United States Department of the Interior
Bureau of Land Management

Environmental Assessment DOI-BLM-ID-T010-2012-0004-EA

Jarbidge Field Office
Livestock Trailing Environmental Assessment

October 2012

U.S. Department of the Interior
Bureau of Land Management
Twin Falls District
Jarbidge Field Office
2536 Kimberly Road
Twin Falls, ID 83301
Phone: (208) 735-2060
FAX: (208) 735-2076

Contents

Chapter 1. Purpose and Need for Action 1
Background 1
Purpose and Need for Action 2
Decision to be Made 2
Conformance with Applicable Land Use Plan 3
Relationship to Statutes, Regulations or Other Plans 3
Scoping, Public Involvement, and Issues 4
Air Quality 4
Q Fever 5
Chapter 2. Proposed Action and Alternatives 6
Proposed Action 8
No Action (Alternative 1) 10
Alternative 2 11
Alternative 3 11
Alternatives Considered but Eliminated from Detailed Study 11
Chapter 3. Affected Environment 12
Soils 12
Water Resources 13
Vegetation 15
Riparian Areas and Wetlands 16
Noxious Weeds and Invasive Plants 17
Threatened, Endangered, and Sensitive Plants 18
Threatened, Endangered, and Sensitive Fish 20
ESA-Listed Fish: Jarbidge River Bull Trout and Designated Critical Habitat 20
BLM Sensitive Fish: Columbia River Redband Trout 21
Threatened, Endangered, and Sensitive Wildlife 22
Amphibians 22
Birds 23
Mammals 24
Invertebrates 26
Migratory Birds 26
Wildlife (Other than Threatened, Endangered, and Sensitive) 27
Big Game 27
Small and Medium-Sized Mammals 28
Herptiles 29
Wild Horses 29
Livestock Grazing 31
Cultural Resources 32
Chapter 4. Environmental Consequences 34
Soils 35
No Action 35
Proposed Action 36

Alternative 2 38
Alternative 3 38
Water Resources 39
No Action 39
Proposed Action 40
Alternative 2 43
Alternative 3 46
Vegetation 48
No Action 48
Proposed Action 49
Alternative 2 51
Alternative 3 52
Riparian Areas and Wetlands 53
No Action 53
Proposed Action 53
Alternative 2 57
Alternative 3 60
Noxious Weeds and Invasive Plants 63
No Action 63
Proposed Action 63
Alternative 2 65
Alternative 3 66
Threatened, Endangered, and Sensitive Plants 66
No Action 66
Proposed Action 67
Alternative 2 70
Alternative 3 71
Threatened, Endangered, and Sensitive Fish 72
No Action 72
Proposed Action 74
Alternative 2 76
Alternative 3 82
Threatened, Endangered, and Sensitive Wildlife 84
No Action 84
Proposed Action 85
Alternative 2 93
Alternative 3 95
Migratory Birds 97
No Action 97
Proposed Action 98
Alternative 2 100
Alternative 3 100
Wildlife (Other than Threatened, Endangered, and Sensitive) 101
No Action 101
Proposed Action 102
Alternative 2 104

Alternative 3 104
Wild Horses 105
No Action 105
Proposed Action 105
Alternative 2 107
Alternative 3 108
Livestock Grazing 109
No Action 109
Proposed Action 111
Alternative 2 114
Alternative 3 115
Cultural Resources 116
No Action 116
Proposed Action 117
Alternative 2 119
Alternative 3 120
Chapter 5. Consultation and Coordination 121
Tribes, Individuals, Organizations, or Agencies Consulted 121
List of Preparers 122
Chapter 6. References 123

Appendix B. Wilkins Island and Bruneau Canyon Allotment Environmental Baseline Overview 1

CHAPTER 1. PURPOSE AND NEED FOR ACTION

Background

The Bureau of Land Management (BLM) Jarbidge Field Office (JFO) is proposing to issue livestock crossing permits within the JFO to qualified applicants beginning in November 2012. The regulations at 43 CFR Sec. 4130.6-3 describe crossing permits.

> "A crossing permit may be issued by the authorized officer to any applicant showing a need to cross the public land or other land under Bureau of Land Management control, or both, with livestock for proper and lawful purposes. A temporary use authorization for trailing livestock shall contain terms and conditions for the temporary grazing use that will occur as deemed necessary by the authorized officer to achieve the objectives of this part."

Qualified applicants, consisting of permittees and non-permittees, frequently request to trail livestock across BLM-administered lands for a variety of reasons. These reasons primarily include (1) moving livestock to and from grazing allotments on BLM-administered lands, and (2) moving livestock to and from grazing allotments on state, private, or other federally managed lands. Livestock operators must obtain a crossing permit from the appropriate BLM jurisdiction prior to trailing livestock on BLM-administered lands for which they do not hold a valid grazing permit. In addition, operators with valid grazing permits must obtain crossing permits if the timing of trailing is outside the terms and conditions of their permit. Crossing permits are not required for trailing that occurs across private and state land or on publicly maintained roads.

In October 2011, the JFO requested permittees submit applications for crossing. In response, the JFO received 11 applications to trail livestock across BLM-administered lands within the JFO. The applications received were for trailing routes where livestock operators have trailed in the past and would like to continue to trail, and routes where they may trail in the future. The project area consists of portions of the allotments that are proposed to be crossed and other known trailing routes within the JFO identified through internal scoping (Map 1, see Appendix A). The majority of trailing events that occur within the JFO occur along roads that are maintained by federal, state, or county governments.

The JFO is divided into 93 grazing allotments that cover approximately 1.3 million acres of BLM-administered lands. Livestock grazing use occurs within the JFO year-round. Generally, the lower elevation rangeland of the northern third of the JFO is grazed in the fall, winter, and spring. The higher elevation in the middle third is grazed in the spring, summer, and fall, and the high elevations in the southern third are grazed primarily in the summer and fall. Trailing of cattle and sheep occurs at different times throughout the year to facilitate these general seasons of grazing use. Furthermore, timing of trailing events may vary annually based on factors such as forage production, drought, resource conditions, weather, wildfire, court decisions, and individual livestock operations. Trailing events across BLM-administered lands within the JFO range in distance from less than 1 mile to approximately 30 miles, and in duration from less than 1 hour up to 14 days.

The details of each particular trailing event vary depending on the individual livestock operator and the kind of livestock to be moved. Generally, cattle are herded on horseback; however, motorcycles or ATVs are also used by some operators. Cattle are first gathered into a herd and then driven at a slow pace in the direction of the intended trail. Once on the trail, cattle tend to spread out lengthwise in more of a single-file formation, allowing them to travel in a relatively narrow area. Meanwhile, sheep are generally trailed by one or two herders on horseback, and accompanied by two to four herding/guard dogs. A camp-wagon is moved from one location to another along the trail route (road) to supply shelter and carry food, water, and other items needed by the herders. Many sheep trailing operations include a water truck to deliver water to bedding areas and also to pull the camp-wagon ahead to a new location. Sheep are trailed in bunches that generally follow roads as the trail route but typically stay off the road itself in order to avoid vehicle traffic and footsore of the sheep.

Trailing of livestock over long distances may require overnighting. When this is necessary, cattle are placed in a pasture near a watering location and allowed to disperse, feed/water, and rest overnight. The cattle are then gathered into a herd the following morning and the trailing event is resumed. Sheep are also placed near a watering location and allowed to feed/water and rest overnight. However, sheep generally do not disperse and tend to stay in a herd. The sheep trailing event then resumes the following morning.

Purpose and Need for Action

The purpose of the action is to respond to applications for crossing permits by identifying areas and terms and conditions for authorizing trailing of livestock across BLM/JFO-administered lands. BLM is required, under the Federal Land Policy and Management Act and the Taylor Grazing Act, to respond to requests for livestock trailing/crossing across BLM-administered lands. In many instances, livestock producers must move their livestock across BLM-administered lands to facilitate proper grazing management of BLM grazing allotments; as well as to facilitate movements of livestock to and from private, state, or other federally administered lands. Issuance of crossing permits authorizing trailing of livestock across BLM-administered lands would be in accordance with 43 CFR 4130 and 4160, and is consistent with the provisions of the Taylor Grazing Act and the Federal Land Policy and Management Act.

Decision to be Made

The Jarbidge Field Manager will decide whether to issue crossing permits authorizing the trailing of livestock across BLM-administered lands within the JFO. If so, the Jarbidge Field Manager will decide where crossing permits will be authorized, i.e. within proposed trailing corridors (Proposed Action) or within trailing corridors considered under Alternatives 2 or 3. If crossing permits are issued, the Jarbidge Field Manager will also decide the specific terms and conditions to include as part of the authorization.

Conformance with Applicable Land Use Plan

The Proposed Action and alternatives are in conformance with the 1987 Jarbidge Resource Management Plan (RMP). The RMP authorizes livestock grazing within the grazing allotments of the JFO. It is reasonable to assume that livestock trailing is an action connected to livestock grazing management and, therefore, trailing is in conformance with the RMP. This action would not result in a change in the scope of resource use or a change in the terms, conditions, and decision of the approved RMP.

Relationship to Statutes, Regulations or Other Plans

Section 7(a)(2) of the Endangered Species Act (ESA) of 1973 outlines the procedures for Federal agencies to conserve federally listed species and their designated habitats. Section 7(a)(2) states that each Federal agency shall, in consultation with the Secretary, ensure that any action they authorize, fund, and carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of their habitats.

To comply with this requirement, Biological Assessments (BAs) were prepared to assess the effects of livestock trailing, as described in this EA, on federally-listed aquatic species and their habitat. Two aquatic BAs were prepared; ESA-listed species affected by the proposed action are documented in a “May Affect” BA that was forwarded to the U.S. Fish and Wildlife Service (FWS) for consultation and concurrence. ESA-listed species that are not affected by the proposed action are documented in a separate BA that includes both federally listed and BLM sensitive species. The BAs are included in the project file at the JFO.

The aquatic species assessed in the BAs include those identified on the U.S. Fish and Wildlife Service list of Endangered, Threatened, Proposed and Candidate Species with Associated Critical Habitats for the BLM Twin Falls District (August 17, 2011; Twin Falls, Elmore and Owyhee County). The only ESA-listed aquatic species that would be affected by livestock trailing is the Jarbidge River bull trout and their designated critical habitat. The BA determined the livestock trailing corridor on the East Fork Jarbidge River and the livestock trailing related affects along the Bruneau River are likely to adversely affect bull trout and/or their designated critical habitat. The U.S. FWS concurred on this determination in a Biological Opinion (FWS File # 01-EIFW00-2012-F-0092). The direct, indirect and cumulative impacts for bull trout and designated critical habitat are also included in this EA.

The affects assessment determined the three ESA-listed aquatic snails within the Jarbidge Field Office (Snake River Physa, Bliss Rapids Snail, and Bruneau hot springsnail) and their habitats would not be affected by the proposed livestock trailing permits. Since these species are not affected, ESA consultation is not required and they are not discussed in the EA.

An affects assessment was also completed for BLM sensitive aquatic species (BLM IM ID-2003-057). Except for redband trout, no effects to BLM sensitive aquatic species or their habitat were identified. For convenience, the affects analysis and determinations for BLM sensitive aquatic species are included in the same BA as the three ESA-listed aquatic snails. The potential impacts

from livestock trailing to redband trout and their habitat are included in the sensitive species BA as well as this EA. ESA consultation with the U.S. FWS is not required for this species.

A BA was also prepared to assess the effects of livestock trailing on *Lepidium papilliferum* (slickspot peppergrass) and its habitat. The BA determined that slickspot peppergrass and its proposed critical habitat would not be likely to be adversely affected because livestock trailing would not occur in occupied and proposed critical habitat. The BLM sent a request for concurence on the "not likely to adversely affect" slickspot peppergrass finding to the Service. The U.S. FWS concurred with this determination in a letter of concurrence (01-EIFW00-2012-I-0162). The BA is included in the project file at the JFO. The direct, indirect and cumulative impacts for slickspot peppergrass are also included in this EA.

The Clean Water Act of 1977, as amended in 1987, provides for the protection, restoration, and improvement of water quality. This Act enables states to establish programs for regulating and managing nonpoint source pollution and directs Federal agencies to comply with state water quality laws. Various Executive Orders and DOI and BLM manuals also direct the BLM to maintain and improve water quality. The Idaho Department of Environmental Quality (DEQ) has responsibility for protecting water quality within Idaho and enforcing specific water quality standards for each beneficial use (IDAPA 58.01.02). The proposed livestock trailing corridors have the potential to affect water quality. The impacts are summarized in this EA.

Scoping, Public Involvement, and Issues

The JFO Interdisciplinary (ID) team met in November 2011 to identify issues internally and develop management actions for the trailing of livestock. This project has been listed on the Idaho NEPA Register since November 2011. A scoping information package was mailed to interested and affected publics on December 2, 2011 and comments were requested by December 23, 2011. Subsequently, 15 response letters were received from interested or affected publics by or after the due date. Comments included suggestions for additional alternatives to those described in the scoping package. As a result, another alternative (Alternative 3) was developed by the ID team and analyzed in Chapter 4. The other suggested alternative was considered but eliminated from detailed analysis (see Chapter 2). Other comments expressed concerns over the effects to livestock grazing, sensitive plant and animal species, native vegetation, riparian and wetland areas, wildlife, cultural resources, soils and the introduction and spread of noxious weeds and invasive plants. Concerns over human health and safety were also brought forward during scoping, including effects livestock trailing may have to air quality and the existence and spread of Q fever to people; however, these two issues will not be analyzed (see below). Due to internal and external scoping, some of the trailing corridors have been changed to limit the effects trailing events may have.

Air Quality

Particulate matter is widespread throughout Idaho and sources include windblown dust, re-entrained road dust, smoke, industrial emissions, and motor vehicle emissions. In 2008 the air

quality for Twin Falls County was rated good 96% of the days and moderate for 4% of the days (IDEQ, 2008).

Potential air quality impacts are expected to be minimal and confined to the immediate areas of the trailing events when livestock are actively being trailed. Emissions of carbon monoxide would occur if vehicles are used in the process. During periods of high winds dust may be blown during trailing. National Ambient Air Quality Standards (NAAQS) are not expected to be exceeded due to the overall short duration, distribution and limited number of trailing events and the low amount of pollutants emitted in the general area since these events have occurred in the past. For these reasons, air quality will not be analyzed further.

Q Fever

The danger of Q fever is considered to be minimal on rangelands within the JFO. The risk on public lands to the users is limited, since Q fever has been directly correlated to occupational exposure involving veterinarians, meat processing plant workers, livestock farmers and researchers at facilities housing livestock. The important fact of the Q fever bacteria is that during the birthing process, the organisms are shed in high numbers within the amniotic fluids and placenta. Since birthing does not coincide with trailing operations, public safety is not impacted from livestock trailing events on public land. For these reasons, the existence and spread of Q fever will not be analyzed further.

CHAPTER 2. PROPOSED ACTION AND ALTERNATIVES

The routes included in the Proposed Action correspond to the crossing permit applications received by the JFO. Alternative 1 is the No Action Alternative, and Alternatives 2 and 3 were developed by the JFO. The JFO Interdisciplinary Team developed the design features listed below to minimize impacts that may occur from the trailing of livestock. The design features are based on available science, current policy, and comments received through the scoping process. Design features apply to all action alternatives (Proposed Action, Alternative 2, and Alternative 3) and include, but are not limited to:

- General
    - Crossing permittees will be directed to stay on existing roads within trailing corridors where and when needed to avoid sensitive resources. Specific details will be identified as terms and conditions in the decision record or crossing permit.
    - Use of motorized vehicles associated with trailing will be restricted to existing roads unless otherwise approved by the authorized officer.

- Wildlife
    - Trailing of domestic sheep/goats will not be allowed within 9 miles of year-round California bighorn sheep habitat to reduce the risk of disease transmission.
    - From March 1 to May 15, livestock trailing will be routed at least 0.62 mile from occupied or historic sage-grouse leks; if this is not possible, trailing events will be timed to occur between 9:00 am and 6:00 pm.
    - From March 1 to May 15, bedding of sheep will not be authorized within 0.62 mile of occupied or historic sage-grouse leks between 6:00 pm and 9:00 am.
    - From March 1 to May 15, over-night areas will be located at least 0.62 mile from occupied or historic sage-grouse leks.
    - From April 1 to June 15, temporary water troughs will not be placed in sagebrush habitat to avoid impacts to nesting sage-grouse; if this is not possible, previously disturbed sites will be used, such as areas around stock ponds or troughs, past seedings, or other grassland sites.
    - From April 1 to June 15, sheep bedding areas, sheep camps, or cattle over-night areas will not be located in sagebrush habitat; if this is not possible, previously disturbed sites will be used, such as areas around stock ponds or troughs, past seedings, or other grassland sites.
    - From April 1 to June 15, livestock trailing routes will avoid sagebrush habitats to the extent practical to minimize potential impacts to nesting sage-grouse.
    - Summer through fall, sage-grouse leks may be used for livestock over-night areas or temporary water sites to maintain shorter vegetation for the lek.
    - Trailing routes will avoid areas occupied by pygmy rabbits to the extent possible.
    - From February 1 to July 31, livestock trailing will be routed at least 0.5 mile from occupied golden eagle nests.

- From February 1 to July 31, livestock trailing and overnight use areas will avoid isolated junipers to minimize disturbing nesting ferruginous hawks.
- From April 15 to June 15, livestock trailing routes will avoid bighorn sheep lambing areas.
- Areas used for staging vehicles, horse trailers, fence panels, etc. will avoid sagebrush areas; if this is not possible, previously disturbed sites will be used, such as areas around stock ponds or troughs, past seedings, or other grassland sites.
- Trailing will only be allowed within 0.1 mile of the Pot Hole road in T06S, R08E Sections 20, 21, and 28 to prevent impacts to Bruneau Dunes tiger beetle habitat.

- Slickspot Peppergrass (*Lepidium papilliferum)*
  - Livestock trailing will not be authorized within occupied Slickspot peppergrass Element Occurrences in accordance with the Biological Opinion (14420-2010-F-0025) on the Effects Of Bureau of Land Management Ongoing Livestock Grazing Actions In Idaho on the Slickspot Peppergrass dated January 25, 2010; as well as, Jarbidge Field Office policy described in Field Manager's February 3, 2006 letter.
  - Livestock trailing will not be authorized within potential slickspot peppergrass habitat during times when soils are saturated (Maps 12, 13, and 14). This design feature only applies to slickspot peppergrass potential habitat that has been rated as having a high or medium potential for slickspot peppergrass discovery. Low potential is not subject to this design feature. All high-rated potential habitat is subject to this design feature. Medium potential habitat within the area south of Balanced Rock and Crow's Nest Road and east of Clover Creek will have this design feature applied, but outside this area this restriction will not apply to the medium-rated potential habitat.
  - For trailing events within high potential habitat, environmental conditions will be monitored to ensure compliance with no trailing during times of saturated soils.
  - Livestock trailing in potential slickspot peppergrass habitat will occur on roadways/designated routes of travel when practical.

- Vegetation
  - Livestock trailing routes will avoid areas recently burned by wildfire where possible.
  - Livestock trailing routes will avoid recent vegetation treatments (Emergency Stabilization and Burned Area Rehabilitation, fuels reduction, or restoration treatments) to the extent possible.
  - Livestock trailing routes will be located, or timed, to minimize the potential spread of noxious weeds (e.g., avoid areas of known noxious weeds; avoid times when seeds from noxious weeds are mature).
  - The use of certified noxious-weed-free forage will be required for any horses used for the herding of livestock or supplemental feeding of livestock.

- Riparian
  - Bedding or over-night areas will be at least 0.25 mile from riparian areas.
  - Temporary water facilities will be placed at least 0.25 mile from riparian areas.

    - Livestock trailing across riparian areas and wetlands will be restricted to pre-determined locations.
    - Active herding/trailing will be required within riparian areas and wetlands and all livestock will be removed from the RCA following the trailing event.

- Cultural
    - Bedding areas, temporary watering facilities, and trailing related camping areas will be at least 0.25 mile from canyon rims and live streams to minimize impacts to cultural resources. Canyon and stream crossings will be restricted to pre-determined locations.
    - Bedding areas, temporary watering facilities, and trailing related camping areas will be at least 0.25 mile from the Oregon National Historic Trail, and the historic Kelton and Toana Freight Wagon Roads. Crossing of these historic trails will be restricted to pre-determined locations.
    - Livestock trailing will avoid playas.

- Soils
    - Trailing will be avoided during times when soils are saturated to minimize impacts to soils.
    - Livestock trailing routes will avoid areas recently burned by wildfire where possible.
    - Livestock trailing routes will occur on roadways/designated routes of travel when practical.

- Wilderness
    - Livestock trailing in designated Wilderness areas will be limited to a 60-foot wide corridor along existing cherry stem roadways.

Any crossing permit issued will be in compliance with the 1987 Jarbidge Resource Management Plan, and will be consistent with the provisions of the Taylor Grazing Act and the Federal Land Policy and Management Act. In addition, 64 grazing allotments within the JFO are subject to Memorandum Decision and Order's issued by the United States District Court for the District of Idaho. Trailing of livestock across subject allotments will be consistent with the applicable Order.

Proposed Action

The BLM proposes to issue crossing permits to qualified applicants authorizing the trailing of livestock across BLM-administered lands within the JFO for multiple grazing years beginning in November 2012. Trailing of livestock would be authorized within 1.0-mile wide corridors to allow for flexibility to trail around sensitive areas or other resource issues. The Proposed Action includes 266 miles of trailing corridors consisting of 151,842 acres of BLM-administered lands.

Grazing permittees or other livestock producers needing to trail livestock across BLM-administered lands would be required to submit an application prior to trailing. For the 2012

grazing season, the JFO has received 11 applications (Table 2-1) to date. The Field Manager will consider each application and may issue crossing permits incorporating considerations for season of use, resource conditions, special status species and their habitat, cultural resources, weather, wildfire, and drought. Map 2 displays the proposed 1.0-mile wide trailing corridors that would be used for the movement of livestock based on the applications received to date.

Table 2-1. 2012 Trailing Applications

Application Serial Number	Applicant	Number and Kind of Livestock	Number of Days	Earliest Date	Latest Date	AUMs
T01012001	Three Creek Ranch Co.	375C	12	5/1	5/12	148
T01012001	Three Creek Ranch Co.	750C	3	12/1	12/3	74
T01012002	Blue Butte Grazing Assoc.	600C	0.5	6/1	8/31	20
T01012002	Blue Butte Grazing Assoc.	600C	0.5	9/1	11/30	20
T01012002	Blue Butte Grazing Assoc.	600C	0.5	10/1	12/31	20
T01012002	Blue Butte Grazing Assoc.	600C	0.5	9/1	11/30	20
T01012002	Blue Butte Grazing Assoc.	600C	0.5	2/1	2/28	20
T01012002	Blue Butte Grazing Assoc.	600C	0.5	4/1	5/31	20
T01012003	Duelke, Barry	1200S	9	3/15	4/15	71
T01012003	Duelke, Barry	1200S	9	3/17	4/17	71
T01012003	Duelke, Barry	1500S	9	3/19	4/19	89
T01012004	Duelke, Barry	1200S	6	10/10	10/20	47
T01012004	Duelke, Barry	1200S	6	10/12	10/22	47
T01012004	Duelke, Barry	1500S	6	10/14	10/24	59
T01012005	Goodtime Grazing Assoc.	400C	0.5	2/1	3/7	13
T01012006	Goodtime Grazing Assoc.	1000S	2	4/7	5/7	13
T01012006	Goodtime Grazing Assoc.	1000S	2	4/7	5/7	13
T01012006	Goodtime Grazing Assoc.	1500S	2	11/25	12/16	20
T01012006	Goodtime Grazing Assoc.	1500S	2	11/25	12/16	20
T01012007	Devil Creek Ranch, Inc.	545C	1	3/15	4/5	18
T01012007	Devil Creek Ranch, Inc.	545C	0.5	6/10	6/30	18
T01012007	Devil Creek Ranch, Inc.	100C	0.5	4/10	4/30	3
T01012007	Devil Creek Ranch, Inc.	545C	0.25	11/1	11/20	18
T01012007	Devil Creek Ranch, Inc.	545C	0.25	12/20	1/15	18
T01012008	Plateau Farms, LLC	1100S	3	3/15	4/10	22
T01012008	Plateau Farms, LLC	900S	3	3/15	4/10	18
T01012008	Plateau Farms, LLC	850S	3	3/15	4/10	17

Application Serial Number	Applicant	Number and Kind of Livestock	Number of Days	Earliest Date	Latest Date	AUMs
T01012008	Plateau Farms, LLC	1100S	2	3/17	4/12	14
T01012008	Plateau Farms, LLC	900S	2	3/17	4/12	12
T01012008	Plateau Farms, LLC	850S	2	3/17	4/12	11
T01012008	Plateau Farms, LLC	1100S	5	3/20	4/15	36
T01012008	Plateau Farms, LLC	900S	5	3/20	4/15	30
T01012008	Plateau Farms, LLC	850S	5	3/20	4/15	28
T01012008	Plateau Farms, LLC	850S	14	3/20	4/20	78
T01012008	Plateau Farms, LLC	1500S	12	11/10	12/10	118
T01012008	Plateau Farms, LLC	1500S	12	11/10	12/10	118
T01012009	Rocking S Ranch	300C	0.25	11/19	11/19	10
T01012009	Rocking S Ranch	300C	0.25	12/31	12/31	10
T01012010	Salmon Falls Land & Livestock Co.	700C	5	11/28	12/31	115
T01012011	Wells Juniper Ranch Grazing Assoc.	400C	4	3/1	2/28	53
T01012011	Wells Juniper Ranch Grazing Assoc.	400C	4	3/1	2/28	53
					TOTAL	**1,623**

Each crossing permit would outline the allotment(s) to be trailed across, the period of use (dates), and the number and kind of livestock. Furthermore, terms and conditions specific to each trailing event would be identified, including the trailing route to be used, minimum distance of travel per day, and over-night areas.

No Action (Alternative 1)

Under this alternative, BLM would not issue crossing permits and the trailing of livestock across BLM-administered lands within the JFO would not be authorized. Livestock could be trailed on publicly maintained roads, State-managed lands, other Federally-managed lands, or on private lands. However, applicants would have to find means other than trailing to reach their destination. A likely possibility would be to transport livestock by truck and trailer. This may result in traveling longer distances on roads with truckloads of livestock.

Alternative 2

The BLM would establish 1.0-mile wide trailing corridors across the JFO (Map 3). The BLM would issue crossing permits to qualified applicants authorizing the trailing of livestock across BLM-administered lands within the established corridors beginning in November 2012. Alternative 2 would include 535 miles of trailing corridors consisting of 289,722 acres of BLM-administered lands. Grazing permittees or other livestock producers needing to trail livestock across BLM/JFO-administered lands would be required to submit an application prior to trailing. The Field Manager will consider each application and may issue crossing permits incorporating considerations for season of use, resource conditions, special status species and their habitat, cultural resources, weather, wildfire, and drought. Each crossing permit would outline the allotment(s) to be trailed across, the period of use (dates), and the number and kind of livestock. Furthermore, terms and conditions specific to each trailing event would be identified, including the trailing corridor to be used, minimum distance of travel per day, and over-night areas.

Alternative 3

The BLM would establish 0.25-mile wide trailing corridors across the JFO (Map 4). The BLM would issue crossing permits to qualified applicants authorizing the trailing of livestock across BLM-administered lands within the established corridors beginning in November 2012. Alternative 3 would include 231 miles of trailing corridors consisting of 35,967 acres of BLM-administered lands. Grazing permittees or other livestock producers needing to trail livestock across BLM/JFO-administered lands would be required to submit an application prior to trailing. The Field Manager will consider each application and may issue crossing permits incorporating considerations for season of use, resource conditions, special status species and their habitat, cultural resources, weather, wildfire, and drought. Each crossing permit would outline the allotment(s) to be trailed across, the period of use (dates), and the number and kind of livestock. Furthermore, terms and conditions specific to each trailing event would be identified, including the trailing route to be used, minimum distance of travel per day, and over-night areas.

Alternatives Considered but Eliminated from Detailed Study

Comments submitted in response to the scoping letter proposed an alternative to require all applicants to truck their livestock instead of authorizing crossing permits. This alternative was considered but eliminated from detailed study because the BLM does not issue permits for the trucking of livestock. Trucking may be an effect and a likely option of the No Action alternative for some applicants. Therefore, where appropriate, the effects of trucking are considered under the No Action alternative.

CHAPTER 3. AFFECTED ENVIRONMENT

During the analysis process, the interdisciplinary team considered several resources and supplemental authorities. The interdisciplinary team determined that the resources discussed below would be affected by the Proposed Action or Alternatives.

Soils

The overall health of watersheds is dependent on soils, which serve to capture, store, and redistribute water, support plant growth, and drive nutrient cycling. The ability of the soil to function in rangeland ecosystems is a factor of the soils physical, biological, and chemical properties.

The soils of the JFO are highly diverse, variable, and complex. As with all soils, their makeup and composition depend on parent material, climate, location, topography, aspect, elevation, and time and age in place. Soils range from very sandy and deep in the northern portion of the JFO, to silts and clays and very shallow and rocky in the southern portion.

Erosion of soils from wind and water results in a loss of topsoil which reduces the ability of the soil to function and sustain productivity for future use. The majority of the project area contains soils with medium potential for water erosion or moderate potential for wind erosion. Water erosion most often occurs from infrequent intense rainfall events in areas with steep slopes and limited vegetative cover. Wind erosion is a concern across the project area, particularly following wildfire. Erosion resulting in rill and gully formation is estimated to be low over most of the project area except on sandy-alluvial soils and clayey-rhyolitic soils occurring on steep slopes with naturally low vegetation cover, which are inherently prone to erosion.

The JFO has a long history of large, and sometimes repeated, wildfires. Wildfires remove vegetation leaving the soil exposed and more susceptible to accelerated erosion. Plant pedestals have been documented in some areas of the project area, documenting accelerated erosion as a result of removal of vegetation by wildfire.

Increased soil bulk density occurs in areas with concentrated use, including roads, trails, and livestock water and mineral locations, and reflects increases in soil compaction. Past assessments have shown most areas did not exhibit increased soil bulk density. Soils saturated with water are more susceptible to increased compaction. Amounts of precipitation vary widely across the project area and isolated areas can be saturated in late winter and early spring. For much of this time the soil is frozen, reducing the risk of compaction.

Biological soil crusts are an important component of many ecological sites in the project area. They function as living mulch by retaining soil moisture and discouraging annual weed growth. They reduce wind and water erosion, fix atmospheric nitrogen, and contribute to soil organic matter (Eldridge and Greene, 1994; Belnap and Gillette, 1997, 1998; McKenna-Neumann et al., 1996). Biological soil crusts also protect interspatial surface areas from various forms of erosion. By occupying this area between larger plants, these crusts enhance soil stability, soil moisture

retention, and site fertility (by fixing atmospheric nitrogen and contributing organic matter). Biological soil crusts are patchy throughout the project area and generally unmapped.

Water Resources

The JFO contains three primary watersheds: the Bruneau River Watershed, the Salmon Falls Creek Watershed, and the Snake River Watershed. Land management practices on both BLM and non-BLM-administered lands can affect water quality and quantity.

The DEQ identifies streams that have impaired water quality in the State of Idaho. The indicators used by DEQ to assess water quality and the numeric standards for each indicator is identified in Table 3-1.

Table 3-1. Water Quality Standards for the State of Idaho.

Indicator	Measurement	DEQ Standards
Sediment	Amount of total suspended solids (TSS)	50-52 mg/L[A] (monthly average), 80 mg/L (weekly maximum)
Temperature	Maximum instantaneous temp.	72°F
Temperature	Maximum daily average temperature	66°F
Dissolved Oxygen (DO)	Amount of DO	>6.0 mg/L
Escherichia coli (E. coli)	Presence/absence	>126 cfu [B]/100ml [C]
Streamflow Alteration/Diversions	Presence/absence of dewatering	No dewatering
Nutrients	Presence/absence of Ammonia	The 30-day average of total ammonia nitrogen is not to exceed the Criterion Continuous Concentration [D] more than once every 3 years.
Nutrients	Amount of total Phosphorus	0.1 mg/L free-flowing streams, 0.050 mg/L mouth of streams into lake/reservoir, 0.025 mg/L lake reservoir
Mercury [E]	Present/absence of Methyl Mercury	0.3 mg/kg [F] of fresh weight fish tissue

[A] milligrams per liter
[B] colony forming units
[C] milliliters; the concentration of *E. coli*, based on a minimum of five samples during any 30-day period.
[D] See IDAPA 58.01.02 for Criterion Continuous Concentration.
[E] Water quality monitoring for mercury is conducted by the EPA and Idaho DEQ (DEQ, 2007).
[F] milligrams per kilogram.

The streams within the JFO that are identified by DEQ as water quality impaired are summarized in Table 3-2. Streams that have been recommended by DEQ for removal from the 303(d) list of streams but have not been approved by the EPA are identified in the table footnote and in the information provided below the table.

Table 3-2. DEQ Designated Water Quality Impaired Streams in the Jarbidge Field Office.

Watershed/River	**Factors Limiting Water Quality** [A]					
	Flow Alteration	***E. coli***	**Sediment**	**Temperature**	**Nutrients**	**Mercury**
Bruneau River Watershed						
Bruneau River	X		X	X	X	
Three Creek			X			
Jarbidge River				X		
Jarbidge River, East Fork				X		
Clover Creek [B]		X	X			
Poison Creek [B]			X			
Cougar Creek [B]			X			
Salmon Falls Creek Watershed						
Salmon Falls Creek		X	X	X	X	
Cedar Creek	X	X	X		X	
Salmon Falls Reservoir					X	X
Cedar Creek Reservoir	X				X	
House Creek [C]		X	X			
China Creek [D]		X	X	X	X	
Snake River Watershed						
Snake River	X		X	X	X	
Sailor Creek [B]			X			
Browns Creek [B]			X			
Deadman Creek [B]			X			

[A] DO is not identified as a factor limiting water quality because it is captured under Flow Alterations or Nutrients.
[B] These streams were recommended to be removed from the list of streams with impaired water quality (DEQ, 2009).
[C] Impaired stream reaches are in the headwater tributaries to House Creek.
[D] Impaired stream reaches are the lower reach of China Creek and the headwater tributaries to China Creek, including Browns Creek.

In 2001, EPA approved a Subbasin Assessment and Total Maximum Daily Load Plan for the Bruneau River and its tributaries (DEQ, 2000). This plan evaluated the following streams within the JFO: Poison Creek, Cougar Creek, Clover Creek, Three Creek, and the Bruneau River. Total Maximum Daily Loads (TMDLs) were not developed for Poison Creek and Cougar Creek since these streams have intermittent flows. TMDLs have been developed for Bruneau River (nutrients), Clover Creek (*E. coli*), and Three Creek (sediment).

The Department of Environmental Quality Working Principles and Policies for the 2008 Integrated (303[d]/305[b]) Report identified the following streams for delisting as impaired bodies of water: Cedar Creek Reservoir for *E. coli*, Cedar Creek from the reservoir to Salmon

Falls Creek for flow alteration, House Creek from its source to Cedar Creek Reservoir for *E. coli*, and Salmon Falls Creek from the Devil Creek confluence to the Snake River for *E. coli* (DEQ, 2009).

The King Hill-C.J. Strike Reservoir Subbasin Assessment and Total Maximum Daily Load also included an assessment for Browns Creek, Deadman Creek, and Sailor Creek (DEQ, 2006). However, since all the creeks were classified as intermittent, no TMDLs were developed. Department of Environmental Quality Working Principles and Policies for the 2008 Integrated (303[d]/305[b]) Report included Browns Creek, Deadman Creek and Sailor Creek because all three drainages are nearly always dry from their headwaters to the Snake River (DEQ, 2009). As a result, the DEQ will no longer be assessing these streams for water quality.

Vegetation

The JFO area was historically occupied by shrub-dominated vegetation, with salt desert shrubs occurring with Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) in the northern part of the JFO, and grading southward into low- and mid-elevation sagebrush-steppe. Mountain shrub communities occur in the Jarbidge Foothills at the southern end of the JFO. About 70% of the JFO has been impacted by large wildfires within the last 10 years, most notably, Clover (2005), Sailor Cap (2006), Murphy Complex (2007), and Long Butte (2010) (Map 5). Loss of shrub cover due to fire and post-fire establishment of native or non-native perennial grasses and forbs, as well as invasive annual vegetation, has resulted in a landscape dominated by herbaceous vegetation types (Map 6, Table 3-3). While shrubs are often seeded as part of ESR treatments, size and scale of fires between 2005 and 2011 have reduced dominance of shrubs in the JFO.

Table 3-3. Composition of the Jarbidge Field Office area by broad vegetation types (Source: BLM GIS data, 2011)

Vegetation Type	Percent of Jarbidge Field Office Area
Annual-dominated (cheatgrass and exotic annual forbs)	8%
Native grassland (dominated by native perennial grasses)	24%
Native shrubland (native shrub-dominated communities with native understories)	22%
Non-native perennial (seedings dominated by non-native perennial grasses and forbs)	16%
Non-native understory (native shrub areas with a non-native perennial understory)	5%
Unvegetated (canyon breaks, sand dunes)	1%
Recent burn (2010, 2011 fires)	22%
No data	2%

Areas of recent burn have been assumed to grow back to what they were before they were burned or to what they were treated with during ES&R treatments. Since shrubs can take 20 years to become a major component of a vegetation community following a burn, no recent burn areas were categorized into native shrubland or non-native understory vegetation types.

Vegetation composition in the areas potentially affected by trailing is summarized in Table 3-4.

Table 3-4. Vegetation composition in areas identified for trailing in the Proposed Action and Alternatives (Source: BLM GIS data, 2011).

Vegetation Type	Percent of Proposed Action Trailing Area	Percent of Alternative 2 Trailing Area	Percent of Alternative 3 Trailing Area
Annual-dominated	8	8	9
Native grassland	41	35	40
Native shrubland	15	22	16
Non-native perennial	33	28	31
Non-native understory	2	6	3
Unvegetated	1	1	1
No data	>1	>1	>1

Riparian Areas and Wetlands

Riparian and wetland communities are areas directly influenced by permanent water or seasonably high water tables. These areas have visible vegetation or physical characteristics reflective of permanent water influence. Riparian areas and wetlands generally can be identified by typical riparian vegetation such as cottonwoods (*Populus spp*.), willow (*Salix spp*.), sedges (*Carex spp*.), and rushes (*Juncus spp.*). Riparian areas provide a transition zone between aquatic and upland areas as well as cover and food for wildlife and fish. These areas also provide water quality benefits by filtering out nutrients from runoff, maintaining stream temperature by providing shade, and controlling erosion. In general, the area along streams where the woody and herbaceous plant community is influenced by the presence of surface and sub-surface water can be referred to as the Riparian Conservation Area (RCA). Human activities and uses within the RCA have the potential to influence riparian condition.

The term “stream” is generally used to describe a body of flowing water in a natural channel. Streams in a natural channel are classified as being perennial, intermittent or ephemeral and are defined as follows (BLM, 1998):

- **Perennial** – A stream that flows continuously. Perennial streams are generally associated with a water table in the localities through which they flow.
- **Intermittent** (seasonal) – A stream that flows only at a certain times of the year when it receives water from springs or from some surface source such as melting snow in mountainous areas. These streams flow continuously for periods of at least 30 days and usually have visible vegetation or physical characteristics reflective of permanent water influence such as the presence of cottonwood.
- **Ephemeral** (short-lived) - A stream that only flows in direct response to precipitation, and whose channel is above the water table at all times. These streams do not flow continuously for at least 30 days and generally do not have visible vegetation or physical characteristics reflective of permanent water influence such as a defined stream channel or cottonwoods.

