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Bruneau Field Office
Livestock Trailing Environmental Assessment

U.S. Department of the Interior
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Bruneau Field Office
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1.0 Introduction

The Bureau of Land Management's (BLM's) Bruneau Field Office (BFO) administers livestock grazing on 40 allotments and has issued 37 livestock grazing permits to 37 livestock operators (permittees). Currently, 128,582 animal unit months (AUMs) of active use are allocated to livestock by the 37 grazing permits, and an additional 6,582 AUMs are listed on these grazing permits as suspended nonuse.

In many instances, livestock operators must move their livestock 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 livestock 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 in the BFO have ranged in distance from less than one mile to approximately 26 miles and in duration from less than one day to five days.

Grazing permittees or other livestock operators needing to trail livestock across BLM-administered lands outside of the terms and conditions of a grazing permit must submit applications for a crossing permit prior to the proposed trailing in accordance with regulations (43 Code of Federal Regulations (CFR) 4130.6-3). Operating outside the terms of a grazing permit would include, but not be limited to, crossing public land outside of the permitted allotment and outside the permitted season of use within the allotment. Crossing permits are not required for trailing across private and state land or on improved roads. The crossing permit specifies the allotment(s) and/or BLM-administered lands to be trailed across, the period of use (dates), and number and kind of livestock authorized to trail.

In October 2011, the BFO requested permittees submit applications for crossing permits to trail livestock across BLM-administered lands. In response, the BFO received 11 applications to trail livestock across BLM-administered lands within the BFO. All 11 applications requested crossing permits to trail cattle. As no applications were received to trail domestic sheep, goats, or horses, trailing by these kinds of livestock is beyond the scope of this environmental assessment (EA).

1.1 Need for and Purpose of Action

Purpose: To determine if and under what conditions requests from qualified applicants for livestock trailing across BLM-administered lands would be permitted.

Need: BLM is required under the Federal Land Policy and Management Act (FLPMA) and the Taylor Grazing Act (TGA) to respond to applications for livestock trailing across BLM-administered lands.

1.2 Decision To Be Made

The BFO will decide whether to approve applications for crossing permits. If trailing is authorized, the BFO will decide whether to include routes and trailing conditions that correspond to crossing permit applications received by the BFO or that have been modified to avoid or

reduce impacts to resources of concern. The BFO will also decide whether to identify additional routes under which applications for crossing permits could be approved and, if so, the conditions under which such applications could be approved.

1.3 Summary of Proposed Action

The BLM proposes to issue crossing permits to qualified applicants authorizing the trailing of livestock across BLM-administered lands in the BFO in response to crossing permit applications received, consistent with the routes, terms and conditions, and stipulations described in Section 2.3.3 as Alternative C. The permits would be issued for up to 10 years or when the permit renewal process is completed; the permits would include terms and conditions and stipulations to minimize adverse environmental effects.

1.4 Location and Setting

The BFO is located in southwest Idaho. The northwest and southeast portions of the BFO are characterized by mountains 7,200 feet high. The trailing routes examined in this EA are utilized by livestock grazing permittees to implement their livestock grazing operations within the BFO. The project area for this EA totals 1,462,332 acres and includes all BLM-administered public lands located within livestock grazing allotments administered by the BFO (Maps 1A, 1B, and 1C). This project area is the area utilized to implement grazing systems throughout the entire BFO under the Bruneau Management Framework Plan (MFP) (1983).

1.5 Conformance with Applicable Land Use Plan

The Bruneau MFP (1983) is the applicable land use plan (LUP) (USDI BLM 1983). Bruneau MFP Range Management Objective #3 states "Allocate livestock forage in each of the allotments in the Bruneau Planning Unit within the limits necessary to maintain and/or enhance the range and soil resource," which allows for livestock grazing on the public lands administered by the BFO. Trailing is one method by which operators can move their livestock to and from range allotments in the BFO in order to graze on those allotments. Although the MFP does not specifically mention trailing, trailing is a customary component of many livestock grazing operations, is not explicitly precluded by the MFP, and is consistent with other relevant objectives and actions within the Bruneau MFP.

1.6 Relationship to Statutes, Regulations, and Other Requirements

Federal regulations authorize BLM to issue crossing permits, with associated terms and conditions, to any applicant showing a need to cross public land with livestock for proper and lawful purposes (43 CFR 4130.6-3). Permittees are permitted to graze livestock on public lands that are designated as available for livestock grazing in the MFP. In addition, the following laws and regulations provide the foundation for managing livestock use on the public lands:

- *The Taylor Grazing Act (TGA) of 1934 as amended:* Provides for the orderly use of public land. The goals of the TGA were to stop injury to the public grazing lands by preventing overgrazing and soil deterioration; to provide for their orderly use, improvement, and development; to stabilize the livestock industry dependent upon the public range; and for other purposes.

- *The Federal Land Policy and Management Act (FLPMA) of 1976:* Authorized the following: Inventory and identification of public lands, land use planning, and public involvement and participation. FLPMA also provides BLM with broad management authority under principles of multiple use and sustained yield. Land use planning resulted in the preparation of land use plans such as the Bruneau MFP.
- *The Public Rangelands Improvement Act (PRIA) of 1978:* Mandates that livestock grazing be managed to improve range condition and maintain the highest level of productivity;
- *National Historic Preservation Act of 1966* (NHPA)
- *Clean Water Act of 1972* (CWA);
- *Endangered Species Act of 1973* (ESA);
- *American Indian Religious Freedom Act of 1979* (AIRFA)
- *Native American Graves Protection and Repatriation Act of 1990 (*NAGPRA*)*: Prescribes a term and condition on all new grazing permits protecting human remains.
- *Title 43 CFR, Subpart 4100 – Grazing Administration, Exclusive of Alaska*: the regulations embody the Acts, as amended, listed above. Specifically, 43 CFR 4180.2 is the regulatory requirement that implements Idaho's Standards for Rangeland Health and Guidelines for Livestock Grazing Management, 1997 (Idaho Standards and Guidelines; USDI BLM 1997).

Fish and Wildlife Laws and Executive Orders

The Endangered Species Act (ESA) of 1973 as amended (16 USC 1531): Section 7 of the ESA outlines the procedure for federal interagency cooperation to conserve federally listed species and their designated habitats. Section 7(a)(2) of the ESA states that each federal agency shall, in consultation with Secretary, ensure that any action they authorize, fund, or carry out is not likely to either jeopardize the continued existence of a listed species or result in the destruction or adverse modification of their habitats within the project area. No ESA-listed species will be affected by the project.

Special Status Species Management Manual for the Bureau of Land Management (BLM Manual 6840): National policy directs BLM State Directors to designate sensitive species in cooperation with the state fish and wildlife agency. This manual establishes policy for management of species listed or proposed for listing pursuant to the ESA and Bureau sensitive species that are found on BLM-administered lands. Where relevant to the activities associated with this project, effects to special status species are analyzed in this EA.

The Migratory Bird Treaty Act, Executive Order 13186, and BLM Memorandum of Understanding WO-230-2010-04 (between BLM and the US Fish and Wildlife Service (USFWS)): These documents expressly require that Federal agencies evaluate the effects of proposed actions on migratory birds (including eagles) pursuant to the National Environmental Policy Act (NEPA) "or other established environmental review process" and restore and enhance the habitat of migratory birds, as practicable. Federal agencies are also required to identify where unintentional take reasonably attributable to agency actions is having, or is likely to have, a measurable negative effect on migratory bird populations. With respect to those actions so identified, the agency shall develop and use principles, standards, and practices that will lessen

the amount of unintentional take, developing any such conservation efforts in cooperation with the USFWS. Effects to migratory birds are analyzed in this EA.

With respect to Bald and Golden Eagles, this EA will evaluate: 1) whether take is likely to occur from activities associated with the proposed activity and 2) the direct, indirect, and cumulative impacts the proposal may have on the ability to meet the preservation standard of the Bald and Golden Eagle Protection Act of 1940, as amended, which the USFWS has interpreted to mean "compatible with the goal of stable or increasing breeding populations." The BLM should, in its NEPA document, include all practicable avoidance and minimization measures, as well as any monitoring or necessary additional mitigation in the project plan or as Conditions of Approval in the decision document.

The BLM Instruction Memorandum (IM-2012-043; USDI BLM 2011d): Greater Sage-grouse Interim Management Policies and Procedures: This document provides conservation policies and procedures to maintain and restore habitat for greater sage-grouse while the agency determines how to incorporate long-term measures into their Land Use Plans. These interim measures include direction for grazing management practices that will minimize adverse effects on greater sage-grouse and its habitat. Design features used to develop Alternative C in this EA include measures to minimize impacts to sage-grouse through timing and location that adhere to the direction in this IM.

Cultural Resource Laws and Executive Orders

BLM is required to consult with Native American tribes to "help assure (1) that federally recognized tribal governments and Native American individuals, whose traditional uses of public land might be affected by a proposed action, will have sufficient opportunity to contribute to the decision, and (2) that the decision maker will give tribal concerns proper consideration" (US Department of the Interior, BLM Manual Handbook H-8120-1). Tribal coordination and consultation responsibilities are implemented under laws and executive orders that are specific to cultural resources, which are referred to as "cultural resource authorities," and under regulations that are not specific, which are termed "general authorities." Cultural resource authorities include the National Historic Preservation Act of 1966, as amended (NHPA); the Archaeological Resources Protection Act of 1979 (ARPA); and the Native American Graves Protection and Repatriation Act of 1990, as amended (NAGPRA). General authorities include the American Indian Religious Freedom Act of 1979 (AIRFA); the National Environmental Policy Act of 1969 (NEPA); the Federal Land Policy and Management Act of 1976 (FLPMA); and Executive Order 13007-Indian Sacred Sites. The proposed action is in compliance with the aforementioned authorities.

Southwest Idaho is the homeland of two culturally and linguistically related tribes: the Northern Shoshone and the Northern Paiute. In the latter half of the 19th century, a reservation was established at Duck Valley on the Nevada/Idaho border west of the Bruneau River. The Shoshone-Paiute Tribes residing on the Duck Valley Reservation today actively practice their culture and retain aboriginal rights and/or interests in this area. The Shoshone-Paiute Tribes assert aboriginal rights to their traditional homelands as their treaties with the United States, the Boise Valley Treaty of 1864 and the Bruneau Valley Treaty of 1866, which would have extinguished aboriginal title to the lands now federally administered, were never ratified.

Other tribes that have ties to southwest Idaho include the Bannock Tribe and the Nez Perce Tribe. Southeast Idaho is the homeland of the Northern Shoshone Tribe and the Bannock Tribe. In 1867, a reservation was established at Fort Hall in southeastern Idaho. The Fort Bridger Treaty of 1868 applies to BLM's relationship with the Shoshone-Bannock Tribes. The northern part of the BLM's Boise District was also inhabited by the Nez Perce Tribe. The Nez Perce signed treaties in 1855, 1863 and 1868. BLM considers off-reservation treaty-reserved fishing, hunting, gathering, and similar rights of access and resource use on the public lands it administers for all tribes that may be affected by a proposed action.

1.7 Scoping and Development of Issues

Through internal scoping, the BFO Interdisciplinary Team (ID Team) identified the following as issues related to livestock trailing in the BFO:

- *Soils:* Issuing crossing permits across areas of highly erosive soils could result in the increase of the potential for erosion. Livestock trailing on saturated soils could degrade soil surface structure leading to soil compaction if repeated in localized areas.
- *Native plant community health:* Issuing crossing permits could result in damage to native plants. Repeated localized trailing may alter the native plant community to a less desirable state.
- *Vegetation Treatments:* Issuing crossing permits could result in preventing vegetation treatments from achieving the intended objectives.
- *Special status plants:* Issuing crossing permits could result in reducing viability of special status plants if the routes cross occupied habitat.
- *Noxious Weeds and Invasive Plants:* Issuing crossing permits could result in increasing the potential for noxious weeds and invasive plants to spread.
- *Special Status Fish:* Issuing crossing permits could result in effects to habitat for special status fish.
- *Species listed as a candidate for listing under the ESA:* Issuing crossing permits during sage-grouse breeding and nesting periods could result in disturbance to displaying and nesting birds.
- *Special Status Wildlife:* Issuing crossing permits could result in damage to special status wildlife nests or natal burrows.
- *Migratory Birds:* Issuing crossing permits during migratory bird nesting periods could result in damage to bird nests or burrows.
- *Big Game:* Issuing crossing permits during big game fawning/calving/lambing and wintering periods could result in disturbance and reduced individual fitness.
- *Cultural Resources:* Issuing crossing permits through archaeological sites could result in adverse effects to those sites.
- *Wilderness and Wild & Scenic Rivers:* Issuing crossing permits through Wilderness or Wild & Scenic Rivers (WSRs) could result in impacts to wilderness character or the river's Outstandingly Remarkable Values (ORVs).
- *Alternative Development*:
    - Non-permittees may not have applied because they were unaware of the need to apply.
    - Need to identify overnight and watering areas.

- Distinguish between trailing use of county-maintained/BLM roads, unimproved roads (two-tracks), and cross-country.
- Trailing width in consideration of sensitive areas (e.g., confine to roads only).
- Trailing AUMs would be in addition to land use plan (Bruneau MFP) AUMs.
- Clearly show/describe how design criteria would be implemented.
- Need for monitoring (compliance, trampling (wet/dry), invasive plants, noxious weeds, and cultural sites).
- Contingencies, penalties, strays, adequate herders, removal of dead animals (e.g., near leks).
- Avoid trailing in noxious weed areas.

A scoping letter was sent on December 15, 2011, to tribal governments, state and county governments, interested publics, and permittees (see Section 4.2, *List of Agencies, Organizations, and Individuals Consulted*). Comments were received from six entities (see Section 4.3, *Public Participation*). Additional issues raised through external scoping and addressed in this EA include the comments summarized below.

Comments from the Idaho Department of Fish and Game (IDFG) are summarized as follows:

- Limit trailing near sage-grouse leks to 10 am-6 pm, or at least do not start until 10 am (vs. 9 am).
- Continue to share sage-grouse data between agencies.
- Suggests that 0.25 mile riparian avoidance buffer and the sagebrush habitat avoidance measures will minimize potential adverse impacts to mule deer and pronghorn fawning areas, as well as elk calving areas, if implemented as described in the scoping package.
- If 0.5 mile avoidance of canyon rims from February 1 to July 31 is implemented, then bighorn lambing habitats used by ewes and young lambs would not be affected.
- In the future, if domestic sheep trailing is proposed, then consult with the IDFG.

Comments from the Idaho Department of Lands are summarized as follows:

- Denial of crossing permits:
  - Would result in the lessee being unable to obtain access to their grazing lease(s),
  - May result in degradation to state lands,
  - Could cause BLM permittees to cancel their state leases and result in loss of revenue to the State, and
  - Would result in an increase in fine fuel loading, causing catastrophic wildfires resulting in an annual herbaceous vegetation community.
- Alternative C may cause overutilization of state land.

Comments from the Idaho State Historical Society are summarized as follows:

- BLM should conduct surveys, at least at the sampling level, in areas that have had no previous investigations.

Comments from the Owyhee County Commissioners are summarized as follows:

- Trailing restrictions would delay allowing a grazing permit holder to move his/her livestock to effect the various terms, such as season of use and grazing rotation, prescribed in his/her grazing permit.

- Trailing should be considered as a connected action with the terms and conditions of a permitted use grazing authorization and is an essential element of proper administration of grazing by BLM under the TGA, PRIA, and FLPMA.
- Trailing has occurred continuously for nearly 150 years and any potential negative effects should be well known and documented.
- NEPA analysis should include consideration of other alternatives, such as trucking. We [the Owyhee County Commissioners] are convinced that an accurate analysis of the impacts of trucking in regard to resource impacts and in terms of animal injury and/or loss to the operator has the greater environmental impact.
- Trailing outweighs the negative environmental impacts of trucking on roads and related public land resource, including costs, as well as the inability of trucks to access many of the intended designations for trailing.
- Trailing must be expanded to include all potentially useful routes or standards including all roads open to the public whether or not they are designated as a BLM road.
- Trailing activity existed prior to the designation as wilderness; [therefore,] there should be no consideration of designated wilderness in a decision to issue or not issue a crossing permit. Bruneau FO states that some trailing within wilderness could continue to occur to accommodate livestock use.

Comments from Western Watersheds Project are summarized as follows. Western Watersheds Project contends that trucking of livestock is a viable alternative and should be considered as an alternative to trailing.

Western Watersheds Project states that trailing:

- Exposes wildlife to diseases.
- Promotes weeds, including medusahead and cheatgrass.
- Jeopardizes public health and safety by concentrating cattle and sheep waste and associated pathogens on or near dirt and gravel roads where inhalation of dust and contamination of waters is highly likely.
- Requires that all parts of livestock grazing must be examined to understand how, when, and where trailing would occur.
- Requires that strict sideboards be established – including denying use of any routes and requiring hauling/trucking, or alteration of grazing patterns.
- Throws open all lands north of the Mud Flat road to near-anything goes – stating that livestock trailing would also be allowed on additional routes there, subject to staying on roads, which brings up the question: what is a road?
- Can create immediate irreparable disturbance and harm to sagebrush habitats and wildlife during vulnerable periods of the year.
- Results in intensive trampling and grazing disturbance outside the proposed routes.
- Effects analysis would lack up-to-date detailed biological and other surveys that fully capture the necessary environmental baseline.
- Would require coordination with other BLM Districts if we have crossing permits that cross District or state boundaries.
- Deviations are very concerning that involve roading and extensive cross-country travel or grazing all along the way.

Western Watersheds Project states that BLM should:

- Consider habitat and population considerations as described in the Knick and Connelly (2009) sage-grouse monograph, the USFWS March 2010 Warranted But Precluded Finding for Greater sage-grouse, and other recent sage-grouse literature,
- Consider no temporary watering in sagebrush habitat year-round vs. 4/1-6/15, and
- Increase restrictions/buffers for overnight areas to increase protection of key sage-grouse habitat (5 miles vs. current 0.6 mile).

Comments from Simplot Livestock are summarized as follows:

- Trailing movements have been consistent over the past several years and, as such, are generally well known.
- Will need any future crossing permits to be effective at least 75 days before beginning trailing.

2.0 Description of the Alternatives

2.1 Alternative Development Process

The routes and trailing conditions included in Alternative A correspond to the crossing permit applications received by the BFO. Alternative B is the No Action Alternative, while Alternative C was developed by the BFO. For all three alternatives, only trailing of cattle was considered, as the BFO did not receive any crossing permit applications for trailing of domestic sheep, goats, or horses.

To develop Alternative C, the BFO ID Team reviewed each route and trailing event in Alternative A in relation to resources of concern. Alternative A routes already meeting the design criteria listed below were brought forward into Alternative C unchanged. The design criteria are based on best available science, current policy, and comments received through the scoping process. These design criteria were used as a guide to reduce resource conflicts on the remaining routes. For the remaining routes, the ID Team either:

- Adjusted the Alternative A route to conform wholly to the relevant design criteria to eliminate the potential resource conflict,
- Adjusted the Alternative A route to conform partially to the relevant design criteria to reduce the potential for adverse resource impacts while still allowing trailing to occur, or
- Removed the Alternative A route from consideration under Alternative C.

The ID Team identified additional routes along existing roads in the BFO that would also be available for trailing, consistent with the design criteria, to facilitate future applications for trailing. Stipulations that would apply to all routes under Alternative C were also developed.

Wildlife

- From March 1 to May 15, livestock trailing would be routed at least 0.62 miles from occupied and undetermined sage-grouse leks; if this is not possible, trailing events would be timed to occur between 10:00 am and 6:00 pm.
- From March 1 to June 30, overnight areas would be located at least 4.0 miles from occupied and undetermined sage-grouse leks to avoid impacts to lekking and nesting sage-grouse (and/or hens with early broods).
- From April 1 to June 30, cattle overnight areas would not be located in sagebrush habitat; if this is not possible, previously disturbed sites would be used, such as areas around stock ponds or troughs, past seedings, or other grassland sites.
- From April 1 to June 30, livestock trailing routes would avoid sagebrush habitats to the extent practical to minimize potential impacts to nesting sage-grouse (and/or hens with early broods).
- Summer through fall (June 1 through November 30), sage-grouse leks may be used for livestock overnight areas to maintain shorter vegetation for the lek.
- Trailing routes would be evaluated to avoid areas known to be occupied by pygmy rabbits from March 1 to July 15 to avoid impacts to natal burrows.
- From February 1 to July 31, livestock trailing would be routed at least 0.5 miles from canyon rims to avoid impacts to nesting golden eagles.

- From March 1 to July 31, livestock trailing routes would avoid historic ferruginous hawk nesting sites unless deemed unoccupied by a wildlife biologist prior to trailing in any given year to minimize disturbance to nesting birds.
- From April 15 to June 15, livestock trailing routes would avoid bighorn sheep lambing areas.

Special Status Plants

- Livestock trailing would be avoided where it has the potential to affect occupied special status plant habitat.
- No overnights would occur within 0.25 miles of special status plant populations
- Trailing that occurs on roads adjacent to special status plant populations would be restricted to within 50 feet of the road edge, except for trailing on roads adjacent to Mud Flat milkvetch populations. Trailing corridor width restrictions would not be imposed in areas with Mud Flat milkvetch, as this species is relatively tolerant of the impacts associated with trailing; however, overnight stays would not be permitted in areas with Mud Flat milkvetch.

Vegetation

- Trailing routes would avoid areas recently burned by wildfire where possible.
- Trailing routes would avoid recent vegetation treatments (Emergency Stabilization and Rehabilitation (ESR), fuels reduction, or restoration treatments) to the extent possible.
- Trailing routes would be located, or timed, to minimize the potential spread of noxious weeds.

Riparian

- Overnight areas would be at least 0.25 miles from riparian areas.
- Temporary water facilities would be placed at least 0.25 miles from riparian areas.
- Livestock trailing across riparian areas and live streams would be restricted to pre-determined locations.

Cultural

- Livestock trailing would be routed at least 0.25 miles from canyon rims and live streams to minimize impacts to cultural resources. Canyon and stream crossings would be restricted to pre-determined locations.
- Livestock trailing would be routed to avoid playas.
- Livestock trailing would be routed to avoid impacts to NRHP-eligible sites.

Soils

- Trailing would not be authorized during times when soils are saturated to minimize impacts to soils.
- Trailing routes would occur on roadways/designated routes of travel when practical.

Wild and Scenic Rivers (WSRs)

- Trailing within WSR corridors would be avoided.

2.2 Alternatives Considered But Not Analyzed in Detail

2.2.1 Trucking of Livestock

The ID Team analyzed the impacts associated with trucking of livestock as part of Alternative B, the No Action Alternative. Under the No Action Alternative, the ID Team assumed that applicants would find alternate means to transport their cattle across public land. For the purposes of analysis, the ID Team assumed that most, if not all, applicants would truck their livestock to and from their allotments and analyzed impacts accordingly.

2.3 Description of Proposed Action and Alternatives

All 11 applications received by the BFO requested crossing permits to trail cattle. As no applications were received to trail domestic sheep, goats, or horses, the alternatives apply only to trailing of cattle; trailing of domestic sheep, goats, and horses is not addressed in this EA.

2.3.1 Alternative A – Applicants' Proposed Trailing

The BLM would issue crossing permits to qualified applicants authorizing the trailing of livestock across BLM-administered lands in the BFO. Livestock trailing would be authorized within 1/8 mile on either side of trailing routes depicted on Map 1A. The total trailing corridor width would be 1/4 mile. Details for each individual applicant's proposed trailing are depicted on Maps 2A through 21A, including overnight locations; these details are summarized in Table 1.

Table 1. Alternative A Routes for Livestock Trailing, Grouped by Applicant.

Route #	Map #	Allotments Crossed	Total # of Cattle	Timeframe		# of Groups[A]	Days per Group[B]	Herding Method
				Begin	End			
John Anchustegui								
216A	2A	Battle Creek	500 C	3-28	4-15	2	1 day	Horse
217A	3A	East Castle Creek Battle Creek	500 C	9-15	11-15	2	2 days	Horse
Joseph Black & Sons								
230A[C]	4A	Northwest	1,100 C	3-28	5-20	3	5 days	Horse
231A	5A	Battle Creek East Castle Creek West Castle Creek	1,100 C	3-15	5-21	3	3 days	Horse
232A	6A	Battle Creek East Castle Creek West Castle Creek	1,100 C	11-1	12-20	3	3 days	Horse
David Lahtinen								
215A	7A	Northwest	204 C	10-1	10-10	1	2 days	Horse and motorized
Chester Sellman								
215A	7A	Northwest	113 C	10-1	10-10	1	2 days	Horse and motorized
John Urquidi								
215A	7A	Northwest	66 C	10-1	10-10	1	2 days	Horse and motorized
Mary's Creek LLC								
211A[C]	8A	Blackleg/Bull Creek Trap	265 C	6-27	7-5	1	3 days	Horse

Route #	Map #	Allotments Crossed	Total # of Cattle	Timeframe		# of Groups[A]	Days per Group[B]	Herding Method
				Begin	End			
227A[C]	8A	Blackleg/Bull Creek Trap	265 C	10-20	11-1	1	3 days	Horse
210A	9A	Blackleg/Bull Creek Trap	265 C	6-27	7-5	1	3 days	Horse
226A	9A	Blackleg/Bull Creek Trap	265 C	10-20	11-1	1	3 days	Horse
JR Simplot Company dbaWickahoney Cattle Company								
209A	10A	Center China Creek	400 C	5-1	5-20	1	2 days	Horse and motorized
209A	10A	Center China Creek	375 C	5-10	5-20	1	2 days	Horse and motorized
205A	10A	China Creek	700 C	10-25	11-10	1	1 day	Horse and motorized
267A	10A	Center	700 C	11-20	12-10	1	1 day	Horse and motorized
206A	11A	Blackstone Highway Field	775 C	6-1	6-15	1	1 day	Horse and motorized
223A	11A	Blackstone Highway Field	400 C	10-15	10-27	1	1 day	Horse and motorized
223A	11A	Blackstone Highway Field	375 C	10-25	11-5	1	1 day	Horse and motorized
207A	12A	Tindall Reservoir Field, Bull Creek West Bull Creek	775 C	6-15	7-1	1	1 day	Horse and motorized
225A	12A	Tindall Reservoir Field, Bull Creek West Bull Creek	775 C	10-20	10-25	1	1 day	Horse and motorized
Simplot Livestock Company								
208A	13A	Antelope Field	650 C	6-7	6-21	1	1 day	Horse and motorized
Strickland YT Ranch								
212A	14A	Trout Creek Highway Field	260 C	7-13	7-17	1	2 days	Horse
228A	14A	Trout Creek Highway Field	184 C	11-22	11-25	1	2 days	Horse
213A	15A	Louse Creek	260 C	6-3	6-6	1	2 days	Horse
313A	15A	Louse Creek	184 C	12-4	12-8	1	2 days	Horse
316A[C]	16A	Louse Creek	260 C	6-3	6-6	1	2 days	Horse
214A[C]	16A	Louse Creek	184 C	12-4	12-8	1	2 days	Horse
Tindall & Sons Ranches LLC								
200A/ 219A	17A	Blackstone	400 C	4-1	4-20	8	1 day	Horse
201A	17A	Sheep Creek SE	400 C	1-1	1-10	1	1 day	Horse
202A	17A	Blackstone	150 C	2-24	3-5	1	1 day	Horse
204A	17A	Sheep Creek SE	75 C	2-1	2-10	1	1 day	Horse
218A	17A	Sheep Creek SE	75 C	1-1	1-10	1	1 day	Horse
220A	17A	Sheep Creek SE	75 C	1-1	1-10	1	1 day	Horse

Route #	Map #	Allotments Crossed	Total # of Cattle	Timeframe		# of Groups[A]	Days per Group[B]	Herding Method
				Begin	End			
203A	17A	Sheep Creek SE	75 C	2-1	2-10	1	1 day	Horse
363A	21A	Buckhorn	400 C	4-1	4-6	1	1 day	Horse
366A	21A	Buckhorn	50 C	7-1	7-6	1	1 day	Horse
363A	21A	Buckhorn	400 C	11-1	11-6	1	1 day	Horse
366A	21A	Buckhorn	400 C	11-15	11-21	1	1 day	Horse
Gordon King								
229A	18A	West Castle Creek	1,100 C	3-31	4-15	3	1 day	Horse
Hall Family Trust								
355A	19A	Louse Creek	56 C	6-3	6-6	1	2 days	Horse
357A	19A	Louse Creek	56 C	8-9	8-12	1	2 days	Horse
359A[C]	20A	Louse Creek	56 C	6-3	6-6	1	2 days	Horse
360A[C]	20A	Louse Creek	56 C	8-9	8-12	1	2 days	Horse

[A] Indicates the number of groups in which the total number of livestock would be split for trailing. For example, 500 total cattle being trailed in 2 groups would result in 2 groups averaging 250 cattle each.
[B] Indicates how long it would take each group of livestock to travel the length of the trailing route.
[C] Routes are alternate routes.

