Names	General Effects to Vegetation
Dicamba + *2,4-D*	Range Star; Weedmaster; Brush-Rhap; Latigo; Rifle-D; KambaMaster; Veteran 720; Brash; Outlaw; Dicamba + 2,4-D DMA	See*Dicamba* and *2,4-D* for effects of these chemicals.
Dicamba + *Diflufenzopyr*	Distinct; Overdrive	*Diflufenzopyr*, which is used in combination with *dicamba* for weed control, is a postemergent that inhibits the transport of auxin in the plant resulting in an abnormal accumulation of auxin or auxin-like compounds in the growing points of susceptible plants and an imbalance in growth hormones in the plant. Works well on broadleaf weeds. **Note: In accordance with the Record of Decision for the Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States PEIS, the aerial application of this herbicide is prohibited.**
Diflufenzopyr	This active ingredient is approved as a formulation with dicamba and is labeled as Distinct® and Overdrive®, but cannot be used as a stand-alone active ingredient by the BLM until it is registered with the EPA.	NA
Diquat	Alligare Diquat; NuFarm Diquat SPC 2 L Herbicide; Diquat SPC 2 L Herbicide; Diquat E-Ag 2L; Reward	*Diquat* is a post-emergence, nonselective herbicide that can be applied directly to vegetation or to ponds, lakes, or drainage ditches for the management of aquatic weed species. *Diquat* is a cell membrane disrupter whose mode of action intercepts electrons from photosynthesis and transfers the energy from photosynthesis to various free radicals that damage cell membranes.
Diuron	Diuron 80 DF; Karmex DF; Karmex XP; Karmex IWC; Direx 4L; Direx 80DF; Diuron 4L; Diuron 80 WDG; Vegetation Man. Diuron 80 DF; Diuron-DF; Direx 4L; Diuron 80WDG; Ceannard Diuron 80DF; Parrot DF; Parrot 4L	*Diuron* is a non-selective, broad-spectrum herbicide, effective both pre- and post-emergence.

Active Ingredient	Registered Trade Names	General Effects to Vegetation
Fluridone	Avast!; Sonar AS; Sonar Precision Release; Sonar Q; Sonar SRP; Fluridone 4L	*Fluridone* is a systemic, selective, aquatic herbicide that can be applied to the water surface or subsurface, or as a bottom application just above the floor of the water body. *Fluridone* is absorbed from the water by the plant shoots and taken up from the soil by the roots. In susceptible plants, *fluridone* inhibits the formation of carotene, which is essential in maintaining the integrity of chlorophyll.
Fluroxypyr	Comet, Fluroxypyr Herbicide, Vista, Vista XRT	*Fluroxypyr* is a selective post- emergence herbicide that is used to manage certain annual and perennial weeds.
Fluroxypyr + Clopyralid	Truslate	See *Fluroxypyr* and *Clopyralid* for effects of these chemicals.
Fluroxypyr + Picloram	Surmount, Trooper Pro	See *Fluroxypyr* and *Picloram* for effects of these chemicals.
Fluroxypyr + Triclopyr	PastureGard, PastureGard HL	See *Fluroxypyr* and *Triclopyr* for effects of these chemicals.
Glyphosate	Aqua Star; Forest Star; Gly Star Gold; Gly Star Original; Gly Star Plus; Gly Star Pro; Glyphosate 4 PLUS; Glyphosate 5.4; Glyfos;Glyfos PRO; Glyfos Aquatic; ClearOut 41 Plus; Accord Concentrate; Accord SP; Accord XRT; Accord XRT II; Glypro; Glypro Plus; Rodeo; Glyphosate 4+; Showdown; Mirage; Mirage Plus; Aquamaster; Roundup Original; Roundup Original II; Roundup Original II CA; Honcho; Honcho Plus; Roundup PRO; Roundup PRO Concentrate; Roundup PRO Dry; Roundup PROMAX; Aqua Neat; Credit Xtreme; Foresters; Razor; Razor Pro; GlyphoMate 41; AquaPro Aquatic Herbicide; Rattler; Buccaneer; Buccaneer Plus; Mirage Herbicide; Mirage Plus Herbicide; Gly-4 Plus; Gly-4; Glyphosate 4; Agrisolutions Cornerstone; Agrisolutions	A nonselective systemic herbicide that can damage all groups or families of non-target plants to varying degrees.

Active Ingredient	Registered Trade Names	General Effects to Vegetation
	Cornerstone Plus; Agrisolutions Rascal; Agrisolutions Rascal Plus; Conerstone 5 Plus; Four Power Plus; Imitator Aquatic; Imitator 25% Concentration; Imitator DA; Imitator Plus; Imitator RTU; KleenUp Pro; Mad Dog Plus; Makaze; Roundup Custom	
Glyphosate + 2,4-D	Landmaster BW; Campaign; Imitator Plus D	See *2,4-D* and *glyphosate* for effects of these chemicals.
Hexazinone	Velpar ULW; Velpar L; Velpar DF; Velossa; Pronone MG; Pronone 10G; Pronone 25G; Pronone Power Pellet; Velpar DF VU; Velpar L VU	A foliar-or soil-applied herbicide with soil activity. It is used for broadleaf weed, brush, and grass control in non-cropland and in forest lands.
Imazapic	Plateau; Panoramic 2SL; Nufarm Imazapic 2SL	This is a selective, systemic herbicide that can be applied both pre-emergence and post-emergence for the management of selective broadleaf and grassy plant species. Its mode of action is associated with the synthesis of branch-chained amino acids.
Imazapic + *Glyphosate*	Journey	See *imazapic* and *glyphosate* for effects of these chemicals.
Imazapyr	Imazapyr 2 SL; Imazapyr 4SL; Ecomazapyr 2 SL; Arsenal Railroad Herbicide; Chopper; Arsenal Applicators Conc.; Arsenal; Arsenal Technical; Arsenal PowerLine; Stalker; Habitat; Polaris; Polaris AC; Polaris AQ; Polaris RR; Polaris SP; Polaris Herbicide; Habitat Herbicide; SSI Maxim Arsenal 0.5G; SSI Maxim Arsenal 5.0G; Ecomazapyr 2 SL; Polaris AC Complete; Rotary 2 SL	This broad-spectrum herbicide can be applied pre or postemergence to weeds. Stable for at least 18 months. Kills plants within two to four weeks with residual activity. It is currently registered for use in non-crop areas such as industrial sites and rights-of-ways.
Imazapyr + *Diuron*	Mojave 70 EG; Sahara DG; Imazuron E-Pro; SSI Maxim Topsite 2.5G	See *imazapyr* and *diuron* for effects of these chemicals.
Imazapyr + *Metsulfuron methyl*	Lineage Clearstand	See *imazapyr* and *metsulfuron methyl* for effects of these chemicals.

Active Ingredient	Registered Trade Names	General Effects to Vegetation
Metsulfuron methyl	MSM 60; AmTide MSM 60DF Herbicide; Escort DF; Escort XP; MSM E-Pro 60 EG Herbicide; MSM E-AG 60 EG Herbicide; Patriot; PureStand; Metsulfuron Methyl DF	*Metsulfuron methyl* is a selective herbicide used pre- and post-emergence in the control of many annual and perennial weeds and woody plants.
Metsulfuron methyl + Chlorsulfuron	Cimarron X-tra; Cimarron Plus	See *metsulfuron methyl* and *chlorsulfuron* for effects of these chemicals.
Metsulfuron methyl + Dicamba + 2,4-D	Cimarron MAX	See *metsulfuron methyl*, *dicamba*, and *2,4-D* for effects of these chemicals.
Picloram	Triumph K; Triumph 22K; Picloram K; Picloram 22K; Grazon PC; OutPost 22K; Tordon K; Tordon 22K; Trooper 22K	*Picloram* is more toxic to broadleaf and woody plants than grains or grasses.
Picloram + 2,4-D	Graslan L; GunSlinger; Picloram + D; Tordon 101 M; Tordon 101 R Forestry; Tordon RTU; Grazon P+D; HiredHand P+D; Pathway; Trooper 101; Trooper P + D	See *Picloram*, and *2,4-D* for effects of these chemicals.
Picloram + *2,4-D +* *Dicamba*	Trooper Extra	See *Picloram*, *2,4-D* and *dicamba* for effects of these chemicals.
Rimsulfuron	Matrix, Matrix SG, Matrix FNV	*Rimsulfuron* is a selective ALS-inhibiting herbicide applied both pre- and post-emergence to target annual species such as cheatgrass and medusahead rye.
Tebuthiuron	Alligare Tebuthiuron 80 WG; Alligare Tebuthiuron 20 P; Spike 20P; Spike 80DF; SpraKil S-5 Granules	A soil-applied herbicide used for control of woody plants and vegetation. *Tebuthiuron* has a two to four rear residual on dry sites depending on application rates.
Tebuthiuron + *Diuron*	SpraKil SK-13 Granular; SpraKil SK-26 Granular	See *tebuthiuron* and *diuron* for effects of these chemicals.

Active Ingredient	Registered Trade Names	General Effects to Vegetation
Triclopyr	Triclopyr 3; Triclopyr 4; Element 3A; Element 4; Forestry Garlon XRT; Garlon 3A; Garlon 4; Garlon 4 Ultra; Remedy; Remedy Ultra: Pathfinder II; Trycera; Relegate; Relegate RTU; Tahoe 3A; Tahoe 4E; Tahoe 4E Herbicide; Renovate 3; Renovate OTF; Ecotriclopyr 3 SL; Triclopyr 3 SL; Triclopyr RTU; Trycera	A growth-regulating herbicide for control of woody and broadleaf perennial weeds in non-cropland, forest lands, and lawns.
Triclopyr + *2,4-D*	Everett; Crossbow; Aquasweep; Candor	See *triclopyr* and *2,4-D* for effects of these chemicals.
Triclopyr + *Clopyralid*	Prescott Herbicide; Redeem RandP; Brazen	See *triclopyr* and *clopyralid* for effects of these chemicals.

Appendix D - Herbicide Application Criteria

The following herbicide application criteria along with BLM herbicide mitigation measures and design features would be utilized to formulate site-specific vegetation treatment plans and Pesticide Use Proposals across the TFD. The 2007 PEIS and 2016 PEIS decisions concerning specific use of certain chemicals approved for BLM use were carried forward in the development of local use criteria.

Herbicides used for pre-emergent control of noxious weeds or invasive plants would not be applied to bare soil where there is potential for off-site soil movement that may negatively impact sensitive resources or private agricultural crop land. Site factors to consider in this determination are topography, soil type and erosion potential, treatment location relative to sensitive resources or private agricultural crop land, project size, wildfire or prescribed fire intensity, and residual vegetation and litter cover. Appropriate SOP would also be applied in the determination (see Appendix E).

The selection of an appropriate herbicide will rest on several factors. Some of these factors will include proximity to water, proximity to croplands, soil permeability, target species, associated plant species, time of application, and prior herbicide use on a target population.

Specific pesticide label requirements will be followed. If minimums from H-9011-1 Chemical Pest Handbook are above pesticide labeling, specific buffer strip widths indicated on pesticide labels or by State regulations must be followed. Pesticide program planners will refer to pesticide labels and State regulations for specific requirements.

In addition to specific label requirements and guidance from BLM Handbook H-9011-1, aquatic habitats, riparian areas, and wetland resources buffers would be applied as shown in the *Design Features and Conservation Measures* section of Chapter 2.

Active Ingredient	Aerial Application	Ground Application	Spot Treatment	Buffers	Target Vegetation	General Effects to Vegetation
Aminopyralid	Yes. Pesticide labels allow for aerial application.	Yes	Yes	Yes. See BLM Handbook H-9011-1 Chapter 2, II. Application Guidance	Invasive annual, biennial, and perennial herbaceous species. Species targeted include: Knapweeds, yellow starthistle, thistles, and rush skeletonweed.	*Aminopyralid* is a post emergence, selective herbicide that is used to manage invasive annual, biennial, and perennial species. Areas where registered use is **not** appropriate include riparian and aquatic habitats. Areas where registered use is appropriate include rangeland, forestland, ROW, recreation and cultural resources, and oil, gas, and minerals.
Bromacil	No. To address concerns regarding herbicide drift, the BLM will not utilize aerial application of B*romacil.*	Yes	Yes	Yes. See BLM Handbook H-9011-1 Chapter 2, II. Application Guidance	Annual and perennial grasses and broadleaf weeds.	*Bromacil* is a non-selective, "broad spectrum" systemic herbicide, which is most effective against annual and perennial weeds, brush, woody plants, and vines. Areas where registered use is **not** appropriate include rangeland, forestland, and riparian and aquatic habitats. Areas where registered use is appropriate include ROW, recreation and cultural resources, and oil, gas, and minerals.