The BLM uses Proper Functioning Condition (PFC) assessments as a broad-scale assessment that uses hydrology, vegetation, and erosion/deposition (soil) attributes and processes to qualitatively assess the condition of riparian and wetland areas. PFC determinations include ratings of PFC, functioning at risk with an upward trend (FAR-UP), functioning at risk with no apparent trend (FAR-NA), functioning at risk with a downward trend (FAR-DN), and non-functioning (NF). From 2001 to 2007, PFC assessments were conducted on 245 miles of riparian areas crossing BLM-administered lands within the JFO. Based on these assessments, 85 miles (35%) of riparian areas are at PFC; 128 miles (52%) are FAR, and 12 miles (5%) are NF. The FAR ratings includes FAR-UP (51 miles, 21%), FAR-DN (30 miles, 12%), and FAR-NA (47 miles, 19%). The condition of 20 miles (8%) of the reaches assessed was unknown.

Wetlands are communities that are wet long enough during the growing season to support a prevalence of wetland vegetation and produce wetland soils. Wetlands within the JFO are generally wet meadows associated with riparian areas, seeps, or springs. There are approximately 885 acres of playas and man-made ponds, 200 seeps or springs, and an unknown acreage of wet meadows within the JFO. These wetlands often provide surface and subsurface water to downslope streams and rivers. The available PFC data for wetlands within the JFO identified nine wetlands rated at PFC (61 acres) and three wetlands that were FAR (112 acres).

Noxious Weeds and Invasive Plants

Noxious weeds and invasive plants can displace native plants, degrade wildlife habitats, reduce recreational opportunities, and impact water quality, runoff, and sedimentation (BLM, 2007). Noxious weeds and invasive plants can also change the composition, structure, and productivity of vegetation communities as well as the state of ecological sites (West, 1999).

Increased occurrence of wildfire over the past 20 years has created opportunities for introduction and spread of noxious weeds and invasive plants, especially cheatgrass (Jessop & Anderson, 2007; Kinter et al., 2007). Noxious weeds and invasive plants can spread and invade from areas of high disturbance into adjacent native and non-native perennial plant communities. Mechanisms for introduction and spread include but are not limited to: cross-country motorized travel, passenger vehicles, road maintenance, recreational use, wild horse and wildlife movements, livestock movements and management activities, wind, gravel pit and mining operations, and fire suppression activities.

Sixteen weeds found on the Idaho and/or Nevada State noxious weed lists are known to occur in the JFO (Table 3-5). In addition, Twin Falls County has a noxious weed list consisting of two weeds: halogeton (*Halogeton glomeratus)* and St. John's wort *(Hypericum perforatum)*, both of which are known to occur in the JFO.

Table 3-5. Idaho and/or Nevada Noxious Weeds Known to Occur within the JFO.

Common Name	Scientific Name
Black henbane	*Hyoscyamus niger*
Canada thistle	*Cirsium arvense*
Diffuse knapweed	*Centaurea diffusa*
Field bindweed	*Convolvulus arvensis*
Hoary cress (whitetop)	*Cardaria draba*
Musk thistle	*Carduus nutans*
Oxeye daisy	*Chrysanthemum leucanthemum*
Perennial pepperweed	*Lepidium latifolium*
Puncturevine	*Tribulus terrestris*
Purple loosestrife	*Lythrum salicaria*
Rush skeletonweed	*Chondrilla juncea*
Russian knapweed	*Acroptilon repens*
Salt cedar (Tamarisk)	*Tamarix ssp.*
Scotch thistle	*Onopordum acanthium*
Spotted knapweed	*Centaurea maculosa*
Water hemlock [A]	*Cicuta maculata*

[A] Species is native.
Sources: (BLM, ; IASCD, 2004; ISDA, 2006; NRCS, 2006a).

Comprehensive noxious weed and invasive plant inventories have not been completed by BLM in the JFO; however, weed treatments have been documented since 1996 and provide locations of 13 noxious weeds and 1 invasive plant. In addition, recent surveys of riparian areas in the JFO show increases in the presence of Canada thistle; and reed and reed canary grass are dominating some parts of Salmon Falls Creek, Clover Creek, and the Bruneau River.

Threatened, Endangered, and Sensitive Plants

Special status plants in the JFO can be rare due to associations with specific substrates, plant communities, or because human-related disturbance has reduced population numbers, available habitat, or degraded habitat condition. Special status plant populations can occur in habitats modified by wildfire or areas of vegetation treatments. Population trends for most special status plants, with the exception of slickspot peppergrass, are largely unknown. However, the scale of vegetation modification in the JFO has likely reduced habitat for those species that are indigenous to native shrub communities. This has been documented for slickspot peppergrass and was a primary reason for the 2009 decision to list the species as Threatened under the ESA (FR 52027-52035).

Table 3-6. Special Status Plant Species Found in the Jarbidge Field Office.

Common Name[A]	Scientific Name	Status[B]	Vegetation Type and Habitat
two-headed onion	*Allium anceps*	4	Low sagebrush
Newberry's milkvetch	*Astragalus newberryi var. castoreus*	4	Wyoming sagebrush-shadscale, Salt desert shrub
Snake River milkvetch	*Astragalus purshii var. ophiogenes*	4	Needle-&-Thread/Indian ricegrass
four-wing milkvetch	*Astragalus tetrapterus*	4	Wyoming sagebrush
Mud Flat milkvetch	*Astragalus yoder-williamsii*	3	Mountain big sagebrush, Low sagebrush
earth lichen	*Catapyrenium congestum (lichen)*	4	Salt desert shrub
alkali cleomella	*Cleomella plocasperma*	3	Salt desert shrub
Greeley's wavewing	*Cymopteris acaulis* var. *greeleyorum*	3	Wyoming sagebrush, desert shrub, Indian ricegrass
California damasonium	*Damasonium californicum*	4	Wet meadow
white eatonella	*Eatonella nivea*	4	Wyoming sagebrush-shadscale, Salt desert shrub
chatterbox orchid	*Epipactis gigantean*	3	Riparian/Wetland
Packard's cowpie buckwheat	*Eriogonum shockleyi var. packardiae*	3	Wyoming sagebrush-shadscale, Salt desert shrub
Matted cowpie buckwheat	*Eriogonum shockleyi var. shockleyi*	3	Wyoming sagebrush-shadscale, Salt desert shrub
white-margined wax plant	*Glyptopleura marginata*	4	Salt desert shrub, Greasewood
spreading gilia	*Ipomopsis polycladon*	3	Low sagebrush, Wyoming sagebrush-shadscale, Salt desert shrub, Horsebrush
Davis peppergrass	*Lepidium davisii*	3, NV	Playa
slickspot peppergrass	*Lepidium papilliferum*	1	Playa, Wyoming sagebrush
Bruneau River prickly phlox	*Linanthus glabrum*	3	Canyon wall or base
rigid threadbush	*Nemacladus rigidus*	4	Wyoming sagebrush, Wyoming sagebrush-shadscale, Salt desert shrub
Simpson's hedgehog cactus	*Pediocactus simpsonii*	4	Low sagebrush, Wyoming sagebrush, Wyoming sagebrush-shadscale
Janish's penstemon	*Penstemon janishiae*	3	Low sagebrush, Wyoming sagebrush, Wyoming sagebrush-shadscale, Salt desert shrub
spine-noded milkvetch	*Peteria thompsoniae*	4	Salt desert shrub
American wood sage	*Teucrium canadense var. occidentale*	3	Riparian/Wetland

[A] There are no known EOs of special status plant species that occur on BLM-administered lands within any of the trailing areas across alternatives.
[B] Type 1. Threatened, Endangered, Proposed, and Candidate Species – These species are listed by the FWS as Threatened or Endangered, or they are Proposed or Candidates for listing under ESA.

Type 2. Range-wide/Globally Imperiled Species – High Endangerment – These species have a high likelihood of being listed in the foreseeable future due to their global rarity and significant endangerment factors.
Type 3. Range-wide/Globally Imperiled Species – Moderate Endangerment – These species are globally rare with moderate endangerment factors. Their global rarity and inherent risks associated with rarity make them imperiled species.
Type 4. Species of Concern – These species 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.

On May 10, 2011 the FWS proposed designating 57,756 acres as critical habitat for slickspot peppergrass (76 FR 90). Of the proposed habitat, 29,910 acres are located in Owyhee County (Unit 4), of which 28,428 acres of proposed critical habitat are located on public land and 1,482 acres are found on lands managed by the State of Idaho. Unit 4 contains the largest amount of contiguous slickspot peppergrass habitat with little fragmentation or development.

Primary factors threatening slickspot peppergrass are changes in wildfire regime and invasive plant expansion. Livestock pose a threat to the species, primarily through trampling of individual plants and slickspot habitats. However, the current livestock management conditions and associated conservation measures address this potential threat such that it does not pose a significant risk to the viability of the species as a whole. Slickspot peppergrass is currently managed using conservation measures specified in the 2009 Conservation Agreement (USDI BLM & FWS, 2009) and the 2009 UFSWS Biological Opinion for existing land use plans.

The Owyhee Plateau population of slickspot peppergrass is known to occur in the Inside Desert area of the JFO; however, potential habitat occurs over most of the JFO (Maps 12, 13, and 14). The slickspot peppergrass potential habitat has been stratified into High, Medium, and Low potential for species occurrence. This stratification used fire frequency, vegetation community, and slope. Surveys to identify slickspot peppergrass populations and habitats are ongoing and focused in areas of High potential for species presence. Known populations in the JFO occur in areas dominated by native plant communities, crested wheatgrass, and intermediate wheatgrass. Part of the area supporting the Owyhee Plateau population burned in the 2007 Murphy Complex and Inside Desert fires.

Threatened, Endangered, and Sensitive Fish

ESA-Listed Fish: Jarbidge River Bull Trout and Designated Critical Habitat

Columbia River bull trout (Jarbidge River) are the only ESA-listed fish that occur within the JFO. Columbia River bull trout (*Salvelinus confluentus*) were listed as threatened under the ESA on November 1, 1999 (64 FR 58909) and the Jarbidge River bull trout were emergency listed as endangered on August 11, 1998 (63 FR 42757) and then listed as threatened on April 8, 1999 (64 FR 17110). The Jarbidge River Distinct Population Segment includes bull trout residing in Idaho and in portions of Nevada. Bull trout in the Jarbidge River are considered important because they occupy a unique and unusual ecological setting and their loss would result in a substantial modification of the species' range.

Bull trout spawning and rearing occurs primarily in the headwater streams in Nevada on U.S. Forest Service lands. The majority of migratory corridors and overwintering habitat occur on BLM-administered lands. Migratory bull trout seasonally inhabit the Jarbidge River downstream of the confluence of the East and West Forks to the Bruneau River from October through late June. The Jarbidge River population boundary includes the entire Bruneau River although there are no known historical recorded occurrences of bull trout in the Bruneau River. Critical habitat for bull trout was designated on October 18, 2010 (75 FR 63898; Unit 25) and included the Bruneau River upstream to the Jarbidge River, the East Fork and West Fork Jarbidge River, and several of their headwater tributaries.

In 2002, BLM completed a stream habitat survey on a section of the East Fork Jarbidge River that was representative of larger stream reaches with similar habitat characteristics (e. g., stream gradient, width, and depth). The results of the survey, with U.S. Fish and Wildlife Service bull trout criteria in parenthesis, determined streambank stability to be 77% (80%); embedded fines to be >31% (<20%); large woody debris to be 31 pieces/mile (48 pieces/mile); pool habitat to be 51/mile (60/mile); and the occurrence of pools larger than 1.6 feet deep to be 45/mile (60/mile). The criteria for large pools were based on Overton and others (1997).

Since 2002, the BLM has collected water temperature data for the East Fork Jarbidge River with continuous water temperature recorders. These data indicate water temperatures in July and August exceed the 59°F Mean Weekly Maximum Temperature considered to be functioning properly for bull trout rearing and migration by 1°F to 12°F. The water temperature requirements for bull trout include temperatures ranging from approximately 39°F to 48°F for spawning and 39°F to 53°F for summertime rearing. Generally, bull trout spawning occurs from mid-September through late October as water temperatures decline to 48°F and colder. Based on water temperature data and the lack of documented bull trout spawning, the portion of the East Fork Jarbidge River on BLM-administered land is considered to be foraging, migratory and overwintering habitat for bull trout (FWS File # 01-EIFW00-2012-F-0092).

BLM Sensitive Fish: Columbia River Redband Trout

Interior Columbia River redband trout (*Oncorhynchus mykiss gibbsi*), a subspecies of rainbow trout, are a BLM Sensitive fish. Redband trout are found in the Bruneau River and its tributaries, including the Jarbidge River. Redband trout have been found in the headwater tributaries to Clover Creek and in lower Clover Creek when surface flows and water temperatures are suitable. Redband trout are also present in Salmon Falls Creek and several of its tributaries that drain the Jarbidge Foothills in the southern portion of the JFO. Many of the streams containing redband trout run dry before reaching their confluence with other tributaries, resulting in populations that are locally isolated at certain times of the year.

In 2006, the BLM completed 25 miles of stream habitat survey on 14 streams throughout the JFO that contained redband trout. The results of this survey are summarized here as a representation of the current baseline conditions for redband trout. The streams identified for habitat survey were divided into 49 reaches based on stream gradient, width, and depth. Based on these surveys, the stream habitat conditions consisted of 12 miles of streams (45%) that were properly functioning for redband trout, 11 miles of streams (44%) that were functioning at risk,

and 3 miles of streams (11%) that were functioning at an unacceptable level for redband trout. The 2006 habitat data were also used to determine the condition of streambanks for the redband trout occupied streams. Half of the 49 stream reaches surveyed had streambank stability ratings of 80% or higher and are functioning properly. The remaining 25 stream reaches had streambank stability ratings of 50% to 80% (21 reaches) or less than 50% (4 reaches).

The stream habitat surveys assessed the number of pools per mile for each surveyed reach. Pool frequencies in 43 stream reaches were rated as functioning properly for redband trout, two were rated as functioning at risk, and four were considered functioning at an unacceptable level for redband trout. The highest pool frequencies were found in the headwaters of Cedar Creek (122 to 127 pools per mile) and the lowest pool frequencies were found in Flat Creek (34 to 41 pools per mile). In general, pool frequencies were higher in the headwater reaches that had boulders and large woody debris to form pools and lower in reaches with low stream gradient and limited boulders and instream woody debris. The standard for large pools, such as those that are 3 feet deep or more, was met in 25 of the stream reaches. Twenty-three of the stream reaches were functioning at risk or functioning at an unacceptable level for redband trout due to their limited occurrence of large pools. Some of these reaches may have limited potential to form large pools due to low stream gradient.

During the summer of 2007, 19 water temperature recorders were placed in the redband trout streams within the Salmon Falls Creek Watershed. All 19 of the streams monitored met the State standards for cold water biota, and in some areas with groundwater influence, water temperatures were cold enough to meet the more stringent standards for bull trout rearing and spawning.

Threatened, Endangered, and Sensitive Wildlife

No threatened and endangered species are known or suspected to occur in or in proximity to the project area. Three candidate species, the yellow-billed cuckoo, Columbia spotted frog, and greater sage-grouse, occur in the JFO. Yellow-billed cuckoo and Columbia spotted frog are limited to specific riparian areas. The greater sage-grouse is present through most of the JFO area, but primarily within the southern half. These species are discussed in more detail below, followed by discussions of the impact of trailing on sensitive species.

Amphibians

Columbia spotted frog (Candidate; Type 1) historically occurred in several higher elevation (6,000+ foot) streams and stream segments of the Salmon Falls Creek drainage. Currently, only a single population of Columbia spotted frog is known to exist within the JFO. This population occurs in a portion of Rocky Canyon Creek located in the southernmost region of the JFO. Occupied habitat is confined to a series of actively maintained beaver ponds which supports a variety of plants including willows, aspen, sedges, and rushes. Spotted frogs are occasionally noted in Bear Creek, Shack Creek, and Timber Canyon. These drainages lack still water habitat created by beaver ponds. No trailing corridors occur within occupied Columbia spotted frog habitat; therefore, no further analysis is necessary.

Birds

Greater sage-grouse (Candidate; Type 1) require extensive stands of sagebrush and other shrub habitat to fulfill seasonal habitat needs, but are susceptible to habitat loss, fragmentation, and degradation (Knick and Connelly 2011; Holloran et al., 2005). In the JFO, upland cover types commonly used by sage-grouse include low sagebrush/grass, black sagebrush/grass, Wyoming big sagebrush/grass, mountain big sagebrush/grass, mountain shrub, and crested wheatgrass seedings. Recent wildfires have removed hundreds of thousands of acres of sagebrush habitat, particularly Wyoming sagebrush, which is not a fire-tolerant species (Baker, 2011). Sage-grouse display on leks (i.e., display grounds with sparse vegetation cover) in the spring, beginning in March and continuing through May. Most nesting activity begins in late April. Following an approximate incubation period of 27 days, the chicks are capable of movement after hatching, are capable of weak flight by 10 days of age, and are capable of strong flight by 5 weeks of age (Schroeder et al., 1999). Herbaceous riparian zones and wetlands provide important brood-rearing habitat, particularly for late brood-rearing activities. Some riparian zones in the JFO have limited value to sage-grouse as they are located in steep, rocky canyons, have dense woody vegetation, or are heavily infested by dense non-native vegetation, such as reed canarygrass. Key sage-grouse habitat is found throughout most of the JFO, with the majority occurring in the southeast portion of the JFO along Brown's Bench, extending west to the Diamond A Desert. Because of the increased precipitation and number of perennial forb species, the high elevation sagebrush communities in the Jarbidge Foothills provide important late brood-rearing habitat for sage-grouse.

Columbian sharp-tailed grouse (BLM sensitive, Type 3) occupy sagebrush-steppe, mixed shrublands/grasslands, mountain shrub communities, and riparian areas. The sharp-tailed grouse were extirpated from the JFO, and existing populations are the result of birds transplanted by the Idaho Department of Fish and Game. Sharp-tailed grouse display on leks in the spring, beginning in March and continuing through May. Most nesting activity begins in late April.

Calliope hummingbirds (BLM sensitive, Type 3) are most often observed in higher elevation foothills and mountainous terrain, where sufficient sources of nectar producing plants such as paintbrushes, penstemons, and other plants with showy flowers are available. Habitat types used for foraging and feeding include native meadows, wooded canyons, riparian zones, and willow thickets. During migration periods, Calliope hummingbirds occupy lower elevation habitats, including sagebrush-steppe and xeric desert communities, when sufficient forbs or insects are available. Within the JFO, distributions are unknown, but most often are observed in the Jarbidge Foothills and canyons of the Bruneau and Jarbidge Rivers. No recorded observations occur within any trailing corridors; therefore, no further analysis is necessary.

Ferruginous hawks (BLM sensitive, Type 3) nest in the JFO but migrate from the area in fall and winter. Ferruginous hawks nest and forage in a variety of habitats within the sagebrush-steppe, including grasslands. Nests can be located in trees, tall shrubs, rocky outcrops, or on the ground. Locally, the vast majority of successful ferruginous hawk nests are in isolated junipers and rarely on rock outcrops. Ferruginous hawks are less tolerant of human related disturbance and activities than most other raptors. Ferruginous hawks return from winter migration earlier than other raptors, with nest territory establishment beginning as early as mid-March.

Peregrine falcons (BLM sensitive, Type 3) nest in various habitats ranging from forested mountains to sagebrush-steppe, but are almost always found in proximity to riparian habitats, especially larger bodies of water. In the JFO there are no known peregrine falcons nests; therefore, no further analysis is necessary.

Prairie falcons (BLM sensitive, Type 3) are year-round residents in southern Idaho, and forage in sagebrush-steppe and grassland sites. Foraging prairie falcons could be observed in or near the project area. Nest establishment may begin in March, followed by egg laying in April. Prairie falcons nest on cliffs or rocky outcrops, and forage in adjacent uplands.

Willow flycatcher (BLM sensitive, Type 3) typically nests in proximity to riparian and short aspen communities. The willow flycatcher is often observed foraging in riparian communities, within or near willow-dominated communities. Locally willow flycatchers are found near low growth form aspen stands adjacent to springs, riparian zones, or the lee side of some ridges.

The distribution of Lewis' woodpecker (BLM sensitive, Type 3) is restricted to aspen areas within the Jarbidge foothills. Locally, this species nests in cavities it excavates, usually in large aspen. Foraging habitat is more diverse and may include short-distance ventures into sagebrush-steppe habitat, but is often within or near riparian corridors and aspen stands. While foraging, Lewis' woodpeckers opportunistically feed on a variety of insects, as well as fruits. Thus healthy and diverse plant communities help support the woodpecker's dietary needs.

Brewer's sparrows (BLM sensitive, Type 3) are sagebrush obligates, and require sagebrush communities for nesting and foraging activities. Brewer's sparrows usually return from winter migration in mid-March or early April. Nests are often found in living sagebrush, and this species is frequently observed in remnant sagebrush islands. Brewer's sparrow may occur in or near remaining shrub islands or unburned shrub stands.

Loggerhead shrikes (BLM sensitive, Type 3) occupy sagebrush-steppe habitat for foraging and nesting. They are frequently observed perched on fence posts, wires, and tall shrubs, while foraging in or along the edges of shrub communities. Nests may occur within sagebrush, greasewood, and bitterbrush communities with tall shrubs, but would not be expected within grassland-dominated areas.

Sage sparrows (BLM sensitive, Type 3) are a sagebrush-obligate species, requiring sagebrush vegetation communities for the majority of their seasonal habitat requirements. The species is susceptible to declines resulting from large-scale wildfires which remove shrub communities. Nests are often found in living sagebrush.

Mammals

Pygmy rabbits (BLM sensitive, Type 2) typically prefer areas with tall, dense, structurally diverse sagebrush stands and deep soils (Heady et al. 2001). In the JFO, they occupy unburned sagebrush habitats within low-mid elevation plains and foothills. Sagebrush is the primary food item for pygmy rabbits year-round, but in winter sagebrush can comprise up to 99% of their diet.

Current pygmy rabbit distributions are scattered due to habitat loss and fragmentation from recent and historic wildfires. Known occupied areas include sagebrush stands on or near the Jarbidge foothills, Horse Butte, and near Roseworth. Historical distributions are largely unknown, but pygmy rabbits likely occurred in sagebrush-steppe communities in the central and northern portions of the JFO.

Piute ground squirrels (BLM sensitive, Type 3) occur throughout most of the JFO below 5,500 feet elevation in a variety of habitats ranging from sagebrush-steppe, mixed grasslands, edges of playas, and roadside ditches. Their diet is composed of green vegetation, native grasses, and grass seeds. Populations appear more stable in high quality sagebrush-steppe habitat versus grassland areas where food source variability can fluctuate dramatically from year to year (Van Horne et al. 1997, Yensen et al. 1992). Burrows can be found under shrubs or in the open. Hibernation lasts from approximately July - late February annually.

Spotted bats (BLM sensitive, Type 3) can occupy a variety of habitats up to approximately 8,200 feet elevation. Specific information regarding roost sites is not well known, but this species has been observed to roost in deep crevices near rocky cliffs. Spotted bats are generally solitary, but may congregate during winter hibernation in small clusters. Spotted bats have been observed to forage over riparian areas or within dry, coniferous forests, with diets composed primarily of moths and other nocturnal insects. Abundance and population trends are largely unknown. Spotted bats have been confirmed in canyons associated with the Bruneau and Jarbidge Rivers as well as Clover and Salmon Fall Creeks. This species is known to travel several miles from daytime canyon roost areas to foraging sites. Because spotted bats are active at night, the potential for spotted bats to occupy or forage in trailing corridors during daylight periods is unlikely; therefore, no further analysis is necessary.

Townsend's big-eared bat (BLM sensitive, Type 3) is usually observed in locations where rocky canyons with caves, lava tubes, or mines are available for roosting. Lava tubes and mines are uncommon in the JFO. Males and females occupy separate roosting sites, but females and pups roost together in maternity colonies that can reach 1,200 individuals. Human activities which disturb maternity colonies are a major threat to this species. The potential for Townsend's big-eared bats to occupy or forage in trailing corridors during daylight periods is unlikely; therefore, no further analysis is necessary.

California myotis (BLM sensitive, Type 4) is one of the smallest bats in North America, and is most prevalent in desert scrub habitat, although populations are known to occupy oak and ponderosa pine forests. Roosts are typically in tree snags and cavities, under loose tree bark, cliff crevices, caves, mines, and abandoned buildings or other human structures. California myotis have been documented in the Bruneau and Jarbidge river canyons. The potential for California myotis bats to occupy or forage in trailing corridors during daylight periods is unlikely; therefore, no further analysis is necessary.

Kit fox (BLM sensitive, Type 4) inhabits a variety of desert habitats including mixed-grass xeric shrublands, grasslands, and pinyon-juniper woodlands in the southwestern United States (Meaney et al., 2006). Exact distribution data are unknown, largely because the species is small, wary of human contact, primarily nocturnal, and not often surveyed. Kit foxes have been

reported within the past 5 years on the Juniper Butte Air Force training range, located in the west-central part of the JFO. No recorded observations occur within any trailing corridors; therefore, no further analysis is necessary.

California bighorn sheep (BLM sensitive, Type 3) occur in the Jarbidge and Bruneau River canyons. Elevations in the area used by bighorn sheep range from 3,600 feet in canyon bottoms to approximately 4,900 feet on desert plateaus. The landscape is characterized by steep, rugged canyons that are 1,000-1,200 feet deep. Vegetation is almost exclusively shrub-steppe, with some riparian shrub communities along river corridors. Bighorn sheep numbers in the JFO appear to be increasing following a precipitous population decline in 1998 and 2000 (IDFG, 2010). The current population is estimated to be approximately 210 sheep. Bighorn sheep are susceptible to diseases (e.g., pneumonia) carried by healthy domestic sheep and goats and once these organism are transmitted there is no effective treatment in bighorn sheep. Therefore, management direction to reduce the impact of disease on bighorn sheep populations is to minimize or eliminate contacts between bighorn sheep and domestic sheep and goats that could result in disease transmission (IDFG, 2010a). Bighorn sheep in this area do not exhibit seasonal migratory movements.

Invertebrates

Bruneau Dunes tiger beetle is an endemic beetle found only in a small area of the northern part of Owyhee County, Idaho (Leffler 2001, Goldberg et al. 2012). Adults occupy open dune areas and the female lays eggs in dune interspaces where the larvae develop. Larvae live in burrows for 2 or more years where they capture other insect prey to develop into adults. Larval burrows can be collapsed by OHVs or livestock trampling (Bauer 1991). Burrow collapse due to trampling by cattle results in significant (80%) mortality (Bauer 1991). The tiger beetle is currently only found in Bruneau Dunes State Park. Historically this species was found at the Wind Mill site south of Indian Cove; however, recent monitoring efforts have failed to document the species in this area (Bosworth et al. 2010). Bosworth and others (2010) identified the expansion of non-native annual weeds into dune areas as the most pressing management issue to Bruneau Dunes tiger beetle. Herbicide spraying with Plateau® could potentially reduce cheatgrass and restore habitat for this species similar to treatment for St Anthony Dunes tiger beetle (Bouffard et al.2009).

Migratory Birds

Migratory birds lacking special status designation are numerous in the JFO and include raptors, woodpeckers, and a variety of songbirds (e.g. hummingbirds, swallows, wrens, grosbeaks, thrushes, towhees, sparrows, and warblers). These birds utilize upland and riparian shrub communities for breeding and migratory stopovers. Shrubs provide food in the form of buds, flowers, fruits, and insects, as well as woody material used for nests. Wildfires have reduced shrub patch size and continuity, thus creating landscape-level gaps in habitats important for breeding and migration for shrub-dependent birds. Some migratory birds prefer grassland communities, including Savannah sparrow, short-eared owl, long-billed curlew, burrowing owl, western meadowlark, and horned lark.

Wildlife (Other than Threatened, Endangered, and Sensitive)

Most wildlife species in the JFO do not have special status and are referred to here as “general” wildlife. Given the large number of taxa included in this category, analyses will focus on three main groups (big game, small-medium sized mammals, and herptiles [i.e. amphibians and reptiles]). These groupings are intended to capture the majority of priority management species, or species which have the greatest potential to be affected by the action alternatives. Birds lacking special status are addressed in the Migratory Bird section.

Big Game

Big game species which occur in the JFO include bighorn sheep (discussed above), elk, mule deer, and pronghorn antelope. For the purposes of this analysis, big game seasonal ranges are classified as either summer or winter, because distinct transitional ranges are limited and migration routes are not known to occur in the JFO.

Elk summer and winter ranges occur primarily in the southern half of the JFO, including the Diamond A Desert and the plateaus between the Jarbidge River and Salmon Falls Creek canyons. The majority of summer range is generally associated with woodland and riparian habitats at higher elevation sites along the Idaho and Nevada borders. Riparian zones which contain shrubs provide important cover and forage, especially when elk return from winter ranges in the spring. Winter range is generally below 5,500-6,500 feet elevation, and occurs in areas of mixed sagebrush/grass vegetation, grassland communities, and riparian zones.

Mule deer are more widely distributed than elk, and utilize riparian, canyon, woodland, and shrub habitats throughout the JFO. In most areas, mule deer are scattered from early summer through fall. Any portion of the JFO is considered potential summer mule deer range. The majority of mule deer habitat occurs in the southern two-thirds of the JFO, in areas where varied topography and intact sagebrush, mountain shrubs, and aspen communities remain. During the past 20 years, habitat conversions, noxious weed and invasive plant expansion, and large wildfires have removed or decreased habitat quality and availability throughout much of the JFO. Habitat loss and degradation has been the most severe following recent large-scale wildfires, which converted thousands of acres of sagebrush-steppe and mountain shrub grassland communities to grasslands, much of which occurred in mule deer summer and winter range. Continued loss of shrub habitats, such as Wyoming big sagebrush, bitterbrush, and mountain mahogany, is considered a major threat to mule deer populations throughout western states, including Idaho. Unlike elk, mule deer often fare poorly in grasslands that remain following wildfires, because these habitats do not contain sufficient cover and browse. Quality riparian habitats for mule deer contain a shrub component, which is essential to survival and reproduction of southern Idaho mule deer herds. Riparian shrubs provide critical nutrients, especially in stressful periods of winter and spring, when many other food sources become scarce or lack sufficient nutrition.

Pronghorn antelope currently occupy a variety of native and non-native rangelands in the JFO, but prefer expansive stands of sagebrush-steppe when it is available. Locally, pronghorn are found in grassland habitats and shrublands with shorter sagebrush. Generally, pronghorn avoid areas with sagebrush taller than about 30 inches. Pronghorn rely upon sagebrush for a majority of life stage requirements. Sagebrush can be a limiting factor in pronghorn fitness and survival. In winter, sagebrush can comprise up to 80% of the pronghorn diet. In the JFO, population numbers have been declining since 1992-1993 following a harsh winter which led to a 30-50 percent decline in the population (Racheal et al., 2009). Subsequent habitat loss and fragmentation from wildfires have continued to hinder population recovery. The most limited habitat types appear to be winter range and spring/summer fawning areas. Winter habitat is varied, but is generally limited to the central and southern portions of the JFO up to 6,000 feet in elevation.

Small and Medium-Sized Mammals

Small mammal inventory data collected by BLM in 2006 and after the 2007 wildfires indicated that small mammal diversity and abundance were higher in shrub-dominated trap sites compared to recently burned or non-native grassland sites (Klott et al., 2007). Deer mice were the most abundant species trapped in all habitats. Based on the inventory data and other ancillary observations, small mammals likely to occupy trailing corridors include deer mouse, montane vole, Great Basin pocket mouse, western harvest mouse, and Ord's kangaroo rat. Species likely to be encountered in or near remaining shrub islands or in unburned areas of the JFO include black-tailed jackrabbit, mountain cottontail, least chipmunk, vagrant shrew, sagebrush vole, and long-tailed weasel. Mammals likely to occur in riparian areas include deer mouse, western jumping mouse, long-tailed vole, meadow vole, muskrat, and American beaver. All of these species prefer a variety of riparian conditions which contain a mixture of moist soils, wetland grasses and forbs, and woody vegetation.

Some small terrestrial mammals are only seasonally active, and enter into aestivation or hibernation in underground dens, beginning in the mid-summer (June-July), continuing until spring (March-April) of the following year. Exact dates vary by species, seasonal weather conditions, and elevation. A few small mammals are active year-round, including deer mice and voles. Small mammals serve as an important prey base for many medium-sized predators, including raptors, coyotes, American badgers, bobcats, and striped skunks. Medium-sized mammalian predators forage in grassland vegetation communities, but often are found within or near shrub habitats which provide important cover for resting, foraging, denning, and rearing of young. Predators are active year-round, and typically have increased ranges during the winter as prey availability decreases.

Flying mammals include several non-special status bat species which occupy and/or migrate through the JFO in spring and fall. These include the western small-footed bat, little brown bat, big brown bat, long-legged myotis, Yuma myotis, pallid bat, hoary bat, silver-haired bat, and western pipestrelle. Bats use various habitats for foraging, including grasslands, but are more often observed in or near canyons and riparian habitats, where insects are more abundant. Because bat species are active at night, the potential for bats to occupy or forage in trailing corridors during daylight periods is unlikely. Therefore, trailing activities are unlikely to affect bats and bats and no further analysis is necessary.

Herptiles

Herptiles include amphibians and reptiles. Although several non-special status reptile species are found in the JFO, only a limited number of them are known or suspected to occupy primarily upland grassland habitats. These include gopher snake, rattlesnake, racer, western whiptail, and horned lizards. Reptiles which occur in riparian habitats include the western terrestrial garter snake and western skink. Reptiles generally become inactive and move underground to hibernate, beginning in October and emerging in April.

Amphibians, such as chorus frogs, spadefoot toads, and bull frogs, occupy portions of the JFO, but are generally restricted to riparian or wetland habitats.

Wild Horses

The Wild Free-Roaming Horse and Burro Act of 1971 as amended (WFRHBA; PL 92-195) requires the BLM to manage wild free-roaming horses and burros under the multiple use management criteria in a manner designed to achieve a thriving natural ecological balance on public lands. The Saylor Creek Herd Management Area (HMA) is located in the northern portion of the JFO, approximately 15 miles south of Glenns Ferry, ID (Map 7). The HMA contains portions of 8 livestock grazing allotments, which are divided into 10 pastures (Table 3-7). The Saylor Creek HMA contains about 101,876 acres. Table 3-8 shows the approximate acres by ownership/land status in the Saylor Creek HMA.

Table 3-7. Livestock Grazing Allotments within the Saylor Creek Herd Management Area.

Allotment	Pastures
Black Mesa	Black Mesa
Blue Butte	Blue Butte
Dove Springs*	North
Dove Springs*	South
Grindstone	Grindstone
Hallelujah	North
Saylor Creek/North Three Island	#3
Saylor Creek/North Three Island	#4
Thompson*	#4
Twin Butte*	West

*Allotment wild horses currently inhabit.

Table 3-8. Land Status within the Saylor Creek Herd Management Area.

Land Status	Acres
Bureau of Land Management	94,987*
Private	1,141
State Endowment Land	5,747
Total	**101,875**

*Includes Bureau of Reclamation.

The HMA was established in accordance with the WFRHBA. Prior to passage of the WFRHBA, small bands of horses were present in the vicinity of Dove Springs and the Sailor Creek seep, as well as the upland benches along the Snake River. Constant human presence associated with development of private agricultural lands and some conversion of public lands to private land beginning in the 1960s slowly eliminated access to natural water at the Snake River, resulting in the herd's total dependence on developed livestock water systems.

Over the last two decades, increased human activities associated with private lands in the northeastern portion of the HMA have resulted in avoidance of portions of the HMA by the wild horses. The horses have developed a strong affinity to preferred areas or "Home Ranges," within the Twin Butte, Dove Springs, and Thompson Allotments. Wild horses are maintained in the Saylor Creek HMA by fencing which restricts impacts from wild horses to within the HMA.

The Jarbidge RMP Record of Decision (1987) established an appropriate management level (AML) of 50 horses for the HMA. The 1987 RMP allocated 600 Animal Unit Months (AUMs) of forage to horses (50 horses for 12 months). Because the wild horse herd is present in the HMA year-round, adequate forage and water must be available year-round. Wild horse diets are diverse, consisting primarily of grasses with lesser amounts of forbs and shrubs (McInnis and Vavra, 1987; Hanley and Hanley, 1982; Beever, 2003). Wild horses consume more browse in the winter (McInnis and Vavra, 1987; Hanley and Hanley, 1982), particularly if grasses are covered by several inches of snow.

Fire and subsequent emergency stabilization have played a role in the existing vegetation in the HMA since the mid-1970s, with the frequency and size of fires increasing over the last decade. The primary grasses seeded following wildfires in the 1970s through mid-1990s were cultivars of crested wheatgrass (*Agropyron cristatum* and *A. desertorum*), Siberian wheatgrass (*A. fragile*), or both. As a result, the vegetation is now dominated by non-native perennial grasses. Non-native annual grasses, primarily cheatgrass (*Bromus tectorum*), are widespread and dominate some areas.

There are no naturally occurring perennial water sources (e.g., streams, springs) in the HMA. Dove Springs and the Sailor Creek seep do not provide water to support the wild horse herd throughout the year. One ephemeral stream, Sailor Creek, carries water a few days each year during spring runoff, but the flow is inconsistent between years due to its dependence on winter and spring precipitation. Currently, wild horses rely solely on water sources installed to facilitate domestic livestock management. The HMA has approximately 93 miles of underground pipelines and 69 troughs providing water to livestock and the wild horse herd. All pipelines are supplied by drilled wells on both public and private lands.

In 2005 and 2010, wildfires burned enough acres within the HMA to require emergency gathers to remove wild horses in order to maintain the health of the horses and allow for restoration and recovery of burned areas. In September 2011, following the recovery of portions of the burned areas, wild horses were released back into the HMA.

Currently 35 horses reside within the HMA. Due to few predators, horse populations regularly increase with a growth rate of 20% annually or higher (Wolfe, 1980; Eberhardt et al., 1982). A 20% or higher growth rate is expected within the Saylor Creek HMA, because the mares were not treated with fertility control before the release in 2011.

The Saylor Creek wild horses are unique in the fact that they have become accustomed to human presence and activity over the past several years. The wild horses spent more than a year in short-term holding facilities in Idaho and Nevada following the Long Butte Fire (2010). As a result, they became used to being in contact with humans. Additionally, the HMA is currently grazed by cattle and sheep in the areas the horses inhabit, so they have become familiar and used to the presence of livestock, and associated human activity.

Livestock Grazing

Grazing Permittees

The JFO is divided into 93 grazing allotments, with roughly 70 permit holders (permittees), on approximately 1.3 million acres of BLM-administered lands. Livestock grazing use occurs within the JFO year-round. Generally, the lower elevation rangeland of the northern third of the JFO is grazed in the fall, winter, and spring. The higher elevation in the middle third is grazed in the spring, summer, and fall, and the high elevations in the southern third are grazed primarily in the summer and fall.

Currently, 188,802 AUMs of active use are authorized on the allotments within the JFO. An AUM is the amount of forage needed to sustain one cow and calf or five sheep for 1 month. Of these AUMs, 96% are allocated to cattle, 4% to domestic sheep, and less than 1% to domestic horses. In addition to permitted AUMs, some allotments are eligible for Temporary Non-renewable Grazing Permits issued annually in accordance with 43 CFR 4130.6-2 and the authority of DOI appropriations acts. Over the past several years, much of the JFO has been burned by wildfire (Map 5), reducing cover of shrub species and creating an increase in the production of grasses.

Livestock Trailing

The JFO received 11 applications requesting crossing permits to trail livestock across BLM-administered lands in 2012. Approximately 267 miles of trailing routes across BLM-administered lands within 46 grazing allotments have typically been used over the past several years. Livestock producers move their livestock across BLM-administered lands to facilitate proper grazing management of BLM grazing allotments; as well as to facilitate movements of livestock to and from private, state, or other federally administered lands. Trailing of cattle or sheep occurs at different times throughout the year to facilitate appropriate seasons of grazing use. Furthermore, timing of trailing events vary annually based on factors such as forage production, drought, resource conditions, weather, wildfire, court decisions, and individual livestock operations.