The application letter asked for alternate trailing routes from applicants and, as a result, four applicants provided alternate routes. The applicant's alternate routes are listed below.

- *Joseph Black & Sons:* Route 230A (Map 4A) is an alternate to Route 231A (Map 5A).
- *Mary's Creek LLC:* Routes 211A and 227A (Map 8A) are alternates to Routes 210A and 226A (Map 9A).
- *Strickland YT Ranch:* Routes 316A and 214A (Map 16A) are alternates to Routes 213A and 313A (Map 15A).
- *Hall Family Trust:* Routes 359A and 360A (Map 20A) are alternates to Routes 355A and 357A (Map 19A).

2.3.2 Alternative B – No Action Alternative

Applications received in accordance with 43 CFR 4130.1-1 and 4130.6-3 for crossing permits to trail livestock on public lands would be denied. All applications received would be denied by decision in accordance with 43 CFR 4160. Livestock could be trailed on publicly maintained roads, State managed lands, or on private lands.

2.3.3 Alternative C – Trailing Designed to Reduce Resource Conflicts

The BLM would issue crossing permits to qualified applicants authorizing the trailing of livestock across BLM-administered lands in the BFO. Livestock trailing would be authorized within 1/8 mile on either side of trailing routes depicted on Map 1C, unless otherwise noted to avoid resources of concern. In these areas, livestock would be kept on the route.

Details for each individual trailing route are depicted on Maps 2C through 28C, including overnight locations; these details are also summarized in Table 2. As in Alternative A, only trailing of cattle would be authorized, as no applications were received to trail other kinds of livestock in the BFO. Maps 2C through 21C depict the trailing routes corresponding to those identified in Alternative A, while Maps 22C through 28C depict the additional trailing routes

identified by BLM to facilitate future applications for trailing, as described under Section 2.1, *Alternative Development Process*.

Stipulations specific to each Alternative C route, if any, are identified in Table 2 and Maps 2C through 28C. Stipulations applicable to all routes under Alternative C include the following:

- Trailing would occur off paved roads (except when crossing a paved road) and would not congest roadways or cause a hazard to motorized vehicles. Cross-country travel by livestock would only be authorized as shown on Maps 2C through 28C.
- Trailing would be active, with livestock moving toward their final destination, except at night.
- Overnighting would occur only at locations displayed on Maps 2C through 28C.
- Motorized vehicles would remain on existing vehicle routes. Cross-country use of motorized vehicles would not be authorized.
- Livestock trailing on routes in or adjacent to burned areas that have been temporarily closed to grazing would be kept on the route until the criteria for reopening the burned area to grazing are met. If the burned area has also had ESR treatments, livestock would be kept on the route until ESR objectives were met.
- Livestock trailing on routes in or adjacent to vegetation treatments (e.g., fuels projects or restoration treatments) would be kept on the route until the treatment objectives are met, unless the specific trailing event would not conflict with treatment objectives.
- From April 1 to June 30, temporary water troughs would not be placed in sagebrush habitat to avoid impacts to nesting sage-grouse (and/or hens with early broods); if this is not possible, previously disturbed sites would be used, such as areas around stock ponds or troughs, past seedings, or other grassland sites. Summer through fall (June 1 through November 30), sage-grouse leks may be used for temporary water sites to maintain shorter vegetation for the lek.
- Areas used for staging vehicles, horse trailers, fence panels, etc. would avoid sagebrush habitats; if this is not possible, previously disturbed sites would be used, such as areas around stock ponds or troughs, past seedings, or other grassland sites.
- Per the Final Supplementary Rules published in the *Federal Register* on July 21, 2011 (76 FR 43706), all supplemental feeding of livestock during trailing, including feeding of horses used for the purposes of herding, must use certified noxious-weed-free forage to prevent the spread of noxious weeds on BLM-administered public lands in Idaho.

Alternative C would include alternate routes for two applicants. The applicant's alternate routes under Alternative C are listed below.

- *Joseph Black & Sons:* Route 230C (Map 4C) is an alternate to Route 231C (Map 5C).
- *Mary's Creek LLC:* Routes 211C and 227C (Map 8C) are alternates to Routes 210C and 226C (Map 9C).

Alternative C would no longer include the alternate routes for two applicants, Strickland YT Ranch and Hall Family Trust, as follows.

- *Strickland YT Ranch:* There would be no alternates to Routes 213C and 313C (Map 15C) under Alternative C.
- *Hall Family Trust:* There would be no alternates to Routes 355C and 357C (Map 19C) under Alternative C.

Table 2. Alternative C Routes for Livestock Trailing, Grouped by Applicant.

Route #	Map #	Allotments Crossed	Total # of Cattle	Timeframe Begin	Timeframe End	# of Groups[A]	Days per Group[B]	Herding Method	Stipulations under Alternative C[C]
John Anchustegui									
216C	2C	Battle Creek	500 C	3-28	4-15	2	1 day	Horse	Adjust route to location shown on map. Check with Wildlife Biologist before trailing. Keep on route where shown on map.[D]
217C	3C	East Castle Creek Battle Creek	500 C	9-15	11-15	2	2 days	Horse	Adjust route to location shown on map. Keep on route where shown on map.
Joseph Black & Sons									
230C[E]	4C	Northwest	1,100 C	3-28	5-20	3	5 days	Horse	Keep on route at stream crossings shown on map. Trail between 10a & 6p where shown on map. Adjust overnight locations as shown on map.
231C	5C	Battle Creek East Castle Creek West Castle Creek	1,100 C	3-15	5-21	3	3 days	Horse	Adjust route to location shown on map. Check with Wildlife Biologist before trailing through eastern portion. Keep on route where shown on map. Trail between 10a & 6p where shown on map. Adjust overnight locations as shown on map.
232C	6C	Battle Creek East Castle Creek West Castle Creek	1,100 C	11-1	12-20	3	3 days	Horse	Adjust route to location shown on map. Keep on route where shown on map.
David Lahtinen									
215C	7C	Northwest	204 C	10-1	10-10	1	2 days	Horse and motorized	Keep on route where shown on map.
Chester Sellman									
215C	7C	Northwest	113 C	10-1	10-10	1	2 days	Horse and motorized	Keep on route where shown on map.
John Urquidi									
215C	7C	Northwest	66 C	10-1	10-10	1	2 days	Horse and motorized	Keep on route where shown on map.
Mary's Creek LLC									
211C[E]	8C	Blackleg/Bull Creek Trap	265 C	7-1	7-5	1	3 days	Horse	Begin trailing timeframe on 7/1, not 6/27. Keep on route where shown on map. Avoid riparian area where shown on map.

Route #	Map #	Allotments Crossed	Total # of Cattle	Timeframe		# of Groups[A]	Days per Group[B]	Herding Method	Stipulations under Alternative C[C]
				Begin	End				
227C[E]	8C	Blackleg/Bull Creek Trap	265 C	10-20	11-1	1	3 days	Horse	Keep on route where shown on map. Avoid riparian area where shown on map.
210C	9C	Blackleg/Bull Creek Trap	265 C	7-1	7-5	1	3 days	Horse	Begin trailing timeframe on 7/1, not 6/27.
226C	9C	Blackleg/Bull Creek Trap	265 C	10-20	11-1	1	3 days	Horse	n/a
JR Simplot Company dbaWickahoney Cattle Company									
222C	10C	Center China Creek	400 C	5-1	5-20	1	2 days	Horse and motorized	**Route added to replace Route 209A.**
222C	10C	Center China Creek	375 C	5-10	5-20	1	2 days	Horse and motorized	**Route added to replace Route 209A.**
221C	10C	China Creek	700 C	10-25	11-10	1	1 day	Horse and motorized	**Route added to replace Route 205A.** Keep on route where shown on map.
265C	10C	Center	700 C	11-20	12-10	1	1 day	Horse and motorized	**Route added to replace Route 267A.**
206C	11C	Blackstone Highway Field	775 C	6-1	6-15	1	1 day	Horse and motorized	n/a
223C	11C	Blackstone Highway Field	400 C	10-15	10-27	1	1 day	Horse and motorized	n/a
223C	11C	Blackstone Highway Field	375 C	10-25	11-5	1	1 day	Horse and motorized	n/a
207C	12C	Tindall Reservoir Field, Bull Creek West Bull Creek	775 C	6-15	7-1	1	1 day	Horse and motorized	n/a
225C	12C	Tindall Reservoir Field, Bull Creek West Bull Creek	775 C	10-20	10-25	1	1 day	Horse and motorized	n/a
Simplot Livestock Company									
208C	13C	Antelope Field	650 C	6-7	6-21	1	1 day	Horse and motorized	Adjust route to location shown on map.
Strickland YT Ranch									
212C	14C	Trout Creek Highway Field	260 C	7-13	7-17	1	2 days	Horse	Adjust overnight location as shown on map.

Route #	Map #	Allotments Crossed	Total # of Cattle	Timeframe		# of Groups[A]	Days per Group[B]	Herding Method	Stipulations under Alternative C[C]
				Begin	End				
228C	14C	Trout Creek Highway Field	184 C	11-22	11-25	1	2 days	Horse	Adjust overnight location as shown on map.
213C	15C	Louse Creek	260 C	6-3	6-6	1	2 days	Horse	Keep on route where shown on map.
313C	15C	Louse Creek	184 C	12-4	12-8	1	2 days	Horse	Keep on route where shown on map.
n/a[E]	16C	Louse Creek	260 C	6-3	6-6	1	2 days	Horse	**No equivalent route in Alternative C.**
n/a[E]	16C	Louse Creek	184 C	12-4	12-8	1	2 days	Horse	**No equivalent route in Alternative C.**
Tindall & Sons Ranches LLC									
200C	17C	Blackstone	400 C	4-1	4-20	8	1 day	Horse	Adjust route to location shown on map.
201C	17C	Sheep Creek SE	400 C	1-1	1-10	1	1 day	Horse	n/a
202C	17C	Blackstone	150 C	2-24	3-5	1	1 day	Horse	n/a
n/a	17C	Sheep Creek SE	75 C	2-1	2-10	1	1 day	Horse	**No equivalent route in Alternative C.**
n/a	17C	Sheep Creek SE	75 C	1-1	1-10	1	1 day	Horse	**No equivalent route in Alternative C.**
n/a	17C	Sheep Creek SE	75 C	1-1	1-10	1	1 day	Horse	**No equivalent route in Alternative C.**
n/a	17C	Sheep Creek SE	75 C	2-1	2-10	1	1 day	Horse	**No equivalent route in Alternative C.**
363C	21C	Buckhorn	400 C	4-1	4-6	1	1 day	Horse	n/a
366C	21C	Buckhorn	50 C	7-1	7-6	1	1 day	Horse	n/a
363C	21C	Buckhorn	400 C	11-1	11-6	1	1 day	Horse	n/a
366C	21C	Buckhorn	400 C	11-15	11-21	1	1 day	Horse	n/a
Gordon King									
229C	18C	West Castle Creek	1,100 C	3-31	4-15	3	1 day	Horse	n/a
Hall Family Trust									
355C	19C	Louse Creek	56 C	6-3	6-6	1	2 days	Horse	Keep on route where shown on map.
357C	19C	Louse Creek	56 C	8-9	8-12	1	2 days	Horse	Keep on route where shown on map.
n/a[E]	20C	Louse Creek	56 C	6-3	6-6	1	2 days	Horse	**No equivalent route in Alternative C.**
n/a[E]	20C	Louse Creek	56 C	8-9	8-12	1	2 days	Horse	**No equivalent route in Alternative C.**
Additional Routes Available for Livestock Trailing									
333C	22C	Riddle Trout Creek	up to 1,100 C	n/a	n/a	n/a	n/a	Horse and motorized	No trailing between 3/1 and 7/15.
332C	23C	Highway Field	up to 1,100 C	n/a	n/a	n/a	n/a	Horse and motorized	No trailing between 3/1 and 7/15.
346C	23C	Highway Field	up to 1,100 C	n/a	n/a	n/a	n/a	Horse and motorized	No trailing between 3/1 and 7/15. Keep on route where shown on map.

Route #	Map #	Allotments Crossed	Total # of Cattle	Timeframe		# of Groups[A]	Days per Group[B]	Herding Method	Stipulations under Alternative C[C]
				Begin	End				
347C	23C	Highway Field	up to 1,100 C	n/a	n/a	n/a	n/a	Horse and motorized	No trailing between 3/1 and 7/15.
323C	24C	Sheep Creek SE Alzola	up to 1,100 C	n/a	n/a	n/a	n/a	Horse and motorized	No trailing between 3/1 and 6/30. Overnight at locations shown on map. Keep on route where shown on map. Keep on route at stream crossing on map.
329C	24C	Alzola	up to 1,100 C	n/a	n/a	n/a	n/a	Horse and motorized	No trailing between 3/1 and 6/30. Overnight at location shown on map. Keep on route at stream crossing on map. Avoid riparian area shown on map.
330C	24C	Alzola	up to 1,100 C	n/a	n/a	n/a	n/a	Horse and motorized	No trailing between 3/1 and 6/30. Overnight at location shown on map.
331C	24C	Alzola Scotts Table McDonald Creek	up to 1,100 C	n/a	n/a	n/a	n/a	Horse and motorized	No trailing between 3/1 and 6/30. Keep on route where shown on map. Keep on route at stream crossing on map.
348C	24C	Alzola Simplot Field	up to 1,100 C	n/a	n/a	n/a	n/a	Horse and motorized	No trailing between 3/1 and 6/30. Keep on route where shown on map.
303C	25C	Northwest Center	up to 1,100 C	n/a	n/a	n/a	n/a	Horse and motorized	Keep on route where shown on map.
305C	25C	Center	up to 1,100 C	n/a	n/a	n/a	n/a	Horse and motorized	Keep on route where shown on map.
315C	25C	Center	up to 1,100 C	n/a	n/a	n/a	n/a	Horse and motorized	Keep on route where shown on map until ESR objectives are met.
308C	25C	Center Northwest	up to 1,100 C	n/a	n/a	n/a	n/a	Horse and motorized	Keep on route where shown on map until ESR objectives are met. Trail between 10a & 6p where shown on map.
306C	25C	Northwest Center	up to 1,100 C	n/a	n/a	n/a	n/a	Horse and motorized	Keep on route where shown on map until ESR objectives are met.
311C	25C	Center Miller Table Seeding East Canyon View	up to 1,100 C	n/a	n/a	n/a	n/a	Horse and motorized	n/a
316C	25C	Center	up to 1,100 C	n/a	n/a	n/a	n/a	Horse and motorized	Keep on route where shown on map until ESR objectives are met.

Route #	Map #	Allotments Crossed	Total # of Cattle	Timeframe		# of Groups[A]	Days per Group[B]	Herding Method	Stipulations under Alternative C[C]
				Begin	End				
334C	26C	China Creek Crab Creek	up to 1,100 C	n/a	n/a	n/a	n/a	Horse and motorized	No trailing between 3/1 and 6/30. Keep on route at stream crossing on map.
345C	27C	Northwest	up to 1,100 C	n/a	n/a	n/a	n/a	Horse and motorized	Keep on route where shown on map.
282C	28C	East Castle Creek West Castle Creek Camas Creek Pocket	up to 1,100 C	n/a	n/a	n/a	n/a	Horse and motorized	No trailing between 3/1 and 7/15.
354C	28C	East Castle Creek Battle Creek	up to 1,100 C	n/a	n/a	n/a	n/a	Horse and motorized	No trailing between 3/1 and 7/15.
294C	28C	Battle Creek	up to 1,100 C	n/a	n/a	n/a	n/a	Horse and motorized	No trailing between 3/1 and 7/15.
295C	28C	Battle Creek	up to 1,100 C	n/a	n/a	n/a	n/a	Horse and motorized	No trailing between 3/1 and 7/15.

[A] Indicates the number of groups in which the total number of livestock would be split for trailing. For example, 500 total cattle being trailed in 2 groups would result in 2 groups averaging 250 cattle each.
[B] Indicates how long it would take each group of livestock to travel the length of the trailing route.
[C] Stipulations for routes depicted on Maps 2C through 21C indicate changes relative to permittees' applications analyzed under Alternative A. Rows with "n/a" indicate that no change was necessary for avoiding resources of concern. Stipulations for the additional routes depicted on Maps 22C through 28C specify stipulations specific to those routes.
[D] "Keep on route" indicates livestock should be actively herded to stay on the route; any strays should be kept to within 50 feet of the route.
[E] Routes are alternate routes.

3.0 Affected Environment and Environmental Consequences

3.1 Introduction

3.1.1 Section Organization

The sections below describe the resources and uses affected by the alternatives described in Section 2.3. Each section is organized as follows:

- *Affected Environment:* Describes the current condition of the affected resource or use.
- *Environmental Consequences:* Describes direct and indirect impacts to the resource or use
  - *General Description of Impacts:* Describes the types of impacts that could result from the alternatives
  - *Comparison of Impacts:* Compares impacts to resource/use indicators under each alternative
  - *Alternative A:* Describes the direct and indirect impacts of Alternative A
  - *Alternative B:* Describes the direct and indirect impacts of Alternative B
  - *Alternative C:* Describes the direct and indirect impacts of Alternative C
- *Cumulative Impacts:* Describes the cumulative impacts to the resource or use
  - *Scope of Analysis:* Describes the geographic scope for each cumulative impacts analysis and past, present, and reasonably foreseeable future actions affecting the resource or use
  - *Alternative A:* Describes cumulative impacts under Alternative A
  - *Alternative B:* Describes cumulative impacts under Alternative B
  - *Alternative C:* Describes cumulative impacts under Alternative C

Additional information relevant to all sections within *Affected Environment and Environmental Consequences* is presented below.

3.1.2 Common Definitions

- *Crossing Permit:* A crossing permit is required when livestock are being trailed across BLM-administered land, or other land under BLM control, where the applicant does not have authorized use or the trailing would occur outside their authorized use period. A crossing permit includes a specified timeframe, a defined route, and other terms and conditions to meet resource objectives (43 CFR 4130.6-3).

- *Project Area:* The project area totals 1,462,332 and includes all BLM-administered public lands located within livestock grazing allotments administered by the BFO (Maps 1A, 1B, and 1C).

- *Road (Improved):* Roads with applications intended to harden the surface. Improved roads are maintained on a regular schedule for the purpose of motor vehicle travel. These roads typically have a formal name that is widely accepted (e.g., State Highway 51, CCC Road, Mud Flat Road, Wickahoney Crossing, Rowland Road).

- *Road (Unimproved):* Roads that could accommodate a motor vehicle but are not surfaced or maintained expressly for motor vehicle travel. These roads are typically not named but

often appear on United States Geological Survey (USGS) 7.5 minute quadrangle maps (e.g., jeep trails, two-track routes).

- *Trailing:* Domestic livestock walking from one location to another under the control of one or more herders.

- *Trailing (Corridor):* The polygons depicted on the maps showing where livestock could potentially occur along each trailing route. See analysis assumptions for livestock travel.

- *Trailing (Route):* The lines depicted on the maps showing where livestock trailing would occur.

3.1.3 Common Analysis Assumptions

- The route widths and AUM calculations encompass the maximum impact that is likely to occur as a result of the alternatives.

- Livestock would overnight in small groups scattered over approximately 40 acres.

- Livestock would travel within 1/8 mile of identified trailing routes, except where applicants are directed to "keep on route" while trailing livestock along particular sections of trailing routes. The intention is that, in these areas, livestock would be actively herded to stay on the route and that any strays should be pulled back to the route. It is assumed that under these conditions, all livestock, including strays, would be kept to within 50 feet of either side of the route and would trail along the route itself.

- Improved roads support no vegetation and are 50 feet wide, while unimproved roads support vegetation across 5 feet of their 15 feet total assumed width.

- Trailing routes in Alternative A and C for which applications were received would generally be used every year. Even though alternate routes would not be used every year, the impacts of using these routes every year were analyzed. Additional trailing routes identified by BLM in Alternative C could be used every year, but would likely be used less frequently. As a result, the impact analysis likely overestimates the impacts associated with trailing under both Alternatives A and C.

- Because motorized vehicle use is restricted to existing vehicle routes and because of the small number of horses that would be involved in herding cattle cross-country, the impact analyses all assume the impacts of the method of herding itself would be negligible.

- If Alternative B, the No Action Alternative, were to be implemented and applications for crossing permits were denied, it is assumed applicants would find alternate means to transport their cattle across public land. For the purposes of analysis, it is assumed that most, if not all, applicants would truck their livestock to and from their allotments. The routes on which trucking of livestock would most likely occur are depicted on Map 1B. The analysis assumes that one truck can generally carry from 32 cow/calf pairs to 45

cows or an average of 40 cows per trip and that loading and staging areas would occur on non-BLM lands or within the applicant's allotment.

- For the purposes of this EA, "permittee" refers to livestock operators whose allotments are being trailed across, while "applicant" refers to livestock operators who have applied for crossing permits for trailing livestock. The term "livestock operators" is used to refer to permittees and applicants collectively or when the distinction between permittees and applicants is not important.

3.1.4 Cumulative Impacts Analysis Overview

The cumulative impacts analysis area comprises the greatest extent over which the combined direct, indirect, and cumulative effects are assessed for each resource. A direct impact is caused by the actions of the project 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 on the environment 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.

NEPA requires that a cumulative effects discussion be included in the analysis. The cumulative effects analysis considers Federal, State, and private activities within the analysis area that affect resources within the BFO that would also be affected by the alternatives in this EA. Past actions that have affected resources in the BFO include the following; some of these actions are also ongoing:

- Livestock grazing and grazing administration
- Livestock trailing
- Range improvement construction and maintenance
- Vegetation treatment projects
- Noxious weed management
- Wildfire suppression and ESR
- Road construction and maintenance
- Cross-country off-highway vehicle (OHV) use
- Recreational activities occurring under Special Recreation Permits
- Historic hunting and agricultural conversion
- Right-of-way (ROW) maintenance
- Military training
- Designation of Wilderness and WSRs

For purposes of the analysis in this EA, the impacts of all past activities within the project area were considered to be reflected in existing resource conditions. 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 the most 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.

Since the scope of cumulative effects analyses varies by resource, each resource section identifies the geographic and temporal scope and rationale for the cumulative impact analysis 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 (project area and partial 17.4 mile buffer; see Section 3.8.2, *Cumulative Impacts – Greater Sage-Grouse*) were identified during analyses (Map 29), and projects are separated accordingly. Table 3 lists all potential present and reasonably foreseeable future actions that may need to be considered in those resource-specific analyses.

Table 3. Present and Reasonably Foreseeable Future Actions within the Cumulative Impacts Analysis Areas.