Active Ingredient	Aerial Application	Ground Application	Spot Treatment	Buffers	Target Vegetation	General Effects to Vegetation
Chlorsulfuron	No. To address concerns regarding herbicide drift, the BLM will not utilize aerial application of C*hlorsulfuron.*	Yes	Yes	Yes. See BLM Handbook H-9011-1 Chapter 2, II. Application Guidance	Dyers woad, thistles, annual and perennial mustards, Russian knapweed, whitetop.	A selective herbicide used on perennial broadleaf weeds and grasses. Areas where registered use is **not** appropriate include forestland and riparian and aquatic habitats. Areas where registered use is appropriate include rangeland habitats, ROW, recreation and cultural resources, and oil, gas and minerals.
Clopyralid	Yes. Pesticide labels allow for aerial application.	Yes	Yes	Yes. See BLM Handbook H-9011-1 Chapter 2, II. Application Guidance	Knapweeds, thistles.	A selective post-emergence herbicide used to control broadleaf weeds. Areas where registered use is **not** appropriate include riparian and aquatic habitats. Areas where registered use is appropriate include rangeland and forestland habitats, ROW, recreation and cultural resources, and oil, gas, and minerals.
2,4-D	Yes. Pesticide labels allow for aerial application.	Yes	Yes	Yes. See BLM Handbook H-9011-1 Chapter 2, II. Application Guidance	Dyers woad, annual and perennial mustards, knapweeds, Russian thistle.	*2,4-D* is a plant growth regulator and acts as a synthetic auxin hormone. Broad-leaved plants are more susceptible than narrow-leaved plants like grasses. Areas where registered use is appropriate include rangeland, forestland, riparian and aquatic

Active Ingredient	Aerial Application	Ground Application	Spot Treatment	Buffers	Target Vegetation	General Effects to Vegetation
						habitats, ROW, recreation and cultural resources, and oil, gas, and minerals.
Dicamba	Yes. Pesticide labels allow for aerial application.	Yes	Yes	Yes. See BLM Handbook H-9011-1 Chapter 2, II. Application Guidance	Dyers woad, knapweeds, thistles, whitetop, toadflax.	A growth-regulating herbicide readily absorbed and translocated from either roots or foliage. This herbicide produces effects similar to those found with *2,4-D*. Areas where registered use is **not** appropriate include forestland and riparian and aquatic habitats. Areas where registered use is appropriate include rangeland habitats, ROW, recreation and cultural resources, and oil, gas and minerals.
Diflufenzopyr	NA	NA	NA	NA	NA	This active ingredient is approved as a formulation with *dicamba* and is labeled as Distinct® and Overdrive®, but cannot be used as a stand-alone active ingredient by the BLM until it is registered with the EPA.

Active Ingredient	Aerial Application	Ground Application	Spot Treatment	Buffers	Target Vegetation	General Effects to Vegetation
*Diflufenzopyr + Dicamba**	Yes. Pesticide labels allow for aerial application.	Yes	Yes	Yes. See BLM Handbook H-9011-1 Chapter 2, II. Application Guidance	Knapweeds, thistles, Russian thistle.	*Diflufenzopyr*, which is used in combination with *dicamba* for weed control, is a postemergent that inhibits the transport of auxin in the plant resulting in an abnormal accumulation of auxin or auxin-like compounds in the growing points of susceptible plants and an imbalance in growth hormones in the plant. Works well on broadleaf weeds. Areas where registered use is **not** appropriate include forestland and riparian and aquatic habitats. Areas where registered use is appropriate include rangeland, ROW, recreation and cultural resources, oil, gas and minerals.
Diquat	No. *Diquat* will not be aerially applied in riparian areas and wetlands.	No. Aquatic herbicide.	Yes	Yes. Buffers should be applied to avoid drift onto non-target terrestrial vegetation. See BLM Handbook H-9011-1 Chapter 2, II. Application Guidance	Watermilfoils.	*Diquat* is a post-emergence, nonselective herbicide that can be applied directly to vegetation or to ponds, lakes, or drainage ditches for the management of aquatic weed species. *Diquat* is a cell membrane disrupter whose mode of action intercepts electrons from photosynthesis and transfers the energy from photosynthesis to various free radicals that damage cell membranes.

Active Ingredient	Aerial Application	Ground Application	Spot Treatment	Buffers	Target Vegetation	General Effects to Vegetation
						Areas where registered use is **not** appropriate include rangeland and forestland habitats. Areas where registered use is appropriate include riparian and aquatic habitats. Areas where approved registration exists but BLM does not propose to use include ROW, recreation and cultural resources, oil, gas, and minerals.
Diuron	No. To address concerns regarding herbicide drift, the BLM will not utilize aerial application of d*iuron.*	Yes	Yes	Yes. See BLM Handbook H-9011-1 Chapter 2, II. Application Guidance	Annual grasses, broadleaf weeds, Russian thistle.	*Diuron* is a non-selective, broad-spectrum herbicide, effective both pre- and post- emergence. Areas where registered use is **not** appropriate include rangeland, forestland, and riparian and aquatic habitats. Areas where registered use is appropriate include ROW, recreation and cultural resources, and oil, gas and minerals.
Fluridone	Yes. Pesticide labels allow for aerial application.	No. Aquatic herbicide.	Yes	Yes. Buffers should be applied to avoid drift onto non-target terrestrial vegetation. See BLM Handbook H-9011-1 Chapter	Watermilfoils.	*Fluridone* is a systemic, selective, aquatic herbicide that can be applied to the water surface or subsurface, or as a bottom application just above the floor of the water body. *Fluridone* is absorbed from the water by the plant shoots and

Active Ingredient	Aerial Application	Ground Application	Spot Treatment	Buffers	Target Vegetation	General Effects to Vegetation
				2, II. Application Guidance		taken up from the soil by the roots. In susceptible plants, *fluridone* inhibits the formation of carotene, which is essential in maintaining the integrity of chlorophyll. Areas where registered use is **not** appropriate include rangeland and forestland habitats, ROW, recreation and cultural resources, oil, gas, and minerals. Areas where registered use is appropriate include riparian and aquatic habitats.
Fluroxypyr	Yes. Pesticide labels allow for aerial application.	Yes	Yes	Yes. See BLM Handbook H-9011-1 Chapter 2, II. Application Guidance	Broadleaf species such as weedy (annual) kochia, mustards, and leafy spurge.	*Fluroxypyr* is a selective post-emergence herbicide that is used to manage certain annual and perennial weeds. Areas where registered use is **not** appropriate include riparian and aquatic habitats. Areas where registered use is appropriate include rangeland, forestland, ROW, recreation and cultural resources, and oil, gas, and minerals.

Active Ingredient	Aerial Application	Ground Application	Spot Treatment	Buffers	Target Vegetation	General Effects to Vegetation
Glyphosate	Yes. Pesticide labels allow for aerial application.	Yes	Yes	Yes. See BLM Handbook H-9011-1 Chapter 2, II. Application Guidance	Annual grasses, mustards.	A nonselective systemic herbicide that can damage all groups or families of non-target plants to varying degrees. Areas where registered use is appropriate include rangeland, forestland, riparian and aquatic habitats, ROW, recreation and cultural resources, oil, gas, and minerals.
Hexazinone	Yes. Pesticide labels allow for aerial application.	Yes	Yes	Yes. See BLM Handbook H-9011-1 Chapter 2, II. Application Guidance	Saltcedar.	A foliar-or soil-applied herbicide with soil activity. It is used for broadleaf weed, brush, and grass control in non-cropland and in forest lands. Areas where registered use is **not** appropriate include riparian and aquatic habitats. Areas where registered use is appropriate include rangeland and forestland habitats, ROW, recreation and cultural resources, oil, gas, and minerals.
Imazapic	Yes. Pesticide labels allow for aerial application.	Yes	Yes	Yes. See BLM Handbook H-9011-1 Chapter 2, II. Application Guidance	Downy brome, medusahead wildrye, leafy spurge, mustards.	This is a selective, systemic herbicide that can be applied both pre-emergence and post-emergence for the management of selective broadleaf and grassy plant species. Its mode of action is associated with the synthesis of branch-chained amino acids.

Active Ingredient	Aerial Application	Ground Application	Spot Treatment	Buffers	Target Vegetation	General Effects to Vegetation
						Areas where registered use is **not** appropriate include riparian and aquatic habitats. Areas where registered use is appropriate include rangeland and forestland habitats, ROW, recreation and cultural resources, oil, gas, and minerals.
Imazapyr	Yes. Pesticide labels for this chemical allow aerial application.	Yes	Yes	Yes. See BLM Handbook H-9011-1 Chapter 2, II. Application Guidance	Saltcedar, annual and perennial broadleaf weeds.	This broad-spectrum herbicide can be applied pre or postemergence to weeds. Stable for at least 18 months. Kills plants within two to four weeks with residual activity. Areas where registered use is appropriate include rangeland, forestland, riparian and aquatic habitats, ROW, recreation and cultural resources, oil, gas, and minerals.
Metsulfuron methyl	No. To address concerns regarding herbicide drift, the BLM will not utilize aerial application of *metsulfuron.*	Yes	Yes	Yes. See BLM Handbook H-9011-1 Chapter 2, II. Application Guidance	Thistles, annual and perennial broadleaf weeds.	*Metsulfuron methyl* is a selective herbicide used pre- and post-emergence in the control of many annual and perennial weeds and woody plants. Areas where registered use is **not** appropriate include riparian and aquatic habitats. Areas where registered use is appropriate include rangeland, forestland, ROW, recreation and

Active Ingredient	Aerial Application	Ground Application	Spot Treatment	Buffers	Target Vegetation	General Effects to Vegetation
						cultural resources, oil, gas, and minerals.
Picloram	Yes. Pesticide labels allow for aerial application.	Yes	Yes	Yes. See BLM Handbook H-9011-1 Chapter 2, II. Application Guidance	Certain annual and perennial broadleaf weeds, leafy spurge, rush skeletonweed, knapweeds, thistles.	*Picloram* is a selective herbicide that is more toxic to broadleaf and woody plants than grains or grasses. Areas where registered use is **not** appropriate include riparian and aquatic habitats. Areas where registered use is appropriate include rangeland, forestland, ROW, recreation and cultural resources, oil, gas, and minerals.
Rimsulfuron	Yes. Pesticide labels allow for aerial application.	Yes	Yes	Yes. See BLM Handbook H-9011-1 Chapter 2, II. Application Guidance	Invasive annual grasses such as cheatgrass and medusahead rye and other annuals.	*Rimsulfuron* is a selective ALS-inhibiting herbicide applied both pre- and post-emergence to target annual species such as cheatgrass and medusahead rye. Areas where registered use is **not** appropriate include riparian and aquatic habitats. Areas where registered use is appropriate include rangeland, forestland, ROW, recreation and cultural resources, oil, gas, and minerals.

Active Ingredient	Aerial Application	Ground Application	Spot Treatment	Buffers	Target Vegetation	General Effects to Vegetation
Tebuthiuron	Yes. Pesticide labels allow for aerial application.	Yes	Yes	Yes. See BLM Handbook H-9011-1 Chapter 2, II. Application Guidance	Shrubs (thinning), Russian olive.	A soil-applied herbicide used for control of woody plants and vegetation. *Tebuthiuron* has a two to four year residual on dry sites depending on application rates. Areas where registered use is **not** appropriate include forestland and riparian and aquatic habitats. Areas where registered use is appropriate include rangeland, ROW, recreation and cultural resources, oil, gas, and minerals.
Triclopyr	Yes. Pesticide labels allow for aerial application.	Yes	Yes	Yes. See BLM Handbook H-9011-1 Chapter 2, II. Application Guidance	Broadleaf weeds, thistles, saltcedar.	A growth-regulating herbicide for control of woody and broadleaf perennial weeds in non-cropland, forest lands, and lawns. Areas where registered use is appropriate include rangeland, forestland, riparian and aquatic habitats, ROW, recreation and cultural resources, oil, gas, and minerals.