Many of the trailing events that occur within the JFO occur along main transportation routes that are maintained by federal, state, or county governments. These transportation routes may be native surface or graveled and wide enough for one vehicle to travel along, or paved with two lanes for traffic. Portions of the proposed trailing events occur along these routes, as well as other trailing events identified through internal scoping.

Cultural Resources

Cultural resources are fragile, irreplaceable resources which represent important aspects of our Nation's heritage. They consist of the physical remains of past human activity, as found in archaeological and historic sites, buildings, structures, and objects, but are also represented by places of traditional cultural importance to Native American tribes or other social/cultural groups.

Cultural resources in the project area are typical of south central Idaho and north central Nevada in terms of cultural themes, and site types, density, and distribution across the landscape. For approximately 12,000 years human use revolved around hunting, gathering, and fishing pursuits with short-term adjustments and long-term adaptations to climatic changes. Since the 1880s cattle, horse, and sheep ranching and farming have been the dominant cultural themes. Native human populations in the area include the Northern Shoshone, Bannock, and Northern Paiute Tribes. Tribal members, now concentrated at the Duck Valley and Fort Hall Reservations, retain an abiding interest in the natural and cultural resources of the region.

Table 3-9 presents the acres within each alternative that have been intensively inventoried for cultural resources (i.e., transect intervals no wider than 100 feet) and the number of cultural resources documented.

Table 3-9. Inventoried Acres and Cultural Resources by Action Alternative

Alternative	Total BLM Acres	Inventoried Acres	Percent Inventoried	Known Cultural Resources
Proposed Action	151,842	68,020	45%	579
Alternative 2	289,722	106,567	37%	1141
Alternative 3	35,967	17,940	50%	142

Cultural resources in the project area are represented by a variety of site types and chronological periods. Overall, approximately 73% of the known resources are prehistoric sites (i.e., Native American sites that pre-date European contact), 24% are historic period sites (i.e., sites of post-contact Native American or Euro-American origins), and 3% contain both prehistoric and historic components.

Lithic scatters are the most common type of prehistoric site found in the project area. These sites consist primarily of stone tools and/or waste flakes related to the manufacture and repair of stone tools. They represent short-term hunting camps, tool production or maintenance locations, and game butchering sites. Other prehistoric site types include streamside camps, rock shelter camps, rock art panels, and sites with architectural features such as rock circles, alignments, and cairns.

Most of the historic sites in the project area represent the remains of early sheep or cow camps but also include failed homesteads, trash dumps, and remnants of early transportation routes. The latter category includes the nationally important Oregon Trail and regionally important segments of the Kelton and Toana Freight Wagon Roads. The Oregon Trail and Kelton Road run diagonally across the northeast portion of the project area while the Toana Road runs south to north along the eastern side (Map 8).

Approximately 53% of cultural resources in the Proposed Action and 56% in Alternatives 2 and 3 consist of isolated artifacts or very small sites with limited historic value or research potential. The remaining sites have been determined eligible for the National Register of Historic Places or are unevaluated and assumed to be eligible pending further investigation. The Toana Road is the only resource on public land, within the project area, currently listed in the National Register.

CHAPTER 4. ENVIRONMENTAL CONSEQUENCES

A direct impact is caused by the action and occurs at the same time or place, whereas an indirect impact is caused by the project but occurs later in time or is further removed in distance, but is reasonably foreseeable. Cumulative effects are impacts that result from the incremental impact of an action when added to the effects from other past, present, and reasonably foreseeable future actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

For purposes of the analysis in this EA, the impacts of past activities within the project area were considered to be reflected in existing resource conditions (i.e. the affected environment). The impacts of any specific past action may be difficult or impossible to individually quantify and disclose due to issues like inconsistent data collection methodology in the past, data that have become lost or missing over time, and the lack of data in the case of unplanned events (wildfire). Therefore, this analysis does not attempt to quantify specific impacts for each past activity within the project area, but rather uses current and scientifically accurate data available to identify the existing condition of each resource. Present and reasonably foreseeable future actions within the analysis area are addressed in the cumulative impacts analysis for each resource.

The cumulative effects analysis considers actions on Federal, State, and private lands within the analysis area that would affect resources within the JFO that would also be affected by the alternatives in this EA. Past actions to be considered include livestock grazing, livestock trailing, road construction and maintenance, range improvement construction and maintenance, vegetation treatment projects, noxious weed management, utility construction and maintenance, and wildfire suppression. Actions that would continue into the foreseeable future include livestock grazing, noxious weed management, road maintenance, range improvement maintenance, utility maintenance, and wildfire suppression and restoration. Energy and transmission projects and the Jarbidge Wildfire Fuel Breaks Project are reasonably foreseeable future actions considered in the analysis.

Since the scope of cumulative effects analyses varies by resource, each resource section identifies the cumulative impact analysis area and rationale for that resource and the past, present, and reasonably foreseeable projects (either individually or by description/proximity) being considered. Spatial extents for two cumulative impacts areas (Greater Sage-Grouse, and California Bighorn Sheep) were identified during analyses (Maps 17, and 18), and projects are separated accordingly.

<u>Definitions</u>

- *Road*: A linear route declared a road by the owner, managed for use by low-clearance vehicles having four or more wheels, and maintained for regular and continuous use.

- *Primitive Road*: A linear route managed for use by four-wheel drive or high-clearance vehicles. Primitive roads do not normally meet any BLM road construction standards. Most primitive roads are not constructed and are developed over time by various resource uses.

- *Trailing Corridor*: The areas described under the alternatives in Chapter 2, shown on Maps 2, 3, and 4, where livestock trailing could potentially occur along each route.

- *Trailing Route*: The paths described under the alternatives in Chapter 2, shown on Maps 2, 3, and 4, where livestock trailing would occur.

Analysis Assumptions

- Livestock would be actively herded while trailing within identified corridors.

- Taking into account minor trail meanderings and the retrieval of strays, most livestock herding activity is expected to occur within 300 feet on either side of the trail route.

- Sheep camps and bedding areas would occur on approximately 5 acres.

- During multi-day trailing events, cattle would be allowed to disperse and graze locally within pastures during overnight stays. Cattle would be gathered and trailing would resume the following morning.

- Each animal unit consumes approximately 30 lbs. of air dry forage per day (USDA NRCS 2003). Grazing would occur primarily in overnight areas. The amount of cattle grazing likely to occur while cattle are moving along a trailing route is small enough to preclude a quantifiable analysis.

Soils

No Action

Direct and Indirect Effects

Under the No Action Alternative, crossing permits would not be issued and trailing would not take place. The potential for soil erosion and compaction from trampling during trailing events would not occur.

Trailing could continue on state and private land but the crossing of BLM-administered lands would not be authorized as it has in the past. Livestock grazing would still occur and there would still be a need to move livestock between allotments, and this is likely to take place by trucking. However, the anticipated increase in vehicle traffic would not have adverse impacts to soils because trucking operations would occur on already existing roads.

Cumulative Effects

Crossing permits would not be issued but livestock grazing would still take place and there would still be a need to move livestock between allotments. There would be no cumulative

effects to soils because trailing would not occur and would not result in any direct or indirect effect.

Proposed Action

Direct and Indirect Effects

Livestock influence soil properties directly through trampling and indirectly through the removal of vegetation. The effects of livestock use on soils are influenced by a variety of factors including season of use, soil moisture, soil texture, stocking rate, and location and density of concentration areas such as water, bedding, and overnight areas (Hart et al., 1993; Rawls et al., 1989; Tate et al., 2004; Van Haveren, 1983). Livestock use reduces plant cover, particularly cover of herbaceous plants, potentially increasing risk of soil erosion. Limited research has been conducted evaluating soil erosion relative to specific livestock utilization (Giordanego et al., 2003).

The effects of livestock trailing on biological soil crusts depend on soil texture, crust composition, patterns of seasonal moisture, season of use, and trampling intensity (Warren & Eldridge, 2001). Biological soil crusts are more susceptible to cover reductions due to livestock trampling during dry periods, compared to times when the crust is moist or frozen (Marble & Harper, 1989; Memmot et al., 1998). Memmot and others (1998) found that livestock activities in south-central Idaho when soils are frozen or snow covered maintained biological soil crust cover, while spring and summer use decreased cover. Disturbance of biological soil crusts can change water infiltration patterns within plant communities and may alter nutrient and water cycling (Belnap et al., 2005).

The Proposed Action would authorize 35 trailing events included in 11 applications for crossing permits. The applicants would be allowed to move livestock along a 1.0-mile wide trailing corridor. These 11 applications and associated trailing corridors cover 151,842 acres of BLM-administered land. The majority of the impacts would take place over 20,731 acres as it is assumed that most livestock herding activity would occur within 300 feet on either side of the trail route. The proposed trailing corridors cross 266 miles of BLM-administered lands with 112 miles on roads, 121 miles on primitive roads, and 33 miles cross-country. Areas where livestock congregate would see higher disturbance to the soils than areas disturbed by the trailing of livestock. Livestock congretation areas related to trailing include watering locations and bedding areas. Impacts to soils from the movement of livestock would be minimal along roadways because of the already disturbed nature of roads. The duration of individual cattle trailing events are short with the majority of the events (71%) lasting 6 hours or less. The majority (60%) of individual sheep trailing events are 5 days or less. Erosion and soil disturbance would be minimized by implementing design features to avoid areas recently burned by wildfires. Due to the lack of vegetation, these areas would be more susceptible to erosion and disturbance caused by livestock trampling. Compaction impacts would be minimized by staying to roadways and avoiding trailing during times of saturated soils.

Impacts to soil resources include disturbance to biological soil crusts, erosion, and compaction. However, due to the majority of trailing occurring along roadways, design features to avoid

recently burned areas and saturated soils, and the short duration and intensity of trailing events, the impacts would be minimal.

Cumulative Effects

The analysis area for cumulative impacts to soils extends to the field office boundary. Soil conditions within the trailing routes are typically shaped by the land management within the grazing allotments they cross. The JFO was selected as an outer limit for cumulative impacts because trailing routes cross many grazing allotments in the JFO and would be used to operate associated grazing systems.

Past actions that were considered include livestock grazing, livestock trailing, road construction and maintenance, range improvements, vegetation treatment projects, fire suppression, utility construction and maintenance, and OHV use. Actions that would continue into the foreseeable future include livestock grazing, noxious weed management, utility and road maintenance, wildfire restoration, and recreation. Energy and transmission projects and the Jarbidge Wildfire Fuel Breaks Project are reasonably foreseeable future actions that were considered.

The collective effect of past actions has contributed to the existing condition of soils described in Chapter 3, Affected Environment – Soils. The effects of ongoing and future actions are described below.

Vegetation treatments and noxious weed control would overall benefit soil resources by providing intact vegetation communities that help control erosion by providing coverage. By preventing the loss of native habitats through weed control, it is expected that overall, long-term soil loss from erosion would be reduced. Permitted livestock grazing affects soils and biological soil crusts directly by trampling and indirectly by affecting the plant cover and plant species composition. Management of grazing combined with monitoring practices would prevent soil and watershed degradation on a landscape level. However, livestock grazing would likely result in localized areas of soil surface degradation and plant community alterations that result in adverse impacts to soils and biological soil crusts in localized areas adjacent to gates, watering areas, and dietary supplement areas.

Motorized recreation would continue to loosen surface soils and disturb soil crusts. Similarly, utility and road maintenance involves periodic removal of vegetation within and along roads and around power poles for fire protection. The overall effect to soils is slight due to the small amount of area affected.

Energy and transmission projects would add new roadways and new transmission lines across the JFO. Vehicle traffic would increase for the duration of construction on the projects. Soils would experience increased compaction and increased erosion due to these projects.

The Jarbidge Wildfire Fuel Breaks Project could affect soils by vegetation removal and drill seeding activities. Equipment would create localized disturbance to soil surfaces and biological crusts. The disturbance effects would be confined to the structural breakdown, from tires, of soil aggregates and biological soil crusts. Removal of vegetation could cause an increase in erosion

until the fuel break vegetation establishes. Drill seeding equipment would disturb soils approximately 2 to 4 inches deep.

Implementing the Proposed Action is expected to be additive in its impacts to livestock grazing, recreation, utility maintenance, and energy and transmission projects. The Jarbidge Wildfire Fuel Breaks Project would have an additive effect until vegetation becomes established but would be expected to have positive impacts as fires are reduced and kept to smaller sizes. Vegetation treatments and noxious weed control would have localized impacts as vegetation is removed and disturbed with positive impacts to soil resources as native vegetation becomes established and more resilient.

Alternative 2

Direct and Indirect Effects

Impacts to soils under Alternative 2 would be similar to those described for the Proposed Action, except they would cover a larger area. Alternative 2 includes 1.0-mile wide corridors that would accommodate the trailing of livestock by qualified applicants. This alternative has 289,722 acres of trailing corridors across BLM-administered land. The majority of the impacts would take place over 37,833 acres as it is assumed that most livestock herding activity would occur within 300 feet on either side of the trail route. Alternative 2 trailing corridors are 269 miles and 137,880 acres more than the Proposed Action and it is expected that more bedding and overnight areas would be required. Alternative 2 has 535 miles of trailing corridors with 290 miles on roads, 209 on primitive roads, and 36 miles of cross-country trailing on BLM-administered lands. This alternative would have similar localized impacts to soil as the Proposed Action except those impacts would occur over a larger area.

Cumulative Effects

Under Alternative 2, cumulative impacts to soil resources due to livestock grazing, recreation, utility maintenance, energy and transmission projects are expected to be greater than the Proposed Action due to greater acreage and miles of trailing corridors. The Jarbidge Wildfire Fuel Breaks Project would have greater additive impacts during vegetation establishment but the beneficial impacts would be similar. The countervailing effect of noxious weed control and vegetation treatments would be reduced due to the increased acreage of the trailing corridors under Alternative 2.

Alternative 3

Direct and Indirect Effects

Impacts to soils under Alternative 3 would be similar to those described for the Proposed Action, except they would occur over a smaller area. Alternative 3 includes 0.25-mile wide corridors that would allow for the trailing of livestock by qualified applicants. This alternative has 231 miles and 35,967 acres of trailing corridors across BLM-administered land. The majority of the

impacts would take place over 16,886 acres as it is assumed that most livestock herding activity would occur within 300 feet on either side of the trail route. This is 35 miles and 115,875 acres less than the Proposed Action. Alternative 3 has 231 miles of trailing with 103 miles on roads, 106 on primitive roads, and 22 miles of cross-country trailing on BLM-administered lands. This alternative would have similar localized impacts to soil as the Proposed Action except those impacts would occur over a smaller area.

Cumulative Effects

Under Alternative 3, cumulative impacts to soil resources due to livestock grazing, recreation, utility maintenance, energy and transmission projects are expected to be less than the Proposed Action due to decreased acreage and miles of trailing corridors. The Jarbidge Wildfire Fuel Breaks Project would have fewer additive impacts during vegetation establishment but the beneficial long term impacts would be similar. The countervailing effects of noxious weed control and vegetation treatments would be increased due to the reduction of trailing corridors in Alternative 3.

Water Resources

No Action

Direct and Indirect Effects

In the No Action Alternative, crossing permits would not be issued. The absence of livestock trailing would not be likely to cause a measurable improvement in water quality along paved roads or at bridges because these areas are maintained as road rights-of-way which have actions to reduce vegetation that impairs traveler safety (line of sight) or dense vegetation that threatens the integrity of the structure at the stream crossing (culvert, bridge, rip-rap, road shoulder).

Water quality could be improved due to the absence of livestock trailing in areas where livestock have historically moved between allotments in areas that are not identified as water gaps or otherwise designated crossing areas. This could result in some wide spread improvement in water quality over time but is not expected to be enough to result in a measurable reduction in coliform levels or other water quality impairments that would result in the removal of a stream as water quality impaired (303(d)-listed).

One indirect effect of the No Action Alternative would be increased trucking of livestock between authorized grazing use areas. However, the anticipated increase in vehicle traffic would not have adverse impacts to water resources because trucking operations would occur on already existing roads and bridges.

Cumulative Effects

The cumulative effects analysis for water resources considers the effects of past, present, and reasonably foreseeable actions on Federal, State, and private lands within and adjacent to the

JFO. The JFO is drained by three primary watersheds (Bruneau River, Salmon Falls Creek, and the Snake River). Human uses that occur on lands adjacent to the JFO also influence the condition of the rivers and streams that border the JFO. The adjacent land management agencies include the BLM Burley Field Office to the east (Salmon Falls Creek, Snake River), the BLM Shoshone Field Office to the north (Snake River), the BLM Bruneau Field Office to the east (Bruneau River), and the U.S. Forest Service, Humboldt-Toiyabe National Forest to the south (upper Jarbidge River). Human activities within these administrative units that have influenced the condition of water quality and quantity, instream habitat, and riparian and wetlands vegetation are the same as those described in the introduction to chapter 4. Because the relationship between water quality, aquatic species, and riparian condition are interrelated, actions that affect one of these resources are likely to affect the other aquatic resources.

Stream channels and riparian areas are focus areas for many uses and, as a result, have been locally degraded over time. Factors that have contributed to current riparian condition include livestock grazing and trailing, recreational uses, road construction and use, energy projects and associated infrastructure, wildfire and fire suppression, increases in the amount of noxious weeds and invasive plants, and alteration of streamflows for a wide variety of human uses. All of these factors have reduced functional condition of fish-bearing streams and the riparian areas which support them and are expected to continue to influence instream and riparian condition in the future. Activities on State and private land are likely to continue to influence instream, riparian condition, and water quality and quantity on public land. Human-related impacts to water resources (quality and quantity), fisheries resources, and riparian areas are also likely to increase over time as the use of surface and ground water (e.g. agriculture, municipal, recreational uses) increases.

The direct and indirect effects of the historic and present actions identified above have all contributed to the existing condition of water quality and quantity, riparian, and instream conditions within the JFO. The existing condition (baseline conditions) for Water Resources, ESA-Listed and BLM Sensitive Fish, and Riparian Areas and Wetlands are described in the Affected Environment section in Chapter 3.

The predicted effects of past, present and reasonably foreseeable future actions were considered in this cumulative effects assessment. The same past, present and future actions and their effects to water resources described for Federal, State, and private lands within the JFO would continue to occur in the No Action Alternative. The No Action Alternative would not authorize livestock trailing which would reduce the amount of livestock use that occurs within the JFO. Overall, there would be a reduction in cumulative effects to water quality due to not authorizing livestock trailing on BLM-adminstered lands.

Proposed Action

Direct and Indirect Effects

In the Proposed Action, the 1.0-mile wide trailing corridors would encompass four 303(d)-listed streams and their associated riparian area (Table 4-1). All of these streams occur within the

assumed impact area of 300 feet on either side of trail routes. A GIS analysis was used to determine length of streams affected by livestock trailing.

Table 4-1. Idaho 303(d)-listed Streams on BLM in 1.0-mile wide Livestock Trailing Corridor.

Stream Name	Miles of 303(d)-Listed Stream in 1.0-Mile Proposed Trailing Corridor	Miles 303(d)-Listed Stream in 600-foot Impact Area for Proposed Trailing Corridor
Perennial		
Snake River**	N/A	N/A
Total BLM 303(d)-Listed Stream	N/A	N/A
Intermittent		
Deadman Creek*	7.7	1.8
Sailor Creek*	11.7	2.0
Yahoo Creek	5.2	0.5
Unnamed Streams	85.0	9.8
Total BLM 303(d)-listed Intermittent	109.6	14.1
Total Miles BLM 303(d)-Listed Stream	109.6	14.1

*Streams proposed by DEQ to be removed from the list of water quality impaired streams due to lack of water.
** Crossing of Snake River on Bliss Bridge not on BLM administered land.

The 1.0-mile wide livestock trailing corridors encompass 109.6 miles of intermittent stream that is 303(d)-listed for impaired water quality (Table 4-1; Map 9). The prediction of 109.6 miles of impacts to 303(d)-listed stream overestimates impacts to water quality because not all of the stream miles are accessible to livestock due to topography, fences, or surface water is not present during most of the year. To focus the analysis, an impact width of 300 feet on either side of the trailing routes is assumed within a trailing corridor. Of the 14.1 miles of assumed impact to 303(d)-listed stream, 9.8 miles of stream do not contain enough surface water to be named and 3.8 miles of stream are recommended for removal from DEQ's list of water quality impaired streams due to a lack of surface flow. This suggests these streams (13.6 miles) are not a major factor affecting water quality. Therefore, trailing livestock within the assumed impact area for these streams is not expected to reduce water quality within the JFO. Livestock trailing across the intermittent portion of Yahoo Creek (0.5 mile) is not expected to have measurable impacts to water quality.

The assessment for water quality considered impacts from livestock trailing for streams that are 303(d)-listed as water quality impaired and streams that are not 303(d)-listed. The analysis assumed that impacts from trailing would be the same for perennial streams whether they are 303(d)-listed or not. Impacts from livestock trailing on intermittent streams was assumed to be less than would be expected for perennial streams because surface water may or may not be present when livestock are trailed across the stream channel. If water is present when livestock use the crossing, the impacts to water quality would be the same as described for perennial streams. The analysis also assumed that impacts from the actual stream crossing would have the greatest impact to water quality.

Livestock use within riparian areas, either as permitted grazing or trailing through riparian areas, can have direct and indirect affects to water quality. Livestock trailing can directly impact water infiltration into the soil due to trampling, soil compaction, and loss of vegetation cover on both upland and riparian sites. This can accelerate surface erosion and increase the amount of fine sediment and nutrients introduced to streams. Accelerated erosion results in an increase in erosion of surface fecal wastes, which can increase bacterial concentrations in streams through introductions to water or riparian areas. Water quality can be indirectly impacted by the increased soil runoff, erosion, and sediment delivery to adjacent riparian areas and streams. Impacts to water quality from livestock trailing are often greater in riparian areas due to livestock attraction to shade, water, and palatable vegetation. Livestock trailing in riparian areas directly affects vegetation condition and instream habitat quality, which can also affect water quality and quantity in streams.

In the Proposed Action, the assumed impact area encompasses 4 perennial streams and 10 intermittent streams. None of the perennial streams are 303(d)-listed as water quality impaired, but 4 of the intermittent streams are 303(d)-listed (Table 4-1; Map 9). Impacts from livestock trailing on the 4 intermittent streams are not expected to reduce water quality or quantity within the JFO due to the short duration of water being present in the stream and the limited amount of time livestock would be present in the stream channel. Any impacts to water quality from livestock trailing would be localized and short-term in duration and not likely to be measurable.

Livestock trailing across streams can have direct impacts to water quality. Direct impacts to water quality would be expected to occur at 3 perennial and 25 intermittent stream crossings for the Proposed Action. Two of these crossings are on intermittent stream reaches that are 303(d)-listed (Deadman Creek, Sailor Creek). In 1997, the BLM conducted water quality monitoring prior to and following a livestock crossing on the East Fork Jarbidge River. With the exception of coliform bacteria, the measurements for pH, turbidity, phosphates, and nitrates returned to near baseline levels within one hour of the livestock crossing. Coliform levels were elevated for at least 30 hours, but remained within Idaho water quality standards for secondary contact recreation including fishing. Based on this data, impacts to water quality from livestock crossings are expected to be localized and of short duration. Impacts to water quality are expected to be the same for 303(d)-listed and non-303(d)-listed streams.

Livestock trailing on BLM-administered lands is not expected to have measurable impacts to streamflow. A majority of the trailing events would occur within a time period of 6 hours or less which equates to herding livestock where they occasionally could drink from a stream. The use of active herding combined with the requirement to have all livestock removed from the RCA after livestock trailing events would limit impacts to water quantity to levels that are localized, short-term and not measurable.

Terms and conditions in livestock crossing permits are expected to reduce impacts to water quality. The requirement for livestock bedding/over-night areas and temporary water facilities to be at least 0.25 mile from riparian areas, and restricting livestock trailing across riparian areas and wetlands to pre-determined locations would reduce the amount of time livestock are present in the RCA. This is expected to improve riparian condition which ultimately improves water

quality within a stream. The use of active herding and the requirement for all livestock to be removed from the RCA after crossing events is expected to minimize impacts to water quality and quantity within the proposed livestock trailing corridors.

Cumulative Effects

The same past, present and reasonably foreseeable actions and their effects to water quality and quantity as described for the No Action Alternative for Federal, State, and private lands within the JFO would also occur under the Proposed Action.

The cumulative impacts related to the Proposed Action include trailing livestock across 3 perennial and 25 intermittent streams of which 12 of the crossings are on intermittent streams that are 303(d)-listed. The Proposed Action, combined with past, present, and reasonably foreseeable future actions, is not expected to have a measurable cumulative impact to water quality within the JFO because the impacts related to livestock trailing would be localized, short-term in duration and are below levels that can be accurately measured. Authorizing livestock trailing within corridors and with terms and conditions for riparian areas is expected to minimize impacts to water resources within the JFO.

Alternative 2

Direct and Indirect Effects

For Alternative 2, the 1.0-mile wide trailing corridors would encompass four perennial and eight intermittent 303(d)-listed streams and their associated riparian area (Table 4-2; Map 10). All but one of the intermittent streams occurs within the assumed impact area of 300 feet on either side of trail routes.

Table 4-2. Idaho 303(d)-listed Streams on BLM in 1.0-mile wide Livestock Trailing Corridor.

Stream Name	Miles of 303(d)-Listed Stream in 1.0-Mile Proposed Trailing Corridor	Miles 303(d)-Listed Stream in 600-foot Impact Area for Proposed Trailing Corridor
Perennial		
Browns Creek *	1.1	0.1
Corral Creek	0.1	<0.1
Pole Creek	1.6	0.1
Snake River**	N/A	N/A
Unnamed Streams	0.1	<0.1
Total BLM Perennial Streams	2.9	<0.4
Intermittent		
Corral Creek	<0.1	0
Deadman Creek*	9.9	1.9
Deadwood Creek	0.4	0
Deer Creek	0.6	0.2
Poison Creek*	0.9	0.2
Sailor Creek*	14.3	2.3
Yahoo Creek	5.2	0.5
Unnamed Streams	132.0	14.8
Total BLM Intermittent Streams	<163.3	19.9
Total BLM 303(d)-Listed Streams in Trailing Corridor	<166.3	<20.3

*Streams proposed by DEQ to be removed from the list of water quality impaired streams due to lack of water.
**Crossing of Snake River on Bliss Bridge not on BLM administered land.

The 1.0-mile wide livestock trailing corridors encompass 2.9 miles of perennial stream and 166.3 miles of intermittent stream that is 303(d)-listed for impaired water quality (Table 4-2). The prediction of 166.3 miles of impacts to 303(d)-listed streams overestimates impacts to water quality because not all of the stream miles are accessible to livestock due to topography, fences or surface water is not present during most of the year. To refine the analysis, an assumed impact area of 300 feet on either side of trail routes was used to focus the predicted area of impact within a livestock trailing corridor. For the 20.3 miles of assumed impact to 303(d)-listed stream, 14.8 miles of stream do not contain enough surface water to be named and 4.5 miles of stream are recommended for removal from DEQ's list of water quality impaired streams due to a lack of surface flow. This suggests these streams (19.3 miles) are not a major factor affecting water quality. Therefore, trailing livestock within the assumed impact area is not expected to reduce water quality within the JFO. The impacts to water quality from livestock trailing in the intermittent reaches of Yahoo Creek (0.5 mile) are not expected to reduce water quality or quantity within the JFO due to the short duration of water being present in the stream and the limited amount of time livestock would be present in the stream channel. Any impacts to water quality would be localized and short-term in duration and not likely to be measurable.

For Alternative 2, the assumed impact area encompasses 4 perennial and 7 intermittent 303(d)-listed streams on BLM-administered lands (Table 4-2). Livestock trailing related impacts to the 4 perennial 303(d)-listed streams would occur within a limited area and are expected to have short-term impacts to water quality similar to those described above for the Proposed Action. Impacts to water quality from livestock trailing for the 7 intermittent streams are not expected to measurably reduce water quality within the JFO due to the short duration of water being present in the stream and the livestock trailing event. If water was present when livestock were in the assumed impact area, the impacts to water quality would be the same as described above for the Proposed Action. Any impacts to water quality from livestock trailing along intermittent streams would be localized and short-term in duration and not likely to be measurable.

For Alternative 2, direct impacts to water quality would be expected to occur at 13 perennial and 48 intermittent stream crossings (Map 10). Two of these crossings are on perennial 303(d)-listed streams (Corral Creek, Pole Creek) and 18 of the crossings are on intermittent 303(d)-listed streams (Deadman (6), Rosevear (3), Sailor Creek (2) and unnamed streams (7)). Impacts to water quality from the perennial crossings is expected to be the same as is described for the 1997 water quality sampling in the Proposed Action. Based on that data, impacts to water quality from livestock crossings are expected to be localized and short-term in duration. Impacts to water quality are expected to be the same for 303(d)-listed and non-303(d)-listed streams. Impacts from livestock trailing on intermittent streams are the same as described for the proposed action except there would be more crossings for Alternative 2.

Livestock trailing within the corridors on BLM-administered lands is not expected to have measurable impacts to streamflow. A majority of the trailing events would occur within a time period of six hours or less which equates to herding livestock where they occasionally could drink from a stream. The use of active herding and the requirement to have all livestock removed from the RCA after trailing events would limit impacts to water quantity to levels that are localized, short-term and not expected to be measurable.

Issuing livestock trailing permits with terms and conditions is expected to minimize impacts to water quality. The requirement for livestock bedding/over-night areas and temporary water facilities to be at least 0.25 mile from riparian areas, and restricting livestock trailing across riparian areas and wetlands to pre-determined locations would reduce the amount of time livestock are present in the RCA and therefore should improve riparian condition and water quality in some locations. The use of active herding and requirement for all livestock to be removed from the RCA after crossing events is expected to minimize impacts to water quality within the livestock trailing corridors.

Cumulative Effects

The same past, present and reasonably foreseeable future actions and their effects to water quality and quantity as described for the No Action Alternative for Federal, State, and private lands within the JFO would also occur under Alternative 2.

The cumulative impacts to water quality from Alternative 2 include trailing livestock within the assumed impact area for 13 perennial and 20 intermittent streams and livestock crossings on 13

perennial and 48 intermittent streams. For these crossings, 3 are on perennial 303(d)-listed streams and 18 are on intermittent 303(d)-listed streams. Alternative 2, combined with past, present, and reasonably foreseeable future actions, is not expected to have a measurable cumulative impact to water quality within the JFO because the impacts related to livestock trailing would be localized, short-term in duration and are below levels that can be accurately measured. Authorizing livestock trailing within corridors and with terms and conditions for riparian areas is expected to minimize impacts to water quality within the JFO.

Alternative 3

Direct and Indirect Effects

For Alternative 3, the proposed 0.25-mile wide livestock trailing corridors would encompass 4 303(d)-listed streams and their associated riparian area (Table 4-3). All of these intermittent streams occur within the assumed impact area of 300 feet on either side of trail routes.

Table 4-3. Idaho 303(d)-listed Streams on BLM in a 0.25-mile wide Livestock Trailing Corridor.

Stream Name	Miles of 303(d)-Listed Stream in 0.25-Mile Proposed Trailing Corridor	Miles 303(d)-Listed Stream in 600-foot Impact Area for Proposed 0.25-Mile Trailing Corridor
Perennial		
Snake River**	N/A	N/A
Total	N/A	N/A
Intermittent		
Deadman Creek*	0.7	0.2
Sailor Creek*	4.3	1.6
Yahoo Creek	1.0	0.5
Unnamed Streams	17.9	7.9
Total BLM Intermittent Streams	23.9	10.2
Total BLM 303(d)-Listed Streams in Trailing Corridor	23.9	10.2

*Streams proposed by DEQ to be removed from the list of water quality impaired streams due to lack of water.
** Livestock crossing of Snake River at Bliss Bridge not on BLM administered land.

The 0.25-mile wide livestock trailing corridors encompass 23.9 miles of intermittent stream that is 303(d)-listed for impaired water quality (Table 4-3, Map 11). The prediction of 23.9 miles of impacts to 303(d)-listed streams overestimates impacts to water quality because not all of the stream miles are accessible to livestock due to topography, fences or surface water is not present during most of the year. To refine the analysis, an assumed impact area of 300 feet on either side of trail routes was used to focus the predicted area of impact within a livestock trailing corridor. For the 10.2 miles of assumed impact to 303(d)-listed stream, 7.9 miles of stream do not contain enough surface water to be named and 1.8 miles of stream are recommended for removal from DEQ's list of water quality impaired streams due to a lack of surface flow. This suggests these streams (9.7 miles) are not a major factor affecting water quality. Therefore, trailing livestock

across these streams is not expected to reduce water quality within the JFO. The impacts to water quality from livestock trailing in Yahoo Creek (0.5 mile) would be the same as described above for the Proposed Action.

For Alternative 3, there are four 303(d)-listed streams on BLM-administered lands that are crossed by a livestock trailing corridor (Table 4-3). The livestock crossings would occur where gravel roads cross intermittent streams. If water is present during the livestock crossings, the impacts to water quality and riparian vegetation are expected to be short-term in duration and similar to those described above for streams affected by the Proposed Action. Livestock crossing in dry stream reaches are not expected to have short-term or long-term impacts to water quality. Alternative 3 is expected to have less potential for impacts to water quality because it has fewer livestock trailing crossings on streams that are 303(d)-listed than the Proposed Action and Alternative 2. The impacts to water quality for streams that are not 303(d)-listed are the same as for streams that are 303(d)-listed. The non-303(d)-listed streams affected by the livestock trailing corridors are described in the Riparian Areas and Wetlands section.

For Alternative 3, the assumed impact area includes 3 perennial streams and10 intermittent streams. None of the perennial streams are 303(d)-listed as water quality impaired, but 4 of the intermittent streams are 303(d)-listed (Table 4-3; Map11). Impacts from livestock trailing on the 4 intermittent streams are not expected to reduce water quality or quantity within the JFO due to the short duration of water being present in the stream and the limited amount of time livestock would be present in the stream channel. Any impacts to water quality from livestock trailing would be localized and short-term in duration and not likely to be measurable.

Direct impacts to water quality would be expected to occur at 3 perennial and 18 intermittent stream crossings for Alternative 3. Three of these crossings are on intermittent stream reaches that are 303(d)-listed (Deadman Creek, Sailor Creek, unnamed stream). Impacts to water quality from the perennial crossings is expected to be the same as is described for the 1997 water quality sampling in the Proposed Action. Based on that data, impacts to water quality from livestock crossings are expected to be localized and short-term in duration. Impacts to water quality are expected to be the same for 303(d)-listed and non-303(d)-listed streams. Impacts from livestock trailing on intermittent streams are the same as described for the proposed action except there would be fewer crossings for Alternative3.

Livestock trailing within the corridors across BLM-administered land is not expected to have measurable impacts to streamflow. A majority of the trailing events would occur within a time period of 6 hours or less which equates to herding livestock where they occasionally could drink from a stream. The use of active herding combined with the requirement to have all livestock removed from the RCA after livestock trailing events would limit impacts to water quantity to levels that are localized, short-term and not expected to be measurable.

Issuing livestock trailing permits with terms and conditions is expected to minimize impacts to water quality. The requirement for livestock bedding/over-night areas and temporary water facilities to be at least 0.25 mile from riparian areas, and restricting livestock trailing across riparian areas and wetlands to pre-determined locations would reduce the amount of time livestock are present in the RCA and therefore should improve riparian condition and water

quality in some locations. The use of active herding and the requirement for all livestock to be removed from the RCA after crossing events is expected to minimize impacts to water quality within the livestock trailing corridors.

Cumulative Effects

The same past, present and reasonably foreseeable future actions and their effects to water quality and quantity as described for the No Action Alternative for Federal, State, and private lands within the JFO would also occur under Alternative 3.

The cumulative impacts to water quality from Alternative 3 include trailing livestock within the assumed impact area for 3 perennial and 10 intermittent streams and livestock crossings on 3 perennial and 18 intermittent streams. For these crossings, none are on perennial 303(d)-listed streams and 3 are on intermittent 303(d)-listed streams. Alternative 3, combined with past, present, and reasonably foreseeable future actions, is not expected to have a measurable cumulative impact to water quality within the JFO because the impacts related to livestock trailing would be localized, short-term in duration and are below levels that can be accurately measured. Authorizing livestock trailing within corridors and with terms and conditions for riparian areas is expected to minimize impacts to water quality in the JFO.

Vegetation

No Action

Direct and Indirect Effects

Under the No Action Alternative, crossing permits would not be issued and trailing would not take place. The impacts from trampling and direct removal of vegetation by trailing livestock would not occur. Trailing could continue on state and private land but the crossing of BLM-administered lands would not be authorized as it has in the past. Livestock grazing would still take place and there would still be a need to move livestock between allotments, and this is likely to take place by trucking. However, the anticipated increase in vehicle traffic would not have adverse impacts to vegetation because trucking operations would occur on already existing roads where little or no vegetation is present.

Cumulative Effects

Crossing permits would not be issued but livestock grazing would still take place and there would still be a need to move livestock between allotments. Because there would be no direct or indirect effect to vegetation from trailing or trucking, there would be no cumulative effects.

Proposed Action

Direct and Indirect Effects

High utilization levels and early season grazing have the potential to alter the composition of the vegetative community, especially if high use levels occur in several subsequent years. Heavy defoliation reduces root growth, and thus reduces a plant's ability to compete for water and nutrients. Grazing an actively growing plant above a certain level (about 50%-60% utilization) would immediately curtail root growth because the plant no longer has the leaves to photosynthesize and produce carbohydrates needed to fuel root growth (Hendrickson & Olson, 2006). Actively trailing livestock does not result in moderate or heavy utilization. During livestock trailing events, it is typical for utilization of grasses or forbs to be negligible. Most plant defoliation actually occurs with trampling, not grazing, but the exception to that is when overnighting of livestock occurs.

There is a correlation between the amount of forage consumed and the distance of the trailing event. The longer the duration of the trailing event, the more forage is likely to be consumed by livestock. Under the Proposed Action, the majority (71%) of individual cattle trailing events are less than 6 hours with no bedding or overnighting of livestock. During 1 day or less trailing events, forage would most likely be trampled, not consumed, since the animals are moving constantly. For livestock trailing events that require overnighting or bedding areas, slightly more forage would be consumed than trampled because the animals would stop to rest for the night and there would be more time for them to graze or browse. Other areas of concentration, such as watering areas, would see an increase of damage directly to vegetation through trampling and grazing due to the concentration of animals in a small area. Soil would also see more compaction in these concentration areas indirectly impacting vegetation.

Based on the width of the trailing corridor in the Proposed Action, there are 151,842 acres of BLM-administered land accessible to livestock. Table 4-4 displays the acreage breakdown by vegetation group that livestock could trail through. The Proposed Action has 33 miles of cross-country trailing. Cross-country trailing would have a greater impact on vegetation communities than trailing following roads (112 miles) or primitive roads (121 miles). The majority of the impacts would occur on an estimated 20,731 acres as it is assumed that most livestock trailing activities would occur within 300 feet on either side of the trail route.

Table 4-4. Vegetation Sub-Group for the Proposed Action

Vegetation Sub-Group	Total Acres	Impact Area Acres
Annual	12,033	1,748
Native Grassland	61,902	8,054
Native Shrubland	23,364	3,318
Non-Native Perennial	48,781	6,567
Non-Native Understory	3,497	452
Unvegetated	2,245	578
No Data	20	14

Design features in the Proposed Action would help reduce impacts. By not placing water troughs and not locating bedding and overnight areas in sagebrush habitat direct impacts to vegetation would be reduced. Livestock tend to avoid moving through areas of shrub cover when open areas (roadways) are available. Actively trailing livestock would limit the amount of time for livestock to graze and following roadways would limit livestock access to vegetation and reduce trampling and grazing impacts.