Project	Date	Agency	Description of Activity: *1) Project Area* *2) Project Area + 17.4 mi. Buffer*
Livestock Grazing	Ongoing	BLM FS	Future decisions will include management to meet or move toward Standards & LUP objectives: 1) ~1.5 million acres (~128,000 AUMs) 2) ~2.7 million acres
Livestock Grazing	Ongoing	State Private	Grazing impacts are variable but could occur on the following number of acres: 1) ~300,000 acres 2) ~508,000 acres
Livestock Trailing	Ongoing	BLM	Cattle and sheep are moved to and between allotments to facilitate grazing management: 1) N/A (cattle trailing is addressed in this EA; sheep trailing is not as no applications were received) 2) ~94,000 acres (OFO and JFO)
Bruneau and Other Fuel Breaks Projects	2012 or 2013	BLM	Fuel breaks, in the form of greenstrips and roadside mowing, will occur in the northeastern portion of the project area (#1 on Map 29), which may take 5 years to implement; maintenance is anticipated every 7-10 years: 1) 145 miles of road; 1,130 acres of shrub modification (#1 on Map 29) 2) 206 miles of road (#1 & #5 on Map 29)
Upper Castle Creek and Other Fuels Projects	2006-2014	BLM	Juniper control project that comprised ~33,000 acres in the northwestern portion of the project area (#2 on Map 29): 1) ~25,000 acres implemented; of the remaining areas to treat, 2,000-4,000 acres/year will occur 2012-2014 (#2 on Map 29) 2) ~25,125 acres (#2 & #6 on Map 29)
Noxious weed and invasive species management	Ongoing	All	BLM Eastern Owyhee Cooperative Weed Management Area (CWMA)

Project	Date	Agency	Description of Activity: *1) Project Area* *2) Project Area + 17.4 mi. Buffer*
Road Maintenance	Ongoing		Only a small portion of the following miles of roads are maintained in any given year: 1) 661 miles[A] 2) 979 miles
Wildfire suppression and ESR	Ongoing		Although wildfire suppression and implementation of ESR projects will occur, locations and quantities are unknown; known future projects include: 1) 8 miles temporary fence + 4 miles permanent fence (#4 on Map 29) 2) 26 miles temporary fence + 4 miles permanent fence (#4 & #5 on Map 29)
Special Recreation Permits	Ongoing	BLM	Typical applications each year include: 1) 2 motorcycle races in the competitive use area in the northwestern portion of the project area (#3 on Map 29), 1-2 bighorn sheep guided hunts, 1 wildlife viewing trip, and 1 group hiking trip 2) 8 races (BFO: 2 motorcycle; OFO: 2 pedestrian, 1 ATV, 2 motorcycle, 1 horse)
Range Improvements (Construction)	2012-2013	BLM	Projects associated with grazing decisions: 1) Projects in the Battle Creek, Owens, and East Castle Creek Allotments associated with grazing decisions for those allotments 2) Same as #1 and none in OFO; unknown for other areas
Range Improvements (Maintenance)	Ongoing	BLM	Regular maintenance of existing projects: 1) Anthill pump house reconstruction (#2 on Map 29) and ~5 trough replacements in northern portion of project area 2) Same as #1 and none in OFO; unknown for other areas
[A] All road miles; in BFO, up to ~140 miles maintained annually.			

3.2 Soils/Watershed

3.2.1 Affected Environment – Soils/Watershed

Soils and watersheds in the project area are managed to provide for proper infiltration, retention, and release of water to provide for nutrient cycling, hydrologic cycling, and energy flow. Soil and watershed conditions in the project area are variable but generally stable. Live vegetative cover, organic matter mass, and levels of bare ground are generally adequate to protect and stabilize soils and promote watershed function. Section 3.6.1 provides a brief description of the characteristics and seasonality of run-off in the Bruneau and Upper Owyhee River Watersheds.

Indicators of soil instability and watershed dysfunction include low amounts and distributions of ground cover, evidence of accelerated erosion, and physical soil crust/surface sealing. Soils that would be affected by the action alternatives can be classified into two distinct types: 1) gravel and sandy loams and 2) the clayey and silt loams. Generally, gravel and sandy loams occur in the

Snake River Plains Major Land Resource Area (MLRA), while clay and silt loams are primarily located in the Owyhee High Plateau MLRA within the project area. The United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) provides maps and full descriptions of both these MLRAs (USDA NRCS 2006).

The Soil Survey of Owyhee County Area, Idaho (USDA) describes the occurrence and characteristics of these soil types in detail. The sandy loams have the highest erosion potential. Erosive soils on 37,808 acres of the project area are more susceptible to accelerated erosion than other soils because they are inherently less stable. Erosive soils, as they pertain to this analysis, are those with a k-factor[1] equal to or greater than 0.49.

Livestock grazing has and continues to affect soil and watershed conditions. Livestock grazing alters the amount and type of vegetative cover and litter. In most cases, current grazing does not destabilize soils or watershed function because current management systems limit utilization levels, seasons of use, and stocking rates. Repeated spring grazing in some steeper areas of the Snake River Plains MLRA, such as the Birch Creek watershed, reduced the soil-surface and sub-surface organic matter, with a corresponding decrease in stability. Some evidence of watershed instability are still visible in those areas but are now recovering due, in part, to implementation of proper grazing management practices consistent with the Idaho Guidelines for Grazing Management to meet or make progress toward meeting the Idaho Standards for Rangeland Health and vegetation treatment projects.

Road construction and maintenance activities and fire suppression activities have removed or severely degraded native soils in localized, linear features of the landscape. Habitual livestock travel and OHV use has created localized areas of bare ground. Vegetation treatment projects involving the use of rangeland drills have disrupted the soil surface on approximately 75,615 acres of the project area. More than half of these have occurred since 2010 as a result of the Crow Bar Fire ESR and Big Hill Fire ESR projects. Range improvement projects like fences and livestock water pipelines have improved the distribution of livestock on the landscape, dispersing the effects of grazing and trampling. These projects all had initial adverse effects to soil structure and stability because the seedings involved surface-disturbing rangeland drills and the pipeline involved excavation. However, these projects eventually improved soil stability and watershed health over the long-term.

Bare ground values fluctuate naturally in accordance with precipitation, particularly in lower elevations where annual vegetation forms a major component of the plant community. The foothill soils of the project area are more susceptible to variations in precipitation as it relates to bare ground. The montane areas of the Owyhee High Plateau MLRA are less susceptible, as their plant communities are composed largely of perennial vegetation.

Biological Soil Crusts

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.

[1] Soil erodibility factor K represents both susceptibility of soil to erosion and the rate of runoff, as measured under the standard unit plot condition.

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).

The NRCS identifies biological soil crusts as a critical ecological attribute to be used as an indicator of rangeland health (USDA NRCS 2003). These crusts may serve as an early indicator of ecological site decline since they appear to be more sensitive to disturbance than vascular plants. In addition, the crusts also appear to limit germination and establishment of invasive annual grasses (USDI BLM 2001). Within the project area, crusts are less likely to occur in sites that have experienced successive disturbance legacies, such as seedings, agricultural sites, and roadsides. In higher elevations with greater precipitation, vascular plant growth precludes biological crust development (USDI 2001).

Biological soil crusts are patchy throughout the project area and generally unmapped. Biological soil crusts are prevalent at lower elevations on less than 1,000 meters (about 3,200 feet) USDI 2001). One area of high soil crust diversity was proposed, but not designated, as an ACEC in 1999. Maps 2A and 2C show the location of this area. This document will refer to this unique area as the "biological soil crust area" because it does not have any official designation.

The biological soil crust area has rather complex topography, consisting of steep-sloped ridges with more gently-sloping depositional sites at the base. Much of this area had a sandy loam to sandy soil surface. Biological crusts throughout the area are varied and well-developed. In general, the presence of well-developed biological soil crusts in sandy soils is an uncommon occurrence because these types of soils are easily disturbed by trampling. The north-slope grassland communities contain moss-dominated crusts, which form a continuous carpet between grass plants. More gentle east and west aspects support sparsely vegetated shrub communities. These contain biological crusts dominated by lichens in the genus *Collema* and contain some filamentous cyanobacteria.

The crusts in the biological soil crust area form a highly dissected, pedicelled structure that is unusual for the Great Basin. This pedicelled structure is more similar to crusts found on the Colorado Plateau. This microtopography adds considerable vertical structure to the community, as well as forming a rough soil surface that functions to slow overland flow of water and increases infiltration by ponding water. The composition of the crust is significant from a plant community health perspective; the dominant crust organisms fix atmospheric nitrogen. Considering the extent of the biological crusts in these areas, it is likely that nutrient cycles in these communities are at least partially dependent on nitrogen input from these crustal organisms.

3.2.2 Environmental Consequences – Soils/Watershed

3.2.2.1 *General Discussion of Impacts*

The general impacts to soils and watersheds by livestock trailing depend on livestock numbers, trailing frequency and timing, surface moisture, aspect, soil type, precipitation, and vegetation.

Steep, south-facing slopes (>20%), combined with erodible soils and sparse or shallow-rooted vegetation, would be most prone to accelerated erosion. The rate of soil loss depends on rainfall, slope erodibility, slope length, slope gradient, and vegetation.

Mechanical disturbance to the soil arises from the direct effects of the hoofs on the soils themselves and results in degrees of soil surface disturbance. These mechanical impacts affect biological crusts specifically because greater than 75% of photosynthetic biomass and productivity is from organisms living in the top 3 mm of soils (Belnap et al. 2003). Soil surface alterations that reduce soil aggregates, pore space, and structure may result in erosion or surface sealing. Erosion risk increases where annual (shallow-rooted) plants dominate. Livestock trailing management practices that minimize surface disturbance, especially in areas with biological soil crusts, would decrease soil erosion potential by increasing greater soil aggregate stability (Thurow 1991), increasing water infiltration, and helping to retain organic matter.

Biological effects include removal or reduction of ground cover that would otherwise shield the soil surface. The effect is direct in the case of grazing but may also be indirect when repetitive grazing or trampling reduces plant vigor and leads to eventual mortality. Heavy intensity and/or early season grazing has a greater effect than light intensity and/or late season grazing. Further indirect effects include changes in the amounts and kinds of organic material in surface soils. Accumulation of litter on the soil surface benefits watershed health by increasing infiltration capacity and reducing evaporation from the soil surface. Grazing animals will remove or translocate vegetation that would otherwise end up as litter. Vegetation decomposes more rapidly when trampled and broken down as animals graze (Naeth et al. 1991). Trailing may result in accelerated erosion and soil loss, which can reduce site fertility and further reduce soil surface stability (Garcia-Pichel and Belnap 1996).

The synergy of mechanical and biological effects may create more bare ground, particularly where livestock trailing is repetitive. Bare ground exposes soil to raindrop impacts capable of loosening soil granules, detaching them, and beating them to pieces. Soil aggregates can disappear. If the dispersed material is not removed by runoff, it may develop into a hard crust upon drying. Water, air, and certain seedlings have difficulty pushing through a soil crust. Indirect surface sealing is less of a potential in the gravel and sandy soil types than the clay and silt types. Organic compounds derived from litter stabilize soils and increase their resistance to erosion, particularly for clay soils.

Disturbance timing can affect the degree to which the cover and species richness of a biological crust is reduced. Soils have different intrinsic soil strengths that vary with moisture content. Soils with little tendency to form aggregates, such as sands, are more susceptible to compressional stresses when dry. Crust components are brittle when dry, and the connections they make between soil particles are easily crushed. Thus, compressional disturbances can severely affect the crust's ability to stabilize soils, especially in dry sandy and silty soils (USDI 2001). As crustal species are only metabolically active when wet and are brittle when dry, disturbance in dry seasons is generally more destructive, and organisms are less able to recover, than when disturbed in wet seasons.

Impacts to soils from livestock trailing could include reductions in ground cover, litter, and standing vegetation. Trampling causes soil compaction and erosional pedestals in areas where livestock trailing occurs, especially where ground cover has been reduced or removed. Soil surface disturbance reduces the capability of a site to limit the redistribution and loss of soil resources by wind and water (erosion). In annual (shallow-rooted) dominated plant communities, soil erosion potential risk increases. Livestock trailing management practices that minimize surface disturbance, especially in areas with biological soil crusts, would decrease soil erosion potential by increasing greater soil aggregate stability (Thurow 1991), increasing water infiltration, and helping to retain organic matter, which, in turn, would create more productive soils to support vegetation.

3.2.2.2 *Comparison of Impacts*

A summary of impacts to soils and watersheds resulting from the alternatives are displayed in Table 4. These impacts are described more fully in the sections for each alternative below.

Table 4. Comparison of Direct and Indirect Impacts to Soils and Watersheds in the Project Area.

Issue	Indicator	Alternative		
		Alternative A	Alternative B	Alternative C
Soil erosion[A]	Trailing corridors that coincide with unmaintained roads or no roads.	393 miles of routes	None	417 miles of routes
	Trailing corridors that coincide with maintained roads	47 miles	None	153 miles
	Trailing corridors that coincide with erosive soils (acres)	517 acres	None	1,708 acres[1]
	Observable accelerated erosion	Very Slight	None	Very Slight
Watershed function	Litter amount	Smaller size classes of litter along a maximum of 393 miles of routes	No effect	Smaller size classes of litter along a maximum of 417 miles of routes
	Bare ground	Very Slight	None	Very Slight
	Reduction of root structures	None	None	None
Biological soil crusts	Number of routes passing through areas of biological soil crust richness	1	0	0

[A] This represents the maximum potential effect due to the ¼-mile wide area of potential effect. Many routes in Alternative C utilize maintained roads to avoid resource impacts. Refer to Section 3.2.2.5 for an explanation of why trailing along maintained roads would likely reduce this number.

3.2.2.3 *Alternative A*

Approximately 440 miles of trailing routes are proposed under Alternative A. Many of these areas have been used as livestock trailing corridors for decades. Effects to soils along 47 miles of routes that coincide with maintained roads would be slight because most animals would be concentrated along the road itself. Effects to soils along the remaining 393 miles (89%) of routes would continue to disturb the soil surface, reduce soil aggregates, and alter litter amounts and size classes. Continued use would result in minor limitations of formation of soil aggregates in the soil surface. Soils along the trailing corridors would continue to harbor slightly more litter in the smaller size classes than elsewhere. Trampling effects would be less pronounced along route fringes than along the center.

Soils in these areas would lose some structure as mechanical impacts loosen soil particles and eliminate aggregates. Accelerated erosion would not be observable because the magnitude of trailing proposed would not substantially reduce aboveground litter or belowground root structures. Further, the proposed trailing is limited to relatively flat or only gently sloping terrain. Trailing corridors and overnight areas could directly affect up to 517 acres of erosive soils where adverse effects would result in moderate degree of soil aggregate damage and a slight increase in the potential for accelerated erosion..

Trailing routes in Alternative A include a route (Route 216A on Map 2A) that partially borders the biological soil crust area on its west edge. This route is primarily cross-country and does not provide any restrictions other than the 1/4 mile trailing corridor. This would result in less landscape control of livestock and potential trampling of diverse biological soil crust communities. Trampling of soil crusts in the sandy and erosive soils along the route would have adverse impacts to watershed stability and plant community composition. Decreases in biological soil crusts could limit nitrogen fixation that is important to plant community health and could cause soil erosion. While this analysis focuses on an area of soil crust richness, the same general impacts would apply to lesser degree to the scattered soil crust communities throughout the project area.

3.2.2.4 *Alternative B*

There would be no direct effects to soils because livestock crossing permits would not be issued. The anticipated increase in vehicle traffic would not affect soils in a measurable way.

3.2.2.5 *Alternative C*

The effects to soils would be similar to those described for Alternative A, except that more areas would be affected. Approximately 570 miles of trailing routes are proposed under Alternative C. Effects to soils along 153 miles (27%) of those routes would be slight because most animals would be concentrated along maintained roads. Effects to soils along the remaining 417 miles (73%) of proposed routes would affect soils adversely for the same reasons discussed under Alternative A.

Soils in these areas would lose some structure as mechanical impacts loosen soil particles and eliminate aggregates. Accelerated erosion would not be observable because the magnitude of trailing proposed would not substantially reduce aboveground litter or belowground root

structures. Further, the proposed trailing is limited to relatively flat or only gently sloping terrain. Trailing corridors and overnight areas could directly affect up to 1,708 acres of erosive soils. Approximately half (780 acres) of those would occur along Route 311C (Map 25C), which follows the Blackstone Grasmere Road between Broken Wagon Flat and the Bruneau River Canyon, a route that is not proposed under Alternative A. Effects to erosive soils would likely be less than the maximum 1,708-acre area due to the tendency of operators to drive livestock in a tight group along maintained roads when possible.

Map 2C shows the mitigated path for Route 216C that minimizes impacts to biological soil crusts. This proposed route was placed on roads and trails to reduce impacts to plants and soils and was routed to the east to move cattle away from the biological soil crust area. Placing cattle on trails and roads limits the impacts from strays and reduces the overall soil disturbance. Restrictions were also placed on this route where it passes parallel to the biological soil crust area to within 50 feet of the road. This measure would protect biological soil crusts from damage and would help maintain the overall plant community and watershed health of this area. Other trailing restrictions that keep cattle within 50 feet of the road throughout the project area would benefit soil crusts by reducing the potential acreage of soil disturbance. BLM-proposed alternative trailing routes do not pass through known areas of biological soil crust richness. Because these routes are relatively wide and maintained roads, off-road trailing is not expected to be common. Areas adjacent to main roads tend to be previously disturbed and would not likely support soil crust communities. Impacts are expected to be minimal.

3.2.3 Cumulative Impacts – Soils/Watershed

3.2.3.1 *Scope of Analysis*

Geographic and Temporal Scope and Rationale

The geographic scope of analysis for cumulative impacts to soil extends to the project area boundary (Maps 1A, 1B, and 1C) as described on page 2. The area was selected because the actions that shape current and future soil conditions occur on a field office-wide scope. Soil conditions within the trailing routes are typically shaped by the land management within the grazing allotments they cross. The BFO was selected as an outer limit for cumulative impacts because trailing routes cross most grazing allotments in the BFO and would be used to operate associated grazing systems.

The temporal scale for the analysis of cumulative effects to soils includes the timespan from 1934 through 2032. This temporal scale was selected because BLM management began affecting soils in the project area soon after the adoption of the Taylor Grazing Act of 1934. Direct and indirect effects from the alternatives would begin to dissipate approximately 10 years after trailing stops.

Past, Present, and Foreseeable Future Actions to be Considered

Past actions to be considered include livestock grazing, livestock trailing, road construction, range improvements, vegetation treatment projects, fire suppression, ESR projects, and OHV use. Actions that will continue into the foreseeable future include livestock grazing, noxious weed management, utility corridor ROW maintenance, and recreation. The Bruneau Field Office Fuel Breaks for Sage-grouse Habitat Maintenance and Restoration Project is a future action considered for analysis.

Effects of Past, Present, and Foreseeable Future Actions

The collective effect of past actions has contributed to the existing condition of soils described in the Section 3.2.1, *Affected Environment – Soils/Watershed*. The effects of ongoing and future actions germane to the discussion of cumulative effects to vegetation are summarized below.

Permitted livestock grazing affects soils and biological soil crusts directly by trampling and indirectly by affecting the vegetative cover, plant species composition, nutrient levels, litter amount, and bare ground, all of which are incrementally additive to the impacts of trailing. Effects are generally dispersed temporally and spatially, making comparison to trailing difficult. However, the cumulative effect to soils, while adverse, would be limited in both magnitude and extent. These effects can be detrimental if livestock are not managed appropriately. Appropriate grazing management combined with annual monitoring practices will prevent soil and watershed degradation on a landscape level. Livestock grazing will likely result in localized areas of soil surface degradation and plant community alterations that result in adverse impacts to soils in localized areas adjacent to gates, watering areas, and dietary supplement areas. Livestock management that does not favor biological soil crusts can result in relatively high impacts to such.

Motorized recreation will continue to loosen surface soils and disturb soil crusts. However, OHVs are confined to existing routes making the extent of the effects slight. Similarly, utility ROW maintenance involves periodic removal of vegetation around power poles along State Highway 51. The effects to soils are generally indirect because vegetative cover is removed in localized areas. The overall effect to soils is slight due to the small amount of area affected. The effects of noxious weed treatments in the project area are characterized in the Noxious and Invasive Weed Treatment for the Boise District and Jarbidge Field Offices Environmental Assessment (EA # ID-100-2005-265). By preventing the loss of native habitats through weed control, it is expected that overall, long-term soil loss from erosion would be reduced.

The Bruneau Field Office Fuel Breaks for Sage-grouse Habitat Maintenance and Restoration Project proposed use of mowing and drill seeding equipment could negatively affect soils. Mowing equipment could create localized and short-term disturbance to soil surfaces and biological crusts on up to 1,115 acres. The disturbance effects would be confined to the structural breakdown, from tires, of soil aggregates and biological soil crusts. Mowing would cut but not remove vegetation; therefore, erosion would not be expected to increase. Drill seeding equipment would moderately disturb a maximum of 400 acres of soils approximately 2 to 4 inches deep and 2 to 4 inches wide every 12 inches.

3.2.3.2 *Cumulative Impacts of Alternative A*

Surface disturbance and erosion could occur in discrete areas, but any measurable increase in either the amount or rates of accelerated erosion in the project area would be slight, if detectable at all.

Cumulative impacts to the biological soil crust area would be greatest in Alternative A because of the cross-country trailing and proximity to an area of biological soil crust diversity. The lack of trailing restrictions and design criteria would result in a greater amount of biological soil crust

that could be adversely impacted than under Alternative C. The impacts to biological soil crusts from grazing across the project area are potentially moderate and combine with the minor impacts associated with trailing. The background soil conditions that are unfavorable to crusts and adjacent to that trailing route would therefore combine with the effects of trailing to have a larger cumulative impact than in Alternatives B or C.

The effects to soils from the Bruneau Field Office Fuel Breaks for Sage-grouse Habitat Maintenance and Restoration Project, when combined with the effects to soils from issuing the crossing permits, would result in a breakdown of soil aggregates on a total of 532 miles of linear features totaling up to 34,050 acres (2%) of the project area. Adverse effects in those areas would be minor and short-term. Drill seeding effects would result in a moderate acceleration of erosion on up to 400 acres (<1%) of the project area, to the extent that the two activities (i.e., trailing and drill seeding) overlap in the same year.

The effects to soils from noxious weed treatments would partially offset adverse effects to soils from trailing over the long-term. Recreation and OHV use could add slightly to the adverse effects of trailing on soils. The adverse effects of recreation on soils has become so slight since the exclusion of cross-country OHV use in the project area that, when added to the adverse effects of livestock trailing, the two do not appreciably increase the extent of overall adverse effects. Erosion could be accelerated slightly where the two activities coincide.

The adverse effects to soils from utility corridor ROW maintenance, when combined with the adverse effects to soils from issuing the crossing permits would not measurably accelerate erosion in the project area.

3.2.3.3 *Cumulative Impacts of Alternative B*

No cumulative impacts would occur to soils or biological soil crusts because no direct or indirect impacts to soils are expected from permit denial.

3.2.3.4 *Cumulative Impacts of Alternative C*

The overall cumulative effect of past, present, and reasonably foreseeable actions on soils would be adverse for the same reasons discussed under Alternative A. As with Alternative A, drill seeding effects would result in a moderate acceleration of erosion on up to 400 acres (<1%) of the project area, to the extent that the two activities (i.e., trailing and drill seeding) overlap in the same year. Mowing and livestock trailing would loosen soil surface aggregates on up to 44,113 acres of the project area. When added to the localized adverse effects of permitted grazing in the project area, this represents an increase of 10,063 acres where soil surface aggregates would be compromised compared to Alternative A. Recreation and utility corridor ROW maintenance, while adverse, add little cumulatively to the overall adverse effect due to the narrow extent of their effects in the project area.

Cumulative impacts to biological soil crusts would be relatively low in Alternative C because the area of high soil crust richness would be avoided and cross-country trailing would be minimized. Therefore, background soil conditions across the allotment, combined with the effects of trailing, would not have as much cumulative impact to biological soil crusts as in Alternative A. Noxious

weed treatments would only partially offset cumulative adverse effects to soils in the project area.

3.3 Upland Vegetation

3.3.1 Affected Environment – Upland Vegetation

The proposed trailing routes are located in a semi-arid steppe climate with little annual rainfall and wide variation in temperatures throughout the year. The routes are located within two MLRAs. Northern routes cross the Snake River Plains MLRA, an area considerably lower and flatter than the surrounding regions. Southern routes cross the Owyhee High Plateau MLRA, an area with tablelands, dissected lava plains, valleys, alluvial fans, and scattered mountains. Ecological systems in each MLRA differ in climate, geology, substrates, hydrology, vegetation, and disturbance regimes (Table 5).

Table 5. Associations of Vegetation, Topography, and Climate.

Major Land Resource Area	Major Plant Indicators	Ecological System	Elevation Topography	Climate
Snake River Plains	•Shadscale •Budsage •Wyoming sagebrush •Ricegrass •Thurber's needlegrass •Winterfat	•Salt Brush Scrub •Inter-Mountain Basins Big Sagebrush Steppe •Semi-Natural Herbaceous Rangeland •Seedings	3,000 to 5,000 feet. Alluvial fans, terraces, and gently sloping bottomlands	Average annual precipitation is 7-12 inches. Most precipitation falls in fall, winter, and spring. Little or no precipitation occurs in summer. Growing season is 110 to 220 days.
Owyhee High Plateau	•Mountain sagebrush •Low sagebrush •Idaho fescue •Oatgrass •Western juniper	•Inter-Mountain Basins Montane Sagebrush Steppe •Columbia Plateau Low Sagebrush Steppe •Columbia Plateau Western Juniper Woodland and Savanna •Inter-Mountain Basins Aspen-Mixed •Mesic Meadow •Seedings	5,000 to 7,050 feet. Rolling plateaus and gently sloping basins dissected by canyons, some mountains	Average annual precipitation is 8-15 inches, distributed throughout the year but is low from midsummer to early autumn. Growing season is 90 to 120 days.

Ecological systems in the BFO support groups of diagnostic plant species and growth forms useful for this analysis of vegetation. While these systems support a mosaic of vegetation, some generalizations about vegetation type and classification are possible. Table 6 is a vegetation classification for project area. Descriptions of the ecological systems follow the tables.

Table 6. General Vegetation Cover Types of the Project Area.

Ecological System	Vegetation Cover Type	Acres	Proportion of Project Area
Columbia Plateau Low Sagebrush Steppe	Bunchgrass	129,408	9%
	Low Sage	351,379	24%
Columbia Plateau Western Juniper Woodland and Savanna	Conifer	257	<1%
	Juniper	20,151	1%
Inter-Mountain Basins Aspen-Mix	Aspen	8,843	1%
	Mountain Shrub	9,343	1%
Inter-Mountain Basins Big Sagebrush Steppe	Big Sage	425,807	29%
	Big Sage Mix	13,367	1%
	Rabbitbrush	39,916	3%
Inter-Mountain Basins Montane Sagebrush Steppe	Bitterbrush	124	<1%
	Mountain Big Sage	177,248	12%
Salt Brush Scrub	Greasewood	21,719	1%
	Salt Desert Shrub	160,546	11%
Semi-Natural Herbaceous Rangeland	Exotic Annuals	27,571	2%
Mesic Meadow	Mesic Meadow	11,669	<1%
Unidentified	Seeding	40,068	3%
	Sparse Veg[A]	22,872	2%
	Other[B]	2,068	<1%
	TOTAL	**1,462,355**	

[A] Playas, badlands, rock
[B] Open water, paved surfaces, agriculture

Vegetation condition varies across the project area. Causal factors that affect condition include natural events (e.g., fire, drought, flood, insect outbreaks) and anthropogenic actions (e.g., vegetation treatments, livestock grazing, OHV use, and road construction and maintenance). Table 7 provides a classification of vegetation conditions.