Appendix E - Standard Operating Procedures for Applying Herbicides

Resource Element	**Standard Operating Procedure**
Guidance Documents	BLM Handbook H-9011-1 (*Chemical Pest Control*); and manuals 1112 (*Safety*), 9011 (*Chemical Pest Control*), 9012 (*Expenditure of Rangeland Insect Pest Control Funds*), 9015 (*Integrated Weed Management)*, and 9220 (*Integrated Pest Management*).
General	• Prepare operational and spill contingency plan in advance of treatment. • Conduct a pretreatment survey before applying herbicides. • Select herbicide that is least damaging to the environment while providing the desired results. • Select herbicide products carefully to minimize additional impacts from degradates, adjuvants, inert ingredients, and tank mixtures. • Apply the least amount of herbicide needed to achieve the desired result. • Follow herbicide product label for use and storage. • Have licensed applicators apply herbicides. • Use only USEPA-approved herbicides and follow product label directions and “advisory” statements. • Review, understand, and conform to the “Environmental Hazards” section on the herbicide product label. This section warns of known pesticide risks to the environment and provides practical ways to avoid harm to organisms or to the environment. • Consider surrounding land use before assigning aerial spraying as a treatment method and avoid aerial spraying near agricultural or densely populated areas. • Minimize the size of application area, when feasible. • Comply with herbicide-free buffer zones to ensure that drift will not affect crops or nearby residents/landowners. • Post treated areas and specify reentry or rest times, if appropriate. • Notify adjacent landowners prior to treatment. • Keep a copy of Material Safety Data Sheets (MSDSs) at work sites. MSDSs are available for review at http://www.cdms.net/. • Keep records of each application, including the active ingredient, formulation, application rate, date, time, and location. • Avoid accidental direct spray and spill conditions to minimize risks to resources. • Consider surrounding land uses before aerial spraying. • Avoid aerial spraying during periods of adverse weather conditions (snow or rain imminent, fog, or air turbulence). • Make helicopter applications at a target airspeed of 40 to 50 miles per hour (mph), and at about 30 to 45 feet above ground. • Take precautions to minimize drift by not applying herbicides when winds exceed >10 mph (>6 mph for aerial applications), or a serious rainfall event is imminent. • Use drift control agents and low volatile formulations. • Conduct pre-treatment surveys for sensitive habitat and special status species within or adjacent to proposed treatment areas.

Resource Element	**Standard Operating Procedure**
	• Consider site characteristics, environmental conditions, and application equipment in order to minimize damage to non-target vegetation. • Use drift reduction agents, as appropriate, to reduce the drift hazard to non-target species. • Turn off applied treatments at the completion of spray runs and during turns to start another spray run. • Refer to the herbicide product label when planning re-vegetation to ensure that subsequent vegetation would not be injured following application of the herbicide. • Clean OHVs to remove seeds.
Air Quality See Manual 7000 (*Soil, Water, and Air Management)*	• Consider the effects of wind, humidity, temperature inversions, and heavy rainfall on herbicide effectiveness and risks. • Apply herbicides in favorable weather conditions to minimize drift. For example, do not treat when winds exceed 10 mph (>6 mph for aerial applications) or rainfall is imminent. • Use drift reduction agents, as appropriate, to reduce the drift hazard. • Select proper application equipment (e.g., spray equipment that produces 200- to 800-micron diameter droplets [spray droplets of 100 microns and less are most prone to drift]). • Select proper application methods (e.g., set maximum spray heights, use appropriate buffer distances between spray sites and non-target resources).
Soil See Manual 7000 (*Soil, Water, and Air Management*)	• Minimize treatments in areas where herbicide runoff is likely, such as steep slopes when heavy rainfall is expected. • Minimize use of herbicides that have high soil mobility, particularly in areas where soil properties increase the potential for mobility. • Do not apply granular herbicides on slopes of more than 15% where there is the possibility of runoff carrying the granules into non-target areas.
Water Resources See Manual 7000 (*Soil, Water, and Air Management*)	• Consider climate, soil type, slope, and vegetation type when developing herbicide treatment programs. • Select herbicide products to minimize impacts to water. This is especially important for application scenarios that involve risk from active ingredients in a particular herbicide, as predicted by risk assessments. • Use local historical weather data to choose the month of treatment. Considering the phenology of the target species, schedule treatments based on the condition of the water body and existing water quality conditions. • Plan to treat between weather fronts (calms) and at appropriate time of day to avoid high winds that increase water movements, and to avoid potential stormwater runoff and water turbidity. • Review hydrogeologic maps of proposed treatment areas. Note depths to groundwater and areas of shallow groundwater and areas of surface water and groundwater interaction. Minimize treating areas with high risk for groundwater contamination. • Conduct mixing and loading operations in an area where an accidental spill would not contaminate an aquatic body. • Do not rinse spray tanks in or near water bodies. Do not broadcast pellets where there is danger of contaminating water supplies. • Maintain buffers between treatment areas and water bodies. Buffer widths should be developed based on herbicide- and site-specific criteria to minimize impacts to water bodies.

Resource Element	Standard Operating Procedure
	• Minimize the potential effects to surface water quality and quantity by stabilizing terrestrial areas as quickly as possible following treatment.
Wetlands and Riparian Areas	• Use a selective herbicide and a wick or backpack sprayer. • Use appropriate herbicide-free buffer zones for herbicides not labeled for aquatic use based on risk assessment guidance, with minimum widths of 100 feet for aerial, 25 feet for vehicle, and 10 feet for hand spray applications.
Vegetation See Handbook H-4410-1 (*National Range Handbook*), and manuals 5000 (*Forest Management*) and 9015 (*Integrated Weed Management*)	• Refer to the herbicide label when planning re-vegetation to ensure that subsequent vegetation would not be injured following application of the herbicide. • Use native or sterile species for re-vegetation projects to compete with invasive species until desired vegetation establishes. • Use weed-free feed for horses and pack animals. Use weed-free straw and mulch for re-vegetation and other activities. • Identify and implement any temporary domestic livestock grazing and/or supplemental feeding restrictions needed to enhance desirable vegetation recovery following treatment. Consider adjustments in the existing grazing permit, needed to maintain desirable vegetation on the treatment site. • Minimize the use of terrestrial herbicides in watersheds with downgradient ponds and streams if potential impacts to aquatic plants are identified. • Establish appropriate (herbicide-specific) buffer zones (see Tables 4-12 and 4-14 in the 2007 PEIS) around downstream water bodies, habitats, and species/populations of interest. Consult the ecological risk assessments (ERAs) prepared for the PEIS for more specific information on appropriate buffer distances under different soil, moisture, vegetation, and application scenarios.
Pollinators	• Complete vegetation treatments seasonally before pollinator foraging plants bloom. • Time vegetation treatments to take place when foraging pollinators are least active both seasonally and daily. • Design vegetation treatment projects so that nectar and pollen sources for important pollinators and resources are treated in patches rather than in one single treatment. • Minimize herbicide application rates. Use typical rather than maximum application rates where there are important pollinator resources. • Maintain herbicide free buffer zones around patches of important pollinator nectar and pollen sources. • Maintain herbicide free buffer zones around patches of important pollinator nesting habitat and hibernacula. • Make special note of pollinators that have single host plant species, and minimize herbicide spraying on those plants (if invasive species) and in their habitats.
Fish and Other Aquatic Organisms See manuals 6500 (*Wildlife and Fisheries Management*)	• Use appropriate buffer zones based on label and risk assessment guidance. • Minimize treatments near fish-bearing water bodies during periods when fish are in life stages most sensitive to the herbicide(s) used, and use spot rather than broadcast or aerial treatments. • Use appropriate application equipment/method near water bodies if the potential for off-site drift exists.

Resource Element	Standard Operating Procedure
and 6780 (*Habitat Management Plans*)	• For treatment of aquatic vegetation: 1) treat only that portion of the aquatic system necessary to achieve acceptable vegetation management; 2) use the appropriate application method to minimize the potential for injury to desirable vegetation and aquatic organisms; and 3) follow water use restrictions presented on the herbicide label. • Limit the use of terrestrial herbicides in watersheds with characteristics suitable for potential surface runoff that have fish-bearing streams during periods when fish are in life stages most sensitive to the herbicide(s) used. • Consider the proximity of application areas to salmonid habitat and the possible effects of herbicides on riparian and aquatic vegetation. Maintain appropriate buffer zones around salmonid-bearing streams (see Appendix C, Table C-16, of the 2007 PEIS, and recommendations in the individual ERAs). • Avoid using the adjuvant R-11® in aquatic environments, and either avoid using glyphosate formulations containing polyoxyethyleneamine (POEA), or seek to use formulations with the least amount of POEA, to reduce risks to aquatic organisms in aquatic environments.
Wildlife	• Use herbicides of low toxicity to wildlife, where feasible. • Use spot applications or low-boom broadcast operations where possible to limit the probability of contaminating non-target food and water sources, especially non-target vegetation over areas larger than the treatment area. • Use timing restrictions (e.g., do not treat during critical wildlife breeding or staging periods) to minimize impacts to wildlife. • Avoid using glyphosate formulations that include R-11® in the future, and either avoid using and formulations with POEA, or seek to use the formulation with the lowest amount of POEA available, to reduce risks to amphibians. • Use appropriate buffer zones (see Table 4-12 and 4-14 in Chapter 4 of the 2007 PEIS) to limit contamination of off-site vegetation, which may serve as forage for wildlife.
Threatened, Endangered, and Sensitive Species See Manual 6840 (*Special Status Species*)	• Survey for special status species before treating an area. Consider effects to special status species when designing herbicide treatment programs. • Use drift reduction agents to reduce the risk of drift hazard. • Use a selective herbicide and a wick or backpack sprayer to minimize risks to special status plants. • Avoid treating vegetation during time-sensitive periods (e.g., nesting and migration, sensitive life stages) for special status species in area to be treated. • Implement all conservation measures for special status plant and animal species presented in the 2007 and 2016 PEIS BAs.
Livestock See Handbook H-4120-1 (*Grazing Management*)	• Whenever possible and whenever needed, schedule treatments when livestock are not present in the treatment area. Design treatments to take advantage of normal livestock grazing rest periods, when possible. • As directed by the herbicide product label, remove livestock from treatment sites prior to herbicide application, where applicable. • Use herbicides of low toxicity to livestock, where feasible. • Take into account the different types of application equipment and methods, where possible, to reduce the probability of contamination of non-target food and water sources.

Resource Element	Standard Operating Procedure
	• Avoid use of diquat in riparian pasture while pasture is being used by livestock. • Notify permittees of the herbicide treatment project to improve coordination and avoid potential conflicts and safety concerns during implementation of the treatment. • Notify permittees of livestock grazing, feeding, or slaughter restrictions, if necessary. • Provide alternative forage sites for livestock, if possible.
Wild Horses and Burros	• Minimize using herbicides in areas grazed by wild horses and burros. • Use herbicides of low toxicity to wild horses and burros, where feasible. • Remove wild horses and burros from identified treatment areas prior to herbicide application, in accordance with herbicide product label directions for livestock. • Take into account the different types of application equipment and methods, where possible, to reduce the probability of contaminating non-target food and water sources.
Cultural Resources and Paleontological Resources See handbooks H-8120-1 (*Guidelines for Conducting Tribal Consultation*) and H-8270-1 (*General Procedural Guidance for Paleontological Resource Management*), and manuals 8100 (*The Foundations for Managing Cultural Resources*), 8120 (*Tribal Consultation Under Cultural Resource Authorities*), and 8270 (*Paleontological Resource Management*) See also: *Programmatic Agreement among the Bureau of Land Management, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers Regarding the Manner in Which BLM Will Meet Its Responsibilities Under the National Historic Preservation Act*	• Follow standard procedures for compliance with Section 106 of the National Historic Preservation Act as implemented through the Programmatic Agreement among the Bureau of Land Management, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers Regarding the Manner in Which BLM Will Meet Its Responsibilities Under the National Historic Preservation Act and state protocols or 36 Code of Federal Regulations Part 800, including necessary consultations with State Historic Preservation Officers and interested tribes. • Follow BLM Handbook H-8270-1 (General Procedural Guidance for Paleontological Resource Management) to determine known Condition I and Condition 2 paleontological areas, or collect information through inventory to establish Condition 1 and Condition 2 areas, determine resource types at risk from the proposed treatment, and develop appropriate measures to minimize or mitigate adverse impacts. • Consult with tribes to locate any areas of vegetation that are of significance to the tribe and that might be affected by herbicide treatments. • Work with tribes to minimize impacts to these resources. • Follow guidance under Human Health and Safety in the PEIS in areas that may be visited by Native peoples after treatments.
Visual Resources	• Minimize the use of broadcast foliar applications in sensitive watersheds to avoid creating large areas of browned vegetation.