Cumulative Effects

The JFO is sufficient to describe cumulative effects to vegetation. This area was chosen because the trailing corridors proposed under the action alternatives facilitate livestock grazing systems throughout the JFO, yet the corridors themselves would affect a maximum of 20% of the JFO with the majority of the impacts taking place on 3%of the JFO.

Past actions that were considered include livestock grazing, livestock trailing, road construction, fence construction, vegetation treatment projects, wildfire, utility construction and maintenance, and OHV use. Actions that have occurred in the past and would continue into the foreseeable future include livestock grazing, noxious weed management, utility and road maintenance, vegetation treatment projects, and recreation. Energy and transmission projects and the Jarbidge Wildfire Fuel Breaks Project are reasonably foreseeable future actions considered in the analysis.

The collective effect of past actions has contributed to the existing condition of vegetation described in Chapter 3, Affected Environment – Vegetation. The effects of ongoing and future actions pertinent to the discussion of cumulative effects to vegetation are summarized below.

Grazing results in trampling and consumption of vegetation in the project area. Currently, almost 190,000 AUMs across approximately 1.3 million acres are allocated for livestock within the JFO. Future livestock grazing is projected to maintain or improve vegetation due to changes in management based upon monitoring data.

Recreation, and specifically OHV recreation, would continue in the JFO and result in impacts to vegetation through crushing of vegetation and soil loss and compaction. Similarly, utility and road maintenance would continue and vegetation would be cleared along roads and around poles and crushing of vegetation would occur from maintenance equipment.

Weed treatments are expected to continue into the foreseeable future and would provide benefit to vegetation through the reduction of competition and establishment of native species to promote a more intact vegetation community.

Foreseeable energy and transmission projects would add new roadways and new transmission lines across the JFO. Vehicle traffic would increase for the duration of construction on the projects. Vegetation would be directly impacted through removal for these projects.

The Jarbidge Wildfire Fuel Breaks Project would include some localized mortality of larger and older sagebrush. Herbaceous species are expected to increase with the reduction of shrub canopy. Native plant damage and mortality could also occur where green strips are planted.

Implementing the Proposed Action is expected to be additive in its impacts to livestock grazing, recreation, utility maintenance, energy and transmission projects. These actions combined would have impacts to vegetation along roadways, but the impacts would become less intense and unmeasurable away from roadways. These actions would not change the composition of the surrounding vegetation communities. The Jarbidge Wildfire Fuel Breaks Project would have an additive impact until vegetation becomes established but would be expected to have positive impacts as fires are reduced and kept to smaller sizes. Vegetation treatments and noxious weed control would have localized negative impacts, but as weedy species are reduced and native vegetation becomes established there would be positive impacts from the reduced competition.

Alternative 2

Direct and Indirect Effects

Impacts to vegetation under Alternative 2 would be similar to those described for the Proposed Action, except they would cover a larger area. The majority of the impacts would take place over 37,833 acres as it is assumed that most livestock trailing activity would occur within 300 feet on either side of the trail route. Table 4-5 displays the acreage breakdown by vegetation group that livestock could trail through in Alternative 2. Alternative 2 would have 3 miles more of cross-country trailing than the Proposed Action.

Table 4-5. Vegetation Sub-Group for Alternative 2

Vegetation Sub-Group	Total Acres	Impact Area Acres	Increase from Proposed Action	
			Total	Impact Area
Annual	24,678	3,050	105%	75%
Native Grassland	102,355	12,636	65%	57%
Native Shrubland	64,937	8,515	178%	157%
Non-Native Perennial	78,193	10,490	60%	60%
Non-Native Understory	15,941	2,147	355%	375%
Unvegetated	3,537	977	58%	69%
No Data	81	17	305%	21%

Alternative 2 increases the exposure of vegetation communities to the impacts of trailing. There would be more overnight and bedding areas used than the Proposed Action. This alternative would have similar localized impacts to vegetation (trampling and grazing) as the Proposed Action except those impacts would occur over a larger area.

Cumulative Effects

Under Alternative 2, cumulative impacts to vegetation resources due to livestock grazing, recreation, utility maintenance, energy and transmission projects are expected to similar to the Proposed Action, with more acres within trailing corridors. The Jarbidge Wildfire Fuel Breaks Project would have greater additive impacts for 2-3 years while the vegetation becomes

established but the beneficial impacts would be similar. The countervailing effect of noxious weed control and vegetation treatments would be reduced due to the increased acreage of the trailing corridors under Alternative 2.

Alternative 3

Direct and Indirect Effects

Impacts to vegetation under Alternative 3 would be similar to those described for the Proposed Action, except they would occur over a smaller area. Alternative 3 includes 0.25-mile wide corridors that would allow for the trailing of livestock by qualified applicants. The majority of the impacts would take place over 16,886 acres as it is assumed that most livestock herding activity would occur within 300 feet on either side of the trail route. Table 4-6 displays the acreage breakdown by vegetation group that livestock could trail through in Alternative 3. Alternative 3 would have 11 miles less of cross-country trailing than the Proposed Action.

Table 4-6. Vegetation Sub-Group for Alternative 3

Vegetation Sub-Group	Total Acres	Impact Area Acres	Decrease from Proposed Action	
			Total	Impact Area
Annual	3,297	1,584	73%	9%
Native Grassland	14,284	6,621	77%	18%
Native Shrubland	5,826	2,690	75%	19%
Non-Native Perennial	10,782	5,039	78%	23%
Non-Native Understory	1,029	447	71%	1%
Unvegetated	735	492	67%	15%
No Data	13	13	35%	7%

Alternative 3 decreases the exposure of vegetation communities to the impacts of trailing. There would be fewer overnight and bedding areas than the Proposed Action. This alternative would have similar localized impacts to vegetation communities as the Proposed Action except those impacts would occur over a smaller area.

Cumulative Effects

Under Alternative 3, cumulative impacts to vegetation resources due to livestock grazing, recreation, utility maintenance, and energy and transmission projects are expected to be similar to the Proposed Action, with fewer acres within trailing corridors. The Jarbidge Wildfire Fuel Breaks Project would have additive impacts for 2-3 years while the vegetation becomes established but the beneficial impacts would be similar. The countervailing effects of noxious weed control and vegetation treatments would be increased due to the reduction of trailing corridors in Alternative 3.

Riparian Areas and Wetlands

No Action

Direct and Indirect Effects

In the No Action Alternative, crossing permits would not be issued for moving livestock across BLM-administered lands. Some riparian areas and wetlands would likely benefit from eliminating impacts due to livestock trailing, but these benefits would be localized and may or may not be measureable.

One indirect effect of the No Action Alternative would be increased use of trucking livestock between authorized grazing use areas. However, the anticipated increase in vehicle traffic would not have adverse impacts to riparian areas and wetlands because trucking operations would occur on already existing roads and bridges.

Cumulative Effects

For riparian areas and wetlands, the same past, present and reasonably foreseeable future actions that are described for Water Resources (No Action) also have the potential to affect riparian and wetland conditions for the No Action Alternative. The existing condition (baseline conditions) for Riparian Areas and Wetlands are described in the Affected Environment. Because the relationship between aquatic species, riparian condition, and water quality are interrelated, actions that affect one of these resources are likely to affect the other aquatic resources.

The same past, present and reasonably foreseeable future actions for Federal, State, and private lands and their effects to riparian areas and wetlands would continue to occur in the No Action Alternative. The No Action Alternative, combined with past, present, and reasonably foreseeable future actions would result in fewer impacts to riparian areas and wetlands. Not authorizing livestock trailing would reduce the amount of livestock use that occurs in riparian areas which could improve riparian condition in some locations. Overall, there would be a reduction in cumulative effects to riparian areas and wetlands due to livestock trailing for the No Action Alternative.

Proposed Action

Direct and Indirect Effects

In the Proposed Action, the 1.0-mile wide trailing corridors would encompass 6 perennial and 11 intermittent streams and their associated riparian area on BLM-administered lands (Table 4-7; Map 9). Of these streams, there are 4 perennial and 10 intermittent riparian areas that occur on BLM-administered lands within the assumed impact area of 300 feet on either side of trail routes.

Table 4-7. Miles of BLM Riparian Area within a 1.0-mile wide Livestock Trailing Corridor.

Stream Name	Miles Riparian Area in 1.0-mile wide Proposed Trailing Corridor	Miles Riparian Area in 600-foot Impact Area within Proposed Trailing Corridor
Perennial		
Devil Creek	1.3	0.2
House Creek	<0.1	0
Snake River *	N/A	N/A
Tuana Gulch	2.1	0
Unnamed Streams	0.4	0.2
West Fork Devil Creek	<0.1	<0.1
Yahoo Creek	1.4	0.2
Total BLM Perennial	<5.4	<0.7
Intermittent		
Big Pilgrim Gulch	2.2	0.2
Camas Slough	1.8	0.2
Cassie Gulch	2.1	0.1
Deadman Creek	7.0	1.8
Devil Creek	1.3	0.2
Pot Hole Creek	6.6	0.8
Rosevear Gulch	1.8	0.3
Sailor Creek	11.9	2.0
Tuana Gulch	0.7	0.1
Yahoo Creek	0.4	0
Unnamed streams	8.5	1.0
Total BLM Intermittent	44.3	6.7
Total BLM Riparian	<49.7	<7.4

*Crossing on Snake River at Bliss Bridge not on BLM managed land.

Livestock trailing corridors in the Proposed Action would encompass 5.4 miles of perennial stream and 44.3 miles of intermittent stream (49.7 miles combined total). The prediction of 49.7 miles of riparian area within the 1.0-mile wide trailing corridor overestimates impacts to riparian areas. In many areas, the trailing corridor includes the RCA but the riparian area is not accessible to livestock due to topography or fences. In some locations, the trailing area parallels but does not enter the RCA or cross the stream. To refine this analysis, an assumed impact area that is 300 feet on either side of trail routes was used to focus the impact area to a more realistic area. This assumption is based on how livestock would be actively trailed through the corridors, which is in a group with the use of herders and stock dogs, instead of in an unorganized herd. The 7.4 miles of assumed impact area for perennial (0.7 miles, 36.7 acres) and intermittent streams (6.7 miles, 20.7 acres) was used in the analysis as a realistic prediction of impacts from livestock trailing.

The Proposed Action would have livestock trailing corridors that cross 3 perennial and 25 intermittent streams (Map 9). All of the perennial crossings (Devil Creek, Yahoo Creek, unnamed stream) are on gravel roads. For the 25 intermittent crossings, 16 are at cross country routes, 6 are on primitive roads, and 3 are on gravel roads (Map 9). Impacts to riparian

conditions from livestock trailing at perennial and intermittent stream crossings would primarily be occurring in areas where riparian conditions are already reduced due to the constructed road crossings or at water gaps that have been designated for livestock watering or fording the stream.

Livestock trailing within riparian areas or at stream crossings can have similar impacts to riparian vegetation and stream channel condition as occurs for livestock grazing, except the duration and magnitude of affects from supervised trailing events are less than what can occur under general permitted livestock grazing. Livestock trailing in riparian areas and wetlands can alter the structure and function of riparian plant communities by grazing, browsing, and trampling; the quantity and composition of plant species as well as the quantity and depth of plant roots can be affected. Livestock can also change the vertical structure and distribution of vegetation, as selective removal or trampling damage can alter age structure of plant communities (Kauffman & Krueger, 1984; Popolizio et al., 1994). In general, riparian areas and wetlands in a reduced condition, either from recreation, flow alteration, or livestock grazing, are at an increased risk for impacts from livestock trailing activities than riparian areas and wetlands that are functioning properly.

Livestock trailing in riparian areas can also influence stream channel characteristics. Streambank shape, soil composition, and gradient are the primary drivers of a stream's hydrological function. Streambanks are the interface between instream characteristics (e.g., flow) and terrestrial characteristics (e.g., riparian vegetation). Excessive livestock trampling can break down streambanks, resulting in lower (flattened) bank angles, a reduction in bank undercutting (Platts, 1991), and accelerated bank erosion. Bank sloughing by livestock can influence the erosion-deposition cycle by accelerating soil erosion (bank degradation) and decreasing deposition on streambanks (bank building) during flood events, largely due to removal of vegetative cover (Platts, 1991). Transport of soils and fine organic material away from the site decreases the fertility of the soils and can reduce capacity to support vegetation of any type (Brady, 1984), resulting in riparian degradation. The vegetation component of certain streamside habitat types responds more quickly to improved management practices than other components such as streambank morphology (Platts, 1991).

The impacts assessment for riparian areas and their associated wetlands due to livestock trailing focused on areas where livestock enter the riparian conservation area (RCA). The potential for impacts to the RCA vary according to type of riparian area (defined in Chapter 3), the type of stream crossing (bridge, culvert, ford), and the type of road surface used for livestock trailing (paved, gravel, dirt). The assumptions made for this analysis are described below:

Perennial and intermittent streams have a defined stream channel and therefore have the potential to influence downstream riparian conditions. Livestock crossing areas for these stream types were considered to have the potential for indirect effects to downstream instream condition and water quality. Ephemeral streams, which do not have a well-defined channel due to their limited surface flows, are expected to have less influence on downstream channel condition than perennial and intermittent stream types.

Stream crossing areas that occur on roads with bridges or culverts would have direct impacts to vegetation (trampling, grazing, browsing) within the road right-of-way with minimal additional

impacts to the stream channel because the channel conditions are already altered by the constructed road crossing. Livestock crossings that occur at existing designated crossings or water gaps would have direct impacts to riparian vegetation (trampling, grazing, browsing) and stream channel conditions (trampling) with indirect impacts to the stream channel extending for an uncertain distance below the designated crossing or water gap. Impacts from livestock trailing through these areas would not likely be measurable because they are currently used as crossing or watering areas by permitted livestock within the specific allotment. Livestock crossings that occur at a stream ford would have direct impacts to riparian vegetation and stream channel condition at the crossing areas.

Livestock trailing activities that occur within a RCA have the potential to introduce fine sediment into streams. The amount of sediment generated is influenced by the type of road surface used for livestock trailing. Roads that are paved are expected to have the least potential to generate sediment that could enter a stream. Roads that have a gravel surface with constructed drainage would have an increased potential to introduce fine sediment into streams. Roads that have a dirt surface with no scheduled maintenance or constructed drainage would have the greatest potential for the erosion of surface fines that could enter a stream. This analysis assumed that most livestock herding activity would occur within 300 feet on either side of the trail route.

Livestock trailing activities that occur within a trailing corridor that are 300 feet or more from a riparian area are not expected to have a direct or indirect impact to the riparian area or stream channel condition. This is consistent with the guidance in INFISH (USDA 1995) which identifies RCA widths of 300 feet for perennial fish-bearing streams, 150 feet for perennial non-fish bearing streams, 150 feet for wetlands greater than 1.0 acre, and 50 feet for seasonally flowing or intermittent streams and wetlands less than 1.0 acre. These widths were identified as adequate to protect streams from non-channelized sediment inputs because non-channelized sediment flow rarely travels more than 300 feet. Therefore, the 200 to 300 feet RCAs are generally effective at protecting streams from non-channelized sediment flow (USDA 1995).

In the Proposed Action, 11 livestock crossing permits would be issued for trailing events that would range from a total of 12 days for cattle and 14 days for sheep. For these proposed trailing events, 71% would occur within a time period of six hours or less which basically equates to herding livestock down a road where they occasionally have access to riparian vegetation and a drink from a stream. The use of active herding combined with the requirement to have all livestock removed from the RCA after livestock trailing events would limit impacts to riparian areas and wetlands to levels that are localized and short-term in duration.

Livestock trailing activities have the potential to affect wetlands which are not associated with riparian areas. Livestock trailing activities are to avoid wetland areas as livestock are moved through the trailing corridors. This is expected to minimize impacts to wetlands to the extent possible but all impacts to wetlands may not be prevented because not all of the wetlands are fenced to exclude livestock.

Issuing livestock crossing permits with terms and conditions is expected to minimize impacts to riparian areas and wetlands to levels that are below what has historically occurred. The requirement for livestock bedding/over-night areas and temporary water facilities to be at least

0.25 mile from riparian areas, and restricting livestock trailing across riparian areas and wetlands to pre-determined locations would reduce the amount of time livestock are present in the RCA and should improve riparian condition in some locations. The use of active herding and the requirement for all livestock to be removed from the RCA after crossing events is expected to further minimize the impacts to riparian areas and wetlands within the proposed livestock trailing corridors.

Cumulative Effects

For riparian areas and wetlands, the same past, present and reasonably foreseeable future actions that are described for Water Resources (No Action) also have the potential to affect riparian and wetland conditions for the Proposed Action. The existing condition (baseline conditions) for Riparian Areas and Wetlands are described in the Affected Environment. Because the relationship between aquatic species, riparian condition, and water quality are interrelated, actions that affect one of these resources are likely to affect the other aquatic resources.

The same past, present and reasonably foreseeable future actions for Federal, State, and private lands and their effects to riparian areas and wetlands would continue to occur in the Proposed Action. The impacts related to the Proposed Action include trailing livestock across 3 perennial and 25 intermittent streams which would impact 36.7 acres of perennial and 20.7 acres of intermittent riparian area. The Proposed Action, combined with past, present, and reasonably foreseeable future actions would result in more cumulative impacts to riparian areas and wetlands than would be expected for the No Action Alternative. Overall, there would be an increase in cumulative effects to riparian areas and wetlands due to livestock trailing under the Proposed Action. However, the mitigations that would be applied to livestock trailing permits would reduce the potential for cumulative impacts below levels that are significant.

Alternative 2

Direct and Indirect Effects

In Alternative 2, the proposed 1.0-mile wide trailing corridors would encompass 20 perennial and 29 intermittent streams and their associated riparian area on BLM-administered lands (Table 4-8; Map 10). Of these streams, there are 13 perennial and 20 intermittent riparian areas that occur within the assumed impact area of 300 feet on either side of trail routes.

Table 4-8. Miles of Riparian Area within 1.0-mile wide Livestock Trailing Corridor.

Stream Name	Miles Riparian Area in 1.0-mile wide Proposed Trailing Corridor	Miles Riparian Area in 600-foot Impact Area for Proposed Trailing Corridor
Perennial		
Bear Creek	0.1	0
Big Flat Creek	1.7	0.1
Bruneau River*	<0.1	<0.1
Cedar Creek	0.2	0
Chimney Creek	0.2	0.1

Stream Name	Miles Riparian Area in 1.0-mile wide Proposed Trailing Corridor	Miles Riparian Area in 600-foot Impact Area for Proposed Trailing Corridor
China Creek	1.6	0.2
Corral Creek	<0.1	<0.1
Deadwood Creek	0.1	0
Devil Creek	1.3	0.2
E.F. Jarbidge R.	<0.1	<0.1
Flat Creek	0.2	0
House Creek	<0.1	0
Little House Creek	0.3	0
Pole Creek	1.7	0.1
Salmon Falls Creek	0.3	0.1
Snake River*	N/A	N/A
Tuana Gulch	2.1	0
Unnamed streams	4.4	0.9
W.F. Devil Creek	0.1	<0.1
Whiskey Slough	0.9	0.1
Yahoo Creek	1.4	0.2
Total BLM Perennial	16.9	2.4
Intermittent		
Antelope Canyon	0.1	0
Beaver Meadows	0.4	<0.1
Big Pilgrim Gulch	2.2	0.2
Black Canyon	0.8	0
Browns Creek	1.1	0.1
Camas Slough	1.8	0.2
Cassia Gulch	2.1	0.1
Cedar Creek	1.6	0.2
Cherry Creek	<0.1	0
Corral Creek Canyon	<0.1	0
Deadman Creek	9.2	1.9
Deadwood Creek	0.4	0
Deer Canyon	0.9	0.1
Deer Creek	0.9	0.2
Devil Creek	1.3	0.2
E.F. Devil Creek	0.9	0.2
House Creek	0.6	0.3
Little House Creek	0.9	0
Middle Fork Devil Creek	0.7	0
Mud Flat Draw	<0.1	0.4
Pot Hole Creek	12.2	2.0
Rosevear Gulch	5.5	0.6
Sailor Creek	12.8	2.1
Shack Creek	0.9	0.1

Stream Name	Miles Riparian Area in 1.0-mile wide Proposed Trailing Corridor	Miles Riparian Area in 600-foot Impact Area for Proposed Trailing Corridor
Three Creek	0.2	0
Tuana Gulch	0.7	0.1
Whiskey Slough	0.7	0.2
Yahoo Creek	0.4	0
Unnamed Streams	27.3	2.9
Total BLM Intermittent Streams	<86.9	<12.2
Total BLM Riparian	<103.8	<14.6

*Crossing of Snake River at Bliss Bridge and Bruneau River not on BLM managed land.

Alternative 2 would encompass 16.9 miles of perennial stream and 86.9 miles of intermittent stream (103.8 miles combined total). The prediction of 103.8 miles of riparian area within the 1.0-mile wide corridor overestimates impacts to riparian areas. In many areas, RCAs are within a trailing corridor but the riparian area is not accessible to livestock due to topography or fences. In some locations, the trailing corridor parallels but does not enter the RCA or cross the stream. To refine this analysis, an assumed impact area that is 300 feet on either side of trail routes was used to focus the impact area in the same manner as described for the Proposed Action. The 14.6 miles of assumed impact area (2.4 miles (144 acres) of perennial and 12.2 miles (80 acres) of intermittent stream) was used in the analysis as a realistic prediction of impacts to riparian areas from livestock trailing.

For Alternative 2, livestock trailing corridors would cross 13 perennial streams and 48 intermittent streams on BLM-administered lands. Eleven of the perennial crossings are on gravel roads (Big Flat Creek, China Creek, Corral Creek, Devil Creek, Pole Creek, Whiskey Slough, Yahoo Creek, Chimney Creek, three unnamed streams), one is on a paved road (Salmon Falls Creek), and one is at a historic livestock fording area (East Fork Jarbidge River). For the 48 intermittent stream crossings, 29 are on paved or gravel surfaced roads and 19 are on cross-country routes (dirt roads). The impacts from trailing livestock across streams on roads that are either paved or a gravel/dirt surface are the same as described for the Proposed Action except there would be more miles of perennial and intermittent stream crossing in Alternative 2 (13 perennial and 48 intermittent streams) than would occur in the Proposed Action (3 perennial and 25 intermittent streams). The impacts from livestock grazing on riparian areas for Alternative 2 are the same as described for the Proposed Action except the impacts would occur over a broader area. The use of active herding and requirement to have all livestock removed from the RCA after crossing is expected to limit impacts to riparian areas to those that are localized and short-term in duration.

Livestock trailing activities have the potential to affect wetlands which are not associated with riparian areas. For Alternative 2, the impacts to wetlands and their supporting vegetation from livestock trailing would be the same as those described for the Proposed Action. Livestock trailing activities are to avoid wetland areas as livestock are trailed through the proposed

corridors. This is expected to minimize impacts to wetlands to the extent possible but all impacts to wetlands may not be prevented because not all of the wetlands are fenced to exclude livestock.

Issuing livestock crossing permits with terms and conditions is expected to minimize impacts to riparian areas. The requirement for livestock bedding/over-night areas and temporary water facilities to be at least 0.25 mile from riparian areas, and restricting livestock trailing across riparian areas and wetlands to pre-determined locations would reduce the amount of time livestock are present in the RCA and should improve riparian condition in some locations. The use of active herding and the requirement for all livestock to be removed from the RCA after crossing events is expected to further minimize the impacts to riparian areas within the livestock trailing corridors.

Cumulative Effects

For riparian areas and wetlands, the same past, present and reasonably foreseeable future actions that are described for Water Resources (No Action) also have the potential to affect riparian and wetland conditions for Alternative 2. The existing condition (baseline conditions) for Riparian Areas and Wetlands are described in the Affected Environment. Because the relationship between aquatic species, riparian condition, and water quality are interrelated, actions that affect one of these resources are likely to affect the other aquatic resources.

The same past, present and reasonably foreseeable future actions for Federal, State, and private lands and their effects to riparian areas and wetlands would continue to occur in Alternative 2. The impacts related to Alternative 2 include trailing livestock across 13 perennial and 48 intermittent streams which would impact 144 acres of perennial and 80 acres of intermittent riparian area. Alternative 2, combined with past, present, and reasonably foreseeable future actions would result in more cumulative impacts to riparian areas and wetlands than would be expected for the No Action and Proposed Action Alternatives. Overall, there would be an increase in cumulative effects to riparian areas and wetlands due to livestock trailing. However, the mitigations that would be applied to livestock trailing permits would reduce the potential for cumulative impacts below levels that are significant.

Alternative 3

Direct and Indirect Effects

In Alternative 3, the proposed 0.25-mile wide livestock trailing corridors would encompass 3 perennial and 10 intermittent streams and their associated riparian area on BLM-administered lands (Table 4-9; Map 11). All of these streams occur within the assumed impact area of 300 feet on either side of trail routes.

Table 4-9. Miles of BLM Riparian Area within a 0.25-mile Livestock Trailing Corridor.

Stream Name	Miles Riparian Area in 0.25-mile Proposed Tailing Corridor	Miles Riparian Area in 600-foot Impact Area within Proposed Trailing Corridor
Perennial		
Devil Creek	0.4	0.2
Snake River*	N/A	N/A
Unnamed Streams	0.4	0.2
Yahoo Creek	0.5	0.2
Total BLM Perennial	1.3	0.6
Intermittent		
Big Pilgrim Gulch	0.5	0.2
Camas Slough	0.4	0.2
Cassia Gulch	0.3	0.1
Deadman Creek	0.4	0.1
Devil Creek	0.4	0.2
Pot Hole Creek	2.5	0.8
Rosevear Gulch	0.5	0.3
Sailor Creek	4.0	1.6
Tuana Gulch	0.2	0.1
Unnamed Streams	1.5	0.9
Total BLM Intermittent	10.7	4.5
Total BLM Riparian	12.0	5.1

*Crossing of Snake River at Bliss Bridge not on BLM managed land.

Alternative 3 would encompass 1.3 miles of perennial stream and 10.7 miles of intermittent stream (12.0 miles combined total). The prediction of 12.0 miles of riparian area within the 0.25-mile wide corridor overestimates impacts to riparian areas. In many instances, riparian areas are included in the trailing corridor but are not accessible to livestock due to topography or fences. In some locations, the trailing route parallels but does not enter the RCA or cross the stream. To refine this analysis, an assumed impact area that is 300 feet on either side of trail routes was used to focus the impact area in the same manner as described for the Proposed Action. The 5.1 miles of assumed impact area (0.6 miles of perennial (29.2 acres) and 4.5 miles (20.2 acres) of intermittent stream) was used as a realistic prediction of impacts to riparian areas from livestock trailing.

For Alternative 3, livestock trailing corridors would cross 3 perennial and 18 intermittent streams on BLM-administered lands. All three of the perennial stream crossings (Devil Creek, Yahoo Creek, unnamed streams) are on gravel roads. For the intermittent streams, nine crossings are on gravel or primitive roads and nine are on cross country routes. The impacts from trailing livestock across streams on roads that are either paved or a gravel/dirt surface are the same as is described for the Proposed Action except there would be fewer miles of perennial and intermittent stream crossing in Alternative 3 (3 perennial and 18 intermittent streams) than would occur in the Proposed Action (3 perennial and 25 intermittent streams) and Alternative 2 (13 perennial and 48 intermittent streams). The impacts from livestock grazing on riparian areas for Alternative 3 are the same as is described for the Proposed Action except the impacts would occur over a smaller area. The use of active herding and the requirement to have all livestock

removed from the RCA after crossing is expected to limit impacts to riparian areas to those that are localized and short-term in duration.

Livestock trailing activities have the potential to affect wetlands which are not associated with riparian areas. For Alternative 3, the impacts to wetlands and their supporting vegetation from livestock trailing would be the same as those described for the Proposed Action. Livestock trailing activities are to avoid wetland areas as livestock are trailed through the corridors. This is expected to reduce impacts to wetlands to the extent possible but all impacts to wetlands may not be prevented because not all of the wetlands are fenced to exclude livestock.

Issuing livestock crossing permits with terms and conditions is expected to minimize impacts to riparian areas. The requirement for livestock bedding/over-night areas and temporary water facilities to be at least 0.25 mile from riparian areas, and restricting livestock trailing across riparian areas and wetlands to pre-determined locations would reduce the amount of time livestock are present in the RCA and therefore should improve riparian condition in some locations. The use of active herding and the requirement for all livestock to be removed from the RCA after crossing events is expected to further reduce the potential for impacts to riparian areas within the livestock trailing corridors.

Cumulative Effects

For riparian areas and wetlands, the same past, present and reasonably foreseeable future actions that are described for Water Resources (No Action) also have the potential to affect riparian and wetland conditions for Alternative 3. The existing condition (baseline conditions) for Riparian Areas and Wetlands are described in the Affected Environment. Because the relationship between aquatic species, riparian condition, and water quality are interrelated, actions that affect one of these resources are likely to affect the other aquatic resources.

The same past, present and reasonably foreseeable future actions for Federal, State, and private lands and their effects to riparian areas and wetlands would continue to occur in Alternative 3. The impacts related to Alternative 3 include trailing livestock across 3 perennial and 18 intermittent streams which would impact 29.2 acres of perennial and 20.2 acres of intermittent riparian area. Alternative 3, combined with past, present, and reasonably foreseeable future actions would result in fewer cumulative impacts to riparian areas and wetlands than would be expected for the No Action, Proposed Action, and Alternative 2. Overall, there would be a decrease in cumulative effects to riparian areas and wetlands due to livestock trailing. Cumulative impacts would be further reduced with the terms and conditions that would be applied to livestock trailing permits.

Noxious Weeds and Invasive Plants

No Action

Direct and Indirect Effects

Under the No Action Alternative, crossing permits would not be issued and trailing would not take place. Trailing could continue on state and private land but the crossing of BLM-administered lands would not be authorized as it has in the past. Livestock grazing would still take place and there would still be a need to move livestock between allotments, and this is likely to take place by trucking. Trucking of livestock between authorized grazing use areas would increase vehicle traffic along existing roads, which could spread weed seed on tires and through increased road maintenance activities.

Cumulative Effects

Crossing permits would not be issued and there would be no direct or indirect effect to noxious weeds and invasive plants from trailing or trucking; there would be no cumulative effects.

Proposed Action

Direct and Indirect Effects

Livestock trailing can alter herbaceous cover and influence species composition and structure of vegetation communities (Saab et al., 1995), including noxious weeds and invasive plants. The type and intensity of effects depends on factors such as type of livestock, season of use, use levels, and location and density of livestock. Effects can be due to herbivory or trampling and can be direct (e.g., removal of vegetation, trampling plants) or indirect (e.g., soil surface disturbance). Livestock can spread seed through their digestive system or by transporting seed attached to hair (DiTomaso, 2000). Noxious weeds and invasive plant species establish more readily as disturbance to soils increases. Roads and trails act as dispersal agents for noxious weeds and invasive plants, and the amount and extent of conveyance is directly related to the degree of road improvement (Gelbard & Belnap, 2003). Trails that are limited in duration and recurrence would be less likely to contribute to establishment and expansion than those trails that are high recurring events.

The use of horses as an aid to trailing on public land requires supplemental feeding of hay or other feed, causing concerns about the introduction of noxious weeds into new areas. However, on September 21, 2010, the BLM Idaho State Office proposed supplementary feeding rules in the Federal Register Notice that would require anyone using, feeding, or storing forage or straw on BLM-administered land in Idaho to use certified noxious-weed-free forage and straw. On July 21, 2011, the BLM posted the Final Supplementary rules in the Federal Register, requiring a standard stipulation for most use authorizations, effective August 22, 2011. Livestock trailing

falls under 43 CFR 4130.6-3 (crossing permits) and therefore, this stipulation would apply to all supplemental feeding of livestock, including horses used for the purposes of herding.

The Proposed Action has potential to spread noxious weeds during trailing events. The process of moving livestock during a trailing event increases the opportunity for exposure to and transmission of noxious weeds and invasive plants. The disturbance caused by trailing can create areas of bare soil by removing vegetation and turning the soil; these are ideal places for weeds to establish. In relationship to the trailing of livestock, overnighting and bedding areas have higher potential for disturbance and higher potential for establishment of weed propagules that have been carried into the area on livestock or in their droppings.

However, trailing events occur infrequently throughout the year, are of short duration, and are not the only use occurring along roads. Because of this livestock trailing would not be expected to affect the spread of noxious weeds and invasive plants in a manner that can be measured. Known infestations are being actively treated and road corridors throughout the area are inspected. Design features such as locating and timing livestock trailing events to avoid known areas of weeds would further reduce the potential of noxious weed spread (e.g., avoid areas of known noxious weeds, avoid times when seeds from noxious weeds are mature).

Cumulative Effects

The extent of the cumulative impact analysis area for noxious weeds and invasive species is the same as the project area. This area was selected because the trailing routes, while dispersed, are located throughout the Field Office and could therefore cumulatively impact noxious weed and invasive species populations across the project area. For these reasons, the cumulative impact analysis area was kept at a relatively large scale, despite the somewhat limited extent of some of the individual populations.

Past actions that were considered include livestock grazing, livestock trailing, road construction, fence construction, vegetation treatment projects, wildfire, utility construction and OHV use. Actions that have occurred in the past and would continue into the foreseeable future include livestock grazing, noxious weed management, utility and road maintenance, vegetation treatment projects, and recreation. Energy and transmission projects and the Jarbidge Wildfire Fuel Breaks Project are future actions that were considered in the analysis.

The collective effect of past actions has contributed to the existing condition of weedy species described in Chapter 3, Affected Environment – Noxious Weeds and Invasive Plants. The effects of ongoing and future actions pertinent to the discussion of cumulative effects to vegetation are summarized below.

In the northern half of the JFO, past wildfires have created an area largely depleted of native understory species that would resist weed invasion. In much of this area, cheatgrass is dominant over native species. The background of high weed cover and high susceptibility to weed invasion creates an additive increase to trailing-caused potential for weed spread. The use of motorized recreation increases the risk of weed spread. Road and utility maintenance are ongoing activities that also increase the risk of weed spread when combined with the impacts of livestock trailing.

Livestock grazing and the use of range facilities such as troughs and supplement locations concentrate livestock and can be a source of spread.

Foreseeable energy and transmission projects would have an additive effect of transmission of noxious weeds and invasive plant species through additional disturbance to vegetation communities and increased vehicle traffic along existing and new roads.

The monitoring and treatment of noxious weeds would continue across the JFO. This would have a countervailing impact to livestock trailing and other activities that spread noxious weeds. Monitoring and treatment of noxious weeds would help reduce the establishment and further spread of weedy species. Continuation of vegetation treatments across the project area is expected to increase native species and promote resiliency against weed invasion. The Jarbidge Wildfire Fuel Breaks Project would have an additive effect until vegetation can become established by causing disturbance and creating areas of bare soil for possible weed invasion. As vegetation grows and occupies the fuelbreaks, the risk of weed invasion and spread would be reduced. Fuel breaks, once established, would also help to reduce the size of wildfires and the size of burned areas that are susceptible to weed invasion and spread.

Implementing the Proposed Action is expected to be additive in its impacts to livestock grazing, recreation, road and utility maintenance, and energy and transmission projects. The Jarbidge Wildfire Fuel Breaks Project would have an additive effect but would be expected to have positive impacts as fires are reduced and kept to smaller sizes. Vegetation treatments and noxious weed control would have countervailing impacts on the transmission of noxious weeds.

Alternative 2

Direct and Indirect Effects

Impacts from noxious weeds and invasive plants under Alternative 2 would be similar to those described for the Proposed Action, except they would cover a larger area. This alternative has 289,722 acres of trailing corridors across BLM-administered land. Alternative 2 includes more overnight and bedding areas than the Proposed Action, which would result in more areas with bare soils. Trailing in this alternative includes 269 miles and 137,880 acres more than the Proposed Action. Alternative 2 has 266 more miles of trailing along roads and primitive roads and 3 more miles of cross-country trailing than the Proposed Action. There would be more overnighting and bedding areas increasing the potential of weed establishment over the Proposed Action. This alternative would have similar localized impacts from noxious weeds and invasive plants species as the Proposed Action except those impacts would occur over a larger area.

Cumulative Effects

Under Alternative 2, cumulative impacts to noxious weeds and invasive plants due to livestock grazing, recreation, utility and road maintenance, energy and transmission projects are expected to be similar to the Proposed Action, with more acres within trailing corridors. The Jarbidge Wildfire Fuel Breaks Project would have greater additive impacts but the beneficial impacts

would be similar. The countervailing effect of noxious weed control and vegetation treatments would be reduced due to the increased acreage of the trailing corridors under Alternative 2.

Alternative 3

Direct and Indirect Effects

Impacts from noxious weeds and invasive plants under Alternative 3 would be similar to those described for the Proposed Action, except they would occur over a smaller area. Alternative 3 includes 0.25-mile wide corridors that would allow for the trailing of livestock by qualified applicants. This alternative has 231 miles and 35,967 acres of trailing corridors across BLM-administered land. This is 35 miles and 115,875 acres less than the Proposed Action. Alternative 3 has 24 fewer miles of trailing along roads and primitive roads and 11 fewer miles of cross-country trailing than the Proposed Action. There would be fewer overnighting and bedding areas needed, reducing the potential of weed establishment over the Proposed Action. This alternative would have similar localized impacts from noxious weeds and invasive plants as the Proposed Action except those impacts would occur over a smaller area.

Cumulative Effects

Under Alternative 3, cumulative impacts to noxious weeds and invasive plants due to livestock grazing, recreation, utility and road maintenance, energy and transmission projects are expected to be similar to the Proposed Action, with fewer acres within trailing corridors. The Jarbidge Wildfire Fuel Breaks Project would have fewer additive impacts but the beneficial impacts would be similar. The countervailing effects of noxious weed control and vegetation treatments would be increased due to the reduction of trailing corridors in Alternative 3.

Threatened, Endangered, and Sensitive Plants

No Action

Direct and Indirect Effects

Under the No Action Alternative, crossing permits would not be issued and trailing would not take place. Trampling or consumption of special status species from livestock trailing events would not occur. Trailing could continue on state and private land but the crossing of BLM-administered lands would not be authorized as it has been in the past. Livestock grazing would still take place and there would still be a need to move livestock between allotments, and this is likely to take place by trucking. However, the anticipated increase in vehicle traffic would not have adverse impacts to threatened, endangered, and sensitive plants because trucking operations would occur on already existing roads.

Cumulative Effects

Crossing permits would not be issued and there would be no direct or indirect effect to special status plants from trailing; therefore, there would be no cumulative effects.

Proposed Action

Direct and Indirect Effects

The effects of livestock trailing are primarily effects to plant communities as a whole and not individual special status plant species. The effects to special status plants can be direct (e.g., consumption, trampling, or uprooting of plants) or indirect (e.g., soil compaction, modification of soil nutrients or plant community composition and/or structure). Sheep would be more likely to consume forbs than cattle; however, trampling disturbance to forbs can be greater due to cattle than sheep (Vallentine, 2001). No special status plant species are documented to occur within any proposed trailing corridors. However, extensive surveys have not been completed across the field office and the potential for a special status plant to occur within the project area exists. The potential impacts to special status plants are similar in the impacts that could occur to slickspot peppergrass and its habitat.

Slickspot peppergrass is present in occupied and proposed critical habitat in the JFO. The proposed trailing events do not include any occupied or proposed critical habitat. The trailing corridor nearest to occupied and proposed critical habitat is 0.5 mile east and is separated by Clover Creek. Clover Creek provides a natural barrier to livestock movement into occupied and proposed critical habitat. The Proposed Action covers 151,842 acres and 69,035 acres are within slickspot peppergrass potential habitat (Map 12). The majority of the impacts would take place over 9,261 acres of potential habitat as it is assumed that most livestock herding activity would occur within 300 feet on either side of the trail route.

The Proposed Action does not take place within slickspot peppergrass habitat known to be occupied. However, due to all potential habitat within the Proposed Action area not having sufficient surveys to be classified as unoccupied by slickspot peppergrass, the potential habitat is being treated as though there is a chance that slickspot peppergrass plants could occur within potential habitat slickspot microsites. Potential habitat has been categorized as having high probability, medium probability, or low probability of finding slickspot peppergrass plants within the potential habitat. These rankings are based on intact native communities with a shrub component, burn frequency over the past 20 years, and slope. See Table 4-10 for acreage break out of potential for species occurrence within identified habitat.