Table 7. Condition of Vegetation in the Project Area.

Vegetation Condition	Acres	Proportion of Project Area
Low Elevation, Shrubs Present, Altered Understory	355,287	24%
Low Elevation, Shrubs Present, Cheatgrass Understory	191,080	13%
Low Elevation, Shrubs Present, Intact Understory	108,336	7%
Shrubs Absent, Cheatgrass	45,881	3%
Shrubs Absent, Crested Wheatgrass	33,749	2%
Shrubs Absent, Intact Understory	86,228	6%
Upper Elevation, Shrubs Present, Altered Understory	158,203	11%
Upper Elevation, Shrubs Present, Intact Understory	383,829	26%
Upper Elevation, Shrubs Present, Mtn. Shrub/Mahogany/Aspen, Altered Understory	3,190	<1%
Upper Elevation, Shrubs Present, Mtn. Shrub/Mahogany/Aspen, Intact Understory	11,399	<1%
Juniper	9,292	<1%
No Data	75,875	5%
TOTAL	**1,462,355**	

Several factors have affected the condition of vegetation in the project area. Historic livestock grazing practices in combination with episodes of drought and fire have altered native species compositions in many areas, particularly in the Snake River Plains MLRA, which receives less precipitation and generally harbors less resilient plant communities than those of the Owyhee High Plateau. More recently, application of the Idaho Standards and Guidelines has improved livestock grazing management, and many degraded vegetation communities either have stabilized or are improving. Assessment of the native plant community standard (Standard 4) has been completed for the following allotments:

- East Castle Creek
- Big Springs
- Battle Creek
- Camas Creek Pocket
- Nahas Fenced Federal Range (FFR)

Areas in these allotments that meet or are making progress towards meeting Standard 4 would continue to do so regardless of the alternative selected here. Native plant community conditions in other grazing allotments in the project area have not yet been adequately studied to make an evaluation with respect to achievement of the native plant standard.

Road construction and maintenance activities have removed or severely degraded native vegetation communities in localized, linear features of the landscape. Road corridors frequently harbor weeds due to the relatively abundant seed sources and bare ground along roadsides. Habitual livestock travel and OHV use have created localized trails where vegetation is either missing or less vigorous than surrounding areas. Vegetation treatment projects have limited the degradation of vegetation communities by seeding perennial grasses and shrubs in areas disturbed by fire or otherwise degraded. Range improvement projects like fences and livestock water pipelines have improved the distribution of livestock on the landscape, dispersing the effects of grazing and trampling.

Road use and maintenance affects vegetation condition. Activities along roadsides have degraded vegetation condition along roadsides due to borrow ditch, weeds, mowing, spraying, and vehicle travel.

3.3.2 Environmental Consequences – Upland Vegetation

3.3.2.1 *General Discussion of Impacts*

The general discussion of trampling and grazing effects is common to all action alternatives. The magnitude, location, and intensity of these effects depend on the alternative selected. A specific discussion of consequences to vegetation follows the general impact discussion.

Effects of Trampling

Perennial Herbaceous Vegetation

Trampling of perennial herbaceous plants could reduce productivity but would be unlikely to result in mortality. This vegetation group is generally more resilient to trampling than shrubs or annual plants due to more flexible tissues and more extensive root systems. A simulated study of hoof action on total shoot biomass and detached material in short grass sod vegetation types

suggests moderate levels of trampling (i.e., 4 footfalls) removes approximately 5% of living biomass (Abdel-Magid et al. 1987).

Annual Vegetation

Trampling impacts to annual vegetation would generally be less adverse during dormancy than during growth because they are less susceptible to aboveground injury when dormant. Injuries to annual plants could result in mortality and/or or seedbank reductions if trampled during growing season. Damage to plants and soils can reduce plants' overall productivity and competitiveness and could create niches for invasive plants to occupy. Moist conditions and openings in ground cover created by hoof (or tire) action provide opportunities for germination and spread of invasive plants, particularly where cheatgrass is a component.

Woody Vegetation

Woody shrubs within trailing routes would display more deformities and fewer young plants than adjacent stands. Trampling of shrubs would deform mature individuals and could kill immature shrubs (Owens and Norton 1990).

Effects of Grazing

General grazing effects are discussed below because livestock would consume some vegetation during trailing events. Most grazing effects would occur in overnight areas, but livestock would also eat vegetation along trailing corridors.

Perennial Herbaceous Vegetation

Livestock would graze preferentially on herbaceous components of the plant community, to the extent that they are actively growing, non-toxic, and non-piercing. Perennial grasses are most susceptible to grazing impacts during their critical growth periods (i.e., from seed stalk emergence to seed dissemination). Generally, the vigor of perennial grasses can be sustained with repeated light utilization, while repeated moderate to heavy utilization reduces photosynthetic tissue and can diminish vigor. Utilization during periods when plants are withdrawing reserves from roots for growth, during re-growth, or during seed formation will impact herbaceous species more than the same level of utilization when the plant is not actively growing.

Annual Vegetation

Grazing would remove biomass and could kill plants, but these effects would be short-term due to the high fecundity and short life cycles of this group. Grazing in these communities during the winter or early spring could result in some short-term indirect benefit for perennial native species by potentially relieving some of the grazing pressure on perennial native grasses. Palatability and rapid growth of cheatgrass is typically earlier than the rapid growth phase for perennial native grasses. If cheatgrass is available, cattle will eat more cheatgrass in the early spring, thus giving perennials a greater chance to maintain or establish themselves.

Woody Vegetation

As winter sets in, cattle would begin utilizing browse species, such as bitterbrush, fourwing saltbush, shadscale, greasewood, and winterfat, to the extent they are available. Livestock utilize

browse species into the late summer and fall, as herbaceous vegetation goes dormant (Stuth and Winward 1977, Ganskopp et al. 1999, Ganskopp et al. 2004).

3.3.2.2 *Comparison of Impacts*

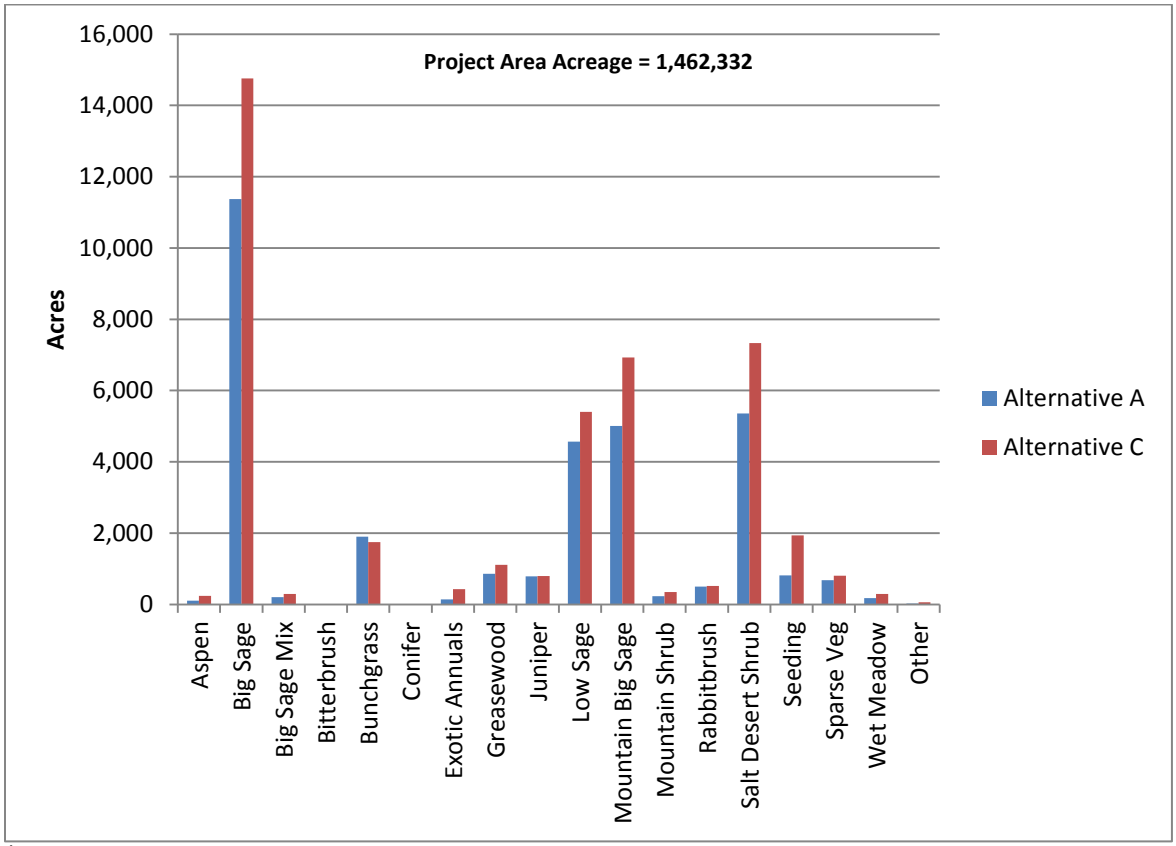
A summary of impacts to upland vegetation resulting from the alternatives are displayed in Table 8 and

Figure 1. These impacts are described more fully in the sections for each alternative below.

Table 8. Comparison of Direct and Indirect Impacts to Upland Vegetation in the Project Area.

Issue	Indicator	Alternative		
		Alternative A	Alternative B	Alternative C
Trampling Effects	Trailing corridors that coincide with maintained roads	47 miles	None	153 miles
	Trailing corridors that coincide with unimproved roads or trails	393 miles	None	417 miles
	Acres within trailing corridors	Up to 32,729	0	Up to 42,998
	Acres of maintained road surface within trailing corridors	300	0	900
	Acres of sagebrush steppe and salt desert scrub systems within trailing corridors	Up to 29,751	0	Up to 38,091
Grazing Effect Indicators	# of overnight areas	9	0	11
	AUMs	1,207	0	1,199 plus BLM routes

Figure 1. A Comparison of Vegetation within Trailing Corridors Proposed for Alternative A and Alternative C.[A]



[A] No trailing corridors are proposed for Alternative B.

3.3.2.3 *Alternative A*

The direct effects to vegetation as a result of issuing crossing permits include trampling and grazing. Indirect alterations in species composition could also occur as a result of the direct effects in concert with the potential for livestock to introduce weed seeds. The direct and indirect effects to upland vegetation, described generally in Section 3.3.2.1, would affect vegetation within 1/8 mile of the trailing routes depicted on Map 1A. Trampling effects would occur primarily along the middle of the trailing route and be less pronounced toward fringes of the route due to the tendency of operators to drive livestock together in a relatively tight group. The primary vegetation cover types affected include Big Sage, Mountain Big Sage, Low Sage, and Salt Desert Shrub. The most likely long-term effects from trampling would be damage to some of the shrubs in the trailing corridors. While 29,751 acres of sagebrush steppe and salt desert scrub systems are located within the ¼-mile wide trailing corridors displayed on Map 1A, damage to woody vegetation would not occur throughout the entire width of the corridor. Instead, a more likely scenario would result in observable damage to less than half of the shrubs in the corridors. Approximately 47 miles (10%) of the total 440 miles of trailing routes coincide with maintained roads, where damage to vegetation from trampling would be negligible.

Table 9 summarizes the vegetation cover types within the proposed trailing corridors and overnight areas where trampling and grazing effects could occur.

Table 9. Vegetation Cover Types Affected by Trailing for Alternative A.

Ecological System	Vegetation Cover Type	Acres	Proportion of Project Area Cover Type
Columbia Plateau Low Sagebrush Steppe	Bunchgrass	1,898	1%
	Low Sage	4,567	4%
Columbia Plateau Western Juniper Woodland and Savanna	Conifer	2	1%
	Juniper	789	4%
Inter-Mountain Basins Aspen-Mix	Aspen	313	2%
	Mountain Shrub	234	2%
Inter-Mountain Basins Big Sagebrush Steppe	Big Sage	11,368	3%
	Big Sage Mix	203	2%
	Rabbitbrush	501	1%
Inter-Mountain Basins Montane Sagebrush Steppe	Bitterbrush	3	2%
	Mountain Big Sage	5,003	3%
Salt Brush Scrub	Greasewood	855	4%
	Salt Desert Shrub	5,353	3%
Semi-Natural Herbaceous	Exotic Annuals	143	1%
Mesic Meadow	Mesic Meadow	177	2%
Unidentified	Seeding	818	2%
	Sparse Veg[A]	682	2%
	Other[B]	26	1%
	TOTAL[C]	**32,729**	

[A] Playas, badlands, rock
[B] Water
[C] Approximately 300 acres of the total are unvegetated road surfaces not captured by Geographic Information Systems (GIS) data.

Grazing effects to vegetation on BLM-administered public land would occur primarily in 9 proposed overnight areas totaling 360 acres (<1% of the project area). Grazing effects would also occur as livestock are driven along trailing routes, but the effects would be less pronounced than those in the overnight areas. Grazing effects would result in shorter herbaceous plant species in overnight areas where key forage species, such as bluebunch wheatgrass, Idaho fescue, ricegrass, and needlegrass, would be selected preferentially over species like Sandberg's bluegrass and squirreltail. Grazing effects would be short-term because grazed plants would recover. Grazing effects would mimic a high intensity, low frequency rotational system (with rest periods greater than 90 days), which is an effective conservation practice for enhancing plant succession on degraded rangelands (e.g., promoting species composition change and improving rangeland health) (Kothmann 2009).

The severity of trampling and grazing effects to vegetation depends on the number of livestock, the duration of use, the frequency of use, and the season of use. For all routes, the duration is short. The maximum stay for any one group is over one night. Group size ranges from 50 animals to 775 animals. The AUM, combined with season of use, provides a reasonable indicator of effects severity for the purpose of analysis to vegetation (Table 10).

Table 10. AUMs Licensed for Trailing under Alternative A.

AUMs Licensed for Trailing	Proportion of Trailing AUMs Occurring During Critical Growing Season[A] of Key Forage Species[B]	Proportion of Trailing AUMs to AUMs for Active Permitted Use in the Project Area
1,207	49%	<1%

[A] The critical growing season for key forage species includes the time from production of reproductive parts through seed ripe.
[B] Key forage species include bluebunch wheatgrass, Idaho fescue, ricegrass, needle-and-threadgrass, and Sandberg's bluegrass. The critical growing season varies by species, but April 15-August 15 includes key forage species in the project area.

The potential for new weed populations in the Owyhee High Plateau MLRA is relatively low given the relative resiliency of the montane plant communities in question and the limited amount of disturbance proposed. Small patches of weedy plant species could establish along routes in the Owyhee High Plateau MLRA, but these would be unlikely to spread due to the relatively high resiliency of plant communities there. Lower elevation plant communities of the Snake River Plains MLRA already support weedy plant species, so spread of existing species is difficult to attribute to issuing crossing permits alone. However, trailing routes in the Snake River Plain MLRA would be at risk for new species of weeds.

In summary, 1,207 AUMs spread across 32,729 acres would result in relatively minor long-term effects to vegetation because of the transitory nature of animals on the landscape and low frequency of trailing events. Trampling and grazing effects would not change vegetation cover types but could degrade vegetation condition on a maximum of 29,751 acres by reducing shrub cover. Trampling effects would be less pronounced along corridor fringes than along the center. Grazing effects would be less pronounced on trailing routes than in overnight areas.

3.3.2.4 *Alternative B*

In contrast to Alternative A, there would be no direct effects from livestock trailing to vegetation because no crossing permits would be issued. Assuming applicants would transport livestock via truck, vehicle traffic along the roads depicted on Map 1B would increase, with a corresponding increase in the amount of atmospheric dust along those roads. The effects of dust on roadside vegetation are unclear. Dust may adversely affect photosynthesis, respiration, and transpiration, but definitive effects to vegetation are unclear (Spellerberg 1998). Farmer (1993) found that lichens and mosses were more sensitive to the effects of roadside dust than vascular plants. Vegetation along 215.8 miles of routes could be indirectly affected by an increase in roadside dust. Effect distances are usually 10-20 meters (Forman and Alexander 1998). Given the analysis assumptions regarding trucking and the number of livestock indicated in Table 1, approximately 373 truck trips would be required to haul livestock.

3.3.2.5 *Alternative C*

The direct and indirect effects to vegetation from issuing the crossing permits would be similar to those described for Alternative A, but more vegetation would be affected because more trailing corridors are proposed under this alternative. While 42,998 acres of sagebrush steppe and salt desert scrub systems are located within the ¼-mile wide trailing corridors displayed on Map 1C, observable damage to those shrubs would be limited to less than half of the trailing corridor width. This represents an increase of 10,269 acres compared to Alternative A. Direct and indirect

effects to vegetation would be limited to the trailing route corridors displayed in Map 1C. The primary vegetation cover types affected include Big Sage, Mountain Big Sage, Low Sage, and Salt Desert Shrub. Approximately 153 miles (27%) of the total 570 miles of trailing routes coincide with maintained roads, where damage to vegetation from trampling would be negligible. Table 11 summarizes the vegetation cover types that could be affected by issuing the crossing permits proposed for Alternative C.

Table 11. General Vegetation Cover Types Affected by Trailing Under Alternative C.

Ecological System	Vegetation Cover Type	Acres	Proportion of Project Area Cover Type
Columbia Plateau Low Sagebrush Steppe	Bunchgrass	1,749	1%
	Low Sage	5,399	2%
Columbia Plateau Western Juniper Woodland and Savanna	Conifer	1	1%
	Juniper	798	4%
Inter-Mountain Basins Aspen-Mix	Aspen	242	3%
	Mountain Shrub	346	4%
Inter-Mountain Basins Big Sagebrush Steppe	Big Sage	14,753	3%
	Big Sage Mix	296	2%
	Rabbitbrush	518	1%
Inter-Mountain Basins Montane Sagebrush Steppe	Bitterbrush	3	3%
	Mountain Big Sage	6,928	4%
Salt Brush Scrub	Greasewood	1,109	5%
	Salt Desert Shrub	7,336	5%
Semi-Natural Herbaceous	Exotic Annuals	429	2%
Mesic Meadow	Mesic Meadow	291	2%
Unidentified	Seeding	1,935	5%
	Sparse Veg[A]	805	4%
	Other[B]	60	3%
	TOTAL[C]	**42,998**	

[A] Playas, badlands, rock
[B] Water
[C] Approximately 900 acres of the total are unvegetated road surfaces.

Grazing effects to vegetation on BLM-administered public land would occur primarily in 11 proposed overnight areas totaling 440 acres (<1% of the project area). This represents an increase of 80 acres compared to Alternative A. Grazing effects would also occur as livestock are driven along trailing routes, but the effects would be less pronounced than those in the overnight areas. Similarly, trampling effects would occur primarily along the middle of the trailing route, but would become less pronounced toward trailing corridor fringes due to the tendency of operators to move livestock together in a relatively tight group while trailing.

The severity of trampling and grazing effects to vegetation would depend on the number of livestock, the duration of use, the frequency of use, and the season of use. For all routes, the duration is short. The maximum stay for any one group is overnight. Group sizes range from 50 animals to 775 animals. The AUM, combined with season of use, provides a reasonable indication of indication of how severe effects to vegetation would be under Alternative C (

Table 12).

Table 12. AUMs Licensed for Trailing under Alternative C.

AUMs Licensed for Trailing[A]	Proportion of Trailing AUMs Occurring During Critical Growing Season[B] of Key Forage Species[C]	Proportion of Trailing AUMs to AUMs for Active Permitted Use in the Project Area
1,199	50%	<1%

[A] Additional routes available for livestock grazing could increase AUMs if an operator were to apply for a crossing permit on those routes.
[B] The critical growing season for key forage species includes the time from production of reproductive parts through seed ripe.
[C] Key forage species include bluebunch wheatgrass, Idaho fescue, ricegrass, needle-and-threadgrass, and Sandberg's bluegrass. The critical growing season varies by species, but April 15-August 15 includes key forage species in the project area.

Stipulations that apply to all routes would limit the potential for livestock trailing to damage the young plants re-establishing naturally or establishing as a result of ESR efforts because the majority of livestock would be kept on improved roads. Approximately 900 acres (2%) of trailing corridors coincide with improved roads where trampling damage to vegetation would be negligible.

Grazing effects would be similar but potentially more widely distributed on the landscape than under Alternative A because this alternative offers more routes and more overnight areas. The potential for new weed populations in the project area would be slightly greater than Alternative A for the same reason. While plant communities in most of the Owyhee High Plateau MLRA are resistant to weed invasions, those in the Snake River Plains MLRA would be at slightly greater risk of new weed populations along trailing routes.

In summary, 1,199 AUMs spread across 42,998 acres would result in relatively minor long-term effects to vegetation because of the transitory nature of animals on the landscape and low frequency of trailing events. Trampling and grazing effects would not change vegetation cover types but could degrade vegetation condition on a maximum of 38,091 acres by reducing shrub cover. The extent of shrub cover reduction would be minor because damage to woody species would be observable only along narrow 50-100 foot swaths of the trailing corridors that do not coincide with maintained roads. Damage to vegetation would be negligible along route fringes. In contrast to Alternative A, a greater proportion of the routes are proposed to occur along improved roads.

3.3.3 Cumulative Impacts – Upland Vegetation

3.3.3.1 *Scope of Analysis*

Geographic and Temporal Scope and Rationale

The extent of the project area is sufficient to describe cumulative effects to upland vegetation. This area was chosen because the trailing corridors proposed under both action alternatives (i.e., A and C) facilitate livestock grazing systems throughout the project area, yet the corridors themselves would affect a maximum of 3% of the project area directly.

The temporal scale for the analysis of cumulative effects to vegetation includes the timespan from 1934 through 2042. This temporal scale was selected because BLM management began

affecting vegetation in the project area soon after the adoption of the Taylor Grazing Act of 1934. Direct and indirect effects from the alternatives would begin to dissipate approximately 20 years after trailing stops.

Past, Present, and Foreseeable Future Actions to be Considered

Past actions to be considered include livestock grazing, livestock trailing, road construction, fence construction, vegetation treatment projects, fire suppression, ESR projects, and OHV use. Actions that have occurred in the past and will continue into the foreseeable future include livestock grazing, noxious weed management, utility corridor ROW maintenance, and recreation. The Bruneau Field Office Fuel Breaks for Sage-grouse Habitat Maintenance and Restoration Project is a future action considered for analysis.

Effects of Past, Present, and Foreseeable Future Actions

The collective effect of past actions has contributed to the existing condition of vegetation described in Section 3.3.1, *Affected Environment – Upland Vegetation*. The effects of ongoing and future actions germane to the discussion of cumulative effects to vegetation are summarized below.

The Bruneau Fuel Breaks Project will result in mowed vegetation on 1,115 acres and greenstrip establishment on 400 acres. Direct effects include some localized mortality of larger and older sagebrush, especially over the long-term with repeated mowing for maintenance. Herbaceous species are expected to increase with the reduction of shrub canopy in mowed areas. Fall mowing could result in an increase of young sagebrush plants during the first few years. Native plant damage and mortality could also occur where greenstrips are established.

Permitted grazing results in damage to and consumption of vegetation in the project area. Currently, 128,582 AUMs of active use are allocated for livestock. Rangeland Health Assessments and subsequent evaluations and determinations on meeting Idaho Standards for Rangeland Health are scheduled for Riddle and West Castle Creek allotments in the near future. Management direction in the new permits may include conditions to achieve applicable standards based on those determinations. Other allotments in the project area are required to meet Idaho Standards and Guidelines. Future livestock grazing is projected to maintain or improve upland vegetation due to implementation of the Idaho Standards and Guidelines. Current grazing management systems utilize rangeland improvement projects, limit utilization levels, seasons of use, and stocking rates to maintain or improve vegetation conditions.

The project area is within the Eastern Owyhee Cooperative Weed Management Area (CWMA). The BLM and its cooperators have been working together to identify, monitor, and treat noxious weeds for several years. This cooperative is expected to continue into the foreseeable future. Weed treatments consist of mechanical, biological, and chemical methods as described in the Noxious and Invasive Weed Treatment for the Boise District and Jarbidge Field Offices Environmental Assessment (EA # ID-100-2005-265).

3.3.3.2 *Cumulative Impacts of Alternative A*

The 1/4-mile wide trailing corridors include 29,751 acres (2.2%) of sagebrush steppe and salt desert scrub systems in the project area. Observable damage to woody vegetation as a result of

issuing the crossing permits would be limited to less than half the total acreage of woody vegetation in the corridors. Herbaceous vegetation would also be trampled and grazed. Approximately 1,207 AUMs would be licensed for trailing.

Cumulative effects to vegetation from the Bruneau Fuel Breaks Project, together with issuing the crossing permits, under the worst case scenario could result in damage or mortality to shrub growth forms on a maximum of 31,266 acres (2.3%) of the sagebrush steppe and salt desert scrub systems in the project area. However, it is much more likely that less than half of the acreage of shrub growth forms in the trailing corridors would be affected by trailing. Fall mowing could partially offset shrub mortality caused by trailing over the long-term because fall mowing could result in an increase of young sagebrush plants during the first few years. The loss of small areas of sagebrush habitat would be offset by the indirect potential for protection of intact stands of existing sagebrush from fire. Anticipated increases in the herbaceous species component in mowed areas would partially offset the amount of AUMs removed from the project area by trailing livestock. The overall amount of herbaceous species increase from mowing and greenstripping is not known at this time but is expected to be nominal within the context of permitted grazing in the project area.

While the effects to vegetation from trailing can be confined to localized areas and narrow timeframes, those of permitted grazing are dispersed both temporally and spatially, making comparison difficult. Using AUMs as a proxy for damage to vegetation from consumption and trampling provides a common denominator. The total active use permitted AUMs in the BFO would increase by 1,207 (<1%). Trailing is not anticipated to prevent grazing allotments that have been assessed for attainment of Standard 4 from continuing to achieve or make progress toward the native plant standard. In areas where overnighting would not occur, very little use due to grazing/trampling, if any at all, is expected to occur. .

Cooperative weed management treatments would partially offset any increase in noxious weeds from issuing livestock crossing permits. The cumulative increase in noxious weeds from issuing the crossing permits would be negligible or very slight.