Resource Element	Standard Operating Procedure
See handbooks H-8410-1 (*Visual Resource Inventory*) and H-8431-1 (*Visual Resource Contrast Rating*), and manual 8400 (*Visual Resource Management*)	• Consider the surrounding land use before assigning aerial spraying as an application method. • Minimize off-site drift and mobility of herbicides (e.g., do not treat when winds exceed 10 mph; minimize treatment in areas where herbicide runoff is likely; establish appropriate buffer widths between treatment areas and residences) to contain visual changes to the intended treatment area. • If the area is a Class I or II visual resource, ensure that the change to the characteristic landscape is low and does not attract attention (Class I), or if seen, does not attract the attention of the casual viewer (Class II). • Lessen visual impacts by: 1) designing projects to blend in with topographic forms; 2) leaving some low-growing trees or planting some low-growing tree seedlings adjacent to the treatment area to screen short-term effects; and 3) re-vegetating the site following treatment. • When restoring treated areas, design activities to repeat the form, line, color, and texture of the natural landscape character conditions to meet established VRM objectives.
Wilderness and Other Special Areas See handbooks H-8550-1 (*Management of Wilderness Study Areas (WSAs)*), and H-8560-1 (*Management of Designated Wilderness Study Areas*), and Manual 8351 (*Wild and Scenic Rivers*)	• Encourage backcountry pack and saddle stock users to feed their livestock only weed-free feed for several days before entering a wilderness area. • Encourage stock users to tie and/or hold stock in such a way as to minimize soil disturbance and loss of native vegetation. • Re-vegetate disturbed sites with native species if there is no reasonable expectation of natural regeneration. • Provide educational materials at trailheads and other wilderness entry points to educate the public on the need to prevent the spread of weeds. • Use the “minimum tool” to treat noxious and invasive vegetation, relying primarily on the use of ground-based tools, including backpack pumps, hand sprayers, and pumps mounted on pack and saddle stock. • Use chemicals only when they are the minimum method necessary to control weeds that are spreading within the wilderness or threaten lands outside the wilderness. • Give preference to herbicides that have the least impact on non-target species and the wilderness environment. • Implement herbicide treatments during periods of low human use, where feasible. • Address wilderness and special areas in management plans. • Maintain adequate buffers for Wild and Scenic Rivers (¼ mile on either side of river, ½ mile in Alaska).
Recreation See Handbook H-1601-1 (*Land Use Planning Handbook, Appendix C*)	• Schedule treatments to avoid peak recreational use times, while taking into account the optimum management period for the targeted species. • Notify the public of treatment methods, hazards, times, and nearby alternative recreation areas. • Adhere to entry restrictions identified on the herbicide product label for public and worker access. • Post signs noting exclusion areas and the duration of exclusion, if necessary. • Use herbicides during periods of low human use, where feasible.
Social and Economic Values	• Consider surrounding land use before selecting aerial spraying as a method, and avoid aerial spraying near agricultural or densely-populated areas. • Post treated areas and specify reentry or rest times, if appropriate.

Resource Element	Standard Operating Procedure
	• Notify grazing permittees of livestock feeding restrictions in treated areas, if necessary, as per herbicide product label instructions. • Notify the public of the project to improve coordination and avoid potential conflicts and safety concerns during implementation of the treatment. • Control public access until potential treatment hazards no longer exist, per herbicide product label instructions. • Observe restricted entry intervals specified by the herbicide product label. • Notify local emergency personnel of proposed treatments. • Use spot applications or low-boom broadcast applications where possible to limit the probability of contaminating non-target food and water sources, especially vegetation over areas larger than the treatment area. • Consult with Native American tribes and Alaska Native groups to locate any areas of vegetation that are of significance to the tribes and Native groups and that might be affected by herbicide treatments. • To the degree possible within the law, hire local contractors and workers to assist with herbicide application projects and purchase materials and supplies, including chemicals, for herbicide treatment projects through local suppliers. • To minimize fears based on lack of information, provide public educational information on the need for vegetation treatments and the use of herbicides in an integrated pest management program for projects proposing local use of herbicides.
Rights-of-way	• Coordinate vegetation management activities where joint or multiple use of a ROW exists. • Notify other public land users within or adjacent to the ROW proposed for treatment. • Use only herbicides that are approved for use in ROW areas.
Human Health and Safety	• Establish a buffer between treatment areas and human residences based on guidance given in the HHRA, with a minimum buffer of ¼ mile for aerial applications and 100 feet for ground applications, unless a written waiver is granted. • Use protective equipment as directed by the herbicide product label. • Post treated areas with appropriate signs at common public access areas. • Observe restricted entry intervals specified by the herbicide product label. • Provide public notification in newspapers or other media where the potential exists for public exposure. • Have a copy of MSDSs at work site. • Notify local emergency personnel of proposed treatments. • Contain and clean up spills and request help as needed. • Secure containers during transport. • Follow label directions for use and storage. • Dispose of unwanted herbicides promptly and correctly.

Appendix F - Plant Species Seed List and Guidance for Selecting Plant Materials

Plant species for use in vegetation treatment seed mixtures within the TFD 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 the table below for plant species and varieties.

The geographical areas were identified because of their high fire frequencies; they are the locations where most vegetation treatment activities occur in the TFD. Plant species and varieties are chosen for a seed mixture based on their adaptability to the geographical areas. Species not currently listed on Table F-1 can be used in vegetation treatment seed mixtures with field office management concurrence. Rationale for seed mixtures (such as plant species and seed rates) will be provided in the vegetation treatment plans.

The following list identifies the plant species that will generally be used in the development of seed mixtures 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

<u>Juniper Sites</u>

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 F-1. Aerial grass seeding rates will generally be 25-50% higher than the drill seed rates. For a typical juniper burn where chaining is identified in the vegetation treatment plan, the amount of grass seed applied should approximately double the drill rates.

The plant species identified for use in vegetation treatment seed mixtures are chosen on their ability to adapt to the geographic areas in the Great Basin and proven success in past seeding efforts in the TFD. Non-native species are included for their known ability to out-compete weedy invasive plants. The need to plant more diverse seed mixtures that include 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 F-1 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. Monitoring results will be used to identify or modify seed selection in future efforts.

Table F-1 Plant Species and Varieties for Use in Vegetation Treatments

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.

Common Name	Species/Variety	Seeds/Lb	Typical Seeding Rate-Lbs/Acre/PLS	Comments
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, Turkey Lake	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

Common Name	Species/Variety	Seeds/Lb	Typical Seeding Rate-Lbs/Acre/PLS	Comments
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
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 G - Important Seasonal Periods for Special Status Aquatic Species in the TFD

Species	Important Seasonal Periods	Approximate Dates
Jarbidge River Bull Trout	Spawning	August through November
	Incubation	November through May
Columbia River Redband Trout	Spawning	May through June
	Incubation	June through August
Snake River White Sturgeon	Spawning	March through June
	Incubation	March through July
Shoshone Sculpin	Spawning	March through August
	Incubation	March through September
Wood River Sculpin	Spawning	March through May
	Incubation	March through June
Yellowstone Cutthroat Trout	Spawning	March through June
	Incubation	March through July
Northern Leatherside Chub	Spawning	April through June
	Incubation	April through July
Bliss Rapids Snail	Reproduction	October through February
Bruneau hot Springsnail	Reproduction	Year-round
Snake River physa	Reproduction	Year-round
Banbury Springs lanx	Reproduction	Year-round
Utah Valvata	Reproduction	Year-round
Short-Face lanx	Reproduction	Year-round

Footnote: Spawning and egg incubation periods are estimates. Rates vary according to local water temperatures.

Appendix H- Seasonal Wildlife Restrictions and Procedures for Processing Requests for Exceptions on Public Lands in Idaho

From Idaho Information Bulletin IDIB2010-039 (July 2010 Version)

1.0. Introduction: In general, BLM-generated projects (e.g., vegetation treatments, range improvements) and other actions for which BLM authorization is required (e.g., rights-of-way, lease authorizations, organized recreational events), should be analyzed in accordance with NEPA and sited or designed in a manner that avoids impacts to wildlife species or habitats of concern to the extent possible, based on current science. Seasonal wildlife restrictions are intended to protect wildlife resources from disturbance during important seasons of the year, such as breeding, nesting or wintering. However, such restrictions may or may not have been previously developed for existing RMPs or MFPs in Idaho or they may lack consistency between BLM districts or field offices, or existing measures may not reflect current science. The purpose of this document is to establish a consistent suite of recommended seasonal restrictions for a selected group of wildlife species of concern to Idaho BLM and to provide a framework for considering appropriate temporary exceptions to those restrictions. Where existing RMP or MFP restrictions are similar to or exceed those described in this document, they can continue to be used. If less restrictive, they should be replaced with those specified in this document unless there is scientific, reasonable justification to the contrary. Where large projects (e.g., transmission, wind etc.) cross multiple field offices or districts, this document can also provide helpful consistency for project planners. This document may be revised in the future, based on new science, policy or other factors.

2.0. Wildlife seasonal restrictions and considerations for granting exceptions:

2.1. Big game winter ranges and bighorn sheep habitat: Seasonal restrictions for potentially disruptive construction or other activities within big game winter ranges in Idaho typically will apply from November 15 through April 30 unless a temporary, short-term exception is granted by the BLM field office manager. General time-frames for calving/fawning are May 1-June 30 for elk and deer and May 15 through June 30 for pronghorn. Seasonal restrictions within bighorn sheep lambing areas will apply from approximately April 15 to June 15. These dates, as specified, are general in nature for purposes of this document, and may be adjusted as needed based on local conditions.

Since there presently is not widespread consistency across the state as to the various winter range sub-categories, we will not make distinctions as to "crucial" or other designations of winter habitat when applying seasonal restrictions or when reviewing requests for exceptions at this time. Rather, we will use the term "winter range", as delineated locally by the IDFG region for each big game species, based on the most recent available information. Additional factors to consider when granting exceptions to seasonal restrictions on winter ranges or in bighorn sheep lambing habitat include:

1. Animal presence or absence
2. Animal condition
3. Weather severity
    - Snow conditions (depth, crusting , longevity)
    - Seasonal weather patterns
    - Wind chill factor (indication of animal's energy use)

- Air temperatures and variation
- Duration of winter conditions
- Forecasts (long range for duration of winter)

4. Habitat condition and availability

- Animal density (high or low)
- Forage condition (good or poor)
- Competition (livestock and other wildlife)
- Forage availability/accessibility (amount of forage, snow depth/crusting)
- Whether or not there is suitable and ample forage immediately available and accessible nearby that is not being used

5. Site location

- Likelihood of animals habituating to activity
- Presence of thermal and security (hiding) cover and other related factors
- Proportion of winter range affected
- Topographic Features (sight distances)
- Location of site within winter range (adjacent? edge? center? etc.)
- Whether there is other activity in the area and whether it is likely to increase the cumulative adverse impact

6. Timing

- Early in winter season?
- Nearing end of winter season?
- Kind and duration of disruptive activity expected

2.2. Raptors:

a. Raptor nest disturbance: Nest management guidelines are currently under revision by the U.S. Fish and Wildlife Service (USFWS). Pending finalization of these USFWS guidelines, protective buffers described in the February 2008 draft version of the USFWS "*Guidelines for Raptor Conservation in the Western United States*" (Whittington & Allen, 2008) will be used on Idaho BLM lands unless more restrictive buffers are identified in existing RMPs of MFPs. While the draft USFWS guidelines provide recommended disturbance buffers for a comprehensive list of raptor species, several species of interest to Idaho BLM are summarized below for convenience.

Species	Spatial Buffer in Non-Urban Areas
Bald eagle	0.5 to 1.0 mile
Northern goshawk	0.5 mile
Ferruginous hawk	1.0 mile
Golden eagle	0.5 mile
Peregrine falcon	1.0 mile
Red-tailed hawk	0.33 mile
Prairie falcon	0.5 mile
Swainson's hawk	0.25 mile
Burrowing owl	0.25 mile

The USFWS Bald Eagle Management Guidelines (BEMG) specifies a 660 foot nest buffer for bald eagles. However page 64 in the 2008 draft USFWS Guidelines for Raptor Conservation in the Western United States (Raptor Guidelines) referenced above, the USFWS recommends a broader 0.5 to 1.0 mile buffer in more open areas of the western U.S. due to greater line-of-sight distances. For winter roosts, a 0.25 to 1 mile buffer is recommended, depending on the degree of screening provided by vegetation or topographic features.

Seasonal restrictions for potentially disruptive construction or other human activities, will generally apply for raptors from February 1 through July 31 unless an exception is granted by the BLM field office manager. Temporary exceptions can be granted in situations where the raptor nest has been destroyed (e.g., by wind, wildfire, lightning), or is not currently active (i.e., young have fledged or if the nest is unused in the current nesting season). Exceptions or temporal deviations from the established February 1 - July 31 timeframe may also be granted based on species, variations in nesting chronology of particular species locally, topographic considerations (e.g., intervening ridge between construction activities and a nest) or other factors that are biologically reasonable. Biologists should review the Bald Eagle Management Guidelines, Draft Guidelines for Raptor Conservation in the Western United States, and Interim Golden Eagle Technical Guidance documents for additional details and protocols.

b. Golden eagle- additional considerations: During project planning, the BLM and project proponents should work closely with the USFWS in incorporating appropriate provisions and protocols found in *Interim Golden Eagle Technical Guidance: Inventory and Monitoring Protocols; and other Recommendations in Support of Golden Eagle Management and Permit Issuance* (Pagel et al., 2010). Consideration of golden eagles and their habitat must be incorporated into NEPA analyses for all renewable energy projects per BLM Washington Office IM 2010-156.