Table 4-10. Potential for slickspot peppergrass occurrence by acreage for the Proposed Action

Acres of potential habitat	High potential	Medium Potential	Low Potential	Total
BLM Corridors	22,561	17,229	29,245	69,035
Impact Area	3,072	2,215	3,973	9,261

Livestock trampling has the potential to spread and/or maintain invasive annual plants and noxious weeds through both continuous soil disturbance and physical transport of weed seed and propagules. Disturbance from the Proposed Action could increase the density of nonnative annual/perennial plants both within and outside of slickspots. Livestock trampling activities contribute to habitat fragmentation primarily through soil disturbance and the spread of noxious weeds and invasive annual plants. These factors inhibit the recovery of native vegetation. Some localized spread of weeds and loss of native species may occur due to livestock trampling but would be too small to be meaningfully measured due to design features that restrict the majority of trailing activities to existing roads and that do not allow trailing in high and medium potential habitat when soils are saturated. Sagebrush avoidance design features would also contribute to maintaining the current vegetation condition and reduce the introduction of invasive plants. This would maintain existing shrub stands and slickspot peppergrass potential habitat.

The Proposed Action may increase trampling of slickspots by domestic livestock. Restricting the majority of trailing activities to existing roads, the short duration of trailing events, and not allowing trailing in high and medium potential habitat when soils are saturated would reduce the level of ground disturbance within slickspots and maintain or increase the current slickspot condition. Localized ground disturbance associated with livestock trampling and support equipment is expected but would be minimal due to the following design features: livestock trailing through slickspot peppergrass potential habitat would be restricted to existing roads, the short duration of trailing events, and when soils are saturated livestock trailing would not occur in high and medium potential habitat. These conservation measures would reduce potential impacts to slickspots to a level where adverse impacts would not occur.

The Proposed Action would increase the level of organic debris within slickspots contributed by domestic livestock. Restricting the majority of trailing activities to existing roads as well as the short duration of trailing events would limit the level of organic debris (livestock feces) in slickspots and maintain the current slickspot condition. In addition, more than 5 years of Habitat Integrity Monitoring has documented very low levels of organic debris accumulating in slickspots due to livestock use.

Livestock trampling, especially when soils are dry, can lead to loss of soil crusts. Some localized soil loss and damage to biological soil crust cover may occur but design features that restrict the majority of trailing activities to existing roads along with sagebrush avoidance measures would reduce potential impacts to a level that cannot be meaningfully measured. The restrictive design features would maintain current levels of soil crusts due to cattle being restricted to roads where crust cover does not occur.

Overall, livestock trampling/trailing activities may contribute to small losses of native forbs through: 1) direct trampling, 2) grazing of native forbs, and 3) introduction and spread of invasive plants and noxious weeds. Some localized introduction and spread of invasive annual plants and noxious weeds and loss of native species may occur due to livestock trampling. Adverse impacts would be too small to be meaningfully measured due to (1) the short duration of most trailing events, (2) design features that restrict the majority of trailing activities to existing roads, and (3) design features that do not allow trailing in high and medium potential habitat

when soils are saturated. Sagebrush avoidance design features would also contribute to maintaining the current vegetation condition.

Cumulative Effects

The extent of the cumulative impact analysis area for special status plant species is the same as the project area. This area was selected because the trailing routes, while dispersed, are located throughout the project area and could cumulatively impact special status plant species populations across the project area. For these reasons, the scope of the cumulative impact analysis area was kept at a relatively large scale, despite the somewhat limited extent of some of the individual populations. Slickspot peppergrass is likely to experience cumulative impacts due to the range of potential habitat across the project area. Other special status species occur within the project area but are not known to occur within the trailing corridors.

Past actions that were considered include livestock grazing, livestock trailing, road maintenance, range infrastructure, vegetation treatment projects, and recreation. Actions that have occurred in the past and would continue into the foreseeable future include livestock grazing, noxious weed management, utility corridor and road maintenance, vegetation treatment projects, and recreation. Future actions include energy and transmission projects and the Jarbidge Wildfire Fuel Breaks Project.

The collective effect of past actions has contributed to the existing condition of special status plant species described in Chapter 3, Affected Environment – Threatened, Endangered, and Sensitive Plants. The effects of ongoing and future actions pertinent to the discussion of cumulative effects to special status species are summarized below.

In the northern half of the JFO, past wildfires have created an area largely depleted of native understory species that support special status species populations. Motorized recreation increases the risk of direct damage to slickspot sites required for slickspot peppergrass. Road and utility maintenance are ongoing activities that also increase the risk to slickspot peppergrass and its habitat when combined with the impacts of livestock trailing. Livestock grazing and the use of range facilities such as troughs and supplement locations concentrate livestock and are areas with higher chances of soil disturbance, weed introduction, and direct vegetation damage which could impact habitat quality for special status species. Foreseeable energy and transmission projects would have an additional additive effect of habitat modification through additional disturbance to soils and vegetation communities and increased vehicle traffic along existing and new roads.

The monitoring and treatment of noxious weeds throughout the Field Office would continue. This would have a countervailing impact to livestock trailing and reduce the establishment and further spread of noxious weeds and invasive plant species. Continuation of vegetation treatments across the Field Office is expected to increase native species and promote resiliency against noxious weed and invasive plant invasion and provide greater soil stability. This would improve habitat and promote pollinators for special status species. The Jarbidge Wildfire Fuel Breaks Project would have an additive effect over 2-3 years during the establishment of the fuelbreak by causing disturbance and opening up resources for possible noxious weed invasion

but would be expected to have a positive impact as fires are reduced and kept to smaller sizes, reducing habitat modification.

Implementing the Proposed Action is expected to be additive in its impacts to livestock grazing, recreation, road and utility maintenance, and energy and transmission projects. The Jarbidge Wildfire Fuel Breaks Project would have additive effects over 2-3 years while the vegetation was established but would be expected to have positive impacts as fires are reduced and kept to smaller sizes. Vegetation treatments and noxious weed control would have countervailing impacts and help promote more intact special status species habitat.

Alternative 2

Direct and Indirect Effects

Impacts to special status plant species under Alternative 2 would be similar to those described for the Proposed Action, except they would cover a larger area. Alternative 2 trailing corridors do not include any occupied or proposed critical habitat for slickspot peppergrass. The nearest trailing corridor to occupied and proposed critical habitat is 0.5 mile east and is separated by Clover Creek. Clover Creek provides a natural barrier to livestock movement into occupied and proposed critical habitat. Alternative 2 covers 289,722 acres and 123,573 acres are within slickspot peppergrass potential habitat (Map 13). The majority of the impacts would take place over 15,939 acres of potential habitat as it is assumed that most livestock trailing activity would occur within 300 feet on either side of the trail route. Table 4-11 shows the acreage break out of potential for species occurrence within identified habitat. Alternative 2 has 266 miles more of trailing along roads and primitive roads and 3 miles more of cross-country trailing than the Proposed Action. There would be more overnighting and bedding areas increasing the potential of localized disturbance in these areas over the Proposed Action. This alternative would have similar localized impacts to special status plant species as the Proposed Action except those impacts would occur over a larger area.

Table 4-11. Potential for slickspot peppergrass occurrence by acreage for Alternative 2

Acres of potential habitat	High potential	Medium Potential	Low Potential	Total
BLM Corridors	47,470	29,965	46,138	123,573
Impact Area	6,134	3,648	6,158	15,939

Cumulative Effects

Under Alternative 2, cumulative impacts to special status plants due to livestock trailing added to livestock grazing, recreation, utility maintenance, energy and transmission projects are expected to be similar to the Proposed Action, with more acres within trailing corridors. The Jarbidge Wildfire Fuel Breaks Project would have additive impacts during plant establishment but the beneficial long term impacts would be similar. The countervailing effect of noxious weed control

and vegetation treatments would be reduced due to the increased acreage of the trailing corridors under Alternative 2.

Alternative 3

Direct and Indirect Effects

Impacts to special status plant species under Alternative 3 would be similar to those described for the Proposed Action, except they would occur over a smaller area. Alternative 3 trailing corridors do not include any occupied or proposed critical habitat. The nearest trailing corridor to occupied and proposed critical habitat is 0.5 mile east and is separated by Clover Creek. Clover Creek provides a natural barrier to livestock movement into occupied and proposed critical habitat. Alternative 3 covers 35,967 acres and 16,212 acres are within slickspot peppergrass potential habitat (Map 14). The majority of the impacts would take place over 7,596 acres of potential habitat as it is assumed that most livestock herding activity would occur within 300 feet on either side of the trail route. Table 4-12 shows the acreage break out of potential for species occurrence within identified habitat. Alternative 3 has 24 miles less of trailing along roads and primitive roads and 11 miles less of cross-country trailing than the Proposed Action. There could be fewer overnighting and bedding areas decreasing the potential of localized disturbance in these areas over the Proposed Action. This alternative would have similar localized impacts to special status plant species as the Proposed Action except those impacts would occur over a smaller area.

Table 4-12. Potential for slickspot peppergrass occurrence by acreage for Alternative 3

Acres of potential habitat	High potential	Medium Potential	Low Potential	Total
BLM Corridors	4,696	4,308	7,208	16,212
Impact Area	2,175	1,994	3,426	7,596

Cumulative Effects

Under Alternative 3, cumulative impacts to special status plants due to livestock grazing, recreation, utility maintenance, energy and transmission projects are expected to be similar to the Proposed Action, with fewer acres within trailing corridors. The Jarbidge Wildfire Fuel Breaks Project would have additive impacts during plant establishment but the beneficial long term impacts would be similar. The countervailing effects of noxious weed control and vegetation treatments would be increased due to the reduction of trailing corridors in Alternative 3.

Threatened, Endangered, and Sensitive Fish

No Action

ESA-Listed Fish: Jarbidge River Bull Trout and Designated Critical Habitat

Direct and Indirect Effects

In the No Action Alternative, there would be no livestock trailing corridors that would cross bull trout occupied streams or their designated critical habitat. The East Fork Jarbidge River designated livestock crossing would not be used to move livestock to and from the Wilkins Island Allotment in the spring and the fall. This would eliminate one location where livestock trailing has a direct impact on bull trout and their designated critical habitat (see Alternative 2, Bull Trout and their designated critical habitat).

One potential effect to bull trout from the No Action Alternative would be the increased use of trucking livestock between authorized grazing use areas. However, the anticipated increase in vehicle traffic would not have adverse impacts to threatened, endangered, and sensitive fish because trucking operations would occur on already existing roads.

Cumulative Effects

The same past, present and reasonably foreseeable future actions on Federal, State, and private lands that are described for Water Resources (No Action) also have the potential to affect Jarbidge River bull trout and designated critical habitat. Because the relationship between aquatic species, riparian condition, and water quality are interrelated, actions that affect one of these resources are likely to affect the other aquatic resources.

The No Action Alternative, combined with past, present, and reasonably foreseeable future actions would result in fewer cumulative impacts to Jarbidge River bull trout and designated critical habitat within a livestock trailing corridor than has occurred historically. Not authorizing livestock trailing would eliminate the use of the East Fork Jarbidge River as a designated crossing area which would generally improve riparian condition at the crossing and reduce impacts to bull trout and designated critical habitat. Overall, there would be a reduction in cumulative effects to Jarbidge River bull trout and designated critical habitat for the No Action Alternative.

BLM Sensitive Fish: Redband Trout

Direct and Indirect Effects

In the No Action Alternative, permits would not be issued for trailing livestock across BLM-administered lands. Impacts to redband trout and their habitat would not occur from livestock that have historically been trailed through allotments as they are moved from private land to public land or between authorized public land use areas. Where trailing use occurred on paved

road or crossed redband trout streams at bridges, the absence of livestock trailing would not have a measurable improvement in instream conditions because these areas would continue to be maintained as road rights-of-way (e.g. actions to reduce vegetation that impairs traveler safety or vegetation that threatens the integrity of the stream crossing structure (culvert, bridge, rip-rap, road shoulder)). Because these areas are maintained as road crossings, the condition of redband trout habitat at these crossings would continue to be impaired.

Existing water gaps and designated crossing areas would continue to be used under permitted grazing within an allotment. Where livestock cross streams at existing water gaps or designated fording areas, there would not likely be measurable improvement in fish bearing habitats due to the absence of permitted livestock trailing. The absence of the permitted livestock trailing would result in less livestock use for streams containing redband trout, but any improvements in instream habitat condition for redband trout would be localized and likely not measurable.

The condition of redband trout streams could be improved due to the absence of livestock trailing in areas where livestock have historically moved between allotments in areas that are not identified as water gaps or otherwise designated crossing areas. Although there would continue to be impacts to instream condition and riparian vegetation from authorized livestock grazing within an allotment, there would be a reduction in livestock use if trailing between allotments did not occur. This could result in some localized improvement in instream condition for redband trout streams over time. This level of improvement could be measurable in some locations with repeated historic trailing use but may not be measurable or apparent in all locations.

One potential result of the No Action Alternative would be the likelihood of increased use of trucking livestock between authorized grazing use areas. If more trucking does occur, trucks would use existing roads along with existing stream crossings.

Cumulative Effects

The same past, present and reasonably foreseeable future actions on Federal, State, and private lands that are described for Water Resources (No Action) also have the potential to affect redband trout and their habitat. Because the relationship between aquatic species, riparian condition, and water quality are interrelated, actions that affect one of these resources are likely to affect the other aquatic resources.

The No Action Alternative, combined with past, present, and reasonably foreseeable future actions, would result in fewer impacts to redband trout and their habitat within a livestock trailing corridor than has occurred historically. Overall, there would be a reduction in cumulative effects to redband trout and their habitat due to the absence of livestock trailing for the No Action Alternative.

Proposed Action

ESA-Listed Fish: Jarbidge River Bull Trout and Designated Critical Habitat

Direct and Indirect Effects

For the Proposed Action, no livestock trailing corridors would cross bull trout occupied streams or designated critical habitat. Therefore, no effects to ESA-listed bull trout or designated critical habitats would occur under the Proposed Action.

Cumulative Effects

The same past, present and reasonably foreseeable future actions on Federal, State, and private lands that are described for Water Resources (No Action) also have the potential to affect Jarbidge River bull trout and their designated critical habitat.

Under the Proposed Action, no livestock trailing corridors would cross bull trout occupied streams or designated critical habitat. Because the historic livestock crossing on the East Fork Jarbidge River would not continue to be used under this alternative, there would be a decrease in cumulative effects to bull trout and their designated critical habitat for the Proposed Action.

BLM Sensitive Fish: Redband Trout

Direct and Indirect Effects

For the Proposed Action, the 1.0-mile wide trailing corridors would encompass four streams containing redband trout (Table 4-13; Map 9). Two of the streams occur within the assumed impact area of a 600-foot wide RCA buffer where the trailing corridor crosses a redband trout stream.

Table 4-13. Acres of BLM Managed Redband Trout Stream within a Trailing Corridor.

Stream Name	Acres of Redband Trout Stream in 1.0-mile wide Proposed Trailing Corridor	Acres of Redband Trout Stream in 600-foot Wide Impact Area within Proposed Trailing Corridor
Clover Creek	10.5	0
Devil Creek	97.2	17.8
House Creek	11.3	--
West Fork Devil Creek	4.0	4.0
Snake River*	N/A	0
Total BLM Redband Streams	123.0	21.8

* Crossing for Snake River at Bliss Bridge not on BLM-administered lands.

The prediction of 123.0 acres of impact to riparian areas containing redband trout within the 1.0-mile wide corridor overestimates impacts to redband trout. In many instances, riparian areas are included in the trailing corridor but are not accessible to livestock due to topography or fences.

In some locations, the trailing area parallels but does not enter the RCA or cross the stream. To refine the analysis, an assumed impact area of 300 feet on either side of the trailing route was used to focus the impact area. This assumption is based on how livestock would be actively trailed through the corridors, which is in a group with the use of herders and stock dogs, instead of in an unorganized herd. The 21.8 acres of assumed impact area was used in the analysis as a realistic prediction of impacts to riparian conservation areas (RCA) containing redband trout and their habitat.

Individual redband trout could also be impacted where livestock are present within an occupied stream. Impacts to individual redband trout would include temporary displacement from habitat which increases the risk for predation. There also is a risk of trampling of individual fish when livestock are present within a stream. Livestock trailing in stream reaches containing suitable spawning habitat can pose a risk to redband trout reproduction at some times of the year (May through June, depending on water temperatures). Where livestock fording occurs across redband trout streams during spawning or egg incubation, the potential for harassment of spawning adults or damage to eggs in the gravel could occur. Livestock trailing activities that occur outside of the redband trout spawning (May through June) and egg incubation periods (June through August) would have less potential to damage eggs or newly hatched alevins that are present in streambed gravels. Once juvenile redband have emerged from the gravel, they are less likely to be harmed by livestock trailing. Livestock trailing in areas that are not suitable for redband trout spawning, such as a constructed crossing or a dewatered stream reach, are not expect to impact redband trout reproduction.

The Proposed Action would have livestock trailing corridors that cross three perennial streams on BLM-administered lands (Map 9). One of these streams (Devil Creek) contains redband trout. The Devil Creek crossing is on a gravel road with fences along the road right-of-way, so livestock only have access to the stream at the crossing and within the road right-of-way. The West Fork Devil Creek is within the assumed impact area but the livestock trailing corridor does not cross the stream. Livestock trailing across the Snake River would occur on the Bliss Bridge where livestock would not have access to the river. The use of active herding and requirement for all livestock to be removed from the RCA after crossing events is expected to minimize the impacts to redband trout at the Devil Creek crossing to those which are localized and short-term in duration.

Redband trout could be impacted due to decreases in water quality from livestock crossing activities. The water quality indicators most likely to be affected by livestock crossings are related to sediment and increases in *E.coli* within and below the crossing area. The water quality data collected to assess impacts to bull trout indicates elevated coliform levels occurred for at least 30 hours but remained within Idaho water quality standards for secondary contact recreation including fishing. Based on this data, impacts to redband trout from livestock crossings are expected to be localized and short-term in duration.

Issuing livestock crossing permits with terms and conditions is expected to minimize impacts to redband trout and their habitat. The requirement for livestock bedding/over-night areas and temporary water facilities to be at least 0.25 mile from riparian areas, and restricting livestock

trailing across riparian areas to pre-determined locations would reduce the amount of time livestock are present in the RCA and minimize impacts to redband trout and their habitat.

Cumulative Effects

The same past, present and reasonably foreseeable future actions on Federal, State, and private lands that are described for Water Resources (No Action) also have the potential to affect redband trout and their habitat. Because the relationship between aquatic species, riparian condition, and water quality are interrelated, actions that affect one of these resources are likely to affect the other aquatic resources.

Cumulative impacts to redband trout and their habitat from the Proposed Action would include impacts from trailing livestock across one redband trout stream (Devil Creek) and the associated trailing impacts to 21.8 acres redband RCA. The cumulative effect of the Proposed Action, combined with other past and present and reasonably foreseeable future activities within the JFO, are not expected to be significant for redband trout or their habitat.

Alternative 2

ESA-Listed Fish: Jarbidge River Bull Trout and Designated Critical Habitat:

Direct and Indirect Effects

Bull Trout:
For Alternative 2, there would be one livestock trailing corridor that would cross a stream containing ESA-listed bull trout or their designated critical habitat. The crossing allows livestock to cross the East Fork Jarbidge River in the spring and again in the fall as livestock are moved to and from the Wilkins Island Allotment. To facilitate an orderly crossing, livestock are moved in two separate groups for the spring and fall crossings (e. g., approximately 400 -500 cattle for each crossing event). The spring crossing generally occurs in May or early June before spring run-off and the fall crossing occurs in September or mid-October. Livestock crossings would only occur at the designated crossing area with the use of herders to ensure all livestock cross at the approved area and are then removed from the RCA after the crossing is completed.

The BLM, in cooperation with the U.S. Fish and Wildlife Service (FWS), consider the designated fording area as seasonally occupied migratory bull trout habitat (spring but not fall) (FWS Biological Opinion (BO) (OALS#: 1-5-03-F-114). The FWS BO also determined that bull trout were not likely to be present in the crossing area during the fall because the crossing events were likely to occur when bull trout were in their spawning areas which are located more than 12 miles upstream of the crossing. Because bull trout individuals are not likely to be present in the crossing area when livestock are present, the primary impacts from the livestock trailing are related to impacts to bull trout critical habitat which are described under Critical Habitat below.

The livestock crossing events in the spring would occur when there is potential for bull trout to be in the crossing area. Therefore, there is the potential for adverse impacts to individual bull trout. Adverse effects to bull trout would include harassment or displacement during livestock

crossing activities or inadvertent trampling of individuals when livestock are in the stream. Impacts to bull trout could also occur indirectly as a result of impacts to instream habitats and streamside vegetation when livestock are present within the RCA. The impacts to the RCA from livestock crossings of the East Fork Jarbidge River would be the same as those described for the Proposed Action, Riparian Areas and Wetland. ESA consultation with the FWS for the spring livestock crossings and critical habitat will be completed prior to future use of the East Fork crossing.

To assess impacts to water quality, the BLM conducted water quality monitoring prior to and following the livestock crossing on the East Fork Jarbidge River (October 1997). Samples were taken prior to the crossing, one hour following the crossing, and 30 hours following the crossing. Water samples were taken within the crossing and 100 meters below the crossing. With the exception of coliform bacteria, measurements for pH, turbidity, phosphates, and nitrates returned to near baseline levels within one hour of the crossing. Coliform levels were elevated for at least 30 hours, but remained within Idaho water quality standards for secondary contact recreation including fishing. Based on this data, impacts to bull trout related to water quality from the crossing are expected to be localized and short-term in duration. Because the crossings in the spring and fall are conducted in the same manner (same numbers of livestock and same designated crossing area) and in compliance with existing ESA consultation with FWS, the impacts to bull trout related to water quality are expected to be the same for each crossing event.

The BLM also considered the impacts to bull trout and designated critical habitat from a livestock trailing corridor into the Bruneau River canyon near Indian Hot Springs. Livestock are trailed from the 71 Desert Allotment down the Indian Hot Springs Road to a private land inholding along the Bruneau River. Livestock trailing occurs in the spring (February/March) and in the fall (November) by approximately 1000 cattle. This livestock trailing event would impact <0.1 mile of Bruneau River (2.3 acres of RCA) on BLM-administered lands (Table 4-8). The impacts to riparian vegetation along the Bruneau River related to this livestock trailing event would be the same as described for the Proposed Action, Riparian Areas and Wetlands. Because the actual livestock crossing occurs on private land, the potential direct and indirect impacts of livestock trailing across private land designated critical habitat were considered as a cumulative effect.

Designated Critical Habitat:

The BLM, through the ESA consultation with the FWS, identified the designated livestock crossing area on the East Fork Jarbidge River as a source of direct and indirect impacts to critical habitat due to sediment and nutrient inputs (*E.coli*). The impact area extended from the crossing downstream for approximately 0.1 mile to the town of Murphy Hot Springs. The 0.1 mile crossing impact area constitutes less than 0.1% of the 152.4 miles of bull trout critical habitat located within the Jarbidge Watershed. The BLM has also considered the impacts to critical habitat for bull trout from the livestock trailing corridor into the Bruneau River canyon near Indian Hot Springs. This livestock trailing would impact <0.1 mile (2.3 acres) of Bruneau River RCA on BLM-administered lands (Table 4-8).

The evaluation of impacts to bull trout critical habitat analyzed the effects of livestock crossings on the primary constituent elements (PCEs) of the critical habitat and Bull Trout Matrix of

Pathways and Indicators (matrix) developed by the FWS (USFWS 1998). The matrix contains 23 indicators, four of which are tied to subpopulation characteristics and 19 which are tied to habitat (Appendix B). The relationship between the effects of the action (livestock trailing) and the effects of the action on the PCEs for critical habitat are summarized below. Additional information on the effects of livestock trailing on ESA listed-bull trout and their designated critical habitat are included in the Livestock Trailing Biological Assessment in the project file at the BLM Jarbidge Field Office in Twin Falls, Idaho.

Livestock trampling generally decreases soil cover. As grazing intensity increases, biological crusts decline (Belnap et al. 2001), and soils are exposed to erosion. Eroding soils are then likely to be transported to stream channels where they can increase turbidity and fines in the substrate (PCEs 1, 2, 3, 4, and 6) in streams that are bull trout critical habitat. Trampling also increases soil compaction which results in decreased infiltration (Belsky et al. 1999). Decreased infiltration results in more rapid runoff (PCE 8) and decreased water storage (PCEs 1 and 8) which ultimately results in decreased base flows.

Livestock accessing streams to water or to forage along the stream alter streambanks, exposing soil to erosion, destroying overhanging banks, and potentially destabilizing banks (PCEs 1, 3, 4, 5, 6, 7, and 8) which may lead to channel widening (PCE 4) and reduced pool depth (PCE 4) (Bowers et al. 1979, Leonard et al. 1997). As channels widen, habitat is simplified (PCE 4), and cover (PCE 4) is reduced. Persistent heavy grazing in riparian areas results in changes in plant species composition from riparian-dependent species to more xeric species which results in weakened root masses for bank stability and decreased stream shade (Bowers et al. 1979, Kaufman and Krueger 1984). Decreased stream shade is ultimately likely to result in increases in stream temperature (PCE 8). Riparian vegetation delivers organic material to the stream, which accounts for a significant amount of a stream's nutrient energy (Cummins 1974). Material provided by riparian vegetation is a primary source of food for aquatic invertebrates (PCE 3) which are an important source of food for bull trout. Livestock grazing that reduces stubble height below 4 inches will likely lessen the sediment trapped by herbaceous vegetation (Clary and Webster 1989, Leonard et al. 1997), reduce ground cover, and increase soil compaction (Bowers et al. 1979) and degrade water quality (Bowers et al. 1979, Fleischner 1994, Belsky et al. 1999). In addition, cattle standing and walking in streams displace substrate, potentially affecting its suitability for spawning or its use as cover by juvenile bull trout.

Cumulative Effects

The same past, present and reasonably foreseeable future actions on Federal, State, and private lands that are described for Water Resources (No Action) also have the potential to affect bull trout and designated critical habitat. Because the relationship between aquatic species, riparian condition, and water quality are interrelated, actions that affect one of these resources are likely to affect the other aquatic resources.

The impacts to bull trout and designated critical habitat from Alternative 2 include trailing livestock across one bull trout stream (East Fork Jarbidge River) and trailing livestock through the RCA of the Bruneau River on BLM-administered lands. The effects of these trailing events, combined with past, present and reasonably foreseeable future actions would be for a localized,

short-term cumulative effect to bull trout and their critical habitat. Compliance with the existing ESA consultation for activities associated with these livestock crossings would minimize the impacts to Jarbidge River bull trout and designated critical habitat below levels that are significant.

BLM Sensitive Fish: Redband Trout

Direct and Indirect Effects

For Alternative 2, the 1.0-mile wide trailing corridors would encompass 18 streams containing redband trout (Table 4-14; Map 10). Ten of these streams are within the assumed impact area of a 600-foot wide RCA buffer where a trailing corridor crosses a redband trout stream.

Table 4-14. Acres of BLM Managed Redband Trout Stream within a Trailing Corridor.

Stream Name	Acres of Redband Trout Stream in 1.0-mile wide Proposed Trailing Corridor	Acres of Redband Trout Stream in 600-foot Impact Area within Proposed Trailing Corridor
Bear Creek	5.8	0
Big Flat Creek	126.6	6.8
Bruneau River*	4.3	2.3
Cedar Creek	19.8	0
Chimney Creek	17.0	8.0
China Creek	111.4	17.1
Clover Creek	10.5	0
Deadwood Creek	17.2	3.1
Deer Creek (Trib. to Three Cr)	<0.1	0
Devil Creek	97.2	17.8
East Fork Jarbidge River	4.4	4.4
Flat Creek	13.5	0
House Creek	11.3	0
Pole Creek (Trib. to Flat Cr)	64.3	15.7
Salmon Falls Creek	9.6	2.4
Sheep Creek	<0.1	0
Spring Creek	0.8	0
West Devil Creek	14.8	10.9
Snake River*	N/A	N/A
Total BLM Redband Streams	<528.7	88.5

* Crossing of Snake River at Bliss Bridge and Bruneau River not on BLM managed land.

For Alternative 2, the prediction of 528.7 acres of impacts to riparian area containing redband trout for the 1.0-mile wide corridor overestimates impacts to redband trout and their habitat. In many cases, riparian areas included in the 1.0-mile wide trailing corridor are not accessible to livestock due to topography or fences. In some locations, the trailing area parallels but does not

enter the RCA or cross the stream. To focus the analysis, an impact area of 300 feet on either side of trail routes was assumed. The 88.5 acres of impact area was used in the analysis as a realistic prediction of impacts to RCA containing redband trout and their habitat.

In Alternative 2, the impacts to redband trout and their habitat from livestock trailing within riparian areas would be the same as is described for the Proposed Action except the impacts for Alternative 2 would occur over a broader area. The assumed impact area for redband trout in the Proposed Action would be 21.8 acres and 88.5 acres for Alternative 2. Alternative 2 would have the potential to impact an additional 66.7 acres of redband trout habitat (i.e. RCA containing redband trout) that would occur for the Proposed Action. These additional acres occur in the southern portion of the JFO where redband trout are the most abundant.

For Alternative 2, livestock trailing corridors would cross seven perennial streams which contain redband trout. For these streams, five crossings are on gravel roads (Big Flat, Chimney, China, Devil, and Pole Creeks), one is on a paved road (Salmon Falls Creek, near Roseworth), and one is at historic designated crossing area (East Fork Jarbidge River). All crossings except for the East Fork Jarbidge River crossings are on roads that are fenced along the road right-of-way so livestock only have access to the width of the ROW (50 feet). The use of active herding and requirement for all livestock to be removed from the RCA after crossing events is expected to minimize the impacts to redband trout at six of the stream crossings to those which are localized and short-term in duration.

Redband trout occupy the East Fork Jarbidge River year-round as spawning, rearing, foraging and over wintering habitat. Redband trout may be present in the designated crossing area when livestock are trailed through the crossing in the spring (late May/early June) and in the fall (late September/early October). The impacts to individual redband trout during these crossings includes temporary displacement from the designated crossing area into adjacent but unaffected habitats or direct harm due to trampling.

Impacts to redband trout related to individual displacement would be short-term (approx. 20-30 minutes), localized (displaced from 100 foot wide crossing area) and would occur approximately four times a year (twice in the spring/and in the fall). The habitat upstream of the designated crossing is virtually undisturbed and has abundant pools, hiding cover and forage for redband trout. Any temporarily displaced redband trout would have access to this habitat until the disturbance at the designated crossing has ceased. The habitat below the crossing also provides good habitat for any displaced fish. This reach of the East Fork has had more disturbances due to private land uses (Murphy Hot Springs) and roads (East Fork road, use and maintenance) and would have the added short-term impact of sediment and nutrients during and after livestock cross the stream. Overall, any redband trout that are present in the crossing are likely to leave the crossing and avoid the potential for being physically harmed or trampled. The use of herders to ensure all livestock cross at the designated area and are removed from the RCA after the crossing is completed would limit impacts to individual redband trout to the extent possible. Impacts are expected to be below levels that would have a measurable decline in redband trout populations in the East Fork Jarbidge River.

During the spring livestock crossing time period, there is the potential for the livestock crossing events to occur when water temperatures and streamflows are suitable for redband trout spawning. Redband trout spawning generally occurs from May through June but varies between years due to water conditions such as temperature and the timing of spring runoff. Redband trout prefer habitats with large pools (1-1.3 feet deep) that span half the width of the stream and adjacent to the thalweg (deepest part of the stream), stable streambanks (>80%), and water temperatures from 50-68ºF (Muhlfeld 2002). Spawning and egg incubation occurs in stream substrates with low fines. Although the livestock crossing would occur during redband trout spawning, the habitat conditions for spawning and incubation generally do not occur at the designated crossing. The crossing area does not have deep pools adjacent to suitable spawning habitat which are preferred by redband trout. The abundance of quality spawning habitat in the upper East Fork Jarbidge River above the designated crossings is more likely to provide recruitment to redband trout populations in the East Fork than the less suitable habitats that occur within or immediately below the designated crossing. The potential for impacts to spawning redband trout cannot be completely discounted at the crossing, but any impacts that occur to reproduction related to livestock trailing are not expected to result in a measurable decline in redband trout populations in the East Fork Jarbidge River.

Indirect effects to spawning habitat or reproduction (eggs, hatchlings) may occur to the suitable redband trout spawning habitat that exists below the crossing. Although the potential for impacts exists, they are expected to be short-term and not measurable due to the limited number of crossings (four events) localized area affected (approx. 100 foot wide crossing area), and the short duration of the crossings (approx. 20 minutes each). The use of active herding and requirement for all livestock to be removed from the RCA after crossings minimizes impacts to redband trout and their spawning, rearing, foraging and over-wintering habitat to levels that are localized and short-term in duration.

Impacts to redband trout and their habitat from a livestock trailing corridor into the Bruneau River canyon near Indian Hot Springs were also considered. Livestock are trailed from the 71 Desert Allotment down the Indian Hot Springs Road to private land along the Bruneau River. Livestock trailing occurs in the spring (February/March) and in the fall (November) by approximately 1000 cattle and is a supervised trailing with the use of riders. The actual livestock crossing occurs on private land, but trailing livestock could access 2.3 acres of RCA on BLM land along the Bruneau River (Table 4-14). The impacts from the livestock crossing on private land were included in the cumulative effects assessment for this alternative.

Redband trout occupy the Bruneau River year-round as spawning, rearing, foraging and over wintering habitat and are likely to be present in the river reach affected by the spring and fall livestock crossings. The impacts to the Bruneau River from livestock trailing within the RCA are expected to be localized and short-term in duration. Livestock trailing would primarily occur on an existing road and would be supervised by riders which would limit the potential for livestock to access the Bruneau River RCA on BLM. Impacts to redband trout individuals from this trailing event are expected to be minimal and below levels that are measurable because livestock would generally not enter the Bruneau River on BLM. The segment of the Bruneau River affected by this trailing event does not have the spawning habitat conditions preferred by

redband trout, and the crossings would not occur during redband spawning or egg incubation periods. Therefore, reproduction is not expected to be affected by this livestock trailing event.

Livestock crossing activities can impact redband trout due to decreases in water quality. The impacts to redband trout related to water quality (sediment and coliform bacteria increases) would be the same as described for Alternative 2, Bull Trout and Designated Critical Habitat, except impacts would occur over a broader area (7 stream crossings). Overall, impacts to redband trout related to water quality from the crossing events are expected to be localized and short-term in duration.

Issuing livestock crossing permits with terms and conditions is expected to minimize impacts to redband trout occupied streams. The requirement for livestock bedding/over-night areas and temporary water facilities to be at least 0.25 mile from riparian areas, and restricting livestock trailing across riparian areas and wetlands to pre-determined locations would reduce the amount of time livestock are present in the RCA and therefore would reduce impacts to redband trout streams. It is likely that the reduced impacts from applying these requirements would be greater in Alternative 2 than for the Proposed Action because they would be applied across a broader area.

Cumulative Effects

The same past, present and reasonably foreseeable future actions on Federal, State, and private lands that are described for Water Resources (No Action) also have the potential to affect redband trout and their habitat. Because the relationship between aquatic species, riparian condition, and water quality are interrelated, actions that affect one of these resources are likely to affect the other aquatic resources.

For Alternative 2, cumulative impacts to redband trout and their habitat would occur at the seven locations (88.5 acres redband RCA) where livestock trailing corridors cross a redband trout stream. The effect of Alternative 2, combined with past, present, and reasonably foreseeable future actions, is that more miles of redband trout habitat would be affected by livestock trailing than would be expected for the Proposed Action (1 crossing, 21.8 acres of RCA along redband trout streams). Therefore, there would be an increase in cumulative effects to redband trout due to livestock trailing for this alternative. Authorizing livestock trailing within corridors with terms and conditions for riparian areas is expected to minimize impacts to redband trout and their habitat.

Alternative 3

ESA-Listed Fish: Jarbidge River Bull Trout and Designated Critical Habitat:

Direct and Indirect Effects

Under Alternative 3, there would be no livestock trailing corridors that would cross bull trout occupied streams or bull trout designated critical habitat. Therefore, no effects to ESA-listed bull trout or their designated critical habitats would occur for Alternative 3.

Cumulative Effects

For Alternative 3, there would be no livestock trailing corridors that would cross bull trout occupied streams or their designated critical habitat. Because there are no direct or indirect effects to bull trout or critical habitat, there would be no cumulative effects.

BLM Sensitive Fish: Redband Trout

Direct and Indirect Effects

In Alternative 3, the proposed 0.25-mile wide livestock trailing corridors would encompass two streams containing redband trout (Table 4-15; Map 11). Only one of these streams (Devil Creek) occurs within the 600-foot assumed impact area for the 0.25-mile wide trailing corridor.

Table 4-15. Acres of BLM Managed Redband Trout Stream within a Trailing Corridor.

Stream Name	Acres of Redband Trout Stream in 0.25-mile wide Proposed Trailing Corridor	Acres of Redband Trout Stream in 600-foot Impact Area within Proposed Trailing Corridor
Clover Creek	1.5	0
Devil Creek	30.0	14.3
Snake River *	N/A	0
Total BLM Redband Stream	31.5	14.3

* Crossing of Snake River at Bliss Bridge not on BLM managed land.

For Alternative 3, the predicted impacts to 31.5 acres of riparian area containing redband trout for the 0.25-mile wide corridor overestimates impacts to redband trout and their habitat. The assumed impact area of 300 feet on either side of trail routes as described for the Proposed Action was used to focus the impact area. For Alternative 3, the assumed impact area for redband trout is 14.3 acres of RCA. This is less redband trout habitat than would be impacted from the Proposed Action (21.8 acres redband RCA) or Alternative 2 (88.5 acres redband RCA).

For Alternative 3, the impacts from livestock trailing within riparian areas containing redband trout and the duration of trailing events are the same as described in the Proposed Action except the impacts would occur over a smaller area. In Alternative 3, livestock trailing corridors would cross three perennial streams with one of the streams containing redband trout (Map 11, Table 4-15). The crossing (Devil Creek) occurs on a gravel road where livestock cross the stream at a culvert and are confined to the 50-foot road right of way with fences. The use of active herding and requirement for all livestock to be removed from the RCA after crossing events is expected to result in impacts to redband trout in Devil Creek that are localized and short-term in duration.

The impacts to redband trout related to water quality for Alternative 3 would be the same as is described for Alternative 2, Bull Trout and Designated Critical Habitat, except the impacts would occur over a smaller area. Overall, impacts to redband trout related to water quality from the crossing are expected to be localized and short-term in duration.

Issuing livestock crossing permits with terms and conditions is expected to minimize impacts to redband trout occupied streams and their habitat. The requirement for livestock bedding/over-night areas and temporary water facilities to be at least 0.25 mile from riparian areas, and restricting livestock trailing across riparian areas and wetlands to pre-determined locations would reduce the amount of time livestock are present in the Devil Creek RCA and therefore would reduce impacts to redband trout and their habitat.

Cumulative Effects

The same past, present and reasonably foreseeable future actions on Federal, State, and private lands that are described for Water Resources (No Action) also have the potential to affect redband trout and their habitat. Because the relationship between aquatic species, riparian condition, and water quality are interrelated, actions that affect one of these resources are likely to affect the other aquatic resources.

Alternative 3, combined with past, present, and reasonably foreseeable future actions, would have fewer cumulative impacts to redband trout streams (1 redband trout stream crossing; 14.3 acres redband RCA affected) than would be expected for the Proposed Action (1 redband trout stream crossing; 21.8 acres redband RCA affected) and for Alternative 2 (7 redband trout stream crossings; 88.5 acres redband RCA affected). Alternative 3 would have a decreased potential for cumulative effects to redband trout due to livestock trailing. Authorizing livestock trailing within corridors and with terms and conditions for riparian areas is expected to further reduce the potential for cumulative impacts to redband trout and their habitats within the JFO.