3.3.3.3 *Cumulative Impacts of Alternative B*

The dust generated by livestock hauling operations would be in addition to dust generated by existing traffic on the routes depicted in Map 1B. The lack of baseline traffic counts along these routes makes a quantifiable analysis of existing roadside dust difficult. However, dust effects would almost certainly be greater from May through September due to dry conditions. The increase in traffic that would result from livestock hauling operations could inhibit plant vigor, but the cumulative effects would not likely be measureable and, therefore, would be negligible.

3.3.3.4 *Cumulative Impacts of Alternative C*

The 1/4-mile wide trailing corridors include 38,091 acres (2.8%) of sagebrush steppe and salt desert scrub systems in the project area. Even in a worst case scenario, not all of the woody species would be affected. Instead, it is much more likely that less than half of the shrub systems in the trailing corridors would be damaged in an observable way. Herbaceous vegetation would also be trampled and grazed. A maximum of 1,199 AUMs would be licensed for trailing. Any

area where overnighting would not occur, very little use due to grazing/trampling, if any at all, is expected to occur.

Cumulative effects to vegetation from the Bruneau Fuel Breaks Project, together with issuing the crossing permits would be similar to those described for Alternative A but would occur on a slightly greater extent. Damage or mortality to shrub growth forms could total a maximum of 39,206 acres (2.8%) of the sagebrush steppe and salt desert scrub systems in the project area. The remainder of cumulative effects to vegetation from the Bruneau Fuel Breaks Project would be the same as those discussed for Alternative A.

The cumulative effects of permitted livestock grazing would be similar to but slightly less than those already described for Alternative A. The total active use permitted AUMs in the project area would increase by 1,199 (<1%). Given the Idaho Standards and Guidelines have resulted in proper livestock management and improving conditions, the cumulative negative effects to vegetation in the project area would be slight.

Cooperative weed management treatments would partially offset any increase in noxious weeds from issuing livestock crossing permits for the same reasons discussed under Alternative A.

3.4 Special Status Plants

3.4.1 Affected Environment – Special Status Plants

Special status plant species occur in a variety of plant communities and physical habitats, many of which have distinctive soil types, and several often occur together. The general habitat types that support special status plants are lake-bed sediments, sagebrush steppe, sandy soils, lithic soils, and wetland areas including playas and hot springs.

One of the most unique areas in the project area is the Owyhee Front. This basin, located between the Owyhee Mountains and Snake River in southwestern Idaho, supports a unique and diverse flora. Consequently, a large number of special status plant species occur here. The Owyhee Front is home to numerous plant taxa that are at the northern-most edge of their ranges or are disjunct from their main populations in the Great Basin or the desert Southwest (Murphy et al. 2003). Several endemic taxa are also found here, including the BFO's most imperiled species, Mulford's milkvetch.

The project area currently contains 29 special status plant species.
Table 13 provides a list of all special status plants known to occur in the BFO, along with their current status and habitat requirements. A portion of the BFO is in Nevada. The BLM Sensitive Species list for Nevada differs from the Idaho list. However, there are currently no known special status plants in the portion of the BFO that occurs in Nevada.

Presently, there are no proposed, threatened, or endangered plants (Type 1) known within the project area. Mulford's milkvetch (*Astragalus mulfordiae*) is the only Type 2 plant currently known in the project area. There are 13 Type 3 plant species and 15 Type 4 species. Earth lichen (*Catapyrenium congestum)*, a pyrenocarpous lichen, is the only nonvascular species listed (Type 4) at this time (
Table 13). Species in bold text in

Table 13 are those that are within 0.25 miles of each side of the trailing routes in Alternatives A and C and would likely be directly or indirectly impacted by trailing.

Table 13. Special Status Plant Species Found in the Project Area.

Common Name[A]	Scientific Name	Status[B]	Vegetation Type and Habitat
Mulford's milkvetch	***Astragalus mulfordiae***	2	Needle-&-Thread/Indian ricegrass
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
Mud Flat milkvetch	***Astragalus yoder-williamsii***	3	Mountain big sagebrush, Low sagebrush
earth lichen	*Catapyrenium congestum (lichen)*	4	Salt desert shrub
desert pincushion	***Chaenactis stevioides***	4	Wyoming sagebrush, Wyoming sagebrush-shadscale, Horsebrush, Indian ricegrass
alkali cleomella	*Cleomella plocasperma*	3	Salt desert shrub
Greeley's wavewing	*Cymopteris acaulis* var. *greeleyorum*	3	Wyoming sagebrush, desert shrub, Indian ricegrass
star waterplantain	*Damasonium californicum*	4	Pond or reservoir margins, Riparian/Wetland
Dimeresia	*Dimeresia howellii*	3	Sagebrush-grassland
Bacigalupi's calico-flower	*Downingia bacigalupii*	4	Pond or reservoir margins, Riparian/Wetland
white eatonella	***Eatonella nivea***	4	Wyoming sagebrush-shadscale, Salt desert shrub
chatterbox orchid	*Epipactis gigantean*	3	Riparian/Wetland
Packard's matted buckwheat	***Eriogonum shockleyi var. packardiae***	4	Wyoming sagebrush-shadscale, Salt desert shrub
Shockley's matted buckwheat	***Eriogonum shockleyi var. shockleyi***	4	Wyoming sagebrush-shadscale, Salt desert shrub
white-margined wax plant	***Glyptopleura marginata***	4	Salt desert shrub, Greasewood
Owyhee forget-me-not	*Hackelia ophiobia*	3	Canyon wall or base
spreading gilia	***Ipomopsis polycladon***	3	Low sagebrush, Wyoming sagebrush-shadscale, Salt desert shrub, Horsebrush
Davis peppergrass	***Lepidium davisii***	3	Playa
Bruneau River prickly phlox	*Linanthus glabrum*	3	Canyon wall or base
inch-high lupine	***Lupinus uncialis***	4	Sagebrush-grassland
disappearing monkeyflower	*Mimulus evanscens*	4	Vernally moist areas
rigid threadbush	***Nemacladus rigidus***	4	Wyoming sagebrush, Wyoming sagebrush-shadscale, Salt desert shrub

Common Name[A]	Scientific Name	Status[B]	Vegetation Type and Habitat
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
turtleback	*Psathyrotes annua*	3	Salt desert shrub
Thinleaf goldenhead	*Pyrrocoma linearis*	3	Grassy springs, Streambanks, Meadows
American wood sage	*Teucrium canadense var. occidentale*	3	Riparian/Wetland

[A] Species in bold text are found within 0.25 mi of either side of trailing routes in Alternatives A and C.
[B] Number refers to BLM Type.

3.4.2 Environmental Consequences – Special Status Plants

3.4.2.1 *General Discussion of Impacts*

All special status plant species could be affected by the same livestock trailing impacts that affect plant communities. General plant community impacts such as soil disturbance, compaction, and increase in noxious weed and invasive plant species also affect special status plants but often to a greater degree because of their rarity. For both annual and perennial special status plants, trailing during the active growth periods of spring and early summer is the most detrimental. If plants are consumed or damaged during this growth period they may not be able to produce seed and will have limited food reserves to send to the roots for survival. Many annual special status plants complete their life cycle in the spring, so trailing during that season would be the most detrimental.

The topographical position of special status plants also determines how they will respond to trailing impacts. Low-elevation sites that receive less precipitation would experience the greatest impacts. Mid to upper elevations that retain soil moisture longer would tend to be more resilient to trailing impacts. The increased soil moisture and less extreme summer temperatures in the higher elevations may allow plants to compensate for plant tissue removal by regrowth. Upper elevations may also experience more frost heaving that could alleviate soil compaction caused by trailing. Aspect can have an influence on the degree of trailing impacts, with north- and east-facing slopes responding with greater resiliency than south- or west-facing slopes. With these considerations, the best scenario for trailing would be upper elevation north- or east-facing slopes when soils are dry or frozen

Trailing intensity, as measured by the number of cattle that pass through a given area, influences the degree of adverse effects. With increased intensity, the degree that the population is directly impacted increases. The intensity of use also determines the amount of indirect impacts to populations from noxious weeds and invasive plants. Low intensity trailing may not remove enough vegetation to allow for noxious weeds and invasive plants to colonize a site. Moderate to high trailing intensities have a much greater potential to create the bare ground openings that

allow noxious weeds and invasive plants to become established. Invasive plants and noxious weeds that become established as a result of livestock trailing may spread into adjacent occupied special status plant habitat, resulting in increased competition for resources over the short- and long-term. Adequate trailing buffers would reduce competition from invasive plants and noxious weeds that become established in disturbed areas.

3.4.2.2 *Comparison of Impacts*

A summary of impacts to special status plants resulting from the alternatives are displayed in Table 14. These impacts are described more fully in the sections for each alternative below.

Table 14. Comparison of Direct and Indirect Impacts to Special Status Plants in the Project Area.

Issue	Indicator	Alternative		
		Alternative A	Alternative B	Alternative C
Viability of special status plants	Number of special status plant populations within trailing route	30	0	14
	Number of special status plant populations within 0.25 miles of overnight areas	1	0	0

3.4.2.3 *Alternative A*

Alternative A trailing routes would impact 30 special status plant populations. Alternative A would also include one overnight area within 0.25 miles of a population of Mud Flat milkvetch. Direct impacts would include trampling of aboveground plant tissues and possible uprooting of plants. This could result in plant mortality and overall decreased population viability. Plant consumption is not typically a concern since most species are not particularly palatable to livestock and livestock are not expected to be actively grazing when trailing. Trampling of associated plant species and soils can lead to weed invasion. Increases in weed cover would sharply reduce the amount of soil moisture available to special status plants.

Plants that occur in upper elevations of the project area, such as Mud Flat milkvetch, are able to withstand grazing and trampling pressures better than plants that grow in the lower elevations of the field office. While several trailing routes pass through populations of Mud Flat milkvetch (8 populations), this plant has been observed to persist and thrive in areas where soil disturbance is relatively high such as near troughs and in roadways. This species is typically surrounded by mid- to late-seral big sagebrush and grass communities that do not support weeds such as cheatgrass. For this reason, the impacts to this species are not expected to have detrimental impacts to population viability.

When roadside trailing impacts to special status plants are put into the context of overall plant population viability throughout the project area, the impacts are mostly negligible. Many of these roadside populations are not part of core populations or in areas of high diversity. There is one area within the trailing routes that has substantial contributions to overall species viability. This is the Mud Flat/Ant Hill area (Map 6A) that supports the core population of Mud Flat milkvetch.

3.4.2.4 *Alternative B*

If livestock trailing were not permitted in Alternative B, the impacts associated with cattle trailing would not occur. Alternate means of moving livestock such as trucking would not have adverse impacts to special status plants.

3.4.2.5 *Alternative C*

Impacts from trailing in Alternative C would be mitigated through corridor restrictions to keep livestock a maximum of 50 feet from the route in areas where routes intersect with special status plant populations. The exception to this measure was where trailing routes crossed Mud Flat milkvetch populations. In these areas, restrictions were not imposed. The livestock would be trailing along a wide road, and any off-road impacts are not expected to adversely impact this somewhat disturbance-tolerant species. This plant has been observed to persist and thrive in areas where soil disturbance is relatively high, such as near troughs and in roadways. This species is typically surrounded by mid- to late-seral big sagebrush and grass communities that do not support weeds such as cheatgrass. For this reason, the impacts to this species are not expected to have detrimental impacts to population viability.

In contrast, the lower elevation species that occur along the CCC Road (Map 25C) are more susceptible to damage. Effective precipitation is much lower here, and invasive weeds such as cheatgrass are common to dominant. The competitive abilities of plants in the low elevation areas are reduced because of existing habitat conditions and both direct and indirect trailing impacts would further exacerbate the conditions. For this reason, livestock are restricted to a narrow corridor within 50 feet of the road. This measure is expected to result in minimal impacts to special status plants.

A total of 14 special status plant populations would be affected by livestock trailing in Alternative C, fewer than the number of populations directly impacted by Alternative A. The decrease in the number of populations affected was not lowered as substantially as expected from applying design criteria. This is because the criteria were not applied to routes near Mud Flat Milkvetch populations, and this plant occurs most commonly along route corridors and comprised the bulk of directly impacted populations (8 populations affected).

When roadside trailing impacts to special status plants are put into the context of overall plant population viability throughout the project area, the impacts are mostly negligible. Many of these roadside populations are not part of core populations or in areas of high diversity. There are two areas within the trailing routes that have substantial contributions to overall species viability. These are the CCC Road (Map 25C) area, where large concentrations of special status plants occur, and the Mud Flat/Ant Hill area (Map 6C) that supports the core population of Mud Flat milkvetch.

Overnight areas were located at least 0.25 miles from special status plant populations in Alternative C. As a result, no populations of special status plants would be impacted by overnight areas under Alternative C. In contrast, overnight areas do not take into consideration locations of special status plants in Alternative A. Therefore, impacts associated with overnight areas (trampling, soil compaction, weed invasion) would be greater in Alternative A than B or C.

3.4.3 Cumulative Impacts – Special Status Plants

3.4.3.1 *Scope of Analysis*

Geographic and Temporal Scope and Rationale

The extent of the cumulative impact analysis area for special status plants 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 therefore cumulatively impact special status populations across the project area. There are few allotments that the routes do not cross and few plant species that are so localized that they are not part of larger plant distributions. 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. The temporal scale for the analysis of cumulative effects to special status plants includes the timespan from 1934 through 2022. This temporal scale was selected because BLM management began affecting plant communities in the project area after the adoption of the Taylor Grazing Act of 1934. Direct and indirect effects from the alternatives would last as long as trailing is authorized.

Past, Present, and Foreseeable Future Actions to be Considered

Past and present actions that have had the greatest influence on the current conditions of special status plant populations in the project area include: previous levels of livestock grazing use, current livestock grazing, and previous wildfire and rehabilitation. Less influential activities include previous and current recreation permits for motorcycle races and range improvements. Future actions that are considered are those that would have a cumulative impact to special status plants when added to the trailing impacts. Future livestock grazing permit renewals, ongoing juniper thinning treatments (i.e., Upper Castle Creek Fuels Project), and ongoing and future recreation permits would cumulatively impact special status plant populations.

Effects of Past, Present, and Foreseeable Future Actions

Special status plant populations in the lower elevations of the project area (<5,000 feet) occur within a matrix of invasive weed species such as cheatgrass, bur buttercup, and stork's bill (*Erodium cicutarium*). These invasive weeds are strong competitors with special status plants for the limited quantities of soil moisture. These invasives can reduce the fitness of existing plants and limit their ability to persist over the long term. Trampling, crushing, and uprooting of plants from other activities can also reduce the overall viability and subsequent gene flow between special status plant populations. Previous and ongoing activities that have contributed to this condition include livestock grazing, motorized recreation, and livestock facilities. These activities impact special status plants through introduction and spread of noxious and invasive weed species.

The higher elevations (>5,000 feet) are less susceptible to weed spread because of the higher effective precipitation and the condition of the plant communities, which is composed primarily of native mid-to-late seral sagebrush steppe. Previous livestock grazing has facilitated weed spread in the higher elevations, but these species are much more restricted to roadsides. For this reason, no increase in grazing-caused impacts to special status plants from trailing would be expected in the higher elevations. Ongoing juniper thinning in the Upper Castle Creek project area could cause a cumulative improvement to Mud Flat milkvetch. This plant occupies openings in sagebrush where cover of competing species is low. The reduction of junipers would help maintain habitat for Mud Flat milkvetch.

3.4.3.2 *Cumulative Impacts of Alternative A*

Livestock trailing, when analyzed in the context of the impacts of past, present, and foreseeable actions listed above, would have negligible impacts to special status plants in the higher elevations. Actions that have a greater cumulative contribution to trailing such as previous and current livestock management and OHV use would occur in the lower elevations. Wildfire and rehabilitation has contributed to the viability of special status plants, particularly in the lower elevations where post-fire cheatgrass spread is more common in special status plant habitats. Wildfire generally has caused special status plant habitat to become more weed dominated, particularly in the lower elevations. Rehabilitation in the lower elevations makes small improvements to habitat condition. Upper elevations have a better chance of natural recovery from wildfire and a higher success rate for rehabilitation. These cumulative impacts would be relatively minor when viewed in the overall context of population viability.

In Alternative A, where no design criteria were applied to trailing routes, the magnitude of cumulative impacts to special status plants would be greater than under Alternatives B or C. The difference would be most noticeable in the direct impacts to special status plants (those within the trailing route). Alternative A has more populations directly impacted by trailing than C and, therefore, would have slightly more cumulative impacts than Alternative C.

Overall cumulative impacts would be greater in Alternative A than in Alternatives B or C.

3.4.3.3 *Cumulative Impacts of Alternative B*

No impacts to special status plants are expected from Alternative B. Therefore, no cumulative impacts to special status plants would occur.

3.4.3.4 *Cumulative Impacts of Alternative C*

Because of the design criteria used to develop Alternative C, the number of populations that would be directly impacted within the trailing route is lower than the number of populations impacted in Alternative A. Therefore, the magnitude of cumulative impacts to special status plants would decrease proportionally. The type of cumulative impacts to special status plants within the trailing route in Alternative C would be similar to Alternative A, but the degree would be substantially less.

3.5 Noxious Weeds and Invasive Species

3.5.1 Affected Environment – Noxious Weeds and Invasive Species

"Noxious weed" is a legal designation made by the Idaho State Department of Agriculture to invasive nonnative plants 1) that are potentially more harmful than beneficial, 2) whose adverse impacts exceed the cost of control, and 3) that have the potential of being eradicated. Most of the project area consists of native plant communities with few, scattered noxious weed populations.

There are 14 noxious weed species known to occur in the project area.

Table 15 identifies the noxious weeds.

Table 15. Noxious Weed Distribution for the Project Area.

Common Name	Scientific Name	Project Area Distribution
Black henbane	*Hyoscyamus niger*	limited
Canada thistle	*Cirsium arvense*	scattered throughout
Diffuse knapweed	*Centaurea diffusa*	limited
Hydrilla	*Hydrilla verticillata*	limited
Perennial pepperweed	*Lepidium latifolium*	scattered throughout
Puncturevine	*Tribulus terrestris*	limited
Purple loosestrife	*Lythrum salicaria*	limited
Rush skeletonweed	*Chondrilla juncea*	scattered throughout
Russian knapweed	*Acroptilon repens*	limited
Russian olive[A]	*Eleagnus angustifolia*	limited
Saltcedar	*Tamarix spp.*	scattered throughout
Scotch thistle	*Onopordum acanthium*	scattered throughout
Spotted knapweed	*Cetaurea maculosa*	limited
Whitetop/Hoary Cress	*Cardaria draba*	scattered throughout
[A] Not a noxious weed but included because it is a high priority for control within the Boise District.		

In addition to the State-listed noxious weeds, six common invasive plant species occur in the project area (Table 16). An example is exotic annual grasses, such as cheatgrass, that are common to dominant in many lower elevation areas (especially the northern part of the BFO), often replacing native species. The following invasive species list is not inclusive, but addresses the most common invasive plant species in the project area.

Table 16. Common Invasive Plant Species.

Common Name	Scientific Name
Bur buttercup	*Ceratocephalus testiculatus*
Cheatgrass	*Bromus tectorum*
Cocklebur	*Xanthium strumarium*
Halogeton	*Halogeton glomeratus*
Medusahead	*Taeniatherum caput-medusae*
Russian thistle	*Salsola tragus*
Tumblemustard	*Sisymbrium altissimum*

3.5.2 Environmental Consequences – Noxious Weeds and Invasive Species

3.5.2.1 *General Discussion of Impacts*

A combination of impacts such as soil disturbance, preferential grazing of native plant species, and weed seed transport could increase invasive species along trailing corridors and overnight areas. Livestock may transport weed seeds that adhere to their bodies and drop undigested weed seeds in their feces. Cheatgrass has been documented to spread in this manner (Young and Longland 1996). The bare ground that increases following trailing can create openings for weed colonization. Invasive and non-native species are often pioneering species that are adapted to occupy new niches more quickly than native species. When trailing spreads weeds, it indirectly elevates competition for limited resources such as soil water between native and exotic species (Laycock and Conrad 1981).

Plant communities above 5,000 feet elevation are less prone to increases in weed spread than those in lower elevations. Increased effective precipitation in the higher elevations often results in higher perennial plant cover that can resist weed invasion. In the lower elevations, the trailing routes are often passing through areas that have higher cover of invasive species; for this reason, the increase in weeds associated with trailing may not be discernible from background conditions.

3.5.2.2 *Comparison of Impacts*

Noxious weeds affected by the trailing corridor were quantified in terms of the number of recorded occurrences and the number of species for each alternative. These calculations are based on Global Positioning Systems (GPS) point locations that are monitored by the Boise District Weeds Specialist. For Alternatives A and C, noxious weeds were evaluated within the defined trailing routes (see Section 2.3, *Description of Proposed Action and Alternatives*). The analysis area for Alternative B was kept the same as Alternative A. Although no cattle would be trailed in Alternative B, vehicle traffic to transport cattle would be substantially increased in this alternative. Because vehicle traffic and associated road maintenance are vectors of weed spread, they are considered in the analysis of Alternative B. Invasive species are typically more diffuse across the project area and are not mapped. The impacts to invasive species are not quantified for analysis, although the effects would be similar as those described for noxious weeds.

A summary of impacts to noxious weeds resulting from the alternatives are displayed in Table 17. These impacts are described more fully in the sections for each alternative below.

Table 17. Comparison of Direct and Indirect Impacts to Noxious Weeds in the Project Area.

Issue	Indicator	Alternative		
		Alternative A	Alternative B	Alternative C
Noxious weed and invasive plant spread.	Number of noxious weed occurrences along the trailing routes	53	107	82
	Number of noxious weed species along the trailing routes	5	8	9

3.5.2.3 *Alternative A*

There would be fewer species and occurrences of noxious weeds within trailing routes in Alternative A than in Alternative C (Table 17). The reason for this difference lies within the number of routes proposed in these alternatives. Alternative A only includes the applicants' proposed routes, whereas Alternative C includes those as well as additional routes to facilitate future trailing.

Most noxious weeds in the project area occur along roads and trails. Therefore, trailing of livestock has the potential to increase their abundance and facilitate the spread of these species into other areas. Because livestock would be restricted to a corridor while trailing, the movement of weeds would be primarily along the corridor and, to a lesser degree, at the livestock's destination. Whether noxious weeds spread outside the corridor is determined by the plant

community composition and livestock management in the pastures through which they trail. Overall, noxious weed increases beyond baseline conditions are expected to be minimal. The upper elevations are largely weed-resistant because of the high cover of native plant communities. The lower elevation trails pass through areas that are often a matrix of non-native or invasive species. For these reason, trailing is not expected to substantially increase noxious or invasive weed occurrences. The potential increases in noxious weed species and species occurrences along the trailing route would be lower in Alternative A than in Alternative C.

3.5.2.4 *Alternative B*

Alternative B would have the fewest impacts to noxious weeds and invasive plants. Although the total number of occurrences potentially affected would be higher than the other alternatives, there would be fewer impacts because cattle would not be on the ground. There would be no soil disturbance and weed seed transport from cattle trailing. Vehicle traffic would increase along the routes, which could spread weed seed on tires and through increased road maintenance activities. However, this rate of weed spread would be less than if cattle were trailing along the routes. In addition, these routes are main roads that would not involve cattle trailing through more remote or smaller routes. In this way, the extent of weed spread may be lower than if cattle were trailing along the routes in that fewer weeds would be introduced to remote areas.

3.5.2.5 *Alternative C*

Alternative C would have more noxious weed species within trailing routes as compared to Alternative A. The higher numbers result from the greater number of routes included in this alternative. This alternative includes a set of BLM-proposed routes that could be used annually if applied for in the future. These trailing routes are typically well-maintained and high-use roads that by nature support more noxious weed species than smaller and more remote trails. Overall, noxious weed increases beyond baseline conditions are expected to be minimal. The upper elevations are largely weed-resistant because of the high cover of native plant communities. The lower elevation trails pass through areas that are often a matrix of non-native or invasive species. For these reason, trailing is not expected to substantially increase noxious or invasive weed occurrences. If Alternative C were compared to A without these additional routes, there would be fewer impacts to weeds because of the multiple restrictions on the applicant-proposed routes.

3.5.3 Cumulative Impacts – Noxious Weeds and Invasive Species

3.5.3.1 *Scope of Analysis*

Geographic and Temporal Scope and Rationale

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 project area and could therefore cumulatively impact noxious weed and invasive species populations across the project area. There are few allotments that the routes do not cross and few noxious weeds and invasive species that are so localized that they are not part of larger distributions within 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. The temporal scale for the analysis of cumulative effects to noxious weeds and invasive plants includes the timespan from 1934 through 2022. This temporal scale was selected because BLM management began affecting plant communities in the project

area after the adoption of the Taylor Grazing Act of 1934. Direct and indirect effects from the alternatives would last as long as trailing is authorized.

Past, Present, and Foreseeable Future Actions to be Considered

Past and present actions that have had the greatest influence on the extent of noxious weed and invasive species populations in the project area include: previous levels of livestock grazing use, current livestock grazing, past trailing events, road maintenance, ongoing noxious weed treatments, and previous wildfire and ESR treatments. Less influential activities include previous and current recreation permits for motorcycle races and livestock facilities such as troughs. Future actions that are considered are those that would have a cumulative impact when added to the trailing impacts. Future livestock grazing permit renewals, sagebrush mowing for fuel breaks (i.e., Bruneau Fuel Breaks Project), and ongoing and future recreation permits would cumulatively impact noxious and invasive weed populations.

Effects of Past, Present, and Foreseeable Future Actions

In the low elevations (<5,000 feet) of the project area, previous livestock grazing and wildfires have combined to create an area largely depleted of native understory species such as perennial deep-rooted plants that would resist weed invasion. In many of the low elevation areas, 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 along the ephemeral drainages and trails in the lower elevations increases the risk of weed spread. Road maintenance is an ongoing activity that also increases the risk of weed spread when combined with the impacts of livestock trailing. Livestock facilities such as troughs and supplement locations concentrate livestock and are therefore areas of weed spread. In this manner, livestock facilities increase noxious weed and invasive species spread. Future plans to mow sagebrush for fuel breaks along road edges may further open up niches for weed spread that could contribute to trailing impacts. Ongoing noxious weed treatments are critical to mitigating the effects of the activities mentioned above. The noxious weed program monitors and treats noxious weeds on an annual basis and this helps slow the rate of noxious weed spread. The degree of weed control from ongoing weed treatments would be the same for all alternatives even though the rate of weed spread may vary.