2.3. Greater Sage-grouse: The greater sage-grouse has been determined warranted for listing under Endangered Species Act but precluded by other listing priorities (Federal Register March 23, 2010). Projects should be designed and sited to avoid impacts and disturbance to leks and sage-grouse habitats to the extent possible; in particular infrastructure/energy development projects (Idaho Sage-grouse Advisory Committee 2006- see pages 4.42-4.45.).

The *Conservation Plan for the Greater Sage-grouse in Idaho* suggests that new infrastructure projects avoid seasonal habitats by a minimum of 2-5 miles, depending on the type of project. In addition, new research suggests that disturbance-related impacts from energy development on counts of displaying male sage-grouse at leks were apparent out to 6.4 km or approximately 4 miles (Naugle et al., *in press*), and that most (79%) nests occur within 6.4 km of leks (Doherty et al., *in press* citing Colorado Division of Wildlife 2008-Appendix B Page 7). Since impacts from infrastructure development may be uncertain, and are contingent on multiple factors, a conservative approach to seasonal restrictions is warranted, pending further review of recent scientific findings and refinement of conservation measures.

Therefore, assuming that projects, including large-scale infrastructure/energy development projects, have been sited to avoid most occupied or undetermined status leks and important seasonal habitats (e.g., breeding, winter) to the extent possible, and in accordance with the *Conservation Plan for the Greater Sage-grouse in Idaho*, the following seasonal restrictions apply to remaining leks/habitat potentially affected by the project:

a. Controlled surface and timing limitation use near sage-grouse leks and/or nesting/early brood rearing habitat: Potentially disruptive larger-scale construction activities (e.g., infrastructure/ energy development and similar projects), shall be avoided within 6.4 km (~4 miles) of occupied or undetermined status sage-grouse leks from March 1 to June 30 to reduce disturbance to lekking or nesting grouse (and/or hens with early broods). Specific dates may be earlier or later, depending on local breeding chronology. The spatial buffer may be increased or decreased based on site-specific factors analyzed and documented in an Environmental Assessment (EA) or Environmental Impact Statement (EIS) and authorized via the appropriate Decision document.

Exceptions may be granted for construction or maintenance activities involving only infrequent, short-term disturbance (less than 1 hour within a 24- hour period in a specific area); or if there are intervening topographic features or line-of-sight screening that buffer the lek or nesting habitat from disturbance; or if recent (within the past 5 years) site-specific studies or local expertise suggest that nesting hens are unlikely to be present within the 4.0 mile zone surrounding the project activity. Suitable nesting and early brood-rearing habitats have not been mapped in most parts of Idaho, so these will need to be identified on a project by project basis.

b. For smaller-scale human disturbances, (e.g., water pipeline construction, routine fence maintenance, facility maintenance etc. of a minor nature) a 1.0 km (0.62 mile) lek disturbance buffer will apply between approximately March 15-May 1 in lower elevations and March 25 through May 15 in higher elevations, from 6:00 PM to 9:00 AM in a specific area to minimize disturbance to lekking grouse (Idaho Sage-grouse Advisory Committee 2006, Page 4-70). Specific dates may be earlier or later, depending on local breeding chronology.

c. For mechanical control of conifers in sage-grouse breeding habitat, work should occur between approximately July 15 and January 30 to minimize disturbance to lekking or nesting sage-grouse and early broods (ISAC 2006, Page 4.97). Specific dates may be earlier or later, depending on local breeding chronology.

d. Specific conservation measures for organized recreational events that may affect sage-grouse or sage-grouse habitat have not been developed to date. In the interim, events should be sited and timed in a manner to minimize impacts to sage-grouse. Spatial and temporal buffers will be developed on a site-specific basis in consideration of the nature of the activity.

2.4. Columbian sharp-tailed grouse: Assuming that projects, including large-scale projects (e.g., infrastructure/energy) have been sited to avoid most occupied or undetermined status leks and important seasonal habitat (e.g., breeding, winter) to the extent possible, the following seasonal restrictions apply to remaining leks/habitat potentially affected:

a. Where sharp-tailed grouse leks occur in proximity to sage-grouse leks, the 4 mile sage-grouse lek/nesting habitat disturbance buffer, as described above, will apply for larger-scale projects (e.g.. infrastructure, energy development), from March 1 to June 30. The spatial buffer may be increased or decreased based on site-specific factors analyzed and documented in an EA or EIS and authorized via the appropriate Decision document. Specific dates may be earlier or later, depending on local breeding chronology.

b. Where sharp-tailed grouse leks occur separately (i.e., not intermingled or near sage-grouse leks), the following will apply:

1. Controlled surface and timing limitation use near Columbian sharp-tailed grouse leks and/or nesting/early brood rearing habitat: Potentially disruptive larger-scale construction activities (e.g.. infrastructure/ energy development and similar projects), shall be avoided within 2.0 km (1.2 miles) of occupied or undetermined status leks from March 15 to June 30 to reduce disturbance to lekking or nesting sharp-tailed grouse unless specifically analyzed in an EA or EIS and authorized through an appropriate Decision. Specific dates may be earlier or later, depending on local breeding chronology. The spatial buffer may be increased or decreased based on site-specific factors analyzed and documented in an EA or EIS and authorized via the appropriate Decision document.

2. Exceptions may be granted for construction or maintenance activities involving only infrequent, short-term (less than one hour within a 24-hour period in a specific area) disturbance; or if there are intervening topographic features or line-of-sight screening that buffer the lek or nesting habitat from disturbance; or if recent (within the past 5 years) site-specific studies or local expertise suggest that nesting hens are unlikely to be present within the 1.2 mile zone surrounding the project activity. Suitable nesting and early brood-rearing habitats have not been mapped in most parts of Idaho, so these will need to be identified on a project by project basis.

3. For smaller scale disturbances, (e.g., water pipeline construction, fence maintenance, facility maintenance etc.), a 1.0 km (0.62 mile) lek disturbance buffer will apply between approximately March 15 and April 30 from 6:00 PM to 9:00 AM in a specific area to minimize disturbance to lekking sharp-tailed grouse. Specific dates may be earlier or later, depending on local breeding chronology.

4. Development of specific conservation measures for organized recreational events that may affect sharp-tailed grouse or habitat have not been developed to date. In the interim, events should be sited and timed in a manner to minimize impacts to grouse. Spatial and temporal buffers will be developed on a site-specific basis in consideration of the nature of the activity.

3.0. General procedure for requesting and granting exceptions to seasonal wildlife restrictions:

Even with conscientious planning up front, it is sometimes not possible to avoid impacts to wildlife. In such cases, temporary exceptions to wildlife seasonal restrictions may be allowed at times to accommodate certain activities, such as construction of energy development facilities, power transmission lines or other projects, if the activities can be done quickly and with little or no disturbance to the wildlife species of interest. The intent of allowing an exception is to eliminate a restriction when it has no applicability or is not needed to avoid impacts to wildlife. The discretion to allow an exception is limited to those situations where the degree of impacts to wildlife, as predicted in the NEPA analysis (e.g., as completed in the EA or EIS for the project in question), would be the same, with or without the restriction. An exception is a case-by–case, one time exemption from a seasonal restriction for a specified portion of the project, right-of-way or lease area.

The unpredictability of factors such as weather, animal movement and animal condition precludes analysis and processing of specific requests for exception very far in advance of the time periods in question. However the restrictions and potential need for exceptions should be described and evaluated in project NEPA analyses to the extent possible. Exceptions to seasonal restrictions may be considered and granted by the field office manager if the BLM field office biologist in consultation with IDFG believes that granting an exception will not unacceptably disturb, displace or stress the wildlife species being protected. There is no clear-cut formula but use of available data and knowledge of local conditions will be the primary factors in making the recommendation. The general process will be as follows:

1. A request for an exception to a seasonal wildlife restriction must be initiated in writing (via letter or email) by the operator or project proponent (or appropriate representative) to the BLM field office manager/ authorized officer. The request must include a 1) description of the activity needing exception, 2) description of the need and rationale for the exception, 3) description of mitigation measures and alternatives such as traffic restrictions, alternative scheduling, staged activity, etc., that may reduce impacts to the wildlife resource, and 4) date or dates for the requested exception.

2. The BLM field office biologist, in coordination with the appropriate IDFG staff, will review the application for exception and available information, including site visits, as appropriate, along with the considerations and criteria in section 2.0 of this document. Analyses of requests for exception will include validation of the seasonal restriction (e.g., is the area still serving as mule deer winter range? Is there still a likelihood of nesting raptors in the area, etc.?) and a review of potential mitigation measures and alternatives proposed in the application, such as traffic restrictions, alternative scheduling, staged activity, etc. The BLM field office biologist will then provide a recommendation in writing to the field office manager as expeditiously as is practical.

3. A final determination for granting an exception to seasonal wildlife restrictions will be made by the BLM field office manager, in consideration of the biologist's recommendation and consistent with applicable law, regulation, policy, or local planning. The request for exception is considered as a unique, site-specific action and is analyzed and subsequently documented by the field office manager or his/her representative, with respect to RMP and project NEPA compliance. If existing project-level NEPA documentation is adequate, a DNA and DR are sufficient (See BLM NEPA Handbook H-1790-1 (2008). In other cases, preparation of a separate EA may be necessary; however under those circumstances it would be difficult to accommodate an exception on short notice. In all cases, the rationale for granting or not granting the exception must be documented in the DR, including the biologists' findings and recommendation and concurrence or non-concurrence with IDFG recommendations.

4. Notification to the applicant will occur in writing, via letter or email from the field office manager or his/her representative.

5. Exceptions may be cancelled by the field office manager/ authorized officer in the event that local conditions change suddenly in a manner that places wildlife at unacceptable risk. For example, a temporary exception for construction activities in big game winter range granted on a Monday could be cancelled if heavy snowfall on the following Wednesday results in an unanticipated concentration of mule deer in the project area. In such cases, the field office manager or his/her representative will contact the project proponent as soon as possible to discuss the situation and negotiate an appropriate resolution.

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Appendix I - BLM Special Status Species List

Special Status Animal Categories:

Type 1. Federally listed Threatened or Endangered species, Experimental Essential populations and designated Critical Habitat.

Type 2. Idaho BLM Sensitive Species, including USFWS Proposed and Candidate species, ESA species delisted during the past five years, and ESA Experimental Non-essential populations.

Special Status Plant Categories:

Type 1. Federally listed Threatened or Endangered Species and designated Critical Habitat.

Type 2. These are species that have a high likelihood of being listed in the foreseeable future due to their global rarity and significant endangerment factors. Species also include USFWS Proposed and Candidate species, ESA species delisted during the past five years, ESA Experimental Non-essential species, and ESA Proposed Critical Habitat.

Type 3. Range-wide or State-wide Imperilied – Moderate Endangerment

These are species that are globally rare or very rare in Idaho, with moderate endangerment factors. Their global or state rarity and the inherent risks associated with rarity make them imperiled species.

Type 4. Species of Concern

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.

NOTE: The following lists are dynamic, and the conservation status for individual species may change in the future.