Threatened, Endangered, and Sensitive Wildlife

No Action

Direct and Indirect Effects

Under the No Action Alternative, crossing permits would not be issued and trailing would not take place. Trailing could continue on state and private land but the crossing of BLM-administered lands would not be authorized as it has in the past. Livestock grazing would still take place and there would still be a need to move livestock between allotments, and this is likely to take place by trucking. Effects to sensitive wildlife species would vary depending on the time of year and the location of trucking operations. Effects to sensitive wildlife species from trucking might include disturbance as trucks drive by and possible death if animals attempt to cross in front of trucks. The extent of the effect depends on the numbers of trucks used, the speed at which trucks travel, timing of trucking, and the habitat through which the trucks would be used. Despite the uncertainty for the extent, the effects are expected to be minimal because some trucking already occurs.

Cumulative Effects

Crossing permits would not be issued but livestock grazing would still take place and there would still be a need to move livestock between allotments. This is likely to take place by trucking which would occur on existing roads where motorized vehicle use already occurs. There are no expected incremental effects to sensitive wildlife species because motorized use already occurs on the existing roads and the amount of additional use from trucking livestock is small.

Proposed Action

Direct and Indirect Effects

Livestock trailing impacts sensitive wildlife through disturbance of individuals or groups during breeding and nesting and habitat modification. The type and intensity of effects depend on factors such as class of livestock, number of animals being trailed, timing of trailing, season of trailing, habitat condition, and location. Even though the corridors are 1-mile wide, effects from trailing are not expected to span the whole width. The 1-mile wide corridors allow for flexibility to avoid areas containing sensitive wildlife or their habitat to the extent possible.

Greater sage-grouse (*Centrocercus urophasianus*)

During the breeding season (March 1 to May 15), sage-grouse may be disturbed during trailing activities. Within the trailing corridors there are 12 occupied and 5 historic sage-grouse leks (Map 15). Additionally, there are 11 occupied and 1 historic leks outside the 1-mile wide corridors yet within 0.62 mile of these corridors. Historic leks are areas where males have been observed displaying in the past, yet limited data precludes determination of the lek's current status as occupied or unoccupied. Leks classified as unoccupied were excluded from the analysis. Design features to minimize impacts to sage-grouse during the breeding season (March 1 to May 15) would include avoiding trailing activities within 0.62 mile of an occupied or historic lek. If this is not feasible, trailing events would be timed to avoid the early morning and late evening hours when males are displaying (Scott 1942, Patterson 1952, Hjorth 1970, Walsh 2002). Also, livestock bedding and overnight areas would not be allowed within 0.62 mile of an occupied or historic lek. When livestock trail through an area occupied by sage-grouse, birds may flush or move to avoid oncoming livestock. The period that birds would be disturbed by trailing livestock is expected to be short in duration (less than 30 minutes) and the birds could then reoccupy the trailing route. The duration of individual cattle trailing events would be short with the majority of the events (71%) lasting 6 hours or less. The majority (60%) of individual sheep trailing events would be 5 days or less. Overall, trailing activities are expected to have a minimal impact on breeding sage-grouse since trailing activities would be short in duration, breeding occurs over a 1-2 month time period, and design features would minimize the potential for disturbance near breeding areas.

During the nesting season (April 1 to June 15), there is a potential for a nest to be trampled or for a hen to flush from an active nest (Beever and Aldridge 2011). Sage-grouse usually nest under dense sagebrush (Patterson 1952, Gill 1965, Wallestad and Pyrah 1974, Petersen 1980, Drut et al. 1994, Gregg et al. 1994, Sveum et al. 1998) and under larger shrubs (Wakkinen 1990, Gregg

1991, Fischer 1994, DeLong et al. 1995, Holloran 1999) with higher sagebrush canopy cover when compared to available habitats (Wallestad and Pyrah 1974, Sveum et al. 1998, Holloran 1999, Lyon 2000, Slater 2003, Holloran et al. 2005). Sagebrush habitat with the highest potential for use by sage-grouse (greater than 10% canopy cover) has been mapped as key sage-grouse habitat. There are 11,368 acres of key sage-grouse habitat (Map 15) included in the Proposed Action. This represents an upper limit of potential acres that could be impacted during trailing activities. With the assumption that most trailing activity would occur within 300 feet on either side of the trail route, the assumed impact area encompasses 1,508 acres of key sage-grouse habitat. Trailing within key habitat would occur along 8.9 miles of primitive roads and 0.1 mile would be cross county. The only cross-country route through key sage-grouse habitat would be located near Antelope Spring. Design features to minimize impacts to sage-grouse during the nesting season include avoiding sagebrush during trailing activities, livestock overnight activities, and when placing temporary water troughs to the extent possible. The potential for nest trampling or for a hen to flush from an active nest is low since design features encourage avoidance of sagebrush during the nesting period and trailing within key habitat would occur mainly on existing roads. Where avoidance of sagebrush is not possible (e.g., cross-country route through key habitat), livestock tend to move around sagebrush rather than directly through it where nesting usually occurs. Should a hen flush from a nest, one or more eggs may be knocked out of the nest when the hen flushes, if it's cold or wet eggs may become chilled resulting in nest failure (Coates 2007). Sage-grouse could also be affected by habitat modification (trampling, rubbing, and consumption); however, little habitat modification is expected because livestock would mostly be traveling on or near roads, events would be short in duration, and livestock do not consume much forage while trailing. Avoidance of roads by grouse has been documented (Lyon and Anderson 2003), further minimizing the potential for impacts.

Livestock trailing events occurring outside the breeding and nesting season (mid-June to late February) are expected to have negligible impacts to sage-grouse. Sage-grouse chicks are capable of movement after hatching and can fly by mid-June (Schroeder et al. 1999), and may flush or move to avoid oncoming livestock.

Columbian sharp-tailed grouse (*Tympanuchus phasianellus columbianus*)

Only one Columbian sharp-tailed grouse lek occurs within a proposed trailing corridor. Near the lek, the trailing route follows a road that is fenced on both sides. The potential for impacts are negligible since trailing would occur within the fenced area along the road.

Ferruginous hawk (*Buteo regalis*)

Ferruginous hawks are sensitive to human disturbance (Olendorff and Stoddard 1974, Fyfe and Olendorff 1976, Woffinden and Murphy 1977, White and Thurow 1985) and are prone to abandon their nests if disturbed during incubation. Nest desertion generally does not occur when there are nestlings in the nest (White and Thurow 1985). Within the proposed trailing corridors there are 6 known ferruginous hawk nests. To minimize disturbance to nesting ferruginous hawks (February 1 to July 31), trail routes would avoid isolated junipers where the majority (80%) of known nests are located. The only known nest outside a juniper occurs on a rock point located in a side drainage near Sailor Cap Butte (0.25 mile from the trailing route). Nest

abandonment should not occur since trailing routes would avoid isolated junipers during breeding and incubation and the nest near Sailor Cap Butte is inaccessible to livestock trailing.

Prairie falcon (*Falco mexicanus*)

Within the proposed trailing corridors there are two known prairie falcon nests. One nest is located on a rock ledge that is inaccessible to livestock trailing near Sailor Cap Butte (0.20 mile from trailing route). The other nest is located on a rock ledge that is inaccessible to livestock trailing in Clover Creek Canyon (0.18 mile from trailing route). Livestock trailing events are expected to have negligible impacts on nesting prairie falcons since they primarily nest on canyons or cliffs (Runde and Anderson 1976).

Willow flycatcher (*Empidonax traillii*)

Willow flycatchers typically nest in proximity to woody riparian areas and short aspen communities. Design features to minimize impacts to riparian communities include restricting livestock trailing across riparian areas and wetlands to predetermined locations and not allowing temporary watering facilities or bedding/overnight areas to occur within 0.25 mile of riparian areas. Livestock trailing events are expected to have negligible impacts on willow flycatcher populations since design features minimize impacts to riparian communities.

Lewis' woodpecker (*Melanerpes lewis*)

No Lewis woodpecker habitat occurs within the proposed trailing corridors.

Brewer's sparrow (*Spizella breweri*), loggerhead shrike (*Lanius ludovicianus*), sage sparrow (*Amphispiza belli*)

Brewer's sparrow, loggerhead shrike, and sage sparrow occupy sagebrush-steppe habitat for foraging and nesting activities (nesting occurs from April to early July). Within the proposed trailing corridors there are 23,364 acres of native shrubland. With the assumption that most trailing activity would occur within 300 feet on either side of the trail route, the assumed impact area encompasses 3,318 acres of native shrubland. Design features that protect sage-grouse and sagebrush habitats would decrease the potential for impacts to these shrub-nesting bird species. The potential for nest trampling to occur by livestock trailing is low since design features encourage avoidance of sagebrush. Where avoidance is not possible (e.g., no way around sagebrush stand within the designated route), livestock tend to move around brush rather than directly through it where nesting usually occurs (Baicich and Harrison 1997). Brewer's sparrow and sage sparrow generally nest within shrubs while loggerhead shrikes build their nests on outer portions of shrubs where they would be more vulnerable to damage from trailing activities (Baicich and Harrison 1997). Re-nesting by these bird species is common (Cade and Swem 1995, Martin and Carlson 1998, Chalfoun and Martin 2007), further minimizing the potential for impacts. Outside the nesting season impacts would be negligible since birds could move to avoid oncoming livestock or species have migrated from the area (August).

Pygmy rabbit (*Brachylagus idahoensis*)

Within the proposed trailing corridors there are three known occupied pygmy rabbit locations. No other occupied locations are known to occur along any of the proposed corridors, but systematic surveys have not been conducted in the majority of the project area. Trailing routes would avoid areas occupied by pygmy rabbits to the extent possible. Design features specific to protecting sage-grouse and sagebrush habitats would decrease the potential for impacts to pygmy rabbits. The potential for burrow trampling and collapse is low since design features encourage avoidance of sagebrush and areas occupied by pygmy rabbits. Rabbits have multiple burrow entrances (Weiss and Verts 1984) and should be able to escape if a burrow is trampled or collapses. Overall there would be no measurable impact on pygmy rabbit populations from trailing activities.

Piute ground squirrel (*Spermophilus mollis*)

Squirrels are active from late February until July (exact dates vary by seasonal weather conditions and elevation) and may be disturbed during trailing activities. Disturbance would cause squirrels to retreat to their burrows. The potential for burrow trampling and collapse from livestock trailing is low. Squirrels have multiple burrow entrances (Yensen and Hammerson 2008) and should be able to escape if a burrow is trampled or collapses. When squirrels are hibernating or aestivating in underground burrows (approximately July to late February) impacts from trailing activities would be negligible (Yensen and Hammerson 2008).

California bighorn sheep (*Ovis canadensis californiana*)

Disease is a factor limiting bighorn sheep populations. Pneumonia is the primary disease that has an impact on bighorn sheep populations. Bighorn sheep are vulnerable to organisms carried by healthy domestic sheep and goats and once these organisms are transmitted there is no effective treatment. Transmission requires nose-to-nose contact or transfer of mucus through coughing or sneezing (USDA 2006). Design features to minimize impacts to bighorn sheep include not allowing domestic sheep/goats trailing to occur within 9 miles of occupied bighorn sheep habitat, and avoiding cattle trailing activities in bighorn sheep lambing areas (April 15 to June 15). Year-round bighorn sheep habitat within the Jarbidge and Bruneau Canyons are greater than or equal to 9 miles from any JFO domestic sheep allotments and are greater than or equal to 7 miles from any Forest Service domestic sheep allotments (Table 4-16). Proposed sheep trailing corridors are greater than or equal to 13 miles from year-round bighorn sheep habitat (Map 16). Proposed cattle trailing corridors are greater than or equal to 4 miles from year-round bighorn sheep habitat. Cattle are not known to transmit pnemonia to bighorn sheep. Bighorn sheep in this area do not exhibit seasonal migratory movements (IDFG 2010a). Due to the separation distance from year-round bighorn sheep habitat and domestic sheep the risk of disease transmission is low.

Table 4-16. Distance from year-round bighorn sheep habitat to allotments with permitted domestic sheep grazing.

Allotment	Distance in Miles
W. Saylor Creek	11
Twin Butte	17
Echo Hammett	9
S. Crows Nest	15
Coonskin	17
Devil Creek Balanced Rock	25
N. Balanced Rock	30
Antelope Springs	21
Pigtail Butte	23
Signal Butte	18
Cedar Creek	21
Little House Creek	17
E&W Deadwood Trap	13
Guerry Patrick	15
Cedar Butte 10	14
West Bruneau River*	7
Tennessee Mountain*	9
Wickiup*	8
Copper Basin*	9

*US Forest Service allotments. Only the 4 closest Forest Service allotments are listed.

Bruneau Dunes tiger beetle (*Cicindela waynei waynei*)

No Bruneau Dunes tiger beetle habitat occurs within the proposed trailing routes.

Comparison of Impacts by Alternative

Table 4-17. Comparison of Direct and Indirect Impacts to Sensitive Wildlife in the Project Area.

Issue	Indicator	Proposed Action	Alternative 2	Alternative 3
Sage-grouse: Lek Disturbance	Occupied leks within corridors	12	24	4
	Historic leks within corridors	5	8	4
	Occupied leks within 0.62 mi of corridors	11	21	15
	Historic lek(s) within 0.62 mi of corridors	1	9	1
Sage-grouse: Nesting Habitat Disturbed	Acres within key habitat	11,368	58,588	2,625
	Acres within key habitat for impact area (i.e., 300 ft either side of the route)	1,508	7,600	1,189
	Miles of roads within key habitat	0	42.0	0
	Miles of primitive roads within key habitat	8.9	34.1	8.6
	Miles of cross-country routes within key habitat	0.1	0.5	0.1
Raptors [A]: Nest Disturbance	Nests within corridors	FH - 6 PF – 2	FH - 11 PF - 3	FH - 0 PF – 0
Lewis woodpecker: Nesting Habitat Disturbed	Acres of aspen	0	257	0
	Acres within aspen for impact area (i.e., 300 ft either side of the route)	0	8	0
Brewer's sparrow, loggerhead shrike, and sage sparrow	Acres of native shrubland	23,364	64,937	5,826
	Acres within native shrubland for impact area (i.e., 300 ft either side of the route)	3,318	8,515	2,690
Pygmy Rabbit: Disturbance	Occupied locations within corridors	3	18	1
California Bighorn Sheep: Disease Transmission	Miles from domestic sheep trailing to year-round bighorn sheep habitat	13	≥ 9	≥ 9
Bruneau Dunes tiger beetle	Miles from historically occupied habitat		≥ 0.1	

[A] Ferruginous Hawk = FH, Prairie Falcon = PF

The values shown represent an upper limit of potential acres, nests, habitat, etc. that could be impacted during trailing activities. Design features that minimize impacts to sensitive species are common to all action alternatives and have been discussed.

Cumulative Effects

Cumulative effects for raptors and other birds (including Brewer's sparrow, loggerhead shrike, and sage sparrow) are discussed in the migratory bird cumulative impact section. Cumulative effects specific to sage-grouse and bighorn sheep are discussed below.

Greater sage-grouse

In the JFO, telemetry data for sage-grouse have been collected by Idaho Department of Fish and Game (IDFG). Data collected by the IDFG in the vicinity of Juniper Butte and Saylor Creek Training Ranges described average movements by sage-grouse of 8 miles with individuals located between 18 feet and 45 miles from the lek of capture (IDFG 2010b). Data collected by the IDFG in the vicinity of Brown's Bench described average movements by sage-grouse of 12-15 miles (D. Musil IDFG, personal communication). The project area was buffered by 15 miles to account for the majority of sage-grouse that may utilize the project area. After the 15-mile buffer was created, areas that do not function as sage-grouse habitat (e.g., agricultural land, elevation greater than 8,400 feet) were removed to derive the cumulative impacts analysis area for sage-grouse (Map 17). Portions of the cumulative effects area do not function as sage-grouse habitat (e.g., coniferous forests), but only elevations greater than 8,400 feet and agricultural lands were removed from consideration in the cumulative effects analysis area. Sage-grouse habitat in Nevada was not mapped due to a lack of data.

The collective effect of past actions has contributed to the existing condition of sage-grouse habitat described in Chapter 3, Affected Environment – Threatened, Endangered, and Sensitive Wildlife. The effects of ongoing and future actions pertinent to the discussion of cumulative effects to sage-grouse are summarized below.

Direct and indirect impacts from the Proposed Action were deemed minimal but could include a small impact to sage-grouse. The ongoing actions and projects identified for cumulative effects analysis included those that could synergistically interact with impacts occurring during breeding and nesting resulting from the Proposed Action. Livestock grazing, trailing, and range improvements on lands managed by the BLM would continue to move those lands toward meeting rangeland health standards by either enhancing areas for sage-grouse that are in poor condition or maintaining those areas that currently exist in good condition. Livestock management on private and state lands is expected to continue under current management. The sage-grouse local working group has funded Dixie harrowing (i.e., mechanical treatment designed to remove sagebrush) and fencing projects and similar projects are expected to continue in the future (JSGLWG 2007). Prescribed burns occur on private lands and are expected to continue in the future.

Foreseeable energy and transmission projects could have a negative effect on breeding and nesting sage-grouse through disturbance during construction and maintenance, increased avian predation on individuals and nests, habitat loss, habitat fragmentation, and increased vehicle traffic along existing and new roads. The following projects have been proposed within the cumulative impact analysis area: China Mountain Wind Energy Project, Corral Creek hydroelectric project, Gateway West transmission line, Jack Ranch wind farm, and the

Southwest Intertie Project. The China Mountain Wind Energy Project and Corral Creek hydroelectric project are proposed in the southeast corner of the planning area. The Gateway West transmission line includes several alternatives; one alternative runs through the northern part of the planning area while another alternative runs through the east central portion of the planning area. The Jack Ranch wind farm is proposed west of Rogerson. The Southwest Intertie transmission project is proposed east of highway 93.

Road and utility maintenance, recreation, and range infrastructure maintenance may result in temporary disturbance to breeding and nesting grouse.

Two proposed fuels reduction projects are expected to begin in the fall of 2012 within the cumulative impacts analysis area (Jarbidge Wildfire Fuel Breaks Project, Bruneau Fuel Breaks Project). Both projects involve planting green strips along roads which are designed to prevent wildfires from consuming large areas of sage-grouse habitat. The Jarbidge Wildfire Fuel Breaks Project would occur predominately along the same roads proposed for trailing activities. The fuel breaks are expected to result in some habitat conversion and may contribute to fragmentation. To the extent fuel breaks reduce future wildfire size they may protect sagebrush habitat in some instances which would ultimately benefit sage-grouse.

Lastly, wildfire is a natural part of the ecosystem and will continue to reduce and fragment sagebrush habitat in the future. Wildfire suppression and ESR activities will continue to occur, but locations and amounts of impacted habitat are impossible to determine. Given the interim guidance that the BLM is currently under (IM 2012-043, which mandates compliance with IM 2011-138, *Sage-grouse Conservation Related to Wildland Fire and Fuels Management*), protection of sage-grouse habitat is viewed as a high priority. Consequently, it is unknown how much sage-grouse habitat may be affected by wildfire suppression and ESR, but possible impacts will be minimized as a result of the aforementioned guidance.

Livestock grazing, trailing, range improvements, fuels reduction projects, wildfire suppression and ESR activities considered in the cumulative impacts area are expected to continue as they have in the past and will benefit sage-grouse via habitat enhancement and protection. Foreseeable energy and transmission projects could have a negative cumulative effect on sage-grouse populations. The minimal effects from this alternative, when combined with past, present, and reasonably foreseeable future energy and transmission projects and large wildfires within 15 miles of the project area, would cumulatively have a negative measurable impact on sage-grouse populations.

California Bighorn sheep

In the Bruneau Jarbidge Population Management Unit (IDFG bighorn sheep management area), survey flights for bighorn sheep have been conducted by IDFG. Observational data collected during survey flights identified the majority of groups or individuals occurred within habitat mapped as year-round habitat for bighorn sheep, 99% were within 1.62 mile of year-round habitat. The 1.62 mile buffer from year-round habitat was used as the cumulative effects analysis area (Map 18).

Direct and indirect impacts from the Proposed Action were deemed minimal but include a low risk of disease transmission to bighorn sheep. Ongoing actions and projects that place additional stressors on bighorn sheep making them more susceptible to disease were selected for the cumulative effects analysis. Dispersed recreation (e.g., fishing, hunting, and rafting) can disturb bighorn sheep, increase stress, and displace them from normal use areas, yet these impacts are not expected to measurably increase the risk of disease transmission. Idaho Fish and Game authorizes the harvest of a few rams annually (less than or equal to 5 rams). Other hunting for mule deer, pronghorn, and chukar occur in and adjoining bighorn habitat. Two special recreation permits are issued within the cumulative impacts analysis area (outfitter and guide hunting, Riverstone school hike). Additionally, 28% of the cumulative effects analysis area is within the Bruneau Jarbidge Rivers Wilderness which provides additional protection to bighorn sheep.

There are two reasonably foreseeable projects, the Murphy to Jarbidge Fiber Optic Route, and a bridge replacement on private land at Indian Hot Springs that are expected to occur within the cumulative impacts analysis area. Bighorn sheep infrequently use the canyons south of Murphy Hot Springs where the fiber optic route is proposed, and the bridge replacement is not expected to displace bighorn sheep from normal use areas, therefore these projects are not expected to increase the risk of disease associated with increased stress.

Grazing in the Bruneau and Jarbidge Canyons is not allocated within the JFO. Yet in the Bruneau Field Office, grazing by cattle is allocated for the Bruneau Canyon. Cattle grazing and range improvements are not expected to measurably increase the risk of disease transmission since cattle are not known to transmit pneumonia to bighorn sheep.

Domestic sheep or goats do not occur within the cumulative effects analysis area at this time and will not be authorized in the future on BLM-administered land within the cumulative effects analysis area. In the mid 1990's several goats and sheep were present on private land in Murphy Hot Springs. The bighorn population crashed in the late 1990's. Domestic sheep or goats that may occur on private land greatly increase the risk of disease transmission to bighorn sheep which could lead to large population mortality.

Since ongoing actions considered in the cumulative impacts area are expected to continue similar to the past, the overall combination of the minimal effects from this alternative, when combined with any from the past, present, and reasonably foreseeable future actions within the cumulative effects analysis area, are not expected to have a measurable impact on bighorn sheep populations.

Alternative 2

Direct and Indirect Effects

Impacts to sensitive wildlife species, specifically greater sage-grouse, under Alternative 2 would be similar to those described for the Proposed Action, except they would occur over a larger area. There are 24 occupied and 8 historic sage-grouse leks within Alternative 2 trailing corridors (Map 19). Additionally there are 21 occupied and 9 historic leks outside the 1 mile corridors yet within 0.62 mile. Alternative 2 has 12 more occupied and 3 more historic leks within the

corridors than the Proposed Action and 10 more occupied and 2 more historic leks within 0.62 mile. Within Alternative 2 there are 58,588 acres of key sage-grouse habitat; the majority of corridors occurring in key habitat would be located in the southern portion of the JFO and in areas around Roseworth (Map 19). This represents an upper limit of potential acres that could be impacted during trailing activities which is 47,220 acres more than the Proposed Action. With the assumption that most trailing activity would occur within 300 feet on either side of the trail route, the assumed impact area encompasses 7,600 acres of key sage-grouse habitat which is 6,092 acres more than the Proposed Action. Trailing within key habitat would occur along 42.0 miles of roads, 34.1 miles of primitive roads, and 0.5 mile would be cross-country which is 67.6 miles more than the Proposed Action. Design features to minimize impacts from the trailing of livestock within the trailing corridors would be the same as described for the Proposed Action.

Impacts under Alternative 2 would be similar to those described for the Proposed Action, except they would occur over a larger area. Alternative 2 has 18 known occupied pygmy rabbit locations, which is 15 more than the Proposed Action. Within the corridors there are 64,937 acres of native shrubland which provides habitat for sensitive bird species including: Brewer's sparrows, loggerhead shrikes, and sage sparrows. With the assumption that most trailing activity would occur within 300 feet on either side of the trail route, the assumed impact area encompasses 8,515 acres of native shrubland. Alternative 2 has 47,220 acres more native shrubland habitat and 5,197 acres more assumed impact area than was described for the Proposed Action.

Impacts to sensitive raptors under Alternative 2 would be similar to those described for the Proposed Action, except they would occur over a larger area. Alternative 2 has 11 known ferruginous hawk nests, which is 5 nests more than the Proposed Action. Alternative 2 has 3 known prairie falcon nests. Corridors would pass by the same 2 prairie falcon nests described for the Proposed Action and one nest located in Cedar Creek Canyon (0.13 mile from route, not visible from the route).

Lewis woodpecker habitat is restricted to aspen areas within the Jarbidge foothills. Within Alternative 2 corridors there are 257 acres of aspen. With the assumption that most trailing activity would occur within 300 feet on either side of the trail route, the assumed impact area encompasses 8 acres of aspen. Since Lewis woodpecker nesting occurs within cavities in large aspen (Newlon and Saab 2011), trailing events are expected to have a negligible impact.

Livestock trailing events are expected to have negligible impacts on willow flycatcher populations similar to those described for the Proposed Action.

The potential for disease transmission from domestic sheep to bighorn sheep would be similar to those described for the Proposed Action. Domestic sheep trailing would not occur within 9 miles of year-round bighorn sheep habitat (Map 16) and the risk of disease transmission is low. Two cattle trailing corridors occur in year-round bighorn sheep habitat; however, cattle trailing in these corridors does not pose a risk of disease transmission. One corridor is located along the main road to Murphy Hot Springs where bighorn sheep lambing does not occur (1.6 miles in bighorn sheep habitat). The other corridor is located along a cherry stem from the wilderness boundary to private land at Indian Hot Springs (1.8 miles in bighorn sheep habitat). Cattle

trailing would not be allowed in bighorn sheep lambing areas from April 15 to June 15. Therefore, cattle trailing is not expected to impact bighorn sheep.

Alternative 2 is the only alternative with a trailing route near historically occupied Bruneau Dunes tiger beetle habitat. About one half of the historically occupied habitat is within the trailing corridor along the northern portion of the Pot Hole road in T06S, R08E Sections 20, 21, and 28. While one half of the historically occupied habitat is within the 1-mile wide trailing corridor, the nearest potential dune habitat lies more than 0.1 mile southwest of the Pot Hole road. Trailing events would not be allowed greater than 0.1 mile from the Pot Hole road in T06S, R08E Sections 20, 21, and 28 to prevent impacts to Bruneau Dunes tiger beetle habitat. Therefore, trailing is not expected to impact Bruneau Dunes tiger beetle.

Cumulative Effects

Cumulative effects for raptors and other birds (including Brewer's sparrow, loggerhead shrike, and sage sparrow) are discussed in the migratory bird cumulative impact section. Cumulative effects specific to sage-grouse and bighorn sheep are discussed below.

Greater sage-grouse

Cumulative impacts from Alternative 2 would be more than those described for the Proposed Action since there would be an increase in the acreage and miles of trailing corridors through sage-grouse breeding and nesting habitat. Foreseeable energy and transmission projects could have a negative cumulative effect on sage-grouse populations. The minimal effects from this alternative, when combined with past, present, and reasonably foreseeable future energy and transmission projects and large wildfires within 15 miles of the project area, would cumulatively have a negative measurable impact on sage-grouse populations.

California Bighorn sheep

Cumulative impacts from Alternative 2 would be similar to those described in the Proposed Action. While minimal direct and indirect impacts may occur, they would have no measurable impact to bighorn sheep populations.

Alternative 3

Direct and Indirect Effects

Impacts to sensitive wildlife species, specifically greater sage-grouse, under Alternative 3 would be similar to those described for the Proposed Action, except they would occur over a smaller area. Within Alternative 3 trailing corridors there are four occupied and four historic sage-grouse leks (Map 20). Additionally there are 15 occupied and 1 historic leks outside the 0.25-mile wide corridors yet within 0.62 mile. Alternative 3 has eight fewer occupied and one fewer historic leks within the corridors than the Proposed Action and four more occupied leks within 0.62 mile. Within Alternative 3, there are 2,625 acres of key sage-grouse habitat (Map 20). This represents an upper limit of potential acres that could be impacted during trailing activities which is 8,743

fewer acres than the Proposed Action. With the assumption that most trailing activity would occur within 300 feet on either side of the trail route, the assumed impact area encompasses 1,189 acres of key sage-grouse habitat which is 319 fewer acres than the Proposed Action. Trailing within key habitat would occur along 8.6 miles of primitive roads and 0.1 mile would be cross-country which is 0.3 mile less than the Proposed Action. Design features to minimize impacts from the trailing of livestock within the trailing corridors would be the same as described for the Proposed Action.

Impacts under Alternative 3 would be similar to those described for the Proposed Action, except they would occur over a smaller area. Alternative 3 has 1 known occupied pygmy rabbit location, which is 2 fewer than the Proposed Action. Within the corridors there are 5,826 acres of native shrubland which provides habitat for sensitive bird species including: Brewer's sparrows, loggerhead shrikes, and sage sparrows. With the assumption that most trailing activity would occur within 300 feet on either side of the trail route, the assumed impact area encompasses 2,690 acres of native shrubland. Alternative 3 has 17,538 acres less native shrubland habitat and 628 acres less assumed impact area than was described for the Proposed Action.

Impacts to sensitive raptors under Alternative 3 would be similar to those described for the Proposed Action, except they would occur over a smaller area. Alternative 3 has no known ferruginous hawk nests, which is 6 nests less than the Proposed Action. Alternative 3 has no known prairie falcon nests. No Lewis woodpecker habitat occurs within Alternative 3 trailing corridors. Livestock trailing is not expected to impact ferruginous hawks, prairie falcon, or Lewis woodpecker populations.

Livestock trailing events are expected to have negligible impacts on willow flycatcher populations similar to those described for the Proposed Action.

The potential for disease transmission from domestic sheep to bighorn sheep would be similar to that described for the Proposed Action. Domestic sheep trailing would not occur within 9 miles of year-round bighorn sheep habitat (Map 16) and the risk of disease transmission is low. Only one cattle trailing corridor occurs in year-round bighorn sheep habitat; however, cattle trailing in this corridor does not pose a risk of disease transmission. The corridor is located along the main road to Murphy Hot Springs where bighorn sheep lambing does not occur (1.6 miles in bighorn sheep habitat).

No Bruneau Dunes tiger beetle habitat occurs within Alternative 3 trailing corridors.

Cumulative Effects

Cumulative effects for raptors and other birds (including Brewer's sparrow, loggerhead shrike, and sage sparrow) are discussed in the migratory bird cumulative impact section. Cumulative effects specific to sage-grouse and bighorn sheep are discussed below.

Greater sage-grouse

Cumulative impacts from Alternative 3 would be less than those described for the Proposed Action since there would be a decrease in the acreage and miles of trailing corridors through sage-grouse breeding and nesting habitat. Foreseeable energy and transmission projects could have a negative cumulative effect on sage-grouse populations. The minimal effects from this alternative, when combined with past, present, and reasonably foreseeable future energy and transmission projects and large wildfires within 15 miles of the project area, would cumulatively have a negative measurable impact on sage-grouse populations.

California Bighorn sheep

Cumulative impacts from Alternative 3 would be similar to those described in the Proposed Action. While minimal direct and indirect impacts may occur, they would have no measurable impact to bighorn sheep populations.

Migratory Birds

No Action

Direct and Indirect Effects

Under the No Action Alternative, crossing permits would not be issued and trailing would not take place. The potential for impacts to migratory birds by trailing livestock would not occur. Trailing could continue on state and private land but the crossing of BLM-administered lands would not be authorized as it has in the past. Livestock grazing would still take place and there would still be a need to move livestock between allotments, and this is likely to take place by trucking.

Cumulative Effects

Crossing permits would not be issued. Livestock grazing would still take place and there would still be a need to move livestock between allotments. This is likely to take place by trucking which would occur on existing roads where motorized vehicle use already occurs. There are no expected incremental effects to migratory birds because motorized use already occurs on the existing roads and the amount of additional use from trucking livestock is small.

Proposed Action

Direct and Indirect Effects

Raptors

Within the trailing corridors there are three known red-tailed hawk nests, one known Swainson's hawk nest, and three western burrowing owl burrows. There are no known golden eagle or northern harrier nests within the proposed trailing corridors. No other raptors nests or burrows are known to occur along any of the corridors. Most of the species (except for burrowing owls) nest in canyons, cliffs, or trees. Since trailing routes would avoid isolated junipers during breeding and incubation, routes next to canyon areas are few and where canyon crossings occur they are along roads, disturbance to nesting raptors would be negligible.

Burrowing owls may be temporarily disturbed (less than 30 minutes) during trailing activities, yet temporary disturbance is not likely to cause adults to abandon nests. The potential for burrow trampling and collapse is low; should a nest be destroyed early in the breeding season, re-nesting can occur (Thomsen 1971, Butts 1973, Wedgwood 1976). Overall, impacts to nesting raptors would be small from the Proposed Action, with potential for temporary displacement of individuals, but the likelihood of nest failure or abandonment is minimal with no expected impacts to the populations of these raptor species.

Table 4-18. Number of Known Raptor Nests within the Project Area.

Issue	Indicator	Alternative		
		Proposed Action	Alternative 2	Alternative 3
Raptors: Nest Disturbance	Burrowing owl burrows	3	7	2
	Ferruginous hawk nests	6	11	0
	Golden eagle nests	0	0	0
	Northern harrier nests	0	0	0
	Prarie falcon nests	2	3	0
	Red-tailed hawk nests	3	8	2
	Swainson's hawk nests	1	7	0

No other raptors nest or burrows are known to occur along any of the corridors, but systematic surveys for all raptor species have not been conducted in the majority of the project area.

Other Bird Species

During the nesting season (March 1 to July 30), there is a low potential for a nest to be trampled or damaged. Livestock bumping nest branches in shrubs may dislodge the nest or eggs from the nest. Birds that nest on the ground (e.g., grasshopper sparrow, long-billed curlew) would be more susceptible to trampling than shrub-nesting birds (e.g., sage thrasher). Ground nests placed at the base of shrubs are less likely to be trampled than nests without protection. Design features that protect sage-grouse and sagebrush habitats would decrease the potential for impacts to shrub-

nesting bird species. While there is a low potential for nest trampling or damage to occur, this is not expected to measurably impact any of these species populations.

Cumulative Effects

Direct and indirect impacts from the Proposed Action were deemed minimal but could include temporary displacement of raptors during the nesting season. Impacts to other bird species were also deemed minimal but could include a low potential for a nest to be trampled or damaged. These impacts are not expected to measurably impact populations of these species. Considering the small spatial and temporal effect, the project area was deemed appropriate to describe cumulative effects for both raptors and other bird species.

The collective effect of past actions has contributed to the existing condition described in Chapter 3, Affected Environment – Migratory Birds. Ongoing actions and projects that could impact raptors and other bird species during nesting include foreseeable energy and transmission projects, fuel treatment projects, livestock grazing, livestock trailing, range improvements, recreation, road construction, utility maintenance, and wildfire suppression and ESR activities.

Foreseeable energy and transmission projects could have an additive effect on raptors and other bird species during nesting through disturbance during construction and maintenance, habitat loss, habitat fragmentation, and increased vehicle traffic along existing and new roads.

The Jarbidge Wildfire Fuel Breaks Project scheduled for the fall of 2012 is designed to prevent wildfires from consuming large areas of sagebrush habitat. The fuel breaks are expected to result in some habitat conversion and may contribute to habitat fragmentation. To the extent fuel breaks reduce future fire size they may protect sagebrush habitat used by shrub-nesting birds. Fuel breaks would also benefit raptors which rely on prey species associated with sagebrush habitats.

Livestock grazing, trailing, and range improvements on lands under federal ownership would continue to move those lands toward meeting rangeland health standards by either enhancing areas for nesting birds that are in poor condition or maintaining those areas that currently exist in good condition. Livestock management on private and state lands is expected to continue under current management. Livestock grazing could have an additive effect on nest trampling or damage during the nesting season yet this is not expected to measurably impact any of these species populations.

Road and utility maintenance, recreation specifically off highway vehicle use, and range infrastructure maintenance may result in temporary disturbance to nesting raptors, habitat loss, habitat fragmentation, and increased vehicle traffic along existing and new roads.

Lastly, wildfire suppression and ESR activities will occur in the future, but locations and amounts of impacted habitat are impossible to determine. Given the interim guidance that the BLM is currently under (IM 2012-043, which mandates compliance with IM 2011-138, Sage-grouse Conservation Related to Wildland Fire and Fuels Management), the emphasis on protection of sage-grouse habitat will also benefit shrub-nesting birds, and raptors which rely on

prey species associated with sagebrush habitats. Consequently, it is unknown how much sagebrush habitat may be affected, but possible negative impacts to raptors associated with sagebrush-dependent prey species will be minimized as a result of the aforementioned guidance.

Impacts from the Proposed Action include a potential to briefly disturb nesting raptors and the potential for ground and shrub nesting bird species to have their nest trampled/damaged. Overall, the combination of the minimal disturbance effects and low potential for nest trampling/damage from this alternative, when combined with impacts from the past, present, and reasonably foreseeable future projects within the project area, would not cumulatively have a measurable impact on populations of raptors and other bird species.

Alternative 2

Direct and Indirect Effects

Raptors

Within the trailing corridors there are eight known red-tailed hawk nests, seven known Swainson's hawk nest, and seven western burrowing owl burrows. There are no known golden eagle nests or northern harrier nests within Alternative 2 trailing corridors. Similar to the Proposed Action, impacts to nesting raptors would be small, with potential for temporary displacement of individuals, but the likelihood of nest failure or abandonment is minimal with no expected impacts to the populations of these raptor species.

Other Bird Species

Impacts to migratory bird species under Alternative 2 would be similar to those described for the Proposed Action, except there would be a slight increase in the potential for nest trampling to occur. This slight increase is not expected to measurably impact populations of these species.

Cumulative Effects

Cumulative impacts from Alternative 2 would be more than those described for the Proposed Action since there would be an increase in the acreage and miles of trailing corridors. While minimal direct and indirect impacts may occur, they would have no measurable impact to populations of raptors and other bird species.

Alternative 3

Direct and Indirect Effects

Raptors

Within the trailing corridors there are two known red-tailed hawk nests and two western burrowing owl burrows. There are no known Swainson's hawk or golden eagle nests within

Alternative 3 trailing corridors. Similar to the Proposed Action, impacts to nesting raptors would be small, with potential for temporary displacement of individuals, but the likelihood of nest failure or abandonment is minimal with no expected impacts to the populations of these raptor species.

Other Bird Species

Impacts to migratory bird species under Alternative 3 would be similar to those described for the Proposed Action, except there would be a slight decrease in the potential for nest trampling to occur. This slight decrease is not expected to measurably impact populations of these species.

Cumulative Effects

Cumulative impacts from Alternative 3 would be less than those described for the Proposed Action since there would be a decrease in the acreage and miles of trailing corridors. While minimal direct and indirect impacts may occur, they would have no measurable impact to populations of raptors and other bird species.

Wildlife (Other than Threatened, Endangered, and Sensitive)

No Action

Direct and Indirect Effects

Under the No Action Alternative, crossing permits would not be issued and trailing would not take place. The potential for impacts to general wildlife by trailing livestock would not occur. Trailing could continue on state and private land but the crossing of BLM-administered lands would not be authorized as it has in the past. Livestock grazing would still take place and there would still be a need to move livestock between allotments, and this is likely to take place by trucking. Effects to wildlife would vary depending on the time of year and the location of trucking operations. Effects to wildlife from trucking might include disturbance as trucks drive by and possibly death if animals attempt to cross in front of trucks. The extent of the effect depends on the numbers of trucks used, timing of trucking, the speed at which trucks travel, and the habitat through which the trucks would be used. Despite the uncertainty of the extent, the effects are expected to be minimal because some trucking already occurs, trucking would occur on existing roads, and there does not appear to be any adverse effects from this activity

Cumulative Effects

Crossing permits would not be issued but livestock grazing would still take place and there would still be a need to move livestock between allotments. This is likely to take place by trucking which would occur on existing roads where motorized vehicle use already occurs. There are no expected incremental effects to wildlife because motorized use already occurs on the existing roads and the amount of additional use from trucking livestock is small.