3.5.3.2 *Cumulative Impacts of Alternative A*

Cumulative impacts would be moderate in Alternative A because the number of routes would be few and they would not generally follow main roads where weeds are highest. The cumulative impacts discussed above apply to this alternative, and the degree that they cumulatively impact noxious weeds and invasive species would be between Alternatives B and C.

The higher elevations (>5,000 feet) are less susceptible to weed spread because of the higher effective precipitation and the condition of the plant communities, which is composed primarily of native mid-to-late seral sagebrush steppe. Previous livestock grazing has facilitated weed spread in the higher elevations, but these species are much more restricted to roadsides. For this reason, no cumulative impacts to noxious weeds and invasive species from trailing would be expected in upper elevations.

Lower elevations, would be more likely to have cumulative impacts from background management practices such as previous and current livestock grazing, trailing events, and facilities. This is particularly true in Alternative A where some trails do not follow established roads. Because the lower elevations are already in a partially weed-dominated state, the overall increase in weed spread in expected to be low.

3.5.3.3 *Cumulative Impacts of Alternative B*

Alternative B would have the fewest cumulative impacts of the three alternatives. The types of activities that cumulatively impact noxious weeds and invasive species would be the same in each alternative, but the degree of impact would be lowest in Alternative B. Cumulative impacts would be low because cattle would not be authorized to trail on the routes and there would be a low level of weed increase that would result from cattle trucking and road improvement.

3.5.3.4 *Cumulative Impacts of Alternative C*

Alternative C could have the most cumulative impacts as a result of having the highest numbers of trailing routes. The types of cumulative impacts would be the same as the other alternatives but the degree would be greater because of the increased number of routes. Main roads would be included in this alternative, which typically have higher numbers of weed species because of the increased use. However, these main roads are easier for cattle management to a distinct corridor and therefore impacts would be low.

The higher elevations (>5,000 feet) are less susceptible to weed spread because of the higher effective precipitation and the condition of the plant communities, which is composed primarily of native mid-to-late seral sagebrush steppe. Previous livestock grazing has facilitated weed spread in the higher elevations, but these species are much more restricted to roadsides. Future sagebrush mowing for fuel breaks could contribute to roadside weed spread by disturbing soils and opening niches for weed colonization. Cumulative impacts to noxious weeds and invasive species from trailing would still be expected to be relatively low in mid-to- upper elevations. Alternative C would have slightly more cumulative impacts than Alternative A.

Alternative C contains more routes than Alternatives A and B and crosses more of the lower elevation areas that are prone to weed spread. Because the lower elevations are already in a partially weed dominated state as a result of previous livestock management and wildfire the overall increase in weed spread in expected to be low.

3.6 Stream Crossings/Riparian Zones, Special Status Fish, Water Quality

3.6.1 Affected Environment – Stream Crossings/Riparian Zones, Special Status Fish, Water Quality

<u>Stream Crossings/Riparian Zone Conditions</u>

Stream crossing sites vary in condition from lightly trampled with relatively intact streambank form and bank angles, with some degree of riparian vegetation coverage and structure, to thoroughly trampled streambanks and compacted soils with little to no vegetation remaining. Cattle cross streams via fords (places where livestock wade directly across a stream), bridges, or culverts. Stream ford crossings typically are used twice per year per permit: once on the way to an allotment and again when the herd returns in the fall. Only the route crosses Louse Creek is

used as part of two different permits, and the ford is used by each trailing permit twice in the spring and twice in the fall (see Maps 15 and 19 in Alternatives A and C). Although not typical, there can be years when crossings are not used at all, such as when a rancher takes non-use, a fire occurs in the area, or for other reasons. When considered in the context of the entire length of a stream, a crossing site comprises an extremely small percentage of the stream length and redband trout (*Oncorhynchus mykiss gibbsi*) habitat (in the subset of those streams occupied by redband trout).

Typical vegetation found in the riparian zone at stream cattle crossings include sedges (*Carex spp.*), rushes (*Juncus spp*., *Eleocharis spp*.), and various grasses in genera such as *Poa*, *Festuca*, *Stipa*, and others. Woody shrubs and trees found at crossings can include willow (*Salix spp*.), cottonwood (*Populus spp*.), birch (*Betula spp*.), quaking aspen (*P. tremuloides*), and wild rose (*Rosa spp*.). Trailing routes also cross several intermittent channels, which support varying degrees of riparian vegetation based on how often the channels flow and the moisture-holding capability of the streambank soils. Riparian vegetation is particularly important for stabilizing streambanks, reducing erosion, and shading and cooling the water.

Channel widths at fords are typically widened compared to the stream widths immediately above and below fording sites because trailing can maintain an in-and-out, ramp-like travel way with no undercut or vertical stream banks on one or both banks. This creates a scalloping pattern on both banks, which can then be worsened by high water events that cause the stream to eddy around in the scalloped depressions on one or both sides of the crossing, causing erosion. Fording sites that are armored with varying degrees of gravel, cobble, or boulder can better withstand cattle trampling and incur less streambed and riparian zone damage than those comprised of soil, sand, and fine gravel substrate.

There are five sites on BLM-administered lands where cattle directly cross (ford) a stream and its immediate riparian zone in Alternative A (Map 30) and four sites in Alternative C (Map 31). No cattle stream fording would occur in Alternative B. The stream fords are located on Battle (Maps 4A and 4C), Sheep (Maps 9A and 9C), Mary's (Maps 14A and 14C), China (Map 10A), and Louse Creeks (Maps 15A, 15C, 19A, and 19C). China Creek has a fording site in Alterative A, but in Alternative C, the route crosses a culvert on a road. Table 18 displays streams with a ford crossing on trailing routes and the riparian functioning condition nearest to the crossing. Table 18 also displays the streams within the BFO that would be paralleled by a trailing route under Alternative A and/or C (Maps 30 and 31, respectively).

Table 18. Functioning Condition of Streams at Fording Sites and Along Trailing Routes Paralleling Sections of Streams.

Streams with a Ford Crossing	Functioning Condition in Section Closest to Ford[A]	Streams Paralleled by a Trailing Route	Functioning Condition in Section Closest to Route
Battle Creek	PFC	Road Gulch (3.4 mi)	ND
Sheep Creek	PFC	Little Jacks Creek (2.0 mi)	NF
Mary's Creek	FAR	Poison Creek (7.7 mi; 6.4 mi rated)	FAR and short PFC Sections
Louse Creek	ND, FAR	Sheep Creek (4.9 mi)	FAR
China Creek	ND	Big Jacks Creek (0.5 mi)	FAR

[A] PFC – Proper Functioning Condition; FAR – Functioning at Risk; NF – Non-Functioning; ND – No Data

Special Status Fish and the Fisheries Environment

The BFO is comprised of low elevation sagebrush desert basins that are part of the mainstem Snake, Bruneau, and Owyhee River watersheds. Much of the area receives less than 12 inches of precipitation annually. Most stream surface flows result from snowmelt at higher elevations, producing peak discharges in the spring. Water from the melting snowpack also recharges groundwater levels. Many of the smaller streams have perennial to intermittent surface flows that originate as flowing springs.

The length of streams with perennial surface flow and the length of intermittent streams vary from year to year depending on precipitation levels, particularly the amount of winter snowpack. During years of greater water availability, redband trout and other fishes are distributed to lower elevations in streams (Zoellick 1999). Extended periods of drought reduce the area over which fish are distributed and also the size of fish populations (Dunham et al. 1997). Over 440 miles of perennial and intermittent streams support areas of riparian habitat on public land; approximately 300 of the total 440 stream miles support populations of fish.

Key general indicators of aquatic habitat condition of sagebrush desert streams include: 1) stream shading provided by riparian plant communities, 2) adequate riparian and wetland vegetative cover to stabilize streambanks and channels, and 3) stream substrate composition (≤15% fines – substrate particles the size of sand or smaller).

Fourteen fish species are native to streams on the BFO (Table 19). Streams provide habitat for both cool-water and cold-water adapted fish species, including three special status fish species: redband trout and white sturgeon (*Acipenser transmontanus*), plus potentially bull trout (*Salvelinus confluentus*).

Table 19. Native Fish Status, Distribution, and Abundance.

Common Name	Scientific Name	Classification[A]	Distribution	Origin[B]	Abundance[C]
Bridgelip sucker	*Catostomus columbianus*		throughout BFO	N	A
Bull trout	*Salvelinus confluentus*	T,SC	Bruneau River-uncertain	N	R
Chiselmouth	*Acrocheilus alutaceus*		throughout BFO	N	U
Largescale sucker	*Catostomus macrocheilus*		throughout BFO	N	C
Longnose dace	*Rhinichthys cataractae*		throughout BFO	N	C
Mountain whitefish	*Prosopium williamsoni*	G	Snake, Bruneau, Owyhee Rivers	N	U
Mottled sculpin	*Cottus bairdi*		scattered streams	N	U
Northern Pikeminnow	*Ptychocheilus oregonensis*		throughout BFO	N	C
Peamouth	*Mylocheilus caurinus*		Snake River	N	U
Piute sculpin	*Cottus beldingi*		Owyhee River drainage	N	O
Redband trout	*Oncorhynchus mykiss gibbsi*	G,S,SC	throughout BFO	N	C
Redside shiner	*Richardsonius balteatus*		throughout BFO	N	A
Speckled dace	*Rhinichthys osculus*		throughout BFO	N	A
White sturgeon	*Acipenser transmontanus*	G,S,SC	Snake River	N	O

Common Name	Scientific Name	Classification[A]	Distribution	Origin[B]	Abundance[C]
[A] Classification: G – gamefish, S – BLM Sensitive Species, SC – IDFG Species of Special Concern, T – listed as a Threatened species by USFWS. [B] Origin: N – native. [C] Abundance: A – abundant, a common species that is very numerous in suitable habitat; C – common, certain to be seen in suitable habitat; O – occasional, often seen in suitable habitat; U – uncommon, present but not certain to be seen; may occur only locally; R – extremely rare and probably no longer present.					

Redband trout are a subspecies of rainbow trout that are native to streams east of the Cascade Mountains (Behnke 1992). They are a BLM Sensitive Species and also listed as a species of special concern by the State of Idaho and the American Fisheries Society (Williams et al. 1989). Redband trout have evolved to live in harsh desert environments characterized by extremes in water temperature and stream flow (Behnke 1992, Zoellick 1999, Rodnick et al. 2004). However, their abundance declines as water temperatures increase above 72°F (Li et al. 1994, Zoellick 2004).

On the BFO, redband trout are widely distributed and inhabit about 210 miles of streams on BLM lands. Redband trout abundance increases significantly as the aquatic habitat condition rating increases. Increases in stream shade provided by riparian shrubs and trees are a strong predictor of redband trout abundance in southwestern Idaho streams (Zoellick and Cade 2006). Redband trout are a prized gamefish among many anglers.

White sturgeon are restricted in distribution to the Snake River in a one-mile stretch along the northern border of the BFO and will no longer be discussed in this document as they would not be affected by trailing under Alternatives A or C.

The Bruneau River downstream of the Jarbidge River confluence provides suitable winter habitat for migratory bull trout, but at present it is not known if any bull trout are actually using this habitat. No bull trout have been sampled in BLM and IDFG sampling efforts in this area during the 1990-2010 period. In October 2010, the Bruneau River from the mouth of the Jarbidge River downstream to the Buckaroo Ditch Dam was designated as critical habitat for bull trout by the USFWS. Further, bull trout critical habitat in the Bruneau Canyon would not be affected because none of the routes cross the river, and there are no pathways of effect from trailing that could reach the critical habitat. Bull trout critical habitat down in the Bruneau Canyon would not be affected by Alternatives A or C because the trails downstream of the Jarbidge River confluence (where the critical habitat begins on the Bruneau River) are located to the west in a flat and rolling desert upland environment away from the rim of the canyon.

In addition to redband trout and white sturgeon, cold-water fish species native to streams on the BFO include mountain whitefish (*Prosopium williamsoni*), mottled sculpin (*Cottus bairdi*), and Piute sculpin (*C. beldingi*). Cool-water adapted fish species include eight members of the minnow and sucker families (Cyprinid and Catostomid fishes). Most of these species can tolerate cool- to warm-water conditions (> approximately 77°F) for limited amounts of time.

Water Quality

The BFO is located in the Middle Snake-Boise hydrologic basin (HUC 170501) of the Snake River and includes parts of five subbasins (Table 20).

Table 20. Subbasin Hydrology Summary: Drainage Area and Water Yield within the BFO.

Subbasin	Hydrologic Unit Code	Drainage Area (mi^2)	Water Yield (ac-ft)[A]	Stream Miles[B]	
				Perennial	Intermittent
C.J. Strike Reservoir	17050101	13	100	0	0
Bruneau River	17050102	1,436	51,600	211	46
Mid Snake River-Succor Creek	17050103	401	35,100	41	30
Upper Owyhee River	17050104	1,082	48,300	143	41
Jordan Creek	17050108	39	11,300	3	1
	Totals	**2,971**	**146,400**	**398**	**118**

[A] Water yield estimate derived empirically (Hortness and Berenbrock 2001) and from flow records (Kjelstrom et al. 1996, Brennan et al. 2002).
[B] Water yield calculation is for the total drainage area; stream miles are for BLM-administered lands only

Idaho water quality standards require that surface waters of the state be protected for beneficial uses. Undesignated waters may support cold water or warm water aquatic life, primary or secondary contact recreation, agricultural water supply, industrial water supply, wildlife water supply, and aesthetics.

3.6.2 Environmental Consequences - Stream Crossings/Riparian Zone Conditions

3.6.2.1 *General Discussion of Impacts*

Stream Crossings/Riparian Zones

The direct effects of trailing across a stream through the immediate riparian zone consist of physical alterations to stream channels and riparian zones, including: pugging, bank shearing and trampling, turbidity/sedimentation, and soil compaction. Where banks and the immediate riparian zone are partially or completely armored with rock substrate, less damage to the stream habitat and riparian zone would occur from cattle trailing through the area. Streambank and riparian zone herbaceous vegetation would be trampled, and if woody plants are present they could be physically damaged from stem breakage. Indirect effects could include long-term loss of stream shade from woody stem breakage and trampling of herbaceous ground cover accumulating over time from repeated crossings.

On the trailing routes paralleling streams, livestock are not trailed directly down stream channels and effects would be confined primarily to the near bank, flood-prone areas and secondary stream terraces. The same effects as those listed for stream crossings would occur but would be less intense and scattered, because only limited animals in the trailed herd would stray off the trailing route. Random cattle off the main herd would essentially wander in a path generally parallel to the channel, with the majority of the herd remaining on the route or close to it as they are driven through the area.

On the Mary's Creek LLC routes (Maps 8 and 9 in Alternatives A and C), at least a small percentage of the cattle would be expected to travel through the six springs adjacent to the route, which would result in pugging of soils and trampling of riparian vegetation. Further, a small percentage of animals in the herd could defecate in the springs and surrounding riparian vegetation as they pass through. This expected to be a low to negligible amount involving a small percentage of the overall number of cattle and the brief time they will be moving through the area.

Special Status Fish

In-channel fish habitat could be affected by physical disturbance from cattle trampling in the following ways: Cobble, gravel, undercut banks, and aquatic plants such as aquatic buttercup (*Ranunculus sp.)* would be trampled and altered to varying degrees, reducing the habitat quality for redband trout and other fish species that use these habitats for cover. Short-term water quality impairment would include an increase in turbidity levels at stream crossings and for varying distances shortly downstream until dissipation returned to background levels. At redband trout spawning sites that could occur at a specific ford, juvenile fish or ova that had not emerged from the stream bottom gravel could also be negatively affected by several means, which are described in the effects of Alternatives A and C.

Water Quality

Water quality would be briefly impaired at stream crossings as livestock crossing perennial stream channels would disturb and mobilize bottom sediments and streambank soils releasing turbidity into the water column. Further, streambank soils loosened and exposed by hoof action could be mobilized more easily following future high water events and contribute sediment to streams. Due to widely varying stream and riparian zone conditions at each fording site, it is not possible to predict how many feet downstream of the ford the turbidity would actually drift before dissipating. Variables include the number of cattle passing through the ford, the flow rate and volume at the time of each fording event, and the turbidity concentration generated at the different crossings due to differences in the type of streambank soils and stream substrate at each crossing.

Trail routes crossing streams on bridges or culverts or coursing parallel to perennial streams would have minimal effects on water quality from sedimentation/turbidity and bacteria. Cow manure would be widely dispersed along the route, with a small percentage, if any, of cattle actually depositing manure directly into a flowing water body, and a one-time short-term crossing event would cause elevated bacteria levels momentarily. Turbidity and sedimentation caused by disturbing the stream bottom would also not remain elevated because the flow would disperse it relatively shortly downstream.

Similarly, water quality standards in intermittent streams with parallel trails or at dry fords would not be violated as stream flows would either be non-existent or stream flow volume would be far below levels where Idaho Department of Environmental Quality (IDEQ) contact standards (for primary and secondary contact) for bacterial levels would apply. Water quality standards only apply to intermittent waters during optimum flow periods sufficient enough to support the beneficial uses for which the water body has been designated. The optimum flow for contact recreation is greater than or equal to 5.0 cubic feet per second (cfs); the optimum flow for aquatic life is greater than or equal to 1.0 cfs (Idaho Administrative Procedures Act [IDAPA] 58.01.02.070.07). Although wetlands are protected under Idaho's definition of waters of the State, Idaho has no water quality standards that are specific to wetlands.

Livestock defecating in perennial streams at fords could briefly increase levels of *E. coli* beyond IDEQ thresholds for primary and/or secondary contact recreation. However, this would not constitute a technical water quality violation, as five measurements over 126 cfu/mL (colony

forming units per milliliter) taken over a 30-day period would be needed to exceed the standard (IDAPA 58.01.02.251.01).

3.6.2.2 *Comparison of Impacts*

A summary of impacts to stream crossings/riparian zones, special status fish, and water quality resulting from the alternatives are displayed in Table 21. These impacts are described more fully in the sections for each alternative below.

Table 21. Comparison of Direct and Indirect Impacts to Stream Crossings/Riparian Zones, Special Status Fish, and Water Quality in the Project Area.

Issue	Indicator	Alternative		
		Alternative A	Alternative B	Alternative C
Impacts to Streams and Riparian Zones	# of stream crossings (fords) with direct and indirect impacts	5	0	4
Impacts to Stream Sections Paralleled by Routes	# of stream sections paralleled by routes	5	0	3
Impacts to Redband Trout Habitat	# of stream crossings in redband trout habitat	5	0	4
	# of paralleled stream sections with redband trout	2	0	0

3.6.2.3 *Alternative A*

<u>Stream Crossings/Riparian Zones</u>

In Alternative A, cattle would ford streams at five different sites on five different streams (Map 30). The direct effects of trailing across a stream and through the immediate riparian zone consist of physical alterations to channels and riparian zones, including pugging, root shearing between plants, bank shearing and trampling, turbidity, and soil compaction, as described briefly in Section 3.6.2.1, *General Discussion of Impacts*. In addition, streamside and riparian herbaceous vegetation would be trampled, and if woody plants are present, they could be physically damaged from stem breakage. Indirect effects from woody stem breakage and trampling of taller herbaceous ground cover could result in long-term loss of shade and local increases in water temperature (Zoellick and Cade 2006); however, this would be expected to be minimal and localized due to the limited riparian and stream area affected at crossing sites when compared to the total length of the stream. Indirectly, stream crossings would also likely become small, long-term sources of readily mobilized turbidity because the streambank vegetation could not grow back completely every year between trailing events and stabilize all the streambank soils.

In Alternative A, small numbers of the trailing herd would likely stray and go around some culvert or bridge crossings on the trailing routes. This would primarily occur when large numbers of a herd bunched up at a culvert or bridge. The effects would be the same type as those at stream fording sites but would occur with much lower intensity and in a scattered nature; compared to the main body of the herd being driven down the road, many fewer animals would leave the road and cross through the riparian zone. Further, many of the culvert crossings cross dry washes or intermittent streams with little to no riparian vegetation around the culvert.

Five streams are paralleled by trailing routes in Alternative A (Table 21), varying in distance from 0.5 to 6.4 miles. These streams are Little Jacks, Poison, Sheep, and Big Jacks Creeks (there is also a very short intermittent section of Battle Creek located near the Mud Flat Road trailing route that is fenced off from the road and, therefore, would not be affected by trailing). Along these routes, a small percentage of trailed animals would stray off the road and move in and out of the adjacent riparian zone, up to the 1/4 mile total width of the trailing corridor. The effects from straying into the riparian zone on the paralleled stream sections would result in the same type of effects as those at stream fording sites, but to a much lower degree because it would involve a limited number of stray animals breaking off from the herd. Further, at many fords, cattle are squeezed through the ford crossing, creating a concentrated area of impacts that would be much heavier than those from limited numbers of animals straying off the routes that parallel streams and wandering in a scattered fashion through the riparian zone.

In Alternative A, there are six springs on BLM land on and immediately adjacent to the Mary's Creek LLC proposed trailing route near the Nevada border (Maps 8A and 9A). From north to south, the condition of the first spring is unrated, followed by NF, PFC, NF, and PFC conditions, respectively. The sixth spring may actually be over the border slightly in Nevada; it is rated as FAR. In Alternative A, one additional spring, northwest of the FAR-rated spring, is rated PFC and may fall within the 1/4 mile trailing corridor of Alternative A. These springs would likely incur riparian vegetation trampling, pugging, and compaction; a few animals could defecate directly in the riparian vegetation surrounding the springs. Trailing through these springs could reduce their condition levels from PFC or FAR down to FAR or non-functional, if enough animals moved off the trail and through a spring area.

In summary, Alternative A would have slightly more impacts on stream fords/riparian zones than Alternative C due to two additional paralleled stream sections and one additional stream crossing. In the context of all the miles of streams on the BFO, the impacts would be negligible overall. Alternative C would also have slightly less impact on riparian zones paralleled by routes than Alternative A because cattle would be held to a 50 foot trailside buffer only. Alternative C would also affect one less spring on the two Mary's Creek LLC routes than in Alternative A. This is due to cattle not being able to stray beyond the 50 foot buffer required by Alternative C, and therefore should not impact a seventh spring northwest of the FAR-rated spring on the Nevada border. Alternative A and C would have more effects than Alternative B, because no trailing would be authorized in Alternative B.

Special Status Fish (Redband Trout)

All five streams with a fording site under Alternative A support redband trout; all but Battle and Mary's Creeks have known intermittent sections. Depending on the precipitation pattern of any given year, it is possible the specific crossing site may be dry and redband would be up- and/or downstream of the site (Zoellick 1999) and would not be affected by crossing cattle.

As explained in Section 3.6.2.1, *General Discussion of Impacts*, the direct effects to redband trout habitat at cattle crossings consists of habitat alteration (both in-channel and to bank-stabilizing riparian vegetation), and the potential to disturb redds with juvenile fish or eggs present, if cattle crossed at a site where a redd or redds were present.

Indirect and long-term impacts at crossing sites used repeatedly over the years could include any of the previously listed effects on physical habitat and water quality (turbidity/fine sediment) and would vary in condition level based on the intensity and seasonal timing of crossing events and how often in the future the crossings continued to be used. In addition, short-term turbidity/fine sediment pulses downstream and away from an actual cattle fording site could indirectly affect redband trout as turbidity settled out of the water column and into a redd. This could reduce oxygen or smother eggs or developing fry if a ford was used during redband spawning and incubation season. Due to widely varying stream and riparian zone conditions at each fording site, it is not possible to predict how many feet downstream of the ford the turbidity would travel before dissipating. Variables include the number of cattle passing through the ford, the flow rate and volume at the time of each fording event, and the turbidity concentration generated at the different crossings from differences in the type of streambank soils and stream substrate at each crossing. Alternative A would have slightly more affect on redband trout because it has five ford sites vs. four in Alternative C. Fording sites represent a small percentage of the length of any of the streams with redband, and the consequences to redband populations overall would be negligible.

Two stream sections with redband trout have adjacent trailing routes (Sheep Creek, 4.9 miles; Big Jacks Creek, 0.5 miles) in Alternative A (Maps 17A and 4A, respectively), and the potential effects on redband trout habitat would include the same type of impacts as those described for crossing sites. However, the incidence and intensity of the impacts should be much lower because only a percentage of the overall trailed herd would stray off the road/trail route and move in and out of the adjacent riparian zone. In Alternatives A and C, the section of Little Jacks Creek paralleled by the trailing route (Maps 7A and 7C) does not support redband trout and is dry in all but the most intense spring runoff events. However, the perennial section upstream of where the stream goes subterranean, which is not near the trailing route, does support redband trout. A very short section of McDonald Creek just downstream of Road Gulch and immediately before McDonald Creek enters private land also supports redband trout; this is at the very end of the Roland Road trailing route.

Water Quality

General impacts to water quality are described in Section *3.6.2.1,* General Discussion of Impacts. Longer-term impacts at fording/crossing sites used repeatedly over the years could include any of the previously listed effects on physical habitat and water quality and would vary in condition level based on the seasonal timing of the crossing events (e.g., the degree of streambank soil saturation could affect the amount of streambank sloughing incurred), the number of cattle, and the amount of time it would take a herd to ford through the crossing. Repeatedly used crossings would remain below their potential condition because there would not be sufficient time each year between trailing events to allow woody riparian vegetation and streambank conditions to recover, resulting in the ford remaining a sediment/turbidity source during higher water events. Cattle using the allotment surrounding the fording sites would likely maintain or delay the recovery of the condition of the crossing. In Alternative A, the 1/4 mile corridor would allow cattle to travel further from the route than in Alternative C (where livestock would be kept within 50 feet of specific sections of the route), which would increase the chance for cattle to wander into riparian zones and stream channels and affect water quality.

Table 22 and Table 23 identify stream name, functioning condition, current DEQ Water Quality Status (from 2010 Integrated Report), and flow regime. In addition, potential to affect water quality, and whether DEQ Water Quality Standards may be exceeded, is also displayed. The State of Idaho presumes most unassessed waters will at least support cold water aquatic life and either primary or secondary contact recreation. These are termed "presumed uses." Cold water aquatic life, primary and/or secondary contact recreation, plus shellfish and wildlife beneficial uses automatically apply for unassessed waters (IDAPA 58.01.02.100).

Table 22. Impacts of Trailing Routes that Ford Streams.