Table I-1 - Special Status Plants

Scientific Name	Common Name	Status	JFO	BFO	SFO
Allium anceps	Two-headed onion	Type 4	X	X	
Astragalus anserinus	Goose Creek milkvetch	Type 2		X	
Astragalus atratus var. *inseptus*	Mourning milkvetch	Type 4			X
Astragalus newberryi var. *castoreus*	Newberry's milkvetch	Type 4	X	X	
Astragalus oniciformis	Picabo milkvetch	Type 3			X
Astragalus purshii var. *ophiogenes*	Snake River milkvetch	Type 4	X		X
Astragalus tetrapterus	Four-wing milkvetch	Type 4	X	X	
Astragalus yoder-williamsii	Mudflat milkvetch	Type 3	X		
Calandrinia ciliata	Fringed redmaids	Type 4			X
Catapyrenium congestum	Earth lichen	Type 4	X	X	
Chaenactis stevioides	Desert pincushion	Type 4	X		
Cleomella plocasperma	Twisted or alkali cleomella	Type 3	X		
Cymopterus acaulis var. *greeleyorum*	Greeley's wavewing	Type 3	X		
Damasonium californicum	Fringed waterplantain	Type 4	X		
Downingia bacigalupii	Bacigalupi's downingia	Type 4			X
Eatonella nivea	White eatonella	Type 4	X		X
Epipactis gigantea	Chatterbox or stream orchid	Type 3	X	X	X
Erigeron latus	Broad fleabane	Nevada BLM Sensitive	X		
Eriogonum lewisii	Lewis buckwheat	Nevada BLM Sensitive	X		
Eriogonum ovalifolium var. *focarium*	Craters-of-the-Moon wild buckwheat	Type 3			X
Eriogonum shockleyi var. *packardiae*	Packard's buckwheat	Type 4	X		
Eriogonum shockleyi var. *shockleyi*	Matted cowpie buckwheat	Type 4	X		

Scientific Name	Common Name	Status	JFO	BFO	SFO
Glyptopleura marginata	White-margined wax plant	Type 4	X	X	
Ipomopsis polycladon	Spreading gilia	Type 3	X		
Lepidium davisii	Davis' peppergrass	Type 3	X	X	
Lepidium papilliferum	Slickspot peppergrass	Type 1 Threatened	X		
Leptodactylon glabrum	Bruneau River prickly phlox	Type 3	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
Penstemon idahoensis	Idaho penstemon	Type 3		X	
Penstemon janishiae	Janish's penstemon	Type 3	X		
Peteria thompsoniae	Spine-noded milkvetch	Type 4	X		
Phacelia inconspicua	Obscure phacelia	Type 2			X
Phacelia minutissima	Least phacelia	Type 2			X
Potamogeton diversifolius	Waterthread pondweed	Type 4	X		
Pyrrocoma insecticruris	Bugleg goldenweed	Type 3			X
Sporobolus compositus var. *compositus*	Tall dropseed	Type 3			X
Stanleya confertiflora	Malheur princesplume	Type 2			X
Teucrium canadense var. *occidentale*	American wood sage	Type 4	X		
Townsendia scapigera	Scapose townsendia	Type 3		X	

Special Status Animals

Scientific Name	Common Name	Status	JFO	BFO	SFO
Mammals					
Antrozous pallidus	Pallid bat	Type 2	X	X	X
Brachylagus idahoensis	Pygmy rabbit	Type 2	X	X	X
Canis lupus	Gray wolf	Type 2			X
Eptesicus fuscus	Big brown bat	Type 2	X	X	X
Euderma maculatum	Spotted bat	Type 2	X	X	X
Gulo gulo luscus	Wolverine	Type 1 Proposed Threatened			X
Lasionycteris noctivagans	Silver-haired bat	Type 2	X	X	X
Lasiurus cinereus	Hoary bat	Type 2	X	X	X
Lynx canadensis	Canada lynx	Type 1 (Threatened, Critical Habitat)			X
Martes pennanti	Fisher	Type 2			X
Myotis ciliolabrum	Western small-footed myotis	Type 2	X	X	X
Myotis evotis	Long-eared myotis	Type 2	X	X	X
Myotis lucifugus	Little brown bat	Type 2	X	X	X
Myotis volans	Long-legged myotis	Type 2	X	X	X
Myotis yumanensis	Yuma myotis	Type 2	X	X	X
Ovis canadensis sp.	Bighorn sheep	Type 2	X	X	X
Parastrellus hesperus	Canyon bat (formerlyWestern pipistrelle)	Type 2	X	X	X
Plecotus (Corynorhinus) townsendii	Townsend’s big-eared bat	Type 2	X	X	X
Urocitellus mollis (formerly *Spermophilus mollis artemisae*)	Piute ground squirrel	Type 2	X	X	X

Scientific Name	Common Name	Status	JFO	BFO	SFO
Vulpes macrotis	Kit fox	Type 2	X	X	X
Birds					
Accipiter gentilis	Northern goshawk	Type 2	X	X	X
Ammodramus savannarum	Grasshopper sparrow	Type 2	X	X	X
Amphispiza belli	Sage sparrow	Type 2	X	X	X
Amphispiza bilineata	Black-throated sparrow	Type 2	X	X	X
Aquila chrysaetos	Golden eagle	Type 2	X	X	X
Asio flammeus	Short-eared owl	Type 2	X	X	X
Athene cunicularia	Burrowing owl	Type 2	X	X	X
Buteo regalis	Ferruginous hawk	Type 2	X	X	X
Carpodacus cassinii	Cassin’s finch	Type 2		X	X
Centrocercus urophasianus	Greater sage-grouse	Type 2	X	X	X
Chlidonias niger	Black tern	Type 2	X	X	X
Coccyzus americanus	Yellow-billed cuckoo	Type 1 (Threatened, proposed Critical Habitat)	X	X	X
Contopus cooperi	Olive-sided flycatcher	Type 2	X	X	X
Cygnus buccinator	Trumpeter swan	Type 2	X		X
Empidonax trailii	Willow flycatcher	Type 2	X	X	X
Gymnorhinus cyanocephalus	Pinyon jay	Type 2		X	
Haliaeetus leucocephalus	Bald eagle	Type 2	X	X	X
Lanius ludovicianus	Loggerhead shrike	Type 2	X	X	X
Melanerpes lewis	Lewis’ woodpecker	Type 2	X	X	X
Numenius americanus	Long-billed curlew	Type 2	X	X	X
Oreoscoptes montanus	Sage thrasher	Type 2	X	X	X

Scientific Name	Common Name	Status	JFO	BFO	SFO
Oreotyx pictus	Mountain quail	Type 2			X
Otus flammeolus	Flammulated owl	Type 2		X	X
Picoides albolarvatus	White-headed woodpecker	Type 2			X
Pipilo chlorurus	Green-tailed towhee	Type 2	X	X	X
Spizella breweri	Brewer’s sparrow	Type 2	X	X	X
Tympanuchus phasianellus columbianus	Columbian sharp-tailed grouse	Type 2	X	X	X
Vermivora virginae	Virginia’s warbler	Type 2	X	X	
Amphibians					
Anaxyrus boreas	Western/boreal toad	Type 2	X	X	X
Rana luteiventris	Columbia spotted frog	Type 2	X		
Rana pipiens	Northern leopard frog	Type 2	X	X	X
Reptiles					
Crotaphytus bicinctores	Great Basin black-collared lizard	Type 2	X		
Rhinocheilus lecontei	Longnose snake	Type 2			X
Sonora semiannulata	Ground snake	Type 2			X
Fish					
Acipencer transmontanus	White Sturgeon	Type 2	X	X	X
Cottus greenei	Shoshone sculpin	Type 2	X		X
Cottus leiopomus	Wood River sculpin	Type 2			X
Lepidomeda copei	Northern Leatherside chub	Type 2		X	X
Oncorhynchus clarki bouvieri	Yellowstone cutthroat trout	Type 2		X	
Oncorhynchus mykiss gairdneri	Redband trout	Type 2	X	X	X

Scientific Name	Common Name	Status	JFO	BFO	SFO
Salvelinus confluentus	Jarbidge River Bull trout	Type 1 (Threatened, Critical Habitat)	X		
Invertebrates					
Anodonta californiensis	California floater	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		
Fisherola nuttalli	Shortface lanx	Type 2	X	X	X
Flumincola fuscus	Ashy (Columbia) pebblesnail	Type 2	X	X	X
Glacicavicola bathyscoides	Blind Cave leiodid beetle	Type 2		X	X
Haitia (Physa) natricina	Snake River physa	Type 1 (Endangered)	X	X	X
Lanx spp.	Banbury Springs lanx	Type 1 (Endangered)			X
Oreohelix strigose goniogyra	Striate mountainsnail	Type 2		X	
Pyrgulopsis bruneauensis	Bruneau hot springsnail	Type 1 (Endangered)	X		
Taylorconcha serpenticola	Bliss Rapids snail	Type 1 (Threatened)	X	X	X

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Appendix J - 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). Some are also BLM special status species. The Migratory Bird Program places priority emphasis on these birds. (USFWS Migratory Bird Program Strategic Plan 2004-2014).

Common Name	Scientific Name	Status
Bald Eagle	*Haliaeetus leucocephalus*	Type 2
Black-chinned Sparrow	*Spizella atrogularis*	Migratory
Black Rosy-Finch	*Leucosticte atrata*	Migratory
Black swift	*Cypseloides niger*	Migratory
Black Tern	*Chlidonias niger*	Type 2
Black-throated Sparrow	*Amphispiza bilineata*	Type 2
Brewer’s sparrow	*Spizella breweri*	Type 2
Burrowing Owl	*Athene cunicularia*	Type 2
Calliope Hummingbird	*Selasphorus calliope*	Migratory
Cassin’s Finch	*Carpodacus cassinii*	Type 2
Columbian Sharp-tailed Grouse	*Tympanuchus phasianellus columbianus*	Type 2
Eared Grebe	*Podiceps nigricollis*	Migratory
Ferruginous hawk	*Buteo regalis*	Type 2
Flammulated owl	*Otus flammeolus*	Type 2
Golden eagle	*Aquila chrysaetos*	Type 2
Grasshopper Sparrow	*Ammodramus savannarum*	Type 2
Greater Sage-grouse	*Centrocercus urophasianus*	Type 2
Green-tailed Towhee	*Pipilo chlorurus*	Type 2

Common Name	**Scientific Name**	**Status**
Lewis woodpecker	*Melanerpes lewis*	Type 2
Loggerhead shrike	*Lanius ludovicianus*	Type 2
Long-billed curlew	*Numenius americanus*	Type 2
Marbled godwit	*Limosa fedoa*	Migratory
Mountain Quail	*Oreortyx gentilis*	Type 2
Northern Goshawk	*Accipiter gentilis*	Type 2
Olive-sided Flycatcher	*Contopus cooperi*	Type 2
Peregrine falcon	*Falco peregrinus anatum*	Migratory
Pinyon Jay	*Gymnorhinus cyanocephalus*	Type 2
Sage Sparrow	*Amphispiza belli*	Type 2
Sage Thrasher	*Oreoscoptes montanus*	Type 2
Short-eared Owl	*Asio flammeus*	Type 2
Snowy Plover	*Charadrius alexandrinus*	Migratory
Tricolored blackbird	*Agelaius tricolor*	Migratory
Trumpeter Swan	*Cygnus buccinators*	Type 2
Virginia’s warbler	*Vermivora virginae*	Type 2
White-headed Woodpecker	*Picoides albolarvatus*	Type 2
Williamson’s Sapsucker	*Sphyrapicus thyroideus*	Migratory
Willow Flycatcher	*Empidonax trailii*	Type 2
Yellow Rail	*Coturnicops noveborucensis*	Migratory
Yellow-billed cuckoo	*Coccyzus americanus*	Type 1

Appendix K - Land Treatment Monitoring Guidelines

From Twin Falls District Instruction Memorandum IDIMT000-2012-001

The following criteria and guidelines will be used to determine and establish monitoring data collection techniques, methodology by treatment type, data collection intensity, and monitoring point locations.

Data Collection Methods

The following data collection methods will be the standard for TFD vegetation treatments. Additional monitoring data collection methods may be necessary for unique or uncommon treatments. All monitoring points will have geographic positioning system (GPS) data collected for point establishment and during each subsequent data collection visit. GPS data will be maintained within established geodatabases and tabular datasets including ArcGIS and Firemon and Feat Integrated (FFI).

Plot Design

- Triad transect lines (U.S. Geologic Survey [USGS] Standards)

Quantitative Methods

- Line-Point Intercept (USGS Standards) for the measurement of vegetation cover
- Quadrats (USGS Standards) for the measurement of grass/forb density
- Belt Transects (USGS Standards) for the measurement of shrub density
- Shrub seedling survival transects for hand or mechanical planting projects

Qualitative Methods

- Photo Points taken in the four Cardinal directions (Idaho BLM Fuels Standards)
- Data Dictionary “Vegetation Survey” (Idaho BLM Fuels Standards)

Methodology by Treatment Type

Recommended monitoring methods for vegetation treatments are outlined in the following table.

Treatment	Cover	Density (quadrat)	Density (belt transect)	Shrub seedling survival transect	Photos	Data Dictionary /GPS point
Drill/Harrow Seeding	Yes	Yes	No	No	Yes	Yes
Aerial Seeding (grass)	Yes	Yes	No	No	Yes	Yes
Aerial Seeding (brush)	No	No	Yes	No	Yes	Yes
Hand/Mechanical Shrub Planting	No	No	No	Yes	Yes	Yes
Chemical (broadcast)	Yes	No	No	No	Yes	Yes
Hand Thinning	Yes	No	No	No	Yes	Yes
Mastication	Yes	No	No	No	Yes	Yes
Prescribed Fire	Yes	Yes	No	No	Yes	Yes

Monitoring Intensity Determinations

Number of monitoring points recommended for vegetation treatments are outlined in the following table. Total monitoring point determination may be adjusted for unique circumstances such as a high degree of ecological site variability within a single treatment. Reference monitoring points for untreated areas should not exceed 10% of total monitoring points for the treatment area.