Proposed Action

Direct and Indirect Effects

Big Game

Livestock trailing could impact big game through disturbance of individuals or groups during the winter (Nov 15-Apr 30). The Proposed Action includes 151,842 acres within trailing corridors and 4,913 of those acres are within big game winter range (Map 21). With the assumption that most trailing activity would occur within 300 feet on either side of the trail route, the assumed impact area encompasses 761 acres of big game winter range. Avoidance of roads by big game has been documented (Rost and Bailey 1979) particularly in areas within 650 feet of roads where the majority of trailing activities would occur, further minimizing the potential for impacts. Should wintering big game be disturbed by trailing livestock, disturbance is expected to be short in duration (less than 30 minutes). During the winter, four cattle trailing events are scheduled in big game winter range. No sheep trailing events have been proposed during the winter in big game winter range.

Big game could also be affected by habitat modification (trampling, rubbing, and consumption); however, little habitat modification is expected because livestock would mostly be traveling on or near roads (112 miles on road, 122 miles on primitive roads, 33 miles cross-country), events would be short in duration, and livestock do not consume much while trailing. For livestock trailing events that require overnighting or bedding areas, slightly more forage would be consumed than trampled because the animals would stop to rest for the night and there would be more time for them to graze or browse.

Trailing activities are not expected to measurably affect big game fawning and calving activities since fawning and calving occurs throughout the JFO and trailing activities during the relevant time frame would have a limited spatial scope. Overall, impacts to big game would be small from the Proposed Action, with potential for temporary displacement of individuals during the winter, yet this would not have a measurable impact on big game populations.

Table 4-19. Acres of Critical Big Game Winter Range within the Project Area.

Issue	Indicator	Alternative		
		Proposed Action	Alternative 2	Alternative 3
Big Game: Disturbance	Acres of critical winter range within corridors	4,913	30,619	1,510
	Acres within critical winter range for assumed trailing impact area (i.e., 300 ft either side of the route)	761	4,114	722

Small and medium sized mammals

Small and medium sized mammals would be affected so minimally by trailing activities that impacts would be unmeasurable; therefore, they will not be discussed.

Herptiles

Herptiles would be affected so minimally by trailing activities that impacts would be unmeasurable; therefore, they will not be discussed.

Cumulative Effects

Direct and indirect impacts from the Proposed Action were deemed minimal but could include temporary displacement of big game during the winter. Temporary displacement from trailing activities is not expected to measurably impact big game populations. Considering the small spatial and temporal effect, the project area was deemed appropriate to describe cumulative effects for big game species.

The collective effect of past actions has contributed to the existing condition described in Chapter 3, Affected Environment – Wildlife. Ongoing actions and projects that could impact big game during the winter include foreseeable energy and transmission projects, livestock grazing, livestock trailing, recreation, road construction, and utility maintenance.

Foreseeable energy and transmission projects could have an additive effect on big game through disturbance during construction and maintenance, habitat loss, habitat fragmentation, and increased vehicle traffic along existing and new roads.

Livestock grazing could have an additive effect on big game through competition for forage and temporary disturbance. Competition for forage may exist under the following conditions: 1) domestic and big-game animals are utilizing the same area, 2) forage plants are in limited supply, and 3) both domestic and big-game animals are consuming the same forage plants (Smith and Julander 1953). However, due to wildfires, herbaceous forage is not limited.

Road and utility maintenance, recreation specifically off highway vehicle use, and range infrastructure maintenance may result in temporary disturbance to wintering big game, habitat loss, habitat fragmentation, and increased vehicle traffic along existing and new roads.

Impacts from the Proposed Action include a potential to briefly disturb wintering big game and the potential for forage competition. Overall, the combination of the minimal disturbance effects from this alternative, when combined with any from the past, present, and reasonably foreseeable future projects within the project area, would not cumulatively have a measurable impact on big game populations.

Alternative 2

Direct and Indirect Effects

Big Game

Impacts to big game under Alternative 2 would be similar to those described for the Proposed Action, except they would occur over a larger area. Alternative 2 trailing corridors cover 289,722 acres of BLM-administered land and 30,619 of those acres are within big game winter range (Map 21). With the assumption that most trailing activity would occur within 300 feet on either side of the trail route, the assumed impact area encompasses 4,114 acres of big game winter range. Alternative 2 has 25,706 acres more big game winter range and 3,353 acres more assumed impact area than was described for the Proposed Action.

Small and medium sized mammals

Small and medium sized mammals would be affected so minimally by trailing activities that impacts would be unmeasurable; therefore, they will not be discussed.

Herptiles

Herptiles would be affected so minimally by trailing activities that impacts would be unmeasurable; therefore, they will not be discussed.

Cumulative Effects

Cumulative impacts from Alternative 2 would be more than those described for the Proposed Action since there would be an increase in the acreage and miles of trailing corridors. While minimal direct and indirect impacts may occur, they would have no measurable impact to big game populations.

Alternative 3

Direct and Indirect Effects

Big Game

Impacts to big game under Alternative 3 would be similar to those described for the Proposed Action, except they would occur over a smaller area. Alternative 3 trailing corridors cover 35,967 acres of BLM-administered land and 1,510 of those acres are within big game winter range (Map 21). With the assumption that most trailing activity would occur within 300 feet on either side of the trail route, the assumed impact area encompasses 722 acres of big game winter range. Alternative 3 has 3,403 acres less big game winter range and 39 acres less assumed impact area than was described for the Proposed Action.

Small and medium sized mammals

Small and medium sized mammals would be affected so minimally by trailing activities that impacts would be unmeasurable; therefore, they will not be discussed.

Herptiles

Herptiles would be affected so minimally by trailing activities that impacts would be unmeasurable; therefore, they will not be discussed.

Cumulative Effects

Cumulative impacts from Alternative 3 would be less than those described for the Proposed Action since there would be a decrease in the acreage and miles of trailing corridors. While minimal direct and indirect impacts may occur, they would have no measurable impact to big game populations.

Wild Horses

No Action

Direct and Indirect Effects

Under this alternative crossing permits would not be authorized. Thus, no direct or indirect effects to wild horses would occur. Permittees would still need to move livestock between allotments and it is assumed existing corrals, trucks and trailers would be used. Due to their size and weight, the transport vehicles would be limited to paved, graveled, or regularly maintained roads. This is not expected to have an impact on the horses, because the maintained roads within the HMA are commonly used by trucks and trailers.

Cumulative Effects

There are no direct and indirect effects from the No Action Alternative; therefore, there are no cumulative effects associated with the No Action Alternative.

Proposed Action

Direct and Indirect Effects

The Proposed Action would allow for trailing of livestock within 1-mile wide corridors. Under this alternative there are six trailing corridors that would occur within the Saylor Creek HMA, which includes approximately 10 trailing events. The effects of livestock trailing on wild horses include competition for forage that occurs along the trailing route (to a much lesser extent where

trailing occurs along a road), temporary displacement of individuals, and disturbance of herd activities such as breeding and foal rearing, due to trailing activities.

This alternative would affect 23,241 acres of forage and habitat, which is 23% of the HMA. Within the assumed impact area of 300 feet on either side of the trail route, this alternative would affect 2,890 acres, which is 3% of the HMA. Negligible impact to the forage and habitat is expected because livestock would mostly be traveling on or near roads and events would be short in duration, and livestock do not consume much forage while trailing. For livestock trailing events that require overnighting or bedding areas, slightly more forage would be consumed than trampled because the animals would stop to rest for the night and there would be more time for them to graze or browse. No bedding areas have been identified within portions of the HMA inhabited by the wild horses within this alternative.

Impacts from trailing would be negligible because most trailing activity would occur within 300 feet on either side of the trail route, thereby limiting potential for disturbing horses. Disturbance to horses by sheep trailing would be expected to be more than cattle due to sheep bands being more spread out as they are trailed, and more human activity associated with herding and camps. Impacts from sheep trailing are expected to be minimal due to the brief period of activity, and the fact the wild horses are accustomed to human presence, and more specifically to activities associated with sheep trailing and camps.

Because the horses are familiar and accustomed to human presence, activities associated with trailing (sheep camps, humans, vehicles, domestic horses, etc.) are not expected to cause additional direct stress. The potential for stress to the wild horses during sensitive times, such as foaling, should be minimal as a result of the space and topography within the HMA, which would provide a visual and spacial barrier between the home ranges and the trail routes, especially during sensitive times. Furthermore, none of the trail routes transect the Home Ranges. Individual horses may be temporarily displaced as livestock are trailed through portions of the HMA. This is not expected to cause substantial stress; the trailing events would be short in duration and the horses would likely temporarily move over a hill or swale as the livestock move through.

Cumulative Effects

The cumulative effects analysis area for wild horses is the HMA boundary. The wild horses are limited to the HMA due to fencing that restricts their movement to other areas of the JFO.

Effects of past, present and foreseeable future actions include noxious weed and invasive plant control, livestock grazing, range improvement activities, recreation use, activities associated with energy projects, Jarbidge Wildfire Fuelbreaks Project, wildfires, suppression of wildfires, and ES&R activities.

Currently and into the future the BLM plans to control invasive plants and noxious weeds, allow for livestock grazing that meets or is making significant progress with the Idaho Standards for Rangeland Health and maintain range improvements that would improve livestock grazing management within the area.

The Gateway West Transmission Line proposed routes can be found at http://www.gatewaywestproject.com/. Currently there are two different proposed routes that transect the HMA; one route crosses approximately 11 miles of the HMA, while the other crosses approximately 4 miles. During construction activity, use on roads and use of heavy equipment within the HMA would increase. The increased human activity associated with this proposed project through the HMA could increase risk of wildfire, introduction and spread of noxious weeds and invasive plant species, and increase disturbances to the horses.

The Jarbidge Wildfire Fuelbreaks Project would help break up continuous fuels and assist fire suppression efforts to reduce fire size and intensity (once fuelbreaks are established) which would reduce risks to the wild horses and the HMA by stabilizing forage availability.

Motorized recreational activity is expected to continue to increase in portions of the HMA and areas immediately adjacent. The increased presence and noise associated with motorized recreation could increase disruption of normal grazing and social behavior of the horses.

Wildfires are likely to continue to occur. In 2005 and 2010, wildfires burned enough acres within the HMA to require emergency gathers to remove all wild horses in order to maintain the health of the horses and allow for restoration and recovery of burned areas. Currently within the HMA approximately 30,000 acres are closed to livestock and wild horse grazing to allow for the recovery of burned areas and establishment of drill seeding that occurred following fires in 2010 and 2011. Though the location and size of future fires cannot be predicted, based on historic patterns, within the next 20 years, one or more large fires are likely to occur within the HMA. Suppression activities and ES&R activities will be expected following a wildfire within the HMA.

Cumulative effects on wild horses from implementing trailing as proposed would be slight. In the Proposed Action, 23,241 acres could be authorized for trailing within the HMA. The acres affected by trailing in this alternative make up less than 23% of the cumulative analysis area. However, within the assumed impact area of 300 feet on either side of the trail route, this alternative would affect 2,890 acres, which is 3% of the HMA. Because the trailing effects are short duration and are limited in size, the cumulative effects of trailing on horse forage, when combined with the past, present, and foreseeable future are anticipated to be minor.

Alternative 2

Direct and Indirect Effects

Alternative 2 would allow for trailing of livestock within 1-mile wide corridors. This alternative would affect 33,338 acres of forage and habitat, which is 33% of the HMA. This would affect 10,097 more acres and 10% more of the HMA as compared to the Proposed Action. Within the assumed impact area of 300 feet on either side of the trail route, this alternative would affect 4,164 acres, which is 4% of the HMA. Under this alternative there are eight trail corridors that occur within the Saylor Creek HMA.

The effects of Alternative 2 would be similar to the Proposed Action. There are two additional trailing corridors when compared to the Proposed Action; however, they occur within areas of the HMA that the horses do not currently inhabit so disturbance of herd activities and stress to individuals would not increase.

Cumulative Effects

Cumulative effects on wild horses from implementing trailing as proposed in Alternative 2 would similar to the Proposed Action, with slightly more acres within trailing corridors. In Alternative 2, 33,338 acres could be authorized for trailing within the HMA. The acres directly affected by trailing in this alternative make up approximately 33% the analysis area. However, within the assumed impact area of 300 feet on either side of the trail route, this alternative would affect 4,164 acres, which is 4% of the HMA.

Alternative 3

Direct and Indirect Effects

Alternative 3 would allow for trailing of livestock within 0.25-mile wide corridors. Under this alternative, there are five trailing corridors that occur within the Saylor Creek HMA. This alternative would affect 4,736 acres of forage and habitat, which is 5% of the HMA. This would affect 18,505 fewer acres and 18% less of the HMA as compared to the Proposed Action. Within the assumed impact area of 300 feet on either side of the trail route, this alternative would affect 2,196 acres, which is 2% of the HMA.

The effects of Alternative 3 would be similar to the Proposed Action, possible disturbance of herd activities and stress to individuals is not expected to increase. There is one fewer trailing corridor when compared to the Proposed Action. The narrower corridor would reduce possible disturbance of the herd and stress to individuals because less acres would be available within the corridors. Impacts from trailing would be negligible because it is assumed that most trailing activity would occur within 300 feet on either side of the trail route, thereby limiting potential for disturbing horses. Disturbance to horses by sheep trailing would be expected to be more than cattle due to sheep bands being more spread out as they are trailed, and more human activity associated with herding and camps. Impacts from sheep trailing are still expected to be minimal due to the brief period of activity, and the fact the wild horses are accustomed to human presence.

Cumulative Effects

Cumulative effects on wild horses from implementing Alternative 3 would be similar to the Proposed Action, with fewer acres available for trailing. In Alternative 3, 4,736 acres would be authorized for trailing within the HMA. The acres directly affected by trailing in this alternative make up 5% of the analysis area. However, within the assumed impact area of 300 feet on either side of the trail route, this alternative would affect 2,196 acres, which is 2% of the HMA.

Livestock Grazing

No Action

Direct and Indirect Effects

Under the No Action Alternative, crossing permits would not be issued and livestock trailing would not be authorized in the JFO.

Grazing Permittees

Forage- There would be no reduction in forage availability because trailing livestock would not trample or consume up to 1,623 AUMs (Table 2-1).

Livestock/Operational Conflicts- Trailing associated interference with permitted livestock, resource conflicts, or range facilities would not occur.

Crossing Permit Applications

Access- Because applications for crossing permits would be denied, livestock operators would need to find other means of moving their livestock on and off of Federally-managed, private, and State lands. Trucking of livestock would be a possible option for moving livestock; however, many areas of the JFO are not accessible to semi-trucks and trailers. Furthermore, truck and trailers are not always available.

Trucks hauling livestock would require minimum road conditions for safe and efficient travel. Loaded trucks (80,000 to 90,000 lbs. GVW) require maintained roads that are bladed and/or graveled. Roads would need to be firm and dry enough to support the loaded trucks without sinking or sliding off the road surface. Road conditions can often vary which limits the timing of livestock turnout or removal via truck.

Roads that are infrequently maintained may have an even narrower seasonal window for travel by trucks. Rough, rocky, unbladed roads often cause tire loss, getting stuck, and possibly tipping over loaded trucks.

Road conditions can also change rapidly, particularly during the cooler months of the years when precipitation is more frequent and road surface drying is slower. Greater damage to the road surface may occur during this time. Road conditions may be such that they are impassible or present safety hazards because of weather. Once enroute, installing tire chains may be necessary to maintain traction and control, which slows travel and can damage roads. Additionally, availability of trucks may be limited if all applicants truck livestock.

Routes suitable for trucks do not reach every destination for livestock movements associated with permitted use. Some allotments do not have roads that are suitable for trucks along routes comparable to the applications, even if the movement would occur at a time when roads have

been maintained and are dry enough for use. Some roads even when they are passable may not be accessible to livestock hauling trucks because of truck length and low clearance.

Cost- Due to the denial of crossing permits, trucking of livestock would be a likely option for moving livestock. The JFO has not had a large number of livestock operators that truck their livestock to and from allotments, due to lack of suitable roads, holding/loading facilities, animal husbandry, and cost of transportation.

Livestock trucking operations have the potential to increase stress, injury, or even death to livestock. Injuries have the potential to go untreated for some time because the livestock are stressed from the shipping and not likely to be calm enough for treatment. Trampling while loading and unloading both cattle and sheep is also common.

If sheep are hauled in the spring, both the ewes and the lambs must be loaded loosely as lambs are extremely vulnerable and life expectancy decreases as animals are crowded onto the truck. Despite loading pairs loosely, death can occur when trucking. Also, as animals are overcrowded, it becomes difficult for ewes to keep track of lambs, especially twins, in transit. Lambs may not be able to "mother-up" when they are unloaded at their destination, possibly increasing the loss of lambs.

Cost estimates for trucking depend on several factors such as whether the permittee owns semi-trucks or if they have to hire the trucking to be done, how many livestock are to be hauled, where they are being hauled to and from, how many trips would have to be made (depending on how big the trailer is, how many axles the trailer has, and how much weight the truck is registered to haul) and the price of fuel. These are costs that the livestock operators have not paid in the past and have not figured into their business costs.

Cumulative Effects

Grazing Permittees

Forage- Cumulatively, forage would continue to be available to livestock operators and no forage would be authorized to trailing. Considering past, present and reasonably foreseeable future actions, reductions in forage availability from grazing closures associated with wildfire and fuel break treatments could have minor effects on individual permittees and minor impacts to overall forage availability. Proposed energy and transmission line projects are also expected to remove vegetation/forage during construction activities; this loss of forage would last for a few years during construction and rehabilitation activities.

Livestock/Operational Conflicts- Potential disruptions associated with energy and transmission projects would have minimal short-term impacts primarily at the allotment level. Removal of livestock conflicts caused by trailing animals would have a negligible cumulative benefit relative to disruptions caused by energy and transmission development.

Crossing Permit Applicants

Access- Area closures related to wildfires, fuel break treatments, or energy and transmission developments could affect the availability of trucking routes. Routes through (i.e. wildfire or fuel break treatments) or around affected areas would generally be available.

Cost- If crossing permits were denied and operators elected to transport livestock via truck, trucking could incrementally add to the increased costs of livestock operations due to high cost along with the possible livestock loss due to stress/injury that could occur during trucking. Also, where there are closures of entire allotments or pastures due to wildfire, fuel break treatments, and/or energy and transmission developments, some routes may be unavailable to truck livestock which could also add to the cost of operations. The feasibility of trucking in areas that lack a system of improved roads and associated facilities such as corrals, holding pens, and loading chutes eliminate trucking as a feasible option in many areas of the JFO.

Proposed Action

Direct and Indirect Effects

Under the Proposed Action, livestock crossing permits in the JFO would be authorized as applied for by the livestock operators (Table 2-1, page 9). The applicants would be allowed to move livestock within a 1-mile wide trailing corridor that would be subject to specific design features (Chapter 2, page 6) to protect sensitive resources that may occur along these routes.

Grazing Permittees

Forage- Livestock crossing an allotment where permitted livestock grazing is occurring could result in direct and indirect impacts to forage availability.

The availability of forage could be reduced from livestock trailing through the allotment therefore reducing the amount of forage available for the permitted livestock within the allotment. Forage allocations for trailing would have a minor effect on 266 miles of trailing corridors that cross 151,842 acres of BLM-administered land in 46 grazing allotments. The 1,623 AUMs allocated for trailing would be less than 1% of the total active AUMs (188,802) within the JFO. The AUMs that would be authorized under the action alternatives reflects the standard calculation of 43 CFR 4130.8-1(c), … "In calculating the billing the grazing fee is prorated on a daily basis and charges are rounded to reflect the nearest whole number of animal unit months," which creates a bill for a minimum of 1 day regardless of the actual amount of forage consumed or the actual time expended in crossing through a particular allotment or group of allotments.

Because cattle generally graze at over-night sites and not along the trail, forage consumption would primarily occur on the multi-day trailing events. Sheep would be more likely to feed along the trail as well as at bedding sites.

Forage loss due to trampling would vary by route or herd size. Minor amounts of forage loss would occur along 112 miles of routes adjacent to roads and 121 miles adjacent of routes

adjacent to primitive roads. More forage loss from trampling would occur on 33 miles of cross-country routes; however, the amount of forage loss is expected to be minor. The majority of forage loss would take place within the 20,731 acres (area within 300 feet on either side of trail route) where most livestock trailing activity would occur.

Livestock/Operational Conflicts- Livestock/operations could also be affected by the livestock trailing through the allotments. The timing and/or intensity of trailing livestock could create resource conflicts, as well as interfering with the distribution or breeding of permitted livestock within the allotment. There could also be additional costs to maintain, repair, or replace range facilities such as fences, water developments, or troughs that are used by the trailing livestock.

Disruption to permitted livestock grazing by trailing activities would be minimal because many allotments consist of multiple pastures; livestock would not always be present in the same pastures as the trailing event; and the majority of trailing routes occur along roads. There would be limited sheep and cattle conflicts because the species generally do not co-mingle; however, there may be an occasional conflict between the cattle and sheep dogs resulting in minor displacement of cattle. Coordination and communication between grazing permittees and trailing permittees would help alleviate this conflict.

Overlap of proposed cattle trailing and authorized cattle grazing could occur during 14 trailing events. Potential sheep trailing conflicts on allotments with permitted cattle grazing could occur on up to 19 proposed routes; however conflicts would be minimal as long as all gates passed through are closed and efforts made to minimize risk of mixing trailing livestock with permitted grazing livestock. Sheep/sheep conflicts could occur on 11 trailing events where sheep use is being permitted but because sheep bands are closely herded, routes could be identified to eliminate the risk of mixing bands. There are also three events where trailing cattle would cross allotments with permitted sheep use. Many of these trailing routes have been in use for years and BLM has not been made aware that these conflicts pose any threat of operational conflicts with ongoing grazing activities.

There could be negligible short-term impacts to range facilities caused by additional use; however, damages are generally repaired by the crossing applicant once their livestock have left.

Crossing Permit Applicants

Access- Modifications to trailing routes due to restriction of timing, avoidance areas, or conflicts with resource objectives could affect access for the crossing permit applicant.

The number of livestock trailing events being proposed is generally what has been authorized in the past in the JFO. These livestock trails have been authorized in order to trail livestock through to other allotments as well as to National Forest lands, State lands, and privately owned lands. The authorization of these livestock trailing events would facilitate proper grazing rotations and overall rangeland management to achieve or make progress toward meeting Standards for Rangeland Health. There would be no change in access and no impact to crossing permit applicants.

Cost- The crossing permit applicants' cost would be affected by modified trailing. Lengthening of routes could result in additional time to complete trailing events and/or additional overnight stops. Segments with restrictions could also result in additional herders for livestock control. Costs associated with trailing livestock across BLM-administered lands include the cost of the crossing permit ($1.35/AUM (2012, fee may fluctuate annually) plus a $10 Administrative Fee), cost of workers to move livestock as well as the cost for equipment such as gasoline to move workers and haul horses to the trailing location. These are costs that the livestock operators have paid in the past and have already figured into their business operating expenses. There would be no further costs to the crossing permit applicants under the Proposed Action.

Cumulative Effects

The scope of analysis for cumulative impacts to livestock management extends to the JFO boundary. The JFO was selected as an outer limit for cumulative impacts because trailing routes cross many grazing allotments in the JFO and would be used to operate associated grazing systems.

The collective effect of past actions has contributed to the current conditions of livestock grazing within the project area. In relation to this analysis, the effects of current and foreseeable future activities are discussed below.

Wildfires burn annually in the JFO; the number of acres annually affected by wildfires varies widely. Burned areas are normally closed to livestock grazing and permitted use until vegetation recovery objectives are met.

Energy and transmission projects could close pastures or areas of pastures during construction activities and rehabilitation activities.

The Jarbidge Wildfire Fuels Break Project could also close pastures until the fuel breaks have been established.

<u>Grazing Permittees</u>

Forage- The consumption and trampling of forage from trailing livestock would have little effect on forage availability cumulatively. In areas where there are fuel breaks being constructed, until the fuel break is established there would be less forage available. In addition, energy and transmission construction could also remove some forage during the construction period; however, after construction activities are complete, rehabilitation of most of the disturbed area would occur. This would restore vegetation and forage.

Livestock/Operational Conflicts- Trailing livestock along the proposed trailing routes would have a minimal cumulative impact to areas where there are disruptions due to maintaining roads or weed spraying. In areas where there would be energy and transmission project construction there would be more livestock/operation conflicts and trailing could incrementally add to this effect. Coordination and communication between crossing permit applicants and other users would help alleviate these conflicts.

Crossing Permit Applicants

Access- There would be no cumulative impact to the access because crossing permits would be issued as they were proposed.

Cost- There would be no cumulative impacts to costs due to the crossing permits being issued as they were proposed.

Alternative 2

Direct and Indirect Effects

In addition to the routes identified in the Proposed Action, Alternative 2 proposes other routes where trailing events have occurred in the past or could occur in the future. This alternative also proposes to authorize livestock trailing within all corridors with cattle and/or sheep year-round under the specific design features (Chapter 2, page 6) identified to minimize impacts to resources that may occur along these routes.

Grazing Permittees

Forage- Alternative 2 would establish 535 miles of 1-mile wide trailing corridors and would include 289,722 acres of BLM-administered land within 75 grazing allotments. Effects to livestock grazing would be similar to the Proposed Action and mainly occur during overnight stops when livestock are concentrated in areas until trailing resumes. When livestock are overnighted they consume more forage than they do while actively trailing.

Forage loss due to trampling would vary by route or herd size. Negligible to minor effects would occur on 290 miles along roads and 209 miles along primitive roads, whereas minor effects would occur on 36 miles of cross-country routes. The majority of impacts would take place over 37,833 acres as it is assumed that most livestock herding activity would occur within 300 feet on either side of the trail route.

Livestock/Operational Conflicts- The effects of livestock and operational conflicts would be similar to the Proposed Action.

Crossing Permit Applicants

Access- Under Alternative 2, access for the crossing permit applicants would be the most plentiful and flexible due to the amount of miles and acres available to trailing.

Cost- Costs associated with trailing livestock across BLM-administered lands include the cost of the crossing permit ($1.35/AUM (2012, fee may fluctuate annually) plus a $10 Administrative Fee), cost of workers to move livestock as well as the cost for equipment such as gasoline to move workers and haul horses to the trailing location. These are costs that the crossing permit applicants have paid in the past and have already figured into their business operating expenses.

Cumulative Effects

Grazing Permittees

Forage- Impacts to forage availability would be similar to those described in the Proposed Action.

Livestock/Operational Conflicts- Impacts from livestock/operational conflicts would be similar to the Proposed Action.

Crossing Permit Applicants

Access- Areas closed due to wildfire, fuel break treatments, or energy and transmission development would have the same impacts as the Proposed Action. Issuing crossing permits within the 1-mile wide corridors would have a negligible impact on the cumulative effects of access.

Cost- Impacts to cost would be similar to the Proposed Action. Issuing crossing permits within the 1-mile wide corridors would give the most flexibility and would not cause cumulative impacts because these routes provide flexibility to adjust to changing resource conditions.

Alternative 3

Direct and Indirect Effects

Alternative 3 proposes trailing corridor routes where trailing events have or could occur; however, there are fewer corridors than the Proposed Action and Alternative 2 and the corridors are 0.25-mile wide instead of 1-mile wide. This alternative also proposes to authorize livestock trailing within all corridors with cattle and/or sheep year-round under the specific design features (Chapter 2) identified to minimize impacts to resources that may occur along these routes.

Grazing Permittees

Forage- Alternative 3 would establish 231 miles of 0.25-mile wide trailing corridors and would include 35,967 acres of BLM-administered land within 42 grazing allotments. Effects to livestock grazing would be similar to the Proposed Action and mainly occur during overnight stops when livestock are concentrated in areas until the trailing resumes. When livestock are overnighted they consume and trample more forage than they do while actively trailing. However, most of the overnight stops are along main transportation routes or around troughs or other range improvements where forage, or AUMs, is already impacted due to maintenance or permitted grazing.

Forage loss due to trampling would vary by route or herd size. Negligible to minor effects would occur on 103 miles along roads and 106 miles along primitive roads, whereas minor effects would occur on 22 miles of cross-country routes. The majority of impacts would take place over

16,886 acres as it is assumed that most livestock herding activity would occur within 300 feet on either side of the trail route.

Livestock/Operational Conflicts- The impacts to livestock/operational conflicts would be similar to the Proposed Action.

Crossing Permit Applicants

Access- Access under Alternative 3 would be more limited than the Proposed Action and Alternative 2.

Cost- Costs associated with trailing livestock across BLM-administered lands include the cost of the crossing permit ($1.35/AUM (2012, fee may fluctuate annually) plus a $10 Administrative Fee), cost of workers to move livestock as well as the cost for equipment such as gasoline to move workers and haul horses to the trailing location. These are costs that the crossing permit applicants have paid in the past and have already figured into their business operating costs.

Cumulative Effects

Grazing Permittees

Forage- Impacts to forage availability due to closures or construction would be similar to the impacts as described in the Proposed Action.

Livestock/Operational Conflicts- Impacts would be similar to the Proposed Action.

Crossing Permit Applicants

Access- Impacts related to access would be as described in the Proposed Action.

Cost- Impacts to cost would be similar to the Proposed Action. Issuing these crossing permits with smaller corridors and fewer routes could possibly impact the length of the trailing event which could slightly increase the cost; however, this would be negligible to the cumulative impacts.

Cultural Resources

No Action

Direct and Indirect Effects

Under this alternative, crossing permits would not be authorized. No measurable direct or indirect effects to the integrity of cultural resources would occur. Permittees would still need to move livestock between allotments and it is assumed existing corrals, trucks and trailers, would be used. Due to their size and weight, the transport vehicles would be limited to paved, graveled, or regularly maintained roads.

Cumulative Effects

There would be no direct, indirect, or cumulative effects to cultural resources from not issuing crossing permits.

Proposed Action

Direct and Indirect Effects

Direct effects to cultural resources from livestock trampling may include horizontal and vertical displacement of artifacts and breakage of stone tools and ceramics (Broadhead 1999; Osborn et al. 1987). These impacts can diminish the integrity of archaeological sites by obscuring spatial relationships among surface artifacts and by mixing more recent cultural materials with the remains of older occupations. Indirect effects to sites can occur from erosion related to livestock induced vegetation loss (see Soils section). Trampling effects are most pronounced in confined spaces and congregation areas, and are magnified in wet conditions. Livestock are also known to rub against standing structures and other hard surfaces with the potential to collapse stone monuments, or cairns, and damage rock art panels. In addition to the potential impacts described above, tribal interests may be affected by trailing related damage to sites of traditional cultural importance or by interference with traditional practices conducted there. Several design features are incorporated in the Proposed Action to counter these effects. Design features include: avoiding trailing when soils are saturated; restricting motorized support vehicles to existing roads; locating bedding grounds, watering sites, and camp sites at least 0.25 mile away from canyon rims, riparian areas, and the Oregon Trail, Kelton Road and Toana Road; avoiding playas; and directing permittees to stay on existing roads within corridors where needed to avoid impacting sensitive resources.

For this analysis, current cultural resource inventory and site data, obtained through archaeological survey, historical research, and tribal consultation, were compared to the footprint of the proposed trailing corridors in order to identify areas of potential conflict. In addition, field inventories were conducted at proposed congregation areas (bedding, watering, and camping locations), as well as, stream/canyon crossings and historic trail/road crossings.

Under the Proposed Action, a total of 11 crossing permits would be issued for trailing corridors measuring approximately 266 miles in length by 1 mile in width and containing a total of 151,842 acres of BLM-administered land. Intensive (Class III) cultural resource inventories have been conducted on 68,020 acres, or 45% of the area, resulting in the identification of 579 cultural resources. Despite the size of the proposed corridors, experience shows that most trailing activity occurs within a much narrower zone which adheres to existing roads and established trails. Staying on or adjacent to the identified route, through active herding, allows the permittee to maintain the trailing schedule and ensures that trailing livestock connect with gates in order to pass between fenced pastures and allotments. For this analysis, the area of expected effects extends 300 feet on either side of the identified trailing route and includes 20,731 acres of BLM-administered land. Within this reduced zone, Class III inventories have been conducted on 12,368 acres, or 60% of the area, and 95 cultural resources have been recorded. Of the 95 known

sites, 48 have demonstrated historical importance (e.g., the Oregon Trail, Kelton Road and Toana Road) or have the potential to provide important information in prehistory or history.

The trailing routes identified in the Proposed Action have been in use for several years, and, in most cases, for several decades. On dry soils, livestock hoof impacts are expected to be surficial (i.e., not exceeding 1-2 inches in depth) and to be largely confined to areas already compacted from prior use. Cattle would water within the impact zones at existing troughs; springs would not be used and active herding is expected to limit livestock congregation at live stream crossings. If overnighting is required, cattle would disperse to forage within an upland pasture until rounded up the next morning. Under dry conditions, the effects of dispersed livestock grazing on cultural resources in upland settings would be negligible. No cow camps or temporary watering sites are associated with cattle trailing. Sheep travel in bands and, in dry conditions, are expected to produce minor surface effects (i.e., hoof penetration less than 1 inch). They water at existing troughs and at bedding grounds where water is hauled in along with the herder's camp wagon. All identified bedding, watering, and camping areas associated with sheep trailing have been inventoried for cultural resources. No significant site would be affected by these activities.

Due to its temporary nature and short duration, livestock trailing under the Proposed Action would have no effect on the setting of the Oregon Trail, the Kelton Road, and the Toana Road. Direct effects from crossing these historic trails can be effectively minimized by restricting trailing to the disturbed corridor of the existing roads. Restricting use to the existing road would also avoid impacts to any sites in the vicinity of canyon and stream crossings. No effects to rock art, historic buildings, or rock walls or cairns are expected from trailing activities since these types of sites are either outside the expected impact area or would not be accessible to actively herded livestock. Likewise, livestock trailing, as proposed, would have no effect on the access, use, or physical condition of sites of traditional cultural importance to the tribes. With one exception, use of the trailing routes in the Proposed Action is not expected to adversely affect important cultural resources. The cross-country route along Deadman Creek, as currently proposed, is within a high density cultural resource zone and may affect several archaeological sites. To avoid adverse effects, trailing livestock would need to be routed a minimum of 0.25 mile west of Deadman Creek.

Given the design features listed above, the surficial nature of trailing effects, and the placement of congregation areas away from archaeological sites and historic trails, the Proposed Action is expected to result in minimal direct and indirect impacts to important cultural resources.

Cumulative Effects

The geographic scope of the analysis of cumulative effects to cultural resources covers all of the JFO except for the area west of the Jarbidge River because no livestock trailing is proposed in this area under any of the alternatives. The analysis area includes all of the allotments associated with the proposed crossing permits. The current condition of cultural resources varies with the nature and degree of their exposure to natural forces, to past development, and to past and present uses. The surface area of almost all archaeological and historic sites has undergone natural deterioration purely as a function of long-term exposure to wind, rain, heat, and cold. In addition, wildfire has affected sites by accelerating wind erosion and exposing artifacts to

unauthorized collecting. Past human-related activities that have affected the integrity of cultural resources to varying degrees include more than 130 years of livestock grazing and associated livestock trailing, 20th century development projects (e.g., roads, reservoirs, canals, agricultural developments, spring developments and pipelines) carried out prior to the implementation of the National Historic Preservation Act, dispersed recreation and cross-country vehicle traffic. Since the 1980s the effects of development projects have been greatly reduced through agency compliance with Federal historic preservation laws. In addition, the potential for effects from cross-country motorized vehicle travel is substantially reduced since travel within Owyhee County is now restricted to existing routes. Development projects will continue, but, because their disturbance footprints are well defined, it is easier to identify and mitigate development effects to cultural resources than it is with authorizations that permit use over a large area. Presently, and in the foreseeable future, cultural resources will continue to be affected by natural weathering, wildfire, livestock grazing, dispersed recreation and cross-country vehicle use. The incremental effects of repeated livestock trailing events, when added to other past, present, and reasonably foreseeable future actions, is likely to result in a low level of cumulative effects on cultural resources.

Alternative 2

Direct and Indirect Effects

Impacts to cultural resources under Alternative 2 would be similar in nature to those described under the Proposed Action, except they would occur over a larger area. Trailing corridors under this alternative would be 1-mile wide and 535 miles in length, comprising 289,722 acres of BLM-administered land. Within this area, 106,567 acres, or 37%, have been inventoried and 1,141 sites have been recorded. Again, due to active herding along established routes, most effects are expected to occur within 300 feet on either side of the trail route centerline. For Alternative 2, this zone of expected effects includes 37,833 acres, 51% of which has been inventoried with 190 sites recorded. Of the 190 known sites, 94 have demonstrated historical importance (e.g., the Oregon Trail, Kelton Road and Toana Road) or have the potential to provide important information in prehistory or history. Alternative 2 includes 65 more miles of trailing corridor through high cultural resource density areas than the Proposed Action. As with the Proposed Action, trailing livestock would need to be routed a minimum of 0.25 mile west of Deadman Creek to avoid impacting important archaeological sites. In addition, use of the trailing route that extends from Deadwood Creek to Mud Flat Hill has the potential to impact important sites. Impacts can be avoided by redirecting livestock away from the threatened sites through stipulations on the crossing permit.

The design features would be the same as in the Proposed Action and would have the same impact reducing effects. Compared to the Proposed Action, Alternative 2 would nearly double the number of acres in the expected impact zone and the number of sites potentially affected.

Cumulative Effects

Under Alternative 2, cumulative impacts to cultural resources from wildfire, livestock grazing, dispersed recreation, development projects, and cross-country vehicle use are expected to be

greater than the Proposed Action due to the larger number of acres, miles, and sites within the trailing corridor. This is the only alternative with a trailing corridor through the proposed China Mountain Wind Project, an area of high cultural resource density.

Alternative 3

Direct and Indirect Effects

Impacts to cultural resources under Alternative 3 would be similar in nature and degree to those described under the Proposed Action, except they would occur over a much smaller area. Trailing corridors under this alternative would be reduced to 0.25-mile wide and 231 miles in length, comprising 35,967 acres of BLM-administered land. Within this area, 17,940 acres, or 50%, have been inventoried and 142 sites have been recorded. Again, due to active herding along established routes, most effects are expected to occur within 300 feet on either side of the trail route centerline. For Alternative 3, this zone of expected effects includes 16,886 acres, 60% of which has been inventoried with 80 sites recorded. Of the 80 known sites, 37 have demonstrated historical importance (e.g., the Oregon Trail, Kelton Road and Toana Road) or have the potential to provide important information in prehistory or history.

The design features would be the same as in the Proposed Action and would have the same impact reducing effects. Compared to the Proposed Action, Alternative 3 would reduce the size of the expected impact zone by 3,845 acres and the number of known sites potentially affected by 15. In addition, it would remove both the Deadman Creek (Proposed Action) and the Deadwood Creek to Mud Flat Hill (Proposed Action and Alternative 2) routes, thereby eliminating potential impacts to cultural resources in those areas.

Cumulative Effects

Under Alternative 3, cumulative impacts to cultural resources from wildfire, livestock grazing, dispersed recreation, development projects, and cross-country vehicle use are expected to be less than the Proposed Action due to the smaller number of acres, miles, and sites within the trailing corridor.