Stream name	BLM PFC rating	Current DEQ Water Quality Status[1] of Beneficial Uses	Flow Regime	Potential Negative Effects to Water Quality	Exceed a DEQ standard?
China	PFC[2]	Not listed	intermittent	none	no
Louse (2 sites)	ND, FAR	Full support	perennial	sediment, bacteria	no
Mary's	FAR	Un-assessed	perennial	none	no
Sheep	PFC	Un-assessed	perennial	sediment, bacteria	no
Battle		Un-assessed[3]	perennial	none	no

[1] From DEQ 2010 Integrated Report
[2] PFC (proper functioning condition), FAR (functioning at risk), ND (no data)
[3] unassessed, but 303(d) listed for temperature

Table 23. Impacts of Trailing Routes that Parallel Streams.

Stream name	BLM PFC rating	Miles	Current DEQ Water Quality Status of Beneficial Uses	Flow Regime	Potential Negative Effects to Water Quality	Exceed a DEQ standard?
Poison	FAR: 3.9 mi PFC: 0.8 mi NR: 1.7 mi	6.4	Un-assessed[1]	intermittent	none	no
Road Gulch	PFC	3.4	Not listed	intermittent	none	no
Sheep		4.9	Un-assessed	intermittent	none	no
Big Jacks	FAR	0.5	Not listed	intermittent	none	no
Little Jacks	PFC	2.0	Un-assessed	Intermittent	none	no

[1] unassessed but 303(d) listed for sediment

According to the 2003 Mid Snake/Succor Cr. TMDL (IDEQ 2003), Poison Creek is identified as an intermittent stream. Poison Creek currently appears on the 303(d) list as sediment impaired (2010 Integrated Report). Conversations with DEQ personnel indicate that Poison Creek was erroneously listed in previous Integrated Reports as sediment impaired and would be recommended for delisting in the forthcoming 2012 Integrated Report (H. Stone, pers. comm.). Because the active channel of Poison Creek is often within 100 feet or less from the stream, the potential for some livestock to trail through riparian areas is high along this route, and some livestock would likely stray and wander across Poison Creek in several locations. This alone would not result in a violation of applicable standards, as the level of disturbance would still remain low: livestock would not linger in the riparian areas, and it is expected that low numbers

of livestock would leave the road, particularly due to the relatively wide width of the Mud Flat Road. Also, the majority of segments that could be classified as perennial are located in livestock exclosures or in the fenced in area at the Poison Creek Recreation Site. It is not anticipated that trailing would have a negative effect on water quality in Poison Creek.

Battle Creek is 303(d) listed for water temperature. There is only one stream fording location on Battle Creek, and trailing through this ford would have no effect on temperature due to the insignificant size of the crossing site and shading vegetation disturbed, in relation to the overall length of Battle Creek.

Sheep and Louse Creeks have ford crossings, but are not 303(d) listed. However they could be negatively affected briefly by sedimentation/turbidity and bacteria from trailing across them. The DEQ standards would not be violated for these streams because cattle would be crossing through these streams briefly, and a one-time, short-term crossing event would cause elevated bacteria and sediment/turbidity levels only momentarily.

3.6.2.4 *Alternative B*

Stream Crossings/Riparian Zones

Under Alternative B, there would be no effects of livestock trailing on stream crossings/riparian zones because trucks used to move livestock would stay on roads and bridges.

Special Status Fish (Redband Trout)

Under Alternative B, there would be no effects of livestock trailing on stream crossings/riparian zones because trucks used to move livestock would stay on roads and bridges.

Water Quality

Under Alternative B, there would be no effects of livestock trailing on stream crossings/riparian zones because trucks used to move livestock would stay on roads and bridges.

3.6.2.5 *Alternative C*

Stream Crossings/Riparian Zones

Alternative C would have one less ford (China Creek) than Alternative A (Map 31). Under Alternative C, a parallel trailing section would be added along Road Gulch on the Roland Road trailing route, overall resulting in three paralleled stream sections: Poison Creek, Little Jacks Creek, and Road Gulch. The type of effects on stream channels/riparian zones would essentially be the same as those described for Alternative A, except that the requirement to keep livestock within 50 feet of a route would apply to several routes under Alternative C. This would reduce the distance off the road/trail that stray cattle could wander, resulting in fewer impacts to riparian zones and stream channels.

Overall, Alternative C would have less impacts on stream fords/riparian zones than Alternative A due to two fewer creekside trailing sections. In the context of all the miles of streams associated with trailing routes, the impacts would be negligible overall. Alternative C would also have slightly fewer impacts on riparian zones paralleled by routes than Alternative A because cattle would be required to stay within 50 feet of the route.

Alternative C would also affect one less spring on the two Mary's Creek LLC routes (Maps 8C and 9C) than in Alternative A. This is due to the requirement under Alternative C to keep cattle within 50 feet of the route, which should therefore not impact a seventh spring northwest of the FAR-rated spring on the Nevada border.

Special Status Fish (Redband Trout)

The type of effects of Alternative C on stream fords would be identical to Alternative A, but there would be no fording of China Creek in this alternative. Under Alternative C, two stream sections (Sheep and Big Jacks Creeks) would no longer be paralleled by routes, as they would be under Alternative A. Therefore, no impacts to redband trout habitat would occur in these areas. There would be slightly less effect on redband trout due to stream crossings, as Alternative C has four stream fords vs. five in Alternative A.

Water Quality

Alternative C would have the same effects as Alternative A, except that under Alternative C, livestock would be required to stay within 50 feet of the route at specially designated sections. Compared to Alternative A, this would decrease the chance for cattle to wander further into riparian zones and stream channels along the trailing routes. This would reduce the chances for defecation in streams and sediment-generating events such as bank trampling that would be caused by random cattle straying off the route.

3.6.3 Cumulative Impacts – Stream Crossings/Riparian Zones, Special Status Fish, Water Quality

3.6.3.1 *Scope of Analysis*

Geographic and Temporal Scope and Rationale

The cumulative effects area considered for stream crossings/riparian zones, special status fish (redband trout), and water quality is the allotment surrounding the stream crossing site or trailing route parallel to a stream section. This area was selected to assure that effects from cattle grazing in the allotment surrounding the crossing site or paralleled stream section have been considered, along with other effects within the allotment (primarily road use and maintenance on roads used for trailing) that would be additive to the effects from trailing.

The temporal scale for the analysis of cumulative effects to stream crossings/riparian zones, special status fish, and water quality includes the timespan from 1934 through 2022. This temporal scale was selected because BLM management began affecting these resources in the project area after the adoption of the Taylor Grazing Act of 1934. Direct and indirect effects from the alternatives would last as long as trailing is authorized.

Past, Present, and Foreseeable Future Actions to be Considered

The past, present, and foreseeable actions on stream fording sites/ riparian zones, redband trout and water quality are primarily past, present, and future livestock grazing plus sedimentation/turbidity resulting from any road maintenance and road use on roads that parallel trailing routes. Another potential cumulative effect with less chance of affecting these three resources along trailing routes and stream crossings is wildfire and ESR.

Effects of Past, Present, and Foreseeable Future Actions

Effects of past, present, and foreseeable future actions on stream fording sites/riparian zones, redband trout, and water quality include reductions in, and damage to, riparian vegetation and shade plus streambank trampling, short-term increases in bacterial concentrations, and sedimentation/turbidity. The same effects would also occur along stream channels and in riparian zones on creekside trailing routes, but would occur to a lesser degree because these routes concentrate animals further away from riparian zones and the actual stream channel, as compared to the direct interaction at crossing sites.

3.6.3.2 Cumulative Impacts of Alternative A

Stream Crossings/Riparian Zones

The primary activities that could cumulatively impact existing conditions at stream crossings/riparian zones are grazing effects from cattle occupying an allotment during their permitted season and sediment and turbidity from trailing routes on roads that parallel streams (see the *Water Quality* section below). The specific impacts from these activities would include all of those described in Section 3.6.2, *Environmental Consequences – Stream Crossings/Riparian Areas, Special Status Fish, and Water Quality*.

Grazing on the allotments that surround trailing routes and stream crossings has occurred well into the past, has contributed to the current conditions at stream crossings and routes adjacent to streams, and would continue into the foreseeable future.

There is a slight chance of wildfire and ESR activities occurring within the allotments that surround each crossing site and streams that parallel trailing routes. However, the chance of a fire occurring in riparian zones near enough to substantially burn shading riparian vegetation or contribute sediment/turbidity to that contributed when a trailing event is actually occurring are remote and negligible.

The magnitude of cumulative effects to stream crossings and their adjacent riparian zones in Alternative A would be minimally greater than those in Alternative C because routes would include one additional stream crossing under Alternative A. For routes that parallel streams, the cumulative effects of Alternative A would be minimally greater than Alternative C because of the width restrictions required by Alternative C, and Alternative A having two additional stream sections along trailing routes.

Redband Trout

At stream crossings/riparian zones and along routes that parallel redband streams, impacts to redband trout consist primarily of habitat alteration (both in-channel and to bank-stabilizing riparian vegetation) and the potential to disturb redds with juvenile fish or eggs, if cattle crossed at a site where a redd or redds were present. The main activities that could cumulatively impact existing conditions for redband trout are grazing effects on streams and riparian zones by cattle grazing the allotments that contain the fording site, and sediment and turbidity from trailing routes on roads that parallel streams.

Grazing on the allotments that surround trailing routes and stream crossings has occurred in the past, has contributed to the current conditions of redband habitat, and would continue into the

foreseeable future. Road maintenance and use has affected streams in the past and present and will continue to add sediment/contribute turbidity to those two streams along trailing routes with redband trout.

There is also a slight chance for wildfire and ESR activities to add to these disturbances by reducing riparian vegetation and increasing sedimentation. The Boise District Fire Management Plan (BLM 2011) prescribes measures specifically to protect and mitigate effects to special status species.

Redband trout would have more chance of incurring the negative cumulative effects in Alternative A due to there being two routes adjacent to streams with redband, as opposed to zero in Alternative C. The same is true with ford crossings, as Alternative A has one additional fording site than C.

Water Quality

The primary activities that could cumulatively impact water quality at stream crossings/riparian zones and to streams with creekside trailing routes are bank trampling by cattle in the existing permitted allotment and road maintenance, both of which result in a temporary increase in sedimentation turbidity. Road maintenance and use has affected streams in the past and present and will continue to contribute sediment to those streams adjacent to routes, particularly Poison Creek. The chance of a vehicle gasoline leak or spill actually occurring and in such quantity that it would flow overland to a stream course is negligible. Further, defecation in a perennial stream by the cattle using the allotment surrounding the trailing route would add to defecation from cattle trailing across streams and on routes adjacent to streams.

There is a slight chance for wildfire and ESR activities to occur within the allotments that surround each crossing site and streams that parallel trailing routes. Water quality could experience a rise in turbidity and fine sediment levels due to runoff from burned areas, which would be additive if this occurred during a trailing event. The chance of this happening when a trailing event is actually occurring is remote and almost discountable.

For routes that parallel streams, the cumulative effects of Alternative A would be greater than Alternative C because of the width restrictions required by Alternative C and Alternative A having two additional routes following streams.

3.6.3.3 *Cumulative Impacts of Alternative B*

No cumulative impacts would occur to stream crossings/riparian zones, special status fish, or water quality because no direct or indirect impacts to stream crossings/riparian zones, special status fish, or water quality are expected from denying applications for crossing permits.

3.6.3.4 *Cumulative Impacts of Alternative C*

Stream Crossings/Riparian Zones

The magnitude and type of cumulative effects to stream crossings and routes that parallel streams in Alternative C would be similar to those in Alternative A. There would be slightly fewer cumulative effects under Alternative C than under Alternative A because of the width restrictions required by Alternative C and because C has two fewer stream sections along trailing routes and

one less stream crossing. However, as in Alternative A, the chance of a fire occurring in riparian zones near enough to substantially burn shading riparian vegetation or contribute sediment/turbidity to that contributed when a trailing event is actually occurring is remote and almost discountable.

Redband Trout

The primary activities that could cumulatively impact existing conditions for redband trout are grazing effects from cattle occupying an allotment during their permitted season and sediment and turbidity from trailing routes on roads that parallel streams. As in Alternative A, this would include habitat alteration (both in-channel and to bank-stabilizing riparian vegetation) and the potential to disturb redds with juvenile fish or eggs, if cattle crossed at a site where a redd or redds were present. There is also a slight chance for wildfire and ESR activities to add to these disturbances. Alternative C would have a lower chance of incurring cumulative effects on redband trout due to having one less stream ford than Alternative A, and because there are no routes adjacent to streams with redband in this Alternative.

Water Quality

Cumulative impacts of Alternative C would be the same in type as those considered under Alternative A. There would be one fewer stream crossing under Alternative C, resulting in slightly fewer cumulative impacts. There would be two less streams following a trailing route in Alternative C as compared to A; therefore, cumulative impacts on water quality would be lower in Alternative C.

3.7 Wildlife

3.7.1 Affected Environment – Wildlife

Although trailing events described in this EA would only impact a small amount of area within the BFO, the spatial extent of the routes encompass much of the field office. The BFO contains vast expanses of desert plains, deep canyons, and mountains in essentially natural condition, which provide habitat for a variety of native wildlife. Habitat within the BFO includes shrub covered plateaus and foothills, deep rocky canyons, and variably sized creeks, shallow lakes, and wet meadows.

Roughly 30 wildlife species classified as BLM Sensitive Species are known or have the potential to occur within the BFO. Although multiple BLM Sensitive and other important (e.g., big game, raptors) wildlife species reside within the BFO, only those that are likely to be affected by trailing activities (e.g., burrowing, shrub-nesting, and disturbance-sensitive species) will be analyzed in detail. Given the nature of the activities and the general effects described in Section 3.7.2.1, the following species and groups of species are most likely to be impacted by trailing and will be discussed relative to the impact vectors:

- Greater Sage-Grouse (*Centrocercus urophasianus*)
- Columbia Spotted Frog (*Rana luteiventris)*
- Pygmy Rabbit (*Brachylagus idahoensis*)
- California Bighorn Sheep (*Ovis canadensis californiana*)
- Raptors
    - Ferruginous Hawk (*Buteo regalis)*

    - Golden Eagle (*Aquila chrysaetos*)
    - Bald Eagle (*Haliaeetus leucocephalus)*
    - Peregrine Falcon (*Falco peregrinus anatum)*
    - Prairie Falcon (*Falco mexicanus)*
    - Northern Goshawk (*Accipiter gentilis)*
    - Red-tailed Hawk (*Buteo jamaicensis*)
    - Western Burrowing Owl (*Athene cunicularia)*
- Neotropical Migratory Birds (uses sage-grouse analysis as surrogate for impacts description)

Additional species that have the potential to be impacted by trailing activities but would be affected so minimally as to be unmeasurable include the following:

- Piute (*Spermophilus mollis artemisae)* andWyoming Ground Squirrel (*Spermophilus elegans nevadensis)*
- Rocky Mountain Elk (*Cervus elaphus nelsoni*)
- Mule Deer (*Odocoileus hemionus)*
- Pronghorn Antelope (*Antilocapra americanus*)

Although ground squirrels utilize burrows, negative impacts from cattle presence and grazing are not likely (Fehmi et al. 2005). Impacts from trailing to big game species (elk, mule deer, and antelope) could also occur through disturbance and forage competition. However, the large expanses of intact wintering and breeding habitat for big game in the BFO would allow individuals to easily disperse from the short-term disturbance represented by the trailing events, and minimal activities in riparian areas would preclude disturbance to fawning mule deer. It is also unlikely that elk and antelope utilize areas in the BFO for concentrated calving/fawning activities, so the limited spatial scope of the trailing activities during the relevant time period would not have any measurable impacts.

3.7.1.1 *Greater Sage-Grouse*

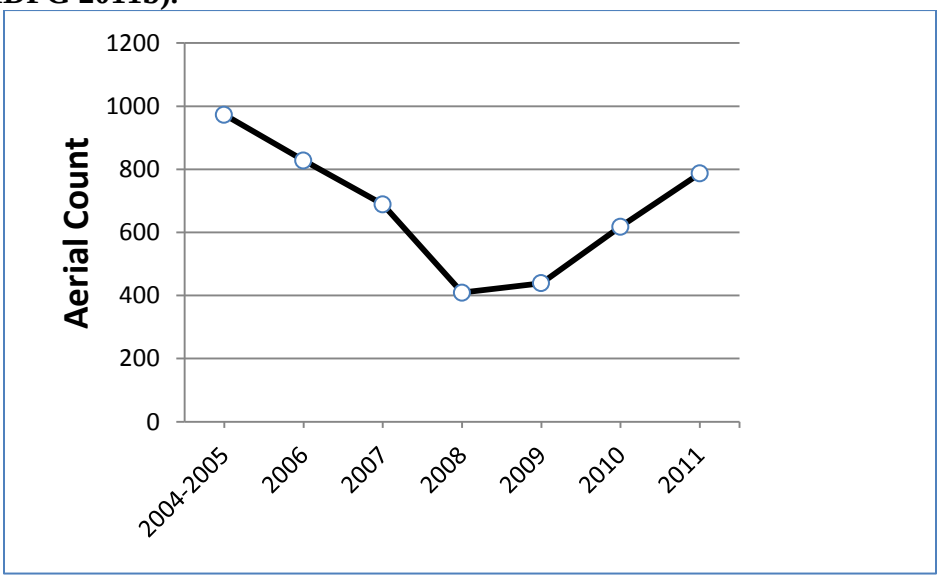
Sage-grouse declined west wide from the 1960s to the mid-1980s and then tended to stabilize (Connelly et al. 2004). In Connelly et al. (2004), there were no clear conclusions about the principal causes of the decline of sage-grouse, but instead, there was a discussion of a variety of factors affecting sage-grouse and sagebrush habitats. In general, range conditions across the West have improved since the days of unregulated livestock grazing combined with large herds of unmanaged wild horses. Sage-grouse numbers were extremely low during 1918-1942, such that wildlife managers feared extinction of the species (Autenreith 1981). Factors, such as habitat loss, weather, disease (Autenreith 1981, Connelly et al. 2004) and predation (Coates 2007) are all involved in affecting sage-grouse populations. Aldridge et al. (2008) examined the chances of survival of sage-grouse across its range and developed a model to predict where they are most likely to persist and where they are at risk of disappearing. According to their model, sage-grouse in the BFO likely represent a secure population.

The BFO is within the Great Basin Core population of sage-grouse, one of the five largest populations across their range (Connelly et al. 2004). Furthermore, the BFO is split between the NE NV/S-Central ID/NW UT and N-Central NV/SE OR/SW ID subpopulations, which are considered loosely connected (Connelly et al. 2004) and demonstrated with IDFG telemetry data (IDFG 2011a). Within Idaho, the BFO contains the largest unburned, intact sagebrush habitat

remaining, and the project area includes over 1.1 million acres mapped as Key habitat (including state, private and federal lands) with nearly 990,000 acres on BLM land. It also contains the largest area with a high density of leks in Idaho. The higher-elevation mountain sagebrush habitat in the BFO is mostly in suitable condition for sage-grouse and has not been lost to wildfires. Much of the lower elevation Wyoming sagebrush habitat on the Snake River Plain lacks adequate grasses and forbs for cover and food, is dominated by cheatgrass in the understory, and/or has been burned by wildfires and lost its sagebrush. The current range of the sage-grouse in the BFO is the higher elevations above the Snake River Plain.

Sage-grouse numbers have been monitored for several years in the project area by both aerial and ground surveys of active leks and from harvest data. Data from aerial surveys in an annually surveyed block of land that overlaps the project area, as illustrated in Figure 2, indicate that populations declined by 60% from 2005 to 2009. However, an increase in males at leks since 2008 suggests that this decline was in part related to a West Nile Virus (WNv) outbreak that occurred in the Big Springs Ranch and Duck Valley Indian Reservation areas during 2006 (IDFG 2008). Numbers have continued to increase since 2008.

Figure 2. Male Lek Attendance in Annually Surveyed Area (Grasmere Block) from 2004 to 2011 (IDFG 2011b).



Sage-grouse are dependent on sagebrush throughout the year, for both food and cover. In the winter, they need areas where sagebrush is above the snow. In the nesting season, they need sagebrush for cover and food, grasses for nesting cover, and forbs for food and nesting cover. In later summer and fall, as the vegetation dries, they use riparian areas, springs, moist meadows, and higher elevations where they can find green forbs to eat (Connelly et al. 2000, Connelly et al. 2004).

On March 23, 2010, the sage-grouse was determined by the USFWS to warrant protection under the ESA but was precluded from listing due to other species of higher listing priority. Subsequently, interim policy on conservation policies and procedures were published (USDI BLM 2011d) to facilitate maintaining and restoring habitat for sage-grouse while the BLM

determines how to incorporate long-term measures into its Land Use Plans. These interim measures include direction for land management practices in Priority and General Habitats, which comprise roughly 1.4 million acres in the project area (~80% of the project area when all ownerships are included). In particular, grazing management practices are described that will minimize adverse effects on greater sage-grouse and its habitat; these practices were included in the design criteria described in Section 2.1 that were used in the development of Alternative C.

3.7.1.2 *Columbia Spotted Frog*

Columbia spotted frogs (*Rana luteiventris*) are distributed widely, but southern Idaho represents the southern portion of their range, where they reside in isolated patches of suitable habitat (Gomez 1994). Spotted frogs have been found from sea level up to 10,000 feet elevation and are most likely to occur near permanent water along the edges of ponds or lakes or in pools along slower moving streams where algae persists. Although there are a few spotted frog observations in the southeastern portion of the project area, the greatest concentration of locations in the Owyhees are in the western portion of the BFO (IFWIS 2011), with most of the habitat residing on private land. Historically, beaver ponds were common in low-gradient streams throughout the Owyhees, but beavers were trapped out in the 1800s so frog habitat used to be much more abundant than it is now.

Spotted frogs in Southwest Idaho, which includes the project area, are within the Great Basin subpopulation (or clade), and genetic analysis suggests that populations have undergone recent declines (Funk et al. 2008). The likely explanation for this decline is an extensive loss of habitat, as wetland habitats have been converted to irrigated pastures, river areas have undergone dewatering, and intensive grazing has impacted riparian habitats (USFWS 1993). However, findings from a recent short-term grazing study suggests light to moderate grazing impacts to spotted frogs are not clearly negative (Adams et al. 2009). In 1993, this Great Basin subpopulation was determined by the USFWS to warrant protection under the ESA but was precluded from listing due to other species of higher listing priority (USFWS 1993).

3.7.1.3 *Pygmy Rabbit*

The pygmy rabbit is the smallest North American rabbit species (USFWS 2010). On September 30, 2010, the USFWS announced that the pygmy rabbit does not currently warrant listing under the ESA (USFWS 2010). This species is typically found in areas of tall, dense sagebrush cover and are considered a sagebrush-obligate species because they are highly dependent on sagebrush to provide both food and shelter throughout the year (Green and Flinders 1980; Katzner et al. 1997). Natal burrows can be active from March through mid-July (Rachlow and Witham 2004, Larrucea and Brussard 2009), which represents the most vulnerable time for young when they are tied to their natal burrow and are therefore more susceptible to burrow damage. Pygmy rabbits have been found from 2,900 feet to over 6,000 feet in elevation in southwestern Idaho. The species has been documented within the project area from surveys conducted over the last decade and were the focus of a Master's thesis conducted during 2004 and 2005 (Burak 2006). Detections during 2011 surveys for a fuel breaks project included detections in deep loamy soils. Analyses of pygmy rabbit detections relative to Ecological Site Description (ESD; NRCS 2012, unpublished draft) showed a logical association of locations with four ESD types. These ESD types represent roughly 260,000 acres in the project area and were used as a model for potential pygmy rabbit habitat in this EA (Maps 35 and 36).

3.7.1.4 *California Bighorn Sheep*

California bighorn sheep were historically found from British Columbia southward to the Sierra Nevada mountain range in California (Krausman and Bowyer 2003). Following the arrival of settlers to Idaho, bighorn sheep populations began to decline during the 1870s, and by the 1930s, were extirpated except for a population along the Salmon River (IDFG 2010). Causes for the decline included unregulated hunting, competition with domestic livestock, and disease (IDFG 2010). In the 1960s, IDFG began reintroducing bighorn sheep from British Columbia to remote wild canyons in southwestern Idaho (IDFG 2009). Their total population in the areas overlapping the BFO (Owyhee River, Big and Little Jacks Creek, and Bruneau/Jarbidge Rivers) peaked at roughly 1,000 animals during the drought of the 1990s and has since returned to pre-drought levels of about 700 animals (2006 estimate; IDFG 2009). The causes of the increase and decline are unknown, especially because the increase occurred during the drought. However, the spike may be related to the normal increase and decline of newly introduced populations. There was likely an initial lag time before predator populations, mainly cougar, adjusted to the new prey source. The current estimate of 700-1,000 California bighorn sheep in southwest Idaho (IDFG 2009, 2010) represents about one-seventh to one-fifth of the roughly 5,000 in the contiguous United States (Krausman and Bowyer 2003).

Predation by cougars may be the biggest factor limiting bighorn sheep populations in the BFO, but the impact of predation is unknown (IDFG 2010). Additionally, disease does not seem to be an issue for bighorn sheep in the BFO since no domestic sheep grazing is allowed on BLM lands in the BFO. However, that does not preclude the presence of domestic sheep on private inholdings. Habitat quality and quantity in the BFO does not appear to be the limiting factor for bighorn sheep numbers since they graze on steeper slopes than cattle, so only localized competition with cattle for forage is possible where cattle can access canyon areas (IDFG 2009, 2010). Decreasing disturbance to bighorn sheep during the lambing season, which is a critical period of the year, is recommended to avoid decreasing the fitness of individual bighorn sheep and maintaining healthy populations (IDFG 2010). Although not comprehensive, the project area encompasses roughly 65,000 acres of bighorn sheep lambing habitat identified by IDFG (Jake Powell, pers. comm.).

3.7.1.5 *Raptors*

Several raptor species utilize habitat throughout the project area and are identified in the FWS "*Guidelines for Raptor Conservation in the Western United States*" (Whittington and Allen 2008) relative to sensitivity to disturbance during the nesting period. Some commonly observed species include prairie falcon, golden eagle, red-tailed hawk, Swainson's hawk, ferruginous hawk, and western burrowing owl. Less common in the project area are the bald eagle and peregrine falcon, but each have been observed and have the potential to use small portions of the area. All of these raptor species are protected and managed under the Migratory Bird Treaty Act of 1918, as amended (16 USC 703 et seq.) and Executive Order 13186. Bald and Golden eagles are also protected by the Bald and Golden Eagle Act, as amended in 1990.