Vegetation Type	Treatment Size (acres)	Monitoring Point Intensity
Grass/Shrub	Less than 500	1
Grass/Shrub	500 to 2,999	1/500 acres (minimum 3)
Grass/Shrub	3,000 to 24,999	1/1,000 acres (minimum 5)
Grass/Shrub	25,000 to 50,000	25 points total
Grass/Shrub	Greater than 50,000	35 points total
Woodland/Forest	Less than 250	1
Woodland/Forest	250 to 1,499	1/250 acres (minimum 3)

Vegetation Type	Treatment Size (acres)	Monitoring Point Intensity
Woodland/Forest	1,500 to 12,500	1/500 acres (minimum 5)
Woodland/Forest	Greater than 12,500	25 points total

Randomized Point Determinations

Monitoring points within a treatment area should use existing vegetation data collection points when possible to build a site "history." Monitoring points should be determined using randomization when there are no pre-existing data collection points. The preferred method is the use of ArcGIS randomization tools. Randomized points may need to be moved to a more representative location based on professional judgment (i.e. if a randomized point falls on a large rock outcrop or road the point may be moved to the nearest representative area).

Point randomization may be stratified to monitor treatment results across a range of variables. Stratification of monitoring points should use the following hierarchy of variables. Other stratification variables may be used based on unique site conditions or treatment objectives.

Exclosures may be used as a means of obtaining data from a controlled site and should contain both treated and untreated vegetation.

Stratification Hierarchy:

1. Treatment type
2. Pre-existing inventory/monitoring points
3. Seed mixtures
4. Soil types
5. Allotment (if practical and feasible)
6. Land designation (if necessary and feasible)

Appendix L - Idaho and Southwestern Montana and Nevada and Northeastern California Greater Sage-Grouse ARMPA Management Decisions

Idaho and Southwestern Montana ARMPA Management Decisions

The management actions listed below are pertinent to the Proposed Action. Refer to the ARMPA for a complete listing of management decisions.

MD SSS 5: Prioritize activities and mitigation to conserve, enhance and restore Greater sage-grouse (GRSG) habitats (i.e., fire suppression activities, fuels management activities, vegetation treatments, invasive species treatments etc.) first by Conservation Area, if appropriate (Conservation Area under adaptive management or at risk of meeting an adaptive management soft or hard trigger), followed by PHMA, then IHMA then GHMA within the Conservation Areas. Local priority areas within these areas will be further refined as a result of completing the GRSG Wildfire and Invasive Species Habitat Assessments as described in Appendix H. This can include projects outside GRSG habitat when those projects will provide a benefit to GRSG habitat.

MD SSS 7: GRSG habitat within the project area will be assessed during project-level NEPA analysis within the management area designations (PHMA, IHMA, GHMA). Project proposals and their effects will be evaluated based on the habitat and values affected.

MD SSS 9: Areas of habitat outside of delineated habitat management areas identified during the Key habitat update process will be evaluated during site-specific NEPA for project level activities and GRSG required design features (Appendix C) and buffers (Appendix B) will be included as part of project design. These areas will be further evaluated during plan evaluation and the 5-year update to the management areas, to determine whether they should be included as PHMA, IHMA, or GHMA.

MD SSS 10: Designate Sagebrush Focal Areas (SFA) as shown on Figure 1-2 (ARMPA, 2015). SFA will be managed as PHMA, with the following additional management:

- Recommended for withdrawal from the General Mining Act of 1872, as amended, subject to valid existing rights.
- Managed as NSO, without waiver, exception, or modification, for fluid mineral leasing.
- Prioritized for vegetation management and conservation actions in these areas, including, but not limited to land health assessments, wild horse and burro management actions, review of livestock grazing permits/leases, and habitat restoration (see specific management sections).

MD SSS 32: Incorporate RDFs as described in Appendix C in the development of project or proposal implementation, reauthorizations or new authorizations and suppression activities, as conditions of approval (COAs) into any post-lease activities and as best management practices for locatable minerals activities, to the extent allowable by law, unless at least one of the following conditions can be demonstrated and documented in the NEPA analysis associated with the specific project:

a. A specific RDF is not applicable to the site-specific conditions of the project or activity;

b. A proposed design feature or BMP is determined to provide equal or better protection for GRSG or its habitat; or

c. Analysis concludes that following a specific RDF will provide no more protection to GRSG or its habitat than not following it, for the project being proposed.

MD SSS 33: Conduct implementation and project activities, including construction and short-term anthropogenic disturbances consistent with seasonal habitat restrictions described in Appendix C.

MD SSS 36: Incorporate appropriate conservation measures for slickspot peppergrass (Lepidium papilliferum) as described in the 2014 Conservation Agreement (as updated, amended or reauthorized) into implementation and project design within slickspot peppergrass habitat in the Jarbidge and Four Rivers Field Offices to avoid and minimize impacts on slickspot peppergrass.

MD SSS 38: Monitor the effectiveness of projects (e.g., fuel breaks. fuels treatments) until objectives have been met or until it is determined that objectives cannot be met, according to the monitoring schedule identified for project implementation.

MD SSS 39: Monitor invasive vegetation post vegetation management treatment.

MD SSS 40: Monitor project construction areas for noxious weed and invasive species for at least 3 years, unless control is achieved earlier.

MD VEG 1: Implement habitat rehabilitation or restoration projects in areas that have potential to improve GRSG habitat using a full array of treatment activities as appropriate, including chemical, mechanical and seeding treatments.

MD VEG 2: Implement vegetation rehabilitation or manipulation projects to enhance sagebrush cover or to promote diverse and healthy grass and forb understory to achieve the greatest improvement in GRSG habitat based on FIAT Assessments (Appendix X of the Idaho and Southwestern Montana Greater Sage-Grouse Final EIS), HAF assessments, other vegetative assessment data and local, site-specific factors that indicate sagebrush canopy cover or herbaceous conditions do not meet habitat management objectives (i.e. is minimal or exceeds optimal characteristics). This may necessitate the use of prescribed fire as a site preparation technique to remove annual grass residual growth prior to the use of herbicides in the restoration of certain lower elevation sites (e.g., Wyoming big sagebrush) but such efforts will be carefully planned and coordinated to minimize impacts on GRSG seasonal habitats.

MD VEG 3: Require use of native seeds for restoration based on availability, adaptation (ecological site potential), and probability of success (Richards et al., 1998). Non-native seeds may be used as long as they support GRSG habitat objectives (Pyke 2011) to increase probability of success, when adapted seed availability is low or to compete with invasive species especially on harsher sites.

MD VEG 4: Implement management changes in restoration and rehabilitation areas, as necessary, to maintain suitable GRSG habitat, improve unsuitable GRSG habitat and to ensure long-term persistence of improved GRSG habitat (Eiswerth and Shonkwiler 2006). Management changes can be considered during livestock grazing permit renewals, travel management planning, and renewal or reauthorization of ROWs.

MD VEG 5: Consider establishing seed harvest areas that are managed for seed production (Armstrong 2007) to provide a reliable source of locally adapted seed to use during rehabilitation and restoration activities.

MD VEG 6: Allocate use of native seed to GRSG or ESA listed species habitat in years when preferred native seed is in short supply. This may require reallocation of native seed from ESR projects outside of PHMA or IHMA to those inside it. Where probability of success or native seed availability is low, nonnative seeds may be used as long as they meet GRSG habitat conservation objectives (Pyke 2011). Re-establishment of appropriate sagebrush species/subspecies and important understory plants, relative to site potential, shall be the highest priority for rehabilitation efforts.

MD VEG 7: During land health assessments, evaluate the relative value of existing nonnative seeding within GRSG habitat as: 1) a component of a grazing system allowing improvement of adjacent native vegetation, 2) development of a forage reserve, 3) incorporation into a fuel break system (Davies et al., 2011) or 4) restoration/diversification for GRSG habitat improvement. Where appropriate and feasible, diversify seedings, or restore to native vegetation when potential benefits to GRSG habitat outweigh the other potential uses of the non-native seeding, with emphasis on PHMA and IHMA. Allow recolonization of seedings by sagebrush and other native vegetation.

MD VEG 9: Incorporate results of the FIAT Assessments into projects and activities addressing invasive species as appropriate.

MD VEG 10: Implement noxious weed and invasive species control using integrated vegetation management actions per national guidance and local weed management plans for Cooperative Weed Management Areas in cooperation with State and Federal agencies, affected counties, and adjoining private lands owners.

MD VEG 11: Conduct integrated weed management actions for noxious and invasive weed populations that are impacting or threatening GRSG habitat quality using a variety of eradication and control techniques including chemical, mechanical and other appropriate means.

MD VEG 13: Treat areas that contain cheatgrass and other invasive or noxious species to minimize competition and favor establishment of desired species.

MD FIRE 9: Implement activities identified within the FIAT Assessments.

MD FIRE 17: Design and implement fuels treatments that will reduce the potential start and spread of unwanted wildfires and provide anchor points or control lines for the containment of wildfires during suppression activities with an emphasis on maintaining, protecting, and expanding sagebrush ecosystems and successfully rehabilitated areas and strategically and effectively reduce wildfire threats in the greatest area.

MD FIRE 19: Apply appropriate seasonal restrictions for implementing vegetation and fuels management treatments according to the type of seasonal habitats present. Allow no treatments in known winter range unless the treatments are designed to strategically reduce wildfire risk around and/or in the winter range and will protect, maintain, increase, or enhance winter range habitat quality. Ensure chemical applications are utilized where they will assist in success of fuels treatments. Strategically place treatments on a landscape scale to prevent fire from spreading into PHMA or WUI.

MD FIRE 22: Fuel treatments will be designed through an interdisciplinary process to expand, enhance, maintain, and protect GRSG habitat which considers a full range of cost effective fuel reduction techniques, including: chemical, biological (including grazing and targeted grazing), mechanical and prescribed fire treatments.

MD FIRE 25: Strategically pre-treat areas to reduce fine fuels consistent with areas and results identified within the Wildfire and Invasive Species Assessments.

MD FIRE 29: Prioritize the use of native seeds for fuels management treatment based on availability, adaptation (site potential), and probability of success. Where probability of success or native seed availability is low or non-economical, nonnative seeds may be used to meet GRSG habitat objectives to trend toward restoring the fire regime. When reseeding, use fire resistant native and nonnative species, as appropriate, to provide for fuel breaks.

MD FIRE 31: If prescribed fire is used in GRSG habitat, the NEPA analysis for the Burn Plan will address:

- why alternative techniques were not selected as a viable options;
- how GRSG goals and objectives will be met by its use;
- how the COT Report objectives will be addressed and met;
- a risk assessment to address how potential threats to GRSG habitat will be minimized.

Allow prescribed fire as a vegetation or fuels treatment in Wyoming big sagebrush sites or other xeric sagebrush species sites, or in areas with a potential for post-fire exotic annual dominance only after the NEPA analysis for the Burn Plan has addressed the four bullets outlined above. Prescribed fire can be used to meet specific fuels objectives that will protect Greater Sage-Grouse habitat in PHMA (e.g., creation of fuel breaks that will disrupt the fuel continuity across the landscape in stands where annual invasive grasses are a minor component in the understory, burning slash piles from conifer reduction treatments, used as a component with other treatment methods to combat annual grasses and restore native plant communities). Allow prescribed fire in known sage-grouse winter range only after the NEPA analysis for the Burn Plan has addressed the four bullets outlined above. Any prescribed fire in winter habitat will need to be designed to strategically reduce wildfire risk around and/or in the winter range and designed to protect winter range habitat quality.

MD FIRE 34: Provide adequate rest from livestock grazing to allow natural recovery of existing vegetation and successful establishment of seeded species within burned/ESR areas. All new seedings of grasses and forbs should not be grazed until at least the end of the second growing season, and longer as needed to allow plants to mature and develop robust root systems which will stabilize the site, compete effectively against cheatgrass and other invasive annuals, and remain sustainable under long-term grazing management. Adjust other management activities, as appropriate, to meet ESR objectives.

MD LG 11: Design any new structural range improvements, following appropriate cooperation, consultation and coordination, to minimize and/or mitigate impacts on GRSG habitat. Any new structural range improvements should be placed along existing disturbance corridors or in unsuitable habitat, to the extent practical, and are subject to RDFs (Appendix C). Structural range improvement in this context, include, but are not limited to: fences, exclosures, corrals or other livestock handling structures; pipelines, troughs, storage tanks (including moveable tanks used in livestock water hauling), windmills, ponds/reservoirs, solar panels and spring developments.

MD LG 13: Prioritize removal, modification or marking of fences or other structures in areas of high collision risk following appropriate cooperation, consultation and coordination to reduce the incidence of GRSG mortality due to fence strikes (Stevens et al., 2012).