CHAPTER 5. CONSULTATION AND COORDINATION

Tribes, Individuals, Organizations, or Agencies Consulted

The following tribes, individuals, organizations, and agencies were contacted in preparation of this EA:

Shoshone-Paiute Tribes, Kyle Prior
Jarbidge Field Office Grazing Permittees
Barry Duelke
Idaho Fish and Game, Jerome Hansen
Nevada Department of Wildlife, Allen Jenne
Idaho Department of Lands, Tim Duffner
Idaho Department of Agriculture, Ron Kay
Idaho Department of Parks and Recreation, Jeff Cook
Idaho Department of Environmental Quality, Sean Woodhead
Idaho Department of Environmental Quality, Balthasar (Sonny) Buhidar
Idaho Power Company, Gary Holmstead
Idaho State Historic Preservation Office, Ken Reid
Western Watersheds Project, Jon Marvel
Western Watersheds Project Idaho Office, Katie Fite
Boise District Grazing Board, Stan T. Boyd
Owyhee Cattlemen's Association, Scott Jensen
Michael Stanford
Robert & Sabrina Amidon
Animal Welfare Institute, DJ Schubert
Idaho Conservation League, John Robison
Idaho Conservation League, Brett Stevenson
Sierra Club (Mid Snake), Marty Marzinelli
The Wilderness Society, Craig Gehrke
Committee For The High Desert, Steve Jakubowics
Bruneau Dunes State Park, Steve Russell
Owyhee County Board of Commisioners, Jerry Hoagland
Owyhee County Board of Commisioners, Jim Desmond
R&S Enterprise, Ray Mitchell
Randy Stowell
Nevada Cattlemen's Association, Meghan Brown
71 Livestock Association, Gus Brackett
Jared Brackett
American Wild Horse Preservation Campaign, Suzanne Roy
Connie Cunningham
Barry Lehman
Friends Of The Mustang, Sabrina Leonard
Ellen McCoy
Pryor Mountain Wild Mustang Center
All Horses Post, Nell Walton
Christine Van Boening
Deniz Bolbol

List of Preparers

Dan Strickler, Rangeland Management Specialist
Jeff Ross, Archaeologist
Jim Klott, Wildlife Biologist
Julie Hilty, Fire Ecologist
Kate Forster, Fisheries Biologist
Ken Crane, Rangeland Management Specialist
Krystle Pehrson, Wild Horse and Burro Specialist
Max Yingst, Outdoor Recreation Planner
Melissa Rutledge, Rangeland Management Specialist
Michael Haney. Wildlife Biologist
Thomas Stewart, Botanist

CHAPTER 6. REFERENCES

Baicich, P. J., and C. J. Harrison. 1997. A guide to the nests, eggs, and nestling of North American birds. 2nd edition. Academic Press, San Diego, CA.

Baker, W. L. 2011. Pre–Euro-American and recient fire in sagebrush ecosystems. Pp. 185–201 *in* S. T. Knick and J. W. Connelly (editors). Greater Sage-Grouse: ecology and conservation of a landscape species and its habitats. Studies in Avian Biology (vol. 38), University of California Press, Berkeley, CA.

Bauer, K. L. 1991. Observations on the developmental biology of *Cicindela arenicola* Rumpp (Coleoptera: Cicindelidae). Great Basin Naturalist 51:226-235.

Beever, E. A. 2003. Management implications of the ecology of free-roaming horses in semi-arid ecosystems of the western United States. Wildlife Society Bulletin 31:887-895.

Beever, E. A., and C. L. Aldridge. 2011. Influences of free-roaming equids on sagebrush ecosystems, with a focus on greater sage-grouse. In: S. T. Knick and J. W. Connelly [EDS.]. Greater sage-grouse: ecology and conservation of a landscape species and its habitats. Studies in Avian Biology. Volume 38. University of California Press, Berkeley, CA. 273-290.

Belnap, J., and D.A. Gillette. 1997. Disturbance of biological soil crusts: impacts on potential wind erodibility of sandy desert soils in southeastern Utah, USA. Land Degradation and Development 8:355-362.

Belnap, J., and D.A. Gillette. 1998. Vulnerability of desert soil surfaces to wind erosion: impacts of soil texture and disturbance. Journal of Arid Environments 39:133-142.

Belnap, J., S. L. Phillips, S. K. Sherrod, and A. Moldenke. 2005. Soil biota can change after exotic plant invasion: Does this affect ecosystem processes? Ecology 86:3007-3017.

Bosworth, W. R., S. J. Romin, and T. Weekley. 2010. Bruneau Dunes tiger beetle assessment: Report for Idaho State Office, BLM. Idaho Department of Fish and Game, Boise, ID. 36 p.

Bouffard, S.H., K.V. Tindall, and K. Fothergill. 2009. Herbicide treatment to restore St. Anthony Dune tiger beetle habitat: A pilot study. Cicindela 41:13-24.

Bowers, W., B. Hosford, A. Oakley, and C. Bond. 1979. Native trout, wildlife habitats in managed rangelands: The Great Basin of southwestern Oregon. United States Department of Agriculture, Forest Service, Pacific Northwest Research Station, General Technical Report, PNW-84, La Grande, OR.

Brady, N. C. 1984. Chapter 16: Soil Erosion and Its Control. In: The Nature and Properties of Soils 9th edition. New York, NY: MacMillan Publishing Company.

Broadhead, W. H. 1999. Cattle, control, and conservation. Cultural Resource Management 9:31-32.

Butts, K. O. 1973. Life history and habitat requirements of burrowing owls in western Oklahoma. M.S. Thesis, Oklahoma State University, Stillwater, OK.

Cade, T. J., and T. Swem. 1995. Ecology of northern shrikes nesting in arctic Alaska. Proceedings of the Western Foundation of Vertebrate Zoology 6:204–214.

Chalfoun, A. D., and T. E. Martin. 2007. Assessments of habitat preferences and quality depend on spatial scale and metrics of fitness. Journal of Applied Ecology, 44:983–992.

Coates, P. S. 2007. Greater sage-grouse (*Centrocercus urophasianus*) nest predation and incubation behavior. Ph.D. Dissertation, Idaho State University, Pocatello, ID.

DeLong, A. K., J. A. Crawford, and D. C. DeLong, Jr. 1995. Relationships between vegetational structure and predation of artificial sage grouse nests. Journal of Wildlife Management 59:88–92.

Department of Environmental Quality 2006. King Hill-C.J. Strike Reservoir Subbasin Assessment and Total Maximum Daily Load.

Department of Environmental Quality. 2008. Working principles and Polices for the 2008 Integrated (303[d]/305[b]) Report.

Department of Environmental Quality. 2000. Subbasin Assessment and Total Maximum Daily Load Plan for the Bruneau River and its tributaries.

DiTomaso, J. M. 2000. Invasive weeds in rangelands: Species, impacts, and management. Weed Science 48:255-265.

Drut, M. S., J. A. Crawford, and M. A. Gregg. 1994. Brood habitat use by sage grouse in Oregon. Great Basin Naturalist 54:170–176.

Eberhardt, L. L., A. K. Majorowicz, and J. A. Wilcox. 1982. Apparent rates of increase for two feral horse herds. Journal of Wildlife Management 46:376-374.

Eldridge, D. J. and R. S. B. Green. 1994. Microbiotic soil crusts: a review of their roles in soil and ecological processes in rangelands of Australia. Australian Journal of Soil Research 32(3):389-415.

Fischer, R. A. 1994. The effects of prescribed fire on the ecology of migratory sage grouse in southeastern Idaho. Ph.D. Dissertation, University of Idaho, Moscow, ID.

Furniss, M. J., T. D. Roelofs, and C. S. Yee. 1991. Road construction and maintenance. In W. R. Meehan [EDS.]. Influences of Forest and Rangeland Management on Salmonid Fishes and Their

Habitats. Vol. American Fisheries Society Special Publication 19. Bethesda, MD: United States Department of Agriculture, Forest Service. 297-324.

Fyfe, R. W., and R. R. Olendorff. 1976. Minimizing the dangers of nesting studies to raptors and other sensitive species. Canadian Wildlife Service Occasion Paper No. 23.

Gelbard, J. L., and J. Belnap. 2003. Roads as conduits for exotic plant invasions in a semiarid landscape. Conservation Biology 17:420-432.

Gill, R. B. 1965. Distribution and abundance of population of sage grouse in North Park, Colorado. M.S. Thesis, Colorado State University, Ft. Collins, CO.

Giordanego, J. H., G. W. Frasier, and M. J. Trlica. 2003. Hydrologic and sediment responses to vegetation and soil disturbances. Journal of Range Management 56:152-158.

Goldberg, C. S., D. C. Tank, S. Uribe-Convers, W. R. Bosworth, H. E. Marx, and L. P. Waits. 2012. Species designation of the Bruneau Dunes tiger beetle (*Cicindela waynei*) is supported by phylogenetic analysis of mitochondrial DNA sequence data. Conservation Genetics 13:373-380.

Gregg, M. A. 1991. Use and selection of nesting habitat by sage grouse in Oregon. M.S. Thesis, Oregon State University, Corvallis, OR.

Gregg, M. A., J. A. Crawford, M. S. Drut, and A. K. DeLong. 1994. Vegetational cover and predation of sage grouse nests in Oregon. Journal of Wildlife Management 58:162–166.

Hanley, T. A., and K. A. Hanley. 1982. Food resource partitioning by sympatric ungulates on Great Basin rangeland. Journal of Range Management 35:152-158.

Hart, R. H., S. Clapp, and P. S. Test. 1993. Grazing strategies, stocking rates, and frequency and intensity of grazing on western wheatgrass and blue grama. Journal of Range Management 46:122-126.

Heady, L. T., K. I. Gabler, and J. W. Laundre. 2001. Habitat selection by pygmy rabbits in southeast Idaho. Bureau of Land Management Technical Bulletin No. 01-7.

Hendrickson J., and B. Olson. 2006. Understanding plant response to grazing. In K. Launchbaugh [ED.]. Targeted Grazing: A Natural Approach to Vegetation Management and Landscape Enhancement. Centennial, ASI, 32–39.

Hjorth, I. 1970. Reproductive behavior in Tetraonidae with special reference to males. Viltrevy 7:381–357.

Holloran, M. J. 1999. Sage grouse (*Centrocercus urophasianus*) seasonal habitat use near Casper, Wyoming. M.S. Thesis, University of Wyoming, Laramie, WY.

Holloran, M. J., B. J. Heath, A. G. Lyon, S. J. Slater, J. L. Kuipers, and S. H. Anderson. 2005. Greater sage-grouse nesting habitat selection and success in Wyoming. Journal of Wildlife Management 69:638–649.

Idaho Department of Fish and Game. 2010a. Bighorn sheep management plan 2010. Idaho Department of Fish and Game, Boise, USA.

Idaho Department of Fish and Game. 2010b. Raptor and sage-grouse study at Mountain Home Range Complex (MHRC) sites FY 2009. Idaho Department of Fish and Game, Boise, USA.

Jarbidge Sage-grouse Local Working Group. 2007. Jarbidge sage-grouse conservation plan. <http://fishandgame.idaho.gov/public/wildlife/sageGrouse/LWGjarbidgePlan.pdf>.

Jessop, B.D., and V. J. Anderson. 2007. Cheatgrass invasion in salt desert shrublands: Benefits of postfire reclamation. Rangeland Ecology and Management 60:235-243.

Kauffman, J. B., and W. C. Krueger. 1984. Livestock impacts on riparian ecosystems and streamside management implications: A review. Journal of Range Management 37:430-438.

Kinter, C. L., B. A. Mealor, N. L. Shaw, and A. L. Hild. 2007. Postfire invasion potential of rush skeletonweed (*Chondrilla juncea*). Rangeland Ecology and Management 60:389-394.

Klott, J. H., S. Whitfield, M. Cota, and E. McTavish. 2007. 2006–2007 wildlife inventory in the Jarbidge Field Office. Idaho Bureau of Land Management Technical Bulletin No.07-3, Boise, ID.

Knick, S. T., and J. W. Connelly (editors). 2011. Greater Sage-Grouse: ecology and conservation of a landscape species and its habitats. Studies in Avian Biology Series (vol. 38), University of California Press, Berkeley, CA.

Leffler, S. 2001. A new species of tiger beetle from southwestern Idaho (Coleoptera: Cincindelida). Cicindela 33:19-40.

Leonard, S., G. Kinch, V. Elsbernd, M. Borman, and S. Swanson. 1997. Riparian Area Management: Grazing Management for Riparian-Wetland Areas. Technical Reference 1737-14. United States Department of the Interior, Bureau of Land Management, National Applied Resource Sciences Center, Denver, CO. p. 63.

Lyon, A. G. 2000. The potential effects of natural gas development on sage grouse near Pinedale, Wyoming. M.S. Thesis, University of Wyoming, Laramie, WY.

Lyon, A. G., and S. H. Anderson. 2003. Potential gas development impacts on sage grouse nest initiation and movement. Wildlife Society Bulletin 31:486–491.

Marble, J. R., and K. T. Harper. 1989. Effect of timing of grazing on soil-surface cryptogamic communities in a Great Basin low-shrub desert: A Preliminary Report. Great Basin Naturalist 49:104-107.

Martin, J. W., and B. A. Carlson. 1998. Sage Sparrow (*Amphispiza belli*), The Birds of North America Online In: A. Poole, [ED.]. Ithaca: Cornell Lab of Ornithology. <http://bna.birds.cornell.edu/bna/species/326>.

McInnis, M. L., and M. Vavra. 1987. Dietary relationships between feral horses, cattle and pronghorn in southeastern Oregon. Journal of Range Management 40:60-66.

McKenna-Neumann, C., C.D. Maxwell, and J.W. Boulton. 1996. Wind transport of sand surfaces crusted with photoautotrophic microorganisms. Catena 27:229-247.

Meaney, C. A., M. Reed-Eckert, and G. P. Beauvais. 2006. Kit fox (*Vulpes macrotis*): a technical conservation assessment. USDA Forest Service, Rocky Mountain Region. <http://www.fs.fed.us/r2/projects/scp/assessments/kitfox.pdf>.

Memmot, K. L., V. J. Anderson, and S. B. Monsen. 1998. Seasonal grazing impact on cryptogamic crusts in a cold desert ecosystem. Journal of Range Management 51:547-550.

Muhlfeld, C. C. 2002. Spawning characteristics of redband trout in a headwater stream in Montana. North American Journal of Fisheries Management 22:1314-1320.

Newlon, K. R., and V. A. Saab. 2011. Nest-site selection and nest survival of Lewis's woodpecker in aspen riparian woodlands. Condor 113:183–193.

Olendorff, R. R., and J. R. Stoddard, Jr. 1974. The potential for management of grassland raptors. In: F. N. Hamerstrom, Jr., B. E. Harrell, and R. R. Olendorff [EDS.]. Raptor Res. Rep. No. 2. Raptor Research Foundation, Vermillion, SD. 47-99

Osborn, A., S. Vetter, R. Hartley, L. Walsh, and J. Brown. 1987. Impacts of domestic livestock grazing on the archeological resources of Capitol Reef National Park, Utah. Springfield, VA: United States Department of Commerce.

Overton, C. K., S. P. Wollrab, B. C. Roberts, and M. A. Radko. 1997. R1/R4 Northern/Intermountain Regions. Fish and Fish Habitat Standard Inventory Procedures Handbook General Technical Report No. INT-GTR-346: United States Department of Agriculture, Forest Service, Intermountain Research Station.

Patterson, R. L. 1952. The sage grouse in Wyoming. Sage Books, Denver, CO.

Petersen, B. E. 1980. Breeding and nesting ecology of female sage grouse in North Park, Colorado. M.S. Thesis, Colorado State University, Ft. Collins, CO.

Platts, W. S. 1991. Livestock grazing. In W. R. Meehan [ED.]. Influences of Forest and Rangeland Management on Salmonid Fishes and Their Habitats. Volume American Fisheries Society Special Publication 19. Bethesda, MD: United States Department of Agriculture, Forest Service. 389-423.

Popolizio, C. A., H. Goetz, and P. L. Chapman. 1994. Short-term response of riparian vegetation to four grazing treatments. Journal of Range Management 47:48-53.

Racheal, J., J. Hayden, J. Crenshaw, S. Nadeau, R. Smith, T. Boudreau, D. Meints, and T. Keegan. 2010. Pronghorn. Idaho Department of Fish and Game W-170-R-34.

Rawls, W., D. L. Brakensiek, and M. R. Savabi. 1989. Infiltration parameters for rangeland soils. Journal of Range Management 42:139-142.

Rost, G.R., and J.A. Bailey. 1979. Distribution of mule deer and elk in relation to roads. Journal of Wildlife Management 43:634-641.

Runde, D.E., and S. H. Anderson. 1986. Characteristics of cliffs and nest sites used by breeding prairie falcons. Raptor Research 20:21–28.

Saab, V. A., C. E. Bock, T. D. Rick, and D. S. Dobkin. 1995. Livestock Grazing Effects in Western North America. In T. E. Martin and D. M. Finch [EDS.]. Ecology and Management of Neotropical Migratory Birds: A Synthesis and Review of Critical Issues. New York, NY: Oxford University Press. 311-353.

Schroeder, M. A., J. R. Young, and C. E. Braun. 1999. Sage grouse (*Centrocercus urophasianus*). In: A. Poole and F. Gill [EDS.]. The birds of North America No. 425, Academy of Natural Sciences, Philadelphia, PA.

Scott, J. W. 1942. Mating behavior of the sage grouse. Auk 59:477-498.

Slater, S. J. 2003. Sage-grouse (*Centrocercus urophasianus*) use of different-aged burns and the effects of coyote control in southwestern Wyoming. M.S. Thesis, University of Wyoming, Laramie, WY.

Smith, J. G., and O. Julander. 1953. Deer and sheep competition in Utah. Journal of Wildlife Management 17:1010–112.

Sveum, C. M., W. D. Edge, and J. A. Crawford. 1998. Nesting habitat selection by sage grouse in south-central Washington. Journal of Range Management 51:265–269.

Tate, K. W., D. Dudley, N. K. McDougald, and M. R. George. 2004. Effect of canopy and grazing on soil bulk density. Journal of Range Management 57:411-417.

Thomsen, L. 1971. Behavior and ecology of burrowing owls on the Oakland municipal airport. Condor 73:177–192.

United States Department of Agriculture, Forest Service. 1995. Inland Native Fish Strategy: Interim Strategies for Managing Fish-Producing watersheds in Eastern Oregon and Washington, Idaho, Western Montana and Portions of Nevada. Appendix E.

United States Department of the Interior, Bureau of Land Management and Fish and Wildlife Service. 2009. Conservation agreement between BLM and USFWS for slickspot peppergrass. Boise, ID: Idaho State Office and Fish and Wildlife Service, Idaho Fish and Wildlife Office.

United States Department of the Interior, Fish and Wildlife Service. 2009. Biological opinion for existing land use plans in the Boise and Twin Falls districts related to slickspot peppergrass conservation. Boise, ID: Fish and Wildlife Service, Idaho Fish and Wildlife Office.

U.S. Fish and Wildlife Service. 1998. A Framework to Assist in Making Endangered Species Act Determinations of Effect for Individual or Grouped Actions at the Bull Trout Subpopulation Watershed Scale.

United States Department of the Interior, Bureau of Land Management. 2007. Environmental Assessment of Noxious and Invasive Weed Treatment for Boise District Office and JFO.

United States Department of the Interior, Bureau of Land Management. 1998 A User's Guide to Assessing Proper Functioning Condition and the Supporting Science for Lentic Areas. Technical Reference 1737-16. United States Department of the Interior, Bureau of Land Management, National Applied Resource Sciences Center, Denver, CO.

United States. Department of the Interior. 2010. Jarbidge Draft Resource Management Plan and Environmental Impact Statement. Bureau of Land Management, Twin Falls District.

United Stated Department of Agriculture, Natural Resource Conservation Service. 2003. National Range and Pasture Handbook, revision 1. December. Grazing Lands Technology Institute.

United States Department of Agricuture. 2006. Risk analysis of disease transmission between domestic sheep and bighorn sheep on the Payette National Forest. Payette National Forest, McCall, ID.

Vallentine, J. F. 2001. Grazing Management 2nd edition. San Diego, CA: Academic Press.

Van Haveren, B. P. 1983. Soil bulk density as influenced by grazing intensity and soil type on a shortgrass prairie site. Journal of Range Management 36:586-588.

Van Horne, B., G. S. Olson, R. L. Schooley, J. G. Corn, and K. P. Burnham. 1997. Effects of drought and prolonged winter on Townsend's ground squirrel demography in shrubsteppe habitats. Ecological Monographs 67:295–315.

Wakkinen, W. L. 1990. Nest site characteristics and spring-summer movements of migratory sage grouse in southeastern Idaho. M.S. Thesis, University of Idaho, Moscow, ID.

Wallestad, R. O., and D. B. Pyrah. 1974. Movement and nesting of sage grouse hens in central Montana. Journal of Wildlife Management 38:630–633.

Walsh, D. P. 2002. Population estimation techniques for greater sage-grouse. M.S Thesis, Colorado State University, Ft. Collins, CO.

Warren, S. D., and D. J. Eldridge. 2001. Biological soil crusts and livestock in arid ecosystems: Are they compatible? In: J. Belnap and O. T. Lange [EDS.]. Biological Soil Crusts: Structure, Function, Management Vol. Ecological Studies Vol. 150. Berlin, Heidelbert, New York: Springer-Verlag. 401-415.

Wedgwood, J. A. 1976. Burrowing owl in south-central Saskatchewan. Blue Jay 34:26–44.

Weiss, N. T., and B .J. Verts. 1984. Habitat and distribution of pygmy rabbits in Oregon. Great Basin Naturalist 22:563-571.

West, N.E. 1999. Synecology and disturbance regimes of sagebrush steppe ecosystems. In: P. G. Entwistle, A. M. DeBolt, J. H. Kaltenecker, and K. Steenhof, [EDS.]. 2000. Proceedings: Sagebrush Steppe Ecosystem Symposium. Bureau of Land Management Publication No. BLM/ID/PT-001001 1150, Boise, Idaho, USA.

White, C. M., and T. L. Thurow. 1985. Reproduction of ferruginous hawks exposed to controlled disturbance. Condor 87:14–22.

Woffinden, N. D., and J. R. Murphy. 1977. Population dynamics of the ferruginous hawk during a prey decline. Great Basin Naturalist 37:411–425.

Wolfe, M. L. 1980. Feral horse demography: A preliminary report. Journal of Range Management 33:354-360.

Yensen, E., D. L. Quinney, K. Johnson, K. Timmerman, and K. Steenhof. 1992. Fire, vegetation changes and population fluctuations of Townsend's ground squirrels. American Midland Naturalist 128:299–312.

Yensen, E., and G. Hammerson. 2008. *Spermophilus mollis.* IUCN Red List of Threatened Species. Version 2011.2. <www.iucnredlist.org>.

APPENDIX B.

Wilkins Island and Bruneau Canyon Allotment
Environmental Baseline Overview

Detailed descriptions of the environmental baselines for each activity are included in the original BAs. A statement is included under each activity description regarding changes in the environmental baseline since the original consultations were completed.

Bull Trout Critical Habitat Effects Analysis Overview

The most effective way to evaluate the impact an activity will have on bull trout critical habitat is to analyze the effects that the activity will have on the primary constituent elements (PCEs) of the critical habitat. The effects of Idaho BLM activities that have undergone ESA Section 7 consultation were largely evaluated using the Bull Trout Matrix of Pathways and Indicators (matrix) (USFWS 1998). Fortunately, the matrix includes indicators that correspond to the bull trout critical habitat PCEs. The matrix contains 23 indicators, four of which are tied to subpopulation characteristics and 19 which are tied to habitat. Twenty of the twenty three indicators are directly or indirectly related to one or more of the nine PCEs, and each PCE corresponds to one or more indicators (Table 2). The *refugia* indicator is relevant to all PCEs because in order for the refugia indicator to be rated "functioning appropriately" most if not all of the PCEs must be present.

Table 2. PCEs for bull trout critical habitat and the associated matrix indicators

PCE #	PCE Description	Associated Matrix Indicators
1	Springs, seeps, groundwater sources, and subsurface water connectivity (hyporheic flows) to contribute to water quality and quantity and provide thermal refugia.	Floodplain connectivity, sediment, substrate embeddedness, chemical contamination/nutrients, off-channel habitat, streambank condition, change in peak/base flows, increase in drainage network, road density and location, disturbance history, riparian conservation areas, and refugia
2	Migration habitats with minimal physical, biological, or water quality impediments between spawning, rearing, overwintering, and freshwater and marine foraging habitats, including but not limited to permanent, partial, intermittent, or seasonal barriers.	Physical barriers, substrate embeddedness, average wetted width/maximum depth ratio, change in peak/base flows, persistence and genetic integrity, temperature, chemical contamination/nutrients, and refugia
3	An abundant food base, including terrestrial organisms of riparian origin, aquatic macroinvertebrates, and forage fish.	Sediment, substrate embeddedness, chemical contamination/nutrients, large woody debris, off-channel habitat, floodplain connectivity, streambank condition, riparian conservation areas, and refugia
4	Complex river, stream, lake, reservoir, and marine shoreline aquatic environments and processes that establish and maintain these aquatic environments, with features such as large wood, side channels, pools, undercut banks and unembedded substrates, to provide a variety of depths, gradients, velocities, and structure.	Sediment, substrate embeddedness, large woody debris, pool frequency and quality, large pools, off-channel habitat, average wetted width/maximum depth ratio, streambank condition, riparian conservation areas, floodplain connectivity, road density and location, disturbance regime, and refugia
5	Water temperatures ranging from 2 to 15 °C (36 to	Temperature, off-channel habitat, floodplain

PCE #	PCE Description	Associated Matrix Indicators
	59 °F), with adequate thermal refugia available for temperatures that exceed the upper end of this range. Specific temperatures within this range will depend on bull trout life-history stage and form; geography; elevation; diurnal and seasonal variation; shading, such as that provided by riparian habitat; streamflow; and local groundwater influence.	connectivity, average wetted width/maximum depth ratio, streambank condition, change in peak/base flows, road density and location, disturbance history, riparian conservation areas, and refugia
6	In spawning and rearing areas, substrate of sufficient amount, size, and composition to ensure success of egg and embryo overwinter survival, fry emergence, and young-of-the-year and juvenile survival. A minimal amount of fine sediment, generally ranging in size from silt to coarse sand, embedded in larger substrates, is characteristic of these conditions. The size and amounts of fine sediment suitable to bull trout will likely vary from system to system.	Sediment, substrate embeddedness, streambank condition, riparian conservation areas, floodplain connectivity, increase in drainage network, road density and location, disturbance regime, and refugia
7	A natural hydrograph, including peak, high, low, and base flows within historic and seasonal ranges or, if flows are controlled, minimal flow departure from a natural hydrograph.	Change in peak/base flows, streambank condition, floodplain connectivity, increase in drainage network, road density and location, disturbance history, riparian conservation areas, and refugia
8	Sufficient water quality and quantity such that normal reproduction, growth, and survival are not inhibited.	Temperature, chemical contamination/nutrients, streambank condition, riparian conservation areas, floodplain connectivity, increase in drainage network, road density and location, disturbance regime, and refugia
9	Sufficiently low levels of occurrence of nonnative predatory (e.g., lake trout, walleye, northern pike, smallmouth bass); interbreeding (e.g., brook trout); or competing (e.g., brown trout) species that, if present, are adequately temporally and spatially isolated from bull trout.	Persistence and genetic integrity

The following discussion describes the relationship of the matrix indicators to the individual PCEs.

1. **Springs, seeps, groundwater sources, and subsurface water connectivity (hyporheic flows) to contribute to water quality and quantity and provide thermal refugia.**

   The *floodplain connectivity* indicator directly addresses how well stream channels are hydrologically connected to off-channel areas. Floodplains are important to maintaining the water table and providing connectivity to the channel for springs, seeps, and groundwater sources which contribute to water quality and quantity (Pollock et al 2007). The *sediment* and *substrate embeddedness* indicators describe the level of fine sediment in the gravel which affects hyporheic flow. Fine sediment fills interstitial spaces making the movement of water through the substrate less efficient (Beechie et al 2007). The *chemical contamination/nutrients* indicator evaluates the water quality of groundwater. The *off-channel habitat* indicator assesses how much off-channel habitat is available, and generally off-channels are connected to adjacent channels via subsurface water (Pollock et al 2007). The *streambank condition* indicator documents bank stability. If the

streambanks are stabilized by vegetation rather than substrate then it is likely that the streambank can act as a sponge that holds water during moist periods and releases that water during dry periods which contributes to water quality and quantity. The *change in peak/base flows* indicator evaluates whether or not peak flow, base flow, and flow timing are comparable to an undisturbed watershed of similar size, geology, and geography. Peak flows, base flows, and flow timing are directly related to subsurface water connectivity (Pollock et al 2007). The *increase in drainage network* and *road density and location* indicators assess the influence of the road and trail networks on subsurface water connectivity. If there is an increase in drainage network and roads are located in riparian areas, it is likely that subsurface water is being intercepted before it reaches a stream. If groundwater is being intercepted then it is likely that water quality is being degraded through increased temperatures, fine sediment, and possibly chemical contamination (Furniss et al 1991). The *disturbance history* indicator evaluates disturbance across the watershed and provides a picture of how management may be affecting hydrology. The *riparian conservation areas* indicator determines whether riparian areas are intact and providing connectivity. If riparian areas are intact it is much more likely that springs, seeps, and groundwater sources are able to positively affect water quality and quantity.

2. **Migration habitats with minimal physical, biological, or water quality impediments between spawning, rearing, overwintering, and freshwater and marine foraging habitats, including but not limited to permanent, partial, intermittent, or seasonal barriers.**

   The *physical barriers* indicator provides the most direct assessment of this PCE. The indicator documents whether or not man-made barriers within the watershed allow upstream and downstream passage at all flows. However, some indicators further evaluate physical impediments and others evaluate the biological or water quality impediments that may be present. The *substrate embeddedness* indicator provides a basis for determining if bull trout fry will have difficulty emerging from the gravel to access rearing habitat (Curry and MacNeill 2004). The *average wetted width/maximum depth ratio* indicator can help identify situations in which water depth for adult passage may be a problem. A very high average wetted width/maximum depth value may indicate a situation where low flows, when adults migrate, are so spread out that water depth is insufficient to pass adults. The *change in peak/base flows* indicator can help determine if change in base flows have been sufficient to prevent adult passage during the spawning migration. The *persistence and genetic integrity* indicator addresses biological impediments by evaluating interactions with other species. Potential water quality impediments are outlined within the *temperature* and *chemical contamination/nutrients* indicator write-ups.

3. **An abundant food base, including terrestrial organisms of riparian origin, aquatic macroinvertebrates, and forage fish.**

   None of the indicators directly address this PCE, but a number of them address it indirectly. The *sediment* and *substrate embeddedness* indicators document the extent to which substrate interstitial spaces are filled with fine sediment. Interstitial spaces provide

important habitat for aquatic macroinvertebrates and sculpin (Suttle et al 2004, cited by Beechie et al 2007) which are important food sources for bull trout. The *chemical contamination/nutrients* indicator evaluates the level to which a stream is contaminated by chemicals or has a high level of nutrients. Chemicals and nutrients greatly affect the type and diversity of aquatic invertebrate communities present in a water body. The *large woody debris* indicator documents how much large wood is present within a stream. The presence of large wood indicates that the diversity of macroinvertebrates may be greater because large wood increases habitat complexity (Bjornn and Reiser 1991). The *off-channel habitat* and *floodplain connectivity* indicators document the presence of off-channels which are generally more productive than main channels. Off channels are important sources of forage, particularly for juveniles. The *streambank condition* and *riparian conservation areas* indicators both shed light on the food base of a stream. Vegetation along streambanks and in riparian areas provide important habitat for individual macroinvertebrates. Vegetation hanging over the stream provides a surface for terrestrial and aquatic insects to perch and ultimately results in insects falling into the stream and becoming bull trout food (Saunders and Fausch 2005).

4. **Complex river, stream, lake, reservoir, and marine shoreline aquatic environments and processes that establish and maintain these aquatic environments, with features such as large wood, side channels, pools, undercut banks and unembedded substrates, to provide a variety of depths, gradients, velocities, and structure.**

Several indicators address this PCE directly. The *sediment* and *substrate embeddedness* indicators provide insight into how complex substrates are within a stream by documenting percent fines and embeddedness. In general, as percent fines and embeddedness increase, substrate complexity decreases. The *large woody debris* indicator provides an excellent picture of habitat complexity. The indicator rates the stream based on the amount of in-channel large woody debris. Habitat complexity increases as large wood increases (Bjornn and Reiser 1991). The *pool frequency and quality* and *large pools* indicators address habitat complexity by rating the stream based on the frequency of pools and their quality. Habitat complexity increases as the number of pools and their quality increase. The *off-channel habitat* indicator directly addresses complexity associated with side channels. The indicator is rated based on the amount of off-channel habitat, cover associated with off-channels, and flow energy levels. The *average wetted width/maximum depth ratio* indicator also corresponds to complexity. Low width-to-depth ratios indicate that undercut banks may be present. The *streambank condition* and *riparian conservation areas* indicators both shed light on the complexity of river and stream shorelines. Vegetation along streambanks and in riparian areas provides important habitat complexity and channel roughness. The *floodplain connectivity* indicator addresses complexity added by side channels and the ability of floodwaters to spread across the floodplain to dissipate energy and provide refugia for fish (Harvey and Watson 1986, cited by Pollock et al 2007). The *road density and location* indicator addresses complexity by identifying if roads are located in valley bottoms. Roads located in valley bottoms reduce complexity by eliminating vegetation and replacing complex habitats with smooth riprap. The *disturbance regime* indicator documents the frequency, duration, and size of environmental disturbance within the watershed. If scour events,

debris torrents, or catastrophic fires are frequent, long in duration, and large, then habitat complexity can be greatly reduced in source and transport channels while habitat complexity can be greatly increased in downstream response channels.

5. **Water temperatures ranging from 2 to 15 °C (36 to 59 °F), with adequate thermal refugia available for temperatures that exceed the upper end of this range. Specific temperatures within this range will depend on bull trout life-history stage and form; geography; elevation; diurnal and seasonal variation; shading, such as that provided by riparian habitat; streamflow; and local groundwater influence.**

   The *temperature* indicator addresses this PCE directly. The indicator rates streams according to how well temperatures meet bull trout requirements. Other matrix indicators address temperature indirectly. The *off-channel habitat* and *floodplain connectivity* indicators address how well stream channels are hydrologically connected to off-channel areas. Floodplains and off-channels are important to maintaining the water table and providing connectivity to the channel for springs, seeps, and groundwater sources which contribute cool water to channels (Pollock et al 2007). The *average wetted width/maximum depth ratio* indicator also corresponds to temperature. Low width-to-depth ratios indicate that channels are narrow and deep with little surface area to absorb heat. The *streambank condition* indicator documents bank stability. If the streambanks are stabilized by vegetation rather than substrate then it is likely that the vegetation provides shade which helps prevent increases in temperature. The *change in peak/base flows* indicator evaluates flows and flow timing characteristics relative to what would be expected in an undisturbed watershed. If base flow has been reduced, it is likely that water temperature during base flow has increased since the amount of water to heat has decreased. The *road density and location* indicator documents where roads are located. If roads are located adjacent to a stream then shade is likely reduced and temperature is likely increased. The *disturbance history* indicator describes how much of the watershed has been altered by vegetation management and therefore indicates how much shade has been removed. The *riparian conservation areas* indicator addresses stream shade which keeps stream temperatures cool.

6. **In spawning and rearing areas, substrate of sufficient amount, size, and composition to ensure success of egg and embryo overwinter survival, fry emergence, and young-of-the-year and juvenile survival. A minimal amount of fine sediment, generally ranging in size from silt to coarse sand, embedded in larger substrates, is characteristic of these conditions. The size and amounts of fine sediment suitable to bull trout will likely vary from system to system.**

   The *sediment* and *substrate embeddedness* indicators directly address this PCE. These indicators evaluate the percent fines within spawning areas and the percent embeddedness within rearing areas. The *streambank condition* and *riparian conservation areas* indicators indirectly address this PCE by documenting the presence or lack of potential fine sediment sources. If streambanks are stable and riparian conservation areas are intact then there is a low risk of introducing fine sediment from bank erosion. Also,

the *floodplain connectivity* indicator indirectly addresses this PCE. If the stream channel is connected to its floodplain, then there is less risk of bank erosion during high flows because stream energy is reduced as water spreads across the floodplain. The *increase in drainage network* and *road density and location* indicators assess the effects of roads on the channel network and hydrology. If the drainage network has significantly increased as a result of human-caused disturbance or road density is high within a watershed and roads are located adjacent to streams, then it is likely that in-channel fine sediment levels will be elevated above natural levels (Furniss et al 1991). The *disturbance regime* indicator documents the nature of environmental disturbance within the watershed. If the disturbance regime includes frequent and unpredictable scour events, debris torrents, and catastrophic fire, then it is likely that fine sediment levels will be elevated above background levels.

7. **A natural hydrograph, including peak, high, low, and base flows within historic and seasonal ranges or, if flows are controlled, minimal flow departure from a natural hydrograph.**

   The *change in peak/base flows* indicator addresses this PCE directly by documenting the condition of the watershed hydrograph relative to an undisturbed watershed of similar size, geology, and geography. There are several indicators that address this PCE indirectly. The *streambank condition* indicator documents bank stability. If the streambanks are stabilized by vegetation rather than substrate then it is likely that the streambank can act as a sponge that holds water during moist periods and releases that water during dry periods which contributes to water quality and quantity. The *floodplain connectivity* indicator is relevant to water storage within the floodplain which directly affects base flow. Floodplains are important to maintaining the water table and providing connectivity to the channel for springs, seeps, and groundwater sources which contribute to water quality and quantity (Pollock et al 2007). The *increase in drainage network* and *road density and location* indicators assess the influence of the road and trail networks on hydrology. If there is an increase in drainage network and roads are located in riparian areas, it is likely water is being intercepted and quickly routed to a stream which can increase peak flow. The *disturbance history* indicator evaluates disturbance across the watershed and provides a picture of how management may be affecting hydrology. The *riparian conservation areas* indicator determines whether riparian areas are intact and providing connectivity. If riparian areas are intact it is much more likely that springs, seeps, and groundwater sources are able to positively affect water quality and quantity.

8. **Sufficient water quality and quantity such that normal reproduction, growth, and survival are not inhibited.**

   The *temperature* and *chemical contamination/nutrients* indicators directly address water quality by comparing water temperatures to bull trout water temperature requirements, and documenting 303(d) designated stream reaches. Several other indicators indirectly address this PCE by evaluating the risk of fine sediment being introduced that would result in decreased water quality through increased turbidity. The *streambank condition* and *riparian conservation areas* indicators indirectly address this PCE by documenting

the presence or lack of potential fine sediment sources. If streambanks are stable and riparian conservation areas are intact then there is a low risk of introducing fine sediment from bank erosion. Also, the *floodplain connectivity* indicator indirectly addresses this PCE. If the stream channel is connected to its floodplain, then there is less risk of bank erosion during high flows because stream energy is reduced as water spreads across the floodplain. The *increase in drainage network* and *road density and location* indicators assess the effects of roads on the channel network and hydrology. If the drainage network has significantly increased as a result of human-caused disturbance or road density is high within a watershed and roads are located adjacent to streams, then it is likely that suspended fine sediment levels will be elevated above natural levels (Furniss et al 1991). The *disturbance regime* indicator documents the nature of environmental disturbance within the watershed. If the disturbance regime includes frequent and unpredictable scour events, debris torrents, and catastrophic fire, then it is likely that turbidity levels will be elevated above background levels.

9. **Sufficiently low levels of occurrence of nonnative predatory (e.g., lake trout, walleye, northern pike, smallmouth bass); interbreeding (e.g., brook trout); or competing (e.g., brown trout) species that, if present, are adequately temporally and spatially isolated from bull trout.**

   The only indicator that addresses this PCE is the *persistence and genetic integrity* indicator. This indicator addresses the probability of hybridization or displacement of bull trout by competitive species.