MD CC 9: All prescribed burning will be coordinated with state and local air quality agencies to ensure that local air quality is not significantly impacted by BLM activities.

MD TTM 1: Limit off-highway vehicle travel within Idaho BLM Field Offices to existing roads, primitive roads, and trails in areas where travel management planning has not been completed or is in progress. This excludes areas previously designated as open through a land use plan decision or currently under review for designation as open, currently being analyzed in on-going RMP revision efforts in the Four Rivers, Jarbidge, and Upper Snake Field Offices.

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MD SSS 4: In OHMAs, authorized/permitted activities are implemented adhering to the RDFs described in Appendix C, consistent with applicable law. At the site-specific scale, if an RDF is not implemented, at least one of the following must be demonstrated in the NEPA analysis associated with the project/activity:

- A specific RDF is documented to not be applicable to the site-specific conditions of the project/activity (e.g., due to the site limitations or engineering considerations). Economic considerations, such as increased costs, do not necessarily require that an RDF be varied or rendered inapplicable.
- An alternative RDF is determined to provide equal or better protection for GRSG or its habitat.
- A specific RDF will provide no additional protection to GRSG or its habitat.

MD SSS 11: Design and construct fences consistent with BLM H-1741-1, Fencing Standards Manual (BLM 1990), and apply the Sage-Grouse Fence Collision Risk Tool to Reduce Bird Strikes (NRCS 2012). Bring existing fencing into compliance as opportunities arise.

MD SSS 18: A biologically significant unit (BSU; see Appendix A; Figure 2-2) that has hit a soft trigger due to vegetation disturbance will be a priority for restoration treatments consistent with Fire and Invasives Assessment Tool (FIAT) (Appendix J).

MD VEG 2: Incorporate GRSG habitat objectives (Table 2-2) in the design of habitat restoration projects and manage treated areas to meet GRSG habitat objectives.

MD VEG 3: Use BLM GRSG habitat maps, habitat objectives (see Table 2-2 for GRSG habitat objectives), ecological site potential, state and transition models, and concepts of resistance and resilience (Appendix H) to prioritize habitat restoration projects, including those following wildfire, to address the most limiting GRSG habitat vegetation components and to connect seasonal ranges.

Habitat restoration includes the following:

i. Restoring sagebrush canopy in PHMAs and GHMAs to meet GRSG habitat objectives (Table 2-2)
ii. Reestablishing perennial grasses and native forbs in PHMAs and GHMAs
iii. Reducing or removing pinyon or juniper in PHMAs and GHMAs to enhance seasonal range connectivity and to maintain sagebrush canopy and understory integrity
iv. Restore areas affected by wildfire and the continuing invasive annual fire cycle to meet GRSG habitat objectives (Table 2-2)
v. Prioritize restoration in areas that have not crossed an ecological threshold

MD VEG 4: Plan vegetation treatments (including GRSG habitat treatments) in a landscape-scale context to address habitat fragmentation, effective patch size, invasive species presence, and intact sagebrush community protection, consistent with the GRSG habitat objectives identified in Table 2-2.

MD VEG 5: For Wyoming, mountain, and basin big sagebrush communities in PHMAs and GHMAs:

i. Prioritize treatments that focus on enhancing, reestablishing, or maintaining the most limiting GRSG habitat component
ii. Reestablish sagebrush to meet GRSG habitat objectives (Table 2-2)
iii. Manage sagebrush communities to achieve age-class, structure, cover, and species composition objectives in GRSG habitat (Table 2-2)
iv. Restore herbaceous understory in brush-dominated areas to meet GRSG habitat objectives (Table 2-2)
v. Treat areas that contain cheatgrass and other invasive or noxious species to minimize competition and favor establishment of desired species (Table 2-2)
vi. Treat disturbed areas in accordance with FIAT (see Appendix H), including implementation-level assessments

MD VEG 6: Manage for establishment of sagebrush in unmaintained nonnative seedings (e.g., crested wheatgrass seedings) in or next to GRSG habitat to meet habitat objectives (Table 2-2).

MD VEG 7: In PHMAs and GHMAs, give preference to native seeds for restoration, based on availability, adaptation (ecological site potential), and probability of success. Where the probability of success or adapted seed availability is low, nonnative seeds may be used, as long as they support GRSG habitat objectives. Choose native plant species outlined in Ecological Site Descriptions (ESDs), where available, to revegetate sites. Emphasize use of local seed collected from intact stands or greenhouse cultivation. If the commercial supply of appropriate native seeds and plants is limited, work with the BLM Native Plant Materials Development Program, Natural Resource Conservation Service (NRCS) Plant Material Program, or State Plant Material Programs. If currently available supplies are limited, use the materials that provide the greatest benefit for GRSG. In all cases, seed must be certified as weed free.

MD VEG 8: To increase seeding success and to ensure effective soil and seed contact, consider the use of specialized seed drills or other proven and effective methods that may become available based on new science.

MD VEG 9a: For Nevada BLM-managed lands, before implementation, establish project monitoring sites where vegetation treatment is planned. Treatment areas will be monitored both pre- and post-treatment on a multiple-year basis to ensure that project objectives are achieved.

MD VEG 10: On public lands, where the attributes, quality, or lack of GRSG winter habitat has been identified as a limiting factor, emphasize vegetation treatments in known winter habitat to enhance quality or reduce wildfire risk around or in winter habitat.

MD VEG 11: In perennial grass, invasive annual grass, and conifer-invaded cover types, restore sagebrush steppe with local sagebrush seedings or planted seedlings where feasible.

MD VEG 12: Continue to coordinate with NDOW, CDFW, and NRCS for all development or habitat restoration proposals in PHMAs and GHMAs. Also, coordinate with the Nevada SETT, tribes, and local working groups on projects proposed in sagebrush ecosystems.

MD VEG 16: Prevent the establishment of invasive species into uninvaded areas in PHMAs and GHMAs through properly managed grazing and by conducting systematic and strategic detection surveys, collecting data, mapping these areas, and engaging in early response to contain and eradicate invasion if it occurs.

MD VEG 17: Control the spread and introduction of noxious weeds listed by the Nevada Department of Agriculture and California Department of Food and Agriculture (NAC 555.010, Classes A through C, inclusive and 3 CCR 4500, Noxious Weed Species Pest Rating A, B, C, and Q) and undesirable nonnative plant species (Gelbard and Belnap, 2003; Bergquist et al., 2007). Work with federal, state, local, and tribal groups, such as Weed Control Districts, Cooperative Weed Management Areas, and Conservation Districts, in detecting and treating nonnative species.

MD VEG 18: Where scientific support is lacking, carefully construct treatments to rigorously assess the value or detriment of untested methods to determine their value for future application to GRSG habitats.

MD VEG 19: The BLM will cooperate with other federal, state, tribal and local agencies along with academia in researching the development of biological control agents and deploying emerging technologies as they become available.

MD VEG 20: Monitor and adjust treatment sites and methods as needed to ensure effectiveness of efforts to prevent and control invasive species and restore GRSG habitat.

MD VEG 21: Assess invasive annual grass presence and distribution before implementing vegetation restoration projects to determine if treatments are required to treat invasive annual grasses.

MD VEG 22: Treat sites in PHMAs and GHMAs that contain invasive species infestations through an integrated pest management (IPM) approach, using fire, chemical, mechanical, and biological (e.g., targeted grazing) methods, based on site potential and in accordance with FIAT (Appendix H). Treat areas that contain cheatgrass and other invasive or noxious species to minimize competition and favor establishment of desired species.

MD VEG 23: Design and implement vegetation treatments in PHMAs and GHMAs to restore, enhance, and maintain riparian areas (Table 2-2).

MD VEG 24: Consider an array of vegetation treatments to increase edge and expand mesic areas in PHMAs and GHMAs where riparian extent is limited by shrub encroachment (Table 2-2).

MD FIRE 19: Review Objective SSS 4 and apply MDs SSS 1 through SSS 4 when reviewing and analyzing projects and activities proposed in GRSG habitat.

MD FIRE 20: In PHMAs and GHMAs, apply fuels treatments on a landscape level to modify fire behavior, intensity, complexity (fire patchiness), size, and effects in which fire management efforts are enhanced.

MD FIRE 21: Establish and maintain fuel breaks to protect GRSG and its habitat to limit fire size and mitigate fire behavior to increase suppression effectiveness. When possible, establish fuel breaks next to roads or other previously disturbed areas.

MD FIRE 22: Use a full range of fuels management strategies and tactics within acceptable risk levels across the range of GRSG habitat consistent with land use plan direction.

MD FIRE 23: If prescribed fire is used in GRSG habitat, the NEPA analysis for the Burn Plan will address:

- why alternative techniques were not selected as a viable option
- how GRSG goals and objectives will be met by its use
- how the COT report objectives will be addressed and met
- a risk assessment to address how potential threats to GRSG habitat will be minimized.

Allow prescribed fire as a vegetation or fuels treatment, and it shall only be considered after the NEPA analysis for the burn plan has addressed the four bullets outlined above. Prescribed fire can be used to meet specific fuels objectives that will protect GRSG habitat in PHMAs (e.g., creation of fuel breaks that would disrupt the fuel continuity across the landscape in stands where annual invasive grasses are a minor component in the understory, burning slash piles from conifer reduction treatments, used as a component with other treatment methods to combat annual grasses and restore native plant communities).

Allow prescribed fire in known winter range, and it shall only be considered after the NEPA analysis for the burn plan has addressed the four bullets outlined above. Any prescribed fire in winter habitat will need to be designed to strategically reduce wildfire risk around and/or in the winter range and designed to protect winter range habitat quality.

MD FIRE 24: In coordination with the USFWS and relevant state agencies and in accordance with FIAT (see Appendix H), develop a fuels management strategy for the BLM with large blocks of GRSG habitat. The strategy shall include an up-to-date fuels profile, land use plan direction, current and potential habitat fragmentation, sagebrush and GRSG ecological factors, and active vegetation management steps to provide critical breaks in fuel continuity. When developing this strategy, consider the risk of increased habitat fragmentation from a proposed action versus the risk of large-scale fragmentation posed by wildfires if the action were not taken.

MD FIRE 25: Design fuels treatments through an interdisciplinary team process to expand, enhance, maintain, and protect PHMAs and GHMAs. Fuel reduction techniques, such as prescribed fire and chemical, biological (including targeted grazing), and mechanical treatments, are acceptable. Use green strips and fuel breaks, where appropriate, to protect seeding from subsequent fires.

MD FIRE 26: In coordination with the USFWS and relevant state agencies and in accordance with FIAT (see Appendix H), BLM will identify treatment needs for wildfire and invasive species management. On-going treatment needs will be coordinated on state and regional scales and across jurisdictional boundaries for long-term conservation of GRSG and its habitat.

MD FIRE 27: On project completion, monitor and manage fuels projects to ensure long-term success, including persistence of seeded species and other treatment components. Control invasive vegetation post-treatment.

MD FIRE 28: Design fuels treatments to protect sagebrush ecosystems, modify fire behavior, restore ecological function, and create landscape patterns that most benefit PHMAs and GHMAs and promote use by GRSG.

MD FIRE 30: Use burning prescriptions that minimize undesirable effects on vegetation or soils (e.g., minimize killing desirable perennial plant species and reduce risk of annual grass invasion) and incorporate FIAT assessment (Chambers et al., 2014) in PHMAs and GHMAs.

MD FIRE 31: Ensure proposed sagebrush treatments are planned with interdisciplinary input from the BLM and coordinated with USFWS and state fish and wildlife agencies to meet GRSG habitat objectives (Table 2-2).

MD FIRE 32: Design vegetation treatments in areas of high fire frequency to facilitate firefighter safety, reduce the potential acres burned, and reduce the fire risk to GRSG habitat.

MD FIRE 33a: For Nevada BLM-administered lands, before implementation, establish project monitoring sites where fuels management projects are planned. Monitor treatment areas both pre- and post-treatment on a multiple-year basis to ensure that project objectives are achieved.

MD LG 20: In PHMA and GHMA, rest areas that have received vegetative treatments from livestock grazing until resource monitoring data verifies the treatment objectives are being met and an appropriate grazing regime has been developed. Any livestock grazing temporary suspended use or other management changes per 43 CFR, Part 4110.3-2a for the purpose of a vegetation treatment will be done through the grazing decision, prior to treatment.

MD LG 22: After grazing rest associated with vegetation treatments in PHMAs and GHMAs, monitor annually for a minimum of 5 years to ensure project objectives are being maintained.

MD LG 23: Fences shall not be constructed or reconstructed within 1.2 miles from the perimeter of occupied leks, unless the collision risk can be mitigated through design features or markings (e.g., mark, laydown fences, and design).

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