Nest locations for many of the species have been recorded in the project area, with most located in the northern areas near the Snake River. Several occurrences of prairie falcon and golden eagle nests reside along CJ Strike Reservoir and the Snake River either on the edge or immediately outside of the project area (IFWIS 2011). Ten historic nest locations representing

BLM-erected nest platforms exist for ferruginous hawks, all of which were visited during 2010 and 2011 (USDI BLM 2010a, 2011b) with only one found in use. Of the ten locations, only six have platforms that remain standing and viable for use by ferruginous hawks. One location for a bald eagle nest is known (USDI BLM 2009, 2010b), and 17 western burrowing owl sightings exist (all sighting types, since presence of nesting activity underground is difficult to discern) (IFWIS 2011). No observations of nests exist for peregrine falcon or red-tailed hawk in the project area. With the exception of ferruginous hawk nest boxes, discovery of nests for raptors were generally the result of incidental observations and recorded observations that do not represent systematic surveys.

3.7.1.6 *Migratory Birds*

Some of the species that inhabit the project area are neotropical migrants. This means they are only present during the spring, summer, and fall. Neotropical migratory birds have become a concern in recent years because of declining populations. The January 10, 2001, Executive Order 13186 on the responsibilities of Federal agencies to protect migratory birds directs action agencies to "ensure that environmental analyses of Federal actions required by the NEPA or other established environmental review processes evaluate the effects of actions and agency plans on migratory birds, with emphasis on species of concern". The Idaho Bird Conservation Plan (IDBCP) identified the highest priority habitats for priority bird species in need of conservation and supports the long-term sustainability goal of Executive Order 13186 as it takes a habitat-based approach to conserving bird populations (IDPIF 2000).

Much of the project area, especially the southern three-fourths in the Owyhee High Plateau MLRA, is comprised of sagebrush habitat and is one of the priority habitats identified in the IDBCP. The Plan identifies the greater sage-grouse as an umbrella species to set the habitat objectives for sagebrush-obligate bird species. Although sage-grouse are only short distance migrants, they will be used to describe effects to high priority, sagebrush-obligate, neotropical migrant birds (e.g., sage thrasher, Brewer's sparrow, sage sparrow). This method could overlook habitat associations specific to some of the high priority bird species, but the sage-grouse analysis includes impacts to nesting habitat, so it will account for impacts to the high priority neotropical migrant bird that could have some of their nesting activities impacted by trailing events. See the greater sage-grouse sections in this document as a surrogate for descriptions of how this project would affect migratory birds in the project area.

3.7.2 Environmental Consequences – Wildlife

3.7.2.1 *General Discussion of Impacts*

The general effects of trailing on wildlife would include disturbance (e.g., behavioral) and physical impacts to wildlife species. Physical impacts could further be separated into direct (e.g., nest trampling) and indirect (e.g., forage competition) effects to wildlife. Trailing activities include the following vectors that could result in impacts to wildlife species:

- Disturbance – Cattle and Human Presence
- Physical, Direct – Trampling
- Physical, Indirect – Grazing
- Physical, Indirect – Disease Transmission

These activities will also vary in magnitude over space and time during trailing since diurnal movement of cattle will comprise relatively rapid movement of animals (generally ≥ 5 miles/day), whereas overnighting cattle would increase the magnitude of some of the vectors.

Disturbance – Winter Range

Disturbance to big game (elk, mule deer, bighorn sheep and pronghorn antelope) in winter range could be a direct effect of livestock trailing. However, the large expanses of intact wintering and breeding habitat for big game in the BFO would allow individuals to easily disperse from the short-term disturbance represented by the trailing events, and minimal activities in riparian areas would preclude disturbance to fawning mule deer. It is also unlikely that elk and antelope utilize areas in the BFO for concentrated calving/fawning activities, so the limited spatial scope of the trailing activities during the relevant time period would not have any measurable impacts. Likewise, disturbance to sage-grouse during the winter would be negligible since there is no shortage of this habitat type in the BFO relative to the small footprint of trailing activities. Consequently, there would be no measurable disturbance to any of the species being analyzed, and this impact vector will not be carried forward into the detailed analysis.

Disturbance – Breeding Behavior

Disturbance from anthropogenic sources has the potential to impact breeding behaviors of wildlife species. Specifically, those species that are tied to specific breeding areas (e.g., sage-grouse and sharp-tailed grouse leks, territories of monogamous birds) are likely more susceptible to disturbance, whereas species with non-resource-based defense mating systems (e.g., many mammals) (Greenwood 1980) would be able to more easily avoid disturbance impacts.

Relative to impacts to sage-grouse, noise playback simulating energy development activities has been seen to reduce the number of males displaying at leks as well as increase the amount of fecal corticosterone (indicative of stress) (Blickley et al. 2010). Although not synonymous with all aspects of trailing activities, use of motorized vehicles (e.g., all-terrian vehicles (ATVs), motorcycles, semi-trucks) could alter lekking activities and reduce reproductive success. This impact would likely increase with the frequency of motorized disturbance associated with any given lek.

Disturbance – Nesting/Juveniles

The disturbance of nesting and juvenile individuals of numerous wildlife species can be a direct impact of livestock trailing. In this instance, disturbance is defined as any activity that could result in the frequent flushing of adults or young, nest abandonment, or significant loss of prey base (ORMP 1999). Human intrusions near Golden Eagle nest sites have resulted in the abandonment of the nest; high nestling mortality due to overheating, chilling or desiccation when young are left unattended; premature fledging; and ejection of eggs or young from the nest (Boeker and Ray 1971, Suter and Joness 1981). Likewise, a positive correlation of OHV trails with songbird nest desertion suggests that motorized disturbance negatively impacts the productivity of songbirds (Barton and Homes 2006).

Restricting vehicle use, using designated livestock trailing periods and routes, and instituting seasonal buffers for critical areas would have short- and long-term beneficial effects on nesting raptors and other wildlife by reducing vehicle noise and other human-caused disturbances.

Physical, Direct (Trampling) – Changes in Habitat Quality/Structure
Changes in wildlife habitat and structure can be both a direct and indirect impact of livestock trailing. Livestock-caused defoliation and trampling of palatable forage species occurring on trailing routes could have short-term adverse impacts on upland vegetation by reducing plant populations and their ability to reproduce, thereby limiting resources available to wildlife and the capacity of residual perennial plant communities to reestablish (Anderson and Holte 1981).

Long-term adverse impacts to wildlife habitat could be caused by changes in the soil structure affecting native vegetation. Soil compaction due to hoof trampling reduces water infiltration, restricts root depth, and limits seed germination (Hart et al. 1993). Mechanical impacts to soils and biological crusts reduce soil stability and fixed nitrogen availability (Belnap 1995; Eldridge and Green 1994). Soil disturbance from hoof shear and overnighting create habitat for non-native invasive and noxious weed species, which likely increases the overall competition between annual and perennial vegetation (Laycock and Conrad 1981).

Trailing through riparian areas could result in habitat alteration through the removal of vegetation, trampling, and ground disturbance. This could create adverse impacts for wildlife associated with riparian and open water habitat by degrading habitat through sedimentation and streambank alteration, resulting in elevated water temperatures and lower levels of dissolved oxygen (USFWS 1995).

Although there could be impacts to big game (i.e., elk, mule deer, bighorn sheep and pronghorn antelope), such as vegetation alteration and forage competition (Ellis 1970; Kindschy et al. 1982), the small area potentially impacted by trailing relative to the habitat available precludes any measurable consequences to big game species.

Restricting vehicle use to roads and limiting the trailing routes to existing road corridors would provide short and long-term beneficial impacts to wildlife habitat by reducing soil and vegetation disturbances, habitat fragmentation, the establishment and spread of noxious weeds, soil compaction, and the alteration of vegetative community dynamics.

Physical, Direct (Trampling) – Impacts to Animals (via stepping on nests, burrow collapse)
Damage to wildlife nests and burrows from trailing activities is another potential vector for impacts. If trailing occurs during the nesting period or while species reside within their burrows, livestock could cause adult mortalities but are more likely to impact juveniles that are present. Birds that nest on the ground (e.g., long-billed curlew) or in burrows (e.g., burrowing owls) would be more susceptible to trailing impacts than shrub-nesting birds (e.g., sage sparrow). Similarly, pygmy rabbits would also be susceptible to trailing impacts, especially during their natal period when juveniles would not be able to detect oncoming livestock or herding mechanisms (i.e., ATVs, motorcycles, horses) and escape their burrows. Although some may not, some species might avoid building nests or burrows near the roads on which much of the trailing activities occur.

Physical, Indirect – Grazing (Competition for Forage)
In terms of livestock trailing, there is a small potential for forage competition among livestock and big game. 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, any quantifiable forage removal would only occur in the small areas used for overnighting (see *Common Analysis Assumptions* in Section 3.0) so competition among livestock and big game will not be carried forward into the detailed analysis.

Physical, Indirect - Disease Transmission (West Nile Virus and Bighorn/Domestic Sheep)
As with livestock grazing, trailing has the potential to result in disease transmission from livestock to wildlife. Two possibilities include an increase of the likelihood of WNv outbreaks via an increase in habitat for mosquitoes and the infection of bighorn sheep with pathogens carried by domestic sheep.

Some birds, like greater sage-grouse, are susceptible to WNv so outbreaks of the disease can have deleterious impacts (Naugle et al. 2004). In 2006, WNv became epidemic in southwest Idaho and some sage-grouse in Owyhee County died. The greatest detected mortalities occurred along Big Springs Creek and in the Duck Valley Reservation (IDFG 2007). During a follow up study conducted during 2007 and 2008, no infected birds were detected via blood sampling (IDFG 2008). *Curex* spp. comprise the primary mosquito genus responsible for West Nile Virus transmission (Zou et al. 2006), with *C. tarsalis* representing the primary carrier in Idaho and the western United States (Ada County 2009). Although this species has been known to successfully utilize artificial containers as larval habitat, it is a colonizing species exhibiting its highest productivity in newly created aquatic habitats with vegetative decay (SDSU 2009). Vegetation along the edges of small bodies of water typify ideal larval habitat for this species (Zou et al. 2006). Consequently, trailing activities that increase trampling in riparian areas and add to the amount of stagnant water where vegetation can persist could increase habitat for *C. tarsalis* and the likelihood of WNv outbreaks.

There will be no trailing of domestic sheep in the BFO with this EA so no disease transmission could occur with trailing activities; this impact will not be analyzed further in direct or indirect effects to bighorn sheep.

3.7.2.2 *Comparison of Impacts*

A summary of impacts to wildlife resulting from the alternatives are displayed in Table 24. These impacts are described more fully in the sections for each alternative below.

Table 24. Comparison of Direct and Indirect Impacts to Wildlife in the Project Area.

Issue	Indicator	Alternative		
		Alternative A	Alternative B	Alternative C[A] (applicant routes + BLM routes)
Sage-grouse: Lek Disturbance	Acres trailing w/in 0.62 mi of occupied or undetermined lek from 6pm to 10am (3/1-5/15)	1,245	N/A	0 + 0

Issue	Indicator	Alternative		
		Alternative A	Alternative B	Alternative C[A] (applicant routes + BLM routes)
Sage-grouse: Nesting Habitat Disturbed	Acres overnighting w/in 4.0 mi of occupied or undetermined lek (4/1-6/30)	400	0	320 + 0
Sage-grouse: Nesting Habitat Trampled	Acres trailing and overnighting w/in 4.0 mi of occupied or undetermined lek (4/1-6/30)	27,348	0	16,974 + 669
Sage-grouse: West Nile Virus Habitat	# perennial/intermittent stream crossings	10	0	10 + 1
	Miles of routes near streams in sage-grouse habitat	12.7	0	7.1 + 2.4
Columbia Spotted Frog: Habitat Alteration	# crossings in streams occupied by spotted frogs	2	0	2 + 0
	Miles of routes near streams occupied by spotted frogs	5.7	0	0.8 + 0
Pygmy Rabbit: Mortality of Young	Acres potential habitat in trailing or overnighting areas (3/1-7/15)	6,088	0	5,411 + 154
California Bighorn Sheep: Lambing Disturbance	Acres of lambing habitat in trailing or overnighting areas (4/15-6/15)	0	0	0
Raptors (8[B]): Nesting Activity Disturbance	# nests w/in 0.25-1.0 mi (varies by species) of trailing or overnighting areas (2/1-7/31)	FH - 3 BO - 1 Other - 0	N/A	FH – 0 BO – 1 + 1 Other – 0

[A] For Alternative C, actual acres may be slightly less than value in table because only routes with 0.5 miles of a 100' restricted trailing buffer (50' from center of route) were depicted in GIS and carried forward into the acre calculation

[B] Ferruginous Hawk = FH, W. Burrowing Owl = BO, Others = Golden Eagle, Bald Eagle, Peregrine Falcon, Prairie Falcon, Northern Goshawk, Red-tailed Hawk

Since quantifying impacts to any one species by varying numbers of livestock is untested, values shown for effects represent an upper limit of potential acres, nests, etc. that could receive an impact from trailing. Further discussions of the direct, indirect, and cumulative impacts in the project area specific to greater sage-grouse, Columbia spotted frog, pygmy rabbit, California bighorn sheep, and raptors are grouped by species in the sections below. Additionally, the temporal bounds and description for effects analyses for all species was 10 years (until 2022), since this project comprises a 10-year time period, future projects (excluding ongoing activities)

are only foreseeable out to roughly 3-5 years, and impacts to any species would be minimal from any of the alternatives. The temporal scope of the cumulative impacts analyses for all species extends back to 1934, as BLM management began affecting wildlife habitat in the project area soon after the adoption of the Taylor Grazing Act of 1934. As described in Section 3.1.4, effects of past actions were considered to be reflected in existing resource conditions.

3.8 Wildlife – Greater Sage-Grouse

3.8.1 Environmental Consequences – Greater Sage-Grouse

Impacts to sage-grouse were broken down by effects to the following:

- Lekking activities
- Nesting activities
- Conditions for mosquitoes that carry WNv

While lekking impacts were measured by disturbance to leks from March 1 to May 15, nesting impacts included 1) disturbance to nests, which are more likely pertinent to neotropical migrant songbirds covered by this analysis, and 2) and trampling of nests from April 1 to June 30. The disturbance and trampling impacts will likely lessen as the distance increases from the route and the livestock become more diffuse. However, a 1/8-mile buffer of routes was generated, except where a more restrictive 50-foot buffer was imposed to reduce resource impacts, and no effort was made to quantify a decrease in impacts with distance to routes. Consequently, impacts were likely overestimated. Finally, livestock trailing across fords, bridges, or culverts and along perennial and intermittent creeks were measured to estimate trailing increases to habitat for *C. tarsalis*, the mosquito species responsible for carrying WNv in Idaho.

3.8.1.1 *Alternative A*

With Alternative A, potential disturbance impacts to sage-grouse lekking on BLM land would amount to 1,245 acres. As shown on Map 32, these impacts are concentrated along Route 230 (Map 4A), with only two other routes (Route 209, Map 10A and Route 231, Map 5A) exhibiting minor impacts to lekking birds. Roughly 15 occupied or undetermined leks are within 0.62 miles of trailing activities between March 1 and May 15, and over 10 of them reside along Route 230 (Map 4A). Even with the aforementioned trailing acres within 0.62 miles of leks, trailing activities would have to occur between 6 pm and 10 am to incur disturbance impacts. Although some activities could occur in this time span, most trailing will not, so the number of leks possibly impacted is less. Some reduction in reproduction could result with these trailing events, but given that activities represent livestock and herders travelling a minimum of five miles a day and lekking occurs over a 1-2 month time period, impacts would be minimal.

Nesting impacts to sage-grouse were assessed relative to trailing disturbance and trampling (Map 32). Disturbance was only measured with overnighting activities because trailing would comprise livestock moving at least five miles per day, so any impacts to sage-grouse would include temporary displacement from nests that would be immeasurable. Conversely, trampling would occur from both trailing and overnighting activities. Although these impacts would decrease with the distance from the routes (i.e., cattle would be more concentrated along the roads they traverse), impacts were not adjusted, and all acres within 1/8 mile of the routes were counted. Furthermore, impacts to sage-grouse, and the sagebrush-obligate neotropical migrant

birds that would be affected similarly, would be afforded some protection from livestock movement given that all of these species generally nest at the base of or in the branches of shrubs (i.e., livestock would mostly traverse areas in shrub interspaces where travelling is easiest).

In Alternative A, overnighting would occur on only 400 acres within 4.0 miles of occupied or undetermined sage-grouse leks. Additionally, 27,348 acres of both overnighting and trailing would occur within 4.0 miles of these leks. Since some nests could be displaced from shrubs or trampled during trailing, impacts could decrease sage-grouse nesting success. However, the protective placement of nests by sage-grouse and the overestimation of areas that will actually be trampled by cattle (see previous discussion), the entire 27,348 acres would not be removed as productive sage-grouse nesting habitat. Some reduction in fitness could be realized, but given that the area that could potentially be trampled comprises less than 2% of the priority and general habitat in the project area and that actual impacts would be less, sage-grouse productivity in the BFO would only be impacted minimally and not enough to measurably affect the population using the project area.

Changes that could increase the habitat for the mosquito that carries WNv was the last impact assessed relative to sage-grouse. Perennial and intermittent streams traversed by trailing represent areas that could be enhanced for mosquito larvae via pugging. Alternative A includes 10 ford and bridge/culvert crossings and 12.7 miles of streams that would be trailed along within the project area (Map 32). Given that trailing has occurred historically in these areas, grazing will continue to occur in these areas, and these riparian habitats represent a miniscule fraction of what exists in the project area (~440 miles), any possible increase to mosquito habitat from implementing Alternative A would be immeasurable.

Considering the impacts to lekking activities, nesting success, and enhancement of habitat for WNv, actions associated with trailing would be minimal but could incur a slight decrease in the fitness of sage-grouse across the project area as long as this activity occurs.

3.8.1.2 *Alternative B*

The only possible impact to sage-grouse that could occur from Alternative B would be disturbance impacts to lekking activities. Buffers (0.62 miles) from 22 occupied or undetermined leks intersect the trucking routes that are likely to be used. Roads that intersect the majority of the leks include Wickahoney, Rowland, Buckhorn, and Duncan Creek. Increased vehicle traffic could incur impacts to lekking sage-grouse (Blickley et al. 2010). However, this traffic would have to occur between March 1 and May 15 and between sunrise and 10 am for these impacts to be realized because these are the hours when lekking activities occur. Given that the trucking routes already experience vehicle traffic and that the increased traffic during the aforementioned dates and hours will represent a small fraction of all of the trucking necessary to meet the Purpose and Need, impacts to lekking sage-grouse would be negligible. Since trucks would operate on existing roads, there would also be no impacts to nesting birds or an increase in breeding habitat for mosquitos. Overall, there would be no direct or indirect impacts to populations of sage-grouse or other sagebrush-obligate birds from the trucking that is assumed to occur if Alternative B is selected and the crossing applications are denied.

3.8.1.3 *Alternative C*

There would be no disturbance impacts to sage-grouse lekking activities with Alternative C on the proposed routes (Map 33). Development of this alternative included timing restrictions, both in the time of the year (primarily for BLM-proposed routes) and in the time of day proximate to active or undetermined leks (permittee-proposed routes).

Contrary to mitigating potential impacts to lekking activities, removing trailing activities from nesting habitat (areas within 4.0 miles of active or undetermined leks) in the abundant habitat found in the project area would be difficult while still meeting the Purpose and Need of this project. In Alternative C, 320 acres of overnighting (i.e., disturbance) and 17,643 acres of trailing and overnighting (i.e., trampling) overlapped with sage-grouse nesting habitat (Map 33). As discussed under Alternative A, protective nest placement and an overestimation of areas that could be impacted within 1/8 mile (or less where restriction would apply) from the routes means that impacts to nesting would be even less than the possible minimal impacts incurred by Alternative A.

In Alternative C, possible enhancement of mosquito habitat includes 11 crossings of perennial and intermittent streams and 9.5 miles of streams that are trailed along (Map 33). As mentioned previously, trailing has occurred historically in these areas, grazing will continue to occur in these areas, and these riparian habitats represent a miniscule fraction of what exists in the project area (~440 miles), so possible increases to mosquito habitat from this alternative would not be measurable.

Even more so than Alternative A, the impacts of Alternative C would be minimal and would only potentially incur a slight decrease, if any, in the fitness of sage-grouse across the project area.

3.8.2 Cumulative Impacts – Greater Sage-Grouse

3.8.2.1 *Scope of Analysis*

In the Bruneau and Owyhee Field Offices, telemetry data for sage-grouse have been collected by IDFG and the University of Idaho (UI). Data collected by the UI (Wik 2002) described average movements by sage-grouse of 14.9 ± 1.3 mi (± standard error (SE)) for males and 10.6 ± 0.9 mi (± SE) for females. Additionally, recent analysis by BLM of sage-grouse tracked by IDFG from April 2002 through December 2011 (IDFG 2011a) showed that birds travelled an average of 17.2 ± 0.8 (± SE) miles annually (sexes, ages, and years combined; USDI BLM 2011a). The aforementioned IDFG data represents the greatest straight line distance from the earliest location during the breeding period to all subsequent locations within an annual cycle, and only data from birds characterized with information spanning breeding through winter seasons were used. Having calculated these distances originally in metric units, this larger value was rounded to 28 km (17.4 miles). The project area was buffered by 17.4 miles to account for the majority of sage-grouse that may utilize the project area. After the 17.4-mile buffer was created, areas that do not function as sage-grouse habitat (e.g., lower elevation areas in the Snake River Plain) were removed to derive the cumulative impacts analysis area for sage-grouse (Map 29).

Past actions and their contribution toward existing conditions have been described. Ongoing and future actions that will be considered for how alternatives for this project could interact to cumulatively affect sage-grouse include the following from Table 3:

- Livestock Grazing
- Livestock Trailing
- Range Improvements
- Bruneau Fuel Breaks Project and other Fuel Breaks Projects
- Upper Castle Creek Fuels Project and other Fuels Projects
- Wildfire Suppression and ESR

3.8.2.2 *Cumulative Impacts of Alternative A*

The area assessed for cumulative impacts to sage-grouse includes the project area and portions of BLM's Jarbidge FO, Owyhee FO, and Elko District Office (Nevada), as well as the US Forest Service's Mountain City and Jarbidge Ranger Districts within the Humboldt-Toiyabe National Forest. Portions of the cumulative impacts area do not function as sage-grouse habitat, but only the large portion north of the Owyhee Front was removed from consideration in the cumulative impacts analysis area. Direct and indirect impacts from Alternative A were deemed minimal but could include a small impact to sage-grouse. The projects selected for cumulative effects analysis included those that could synergistically interact with the lekking, nesting, and WNv impacts resulting from Alternative A.

Current livestock grazing management practices, trailing, and range improvements on lands under federal management would continue to be designed to allow progress 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. Additionally, livestock management on private lands is expected to continue under current management, so the condition of private lands is not expected to worsen and contribute toward increasingly negative impacts to sage-grouse. Conversely, sage-grouse local working groups (e.g., Owyhee County) are currently supporting juniper removal on private lands in Owyhee County presently and in the future. These projects are concentrating efforts in wet meadow areas as a means to improve late brood-rearing habitat for sage-grouse.

Four fuels reduction projects, one of which is partially implemented, will occur within the cumulative impacts analysis area. Two comprise juniper removal on more than 30,000 acres of habitat (Upper Castle Creek Fuels Project and a similar project in the Owyhee Field Office) and two are designed to prevent wildfires from consuming large areas of sage-grouse habitat (Bruneau Fuel Breaks Project and a similar project in the Jarbidge Field Office). All of these projects will ultimately provide beneficial impacts to sage-grouse.

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*), protection of sage-grouse habitat is viewed as a 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.

Since the projects considered in the cumulative impacts area are expected to continue roughly as they have or will benefit sage-grouse via habitat enhancement and protection, the overall combination of the minimal effects from this alternative, when combined with any from the past, present, and reasonably foreseeable future projects within 17.4 miles of the project area, would not cumulatively have a measurable impact on sage-grouse populations at any scale assessed.

3.8.2.3 *Cumulative Impacts of Alternative B*

There would be no measurable direct or indirect impacts to sage-grouse from Alternative B. Consequently, there would be no cumulative effects to sage-grouse resulting from the selection of Alternative B.

3.8.2.4 *Cumulative Impacts of Alternative C*

Cumulative impacts from Alternative C would be less than those described for Alternative A. Although both alternatives would have only minimal direct and indirect effects and there would be no measurable impacts to sage-grouse populations, Alternative C would have even fewer consequences to sage-grouse due to the imposed timing and location restrictions.

3.9 Wildlife – Columbia Spotted Frog

3.9.1 Environmental Consequences – Columbia Spotted Frog

Since spotted frogs are not widely distributed across the project area (IFWIS 2011), only streams and crossings adjacent to or within areas where frogs have been observed were considered for potential impacts. Potentially impacted areas for Alternatives A and C are displayed on Map 34.

3.9.1.1 *Alternative A*

Under Alternative A, there would be two stream crossings where spotted frogs have been observed. This would occur at the culvert where Mud Flat Road crosses Battle Creek on Route 231A (Map 5A) and at the ford crossing on Mary's Creek on Routes 212A/238A (same route traversed in opposite directions; Map 14A). Additionally, trailing would occur near the previously mentioned crossing on Battle Creek (Map 5A) and along Route 204A in Sheep Creek (Map 17A). Although the closest spotted frog observation is five miles upstream of the Sheep Creek trailing route, occupancy at the trailing location is possible since systematic surveys for frogs in that portion of the project area have not occurred.

Even though light to moderate grazing impacts may not negatively impact spotted frogs (Adams et al. 2009), trailing represents more intensive, albeit short duration, trampling. Trailing in the aforementioned areas would not alter enough vegetation at the stream crossings to incur negative habitat impacts, but trailing along Sheep Creek could alter habitat conditions for frogs if they occupy this portion of the creek. Given the uncertainty of spotted frog occupancy in Sheep Creek, the greatest potential impacts to spotted frogs is from direct mortality from trampling at the two stream crossings and along 0.8 miles of Mud Flat Road where it parallels Battle Creek. A recent occupancy survey conducted along the section of Battle Creek that would be trailed along yielded only one detection, which was upstream of Mud Flat Road and out of the area that could be impacted by trailing along Route 231A (BLM 2009). Overall, the greatest potential impact to

spotted frogs from this alternative would be the loss of a few individuals that would not be able to escape trampling at the few areas being traversed by livestock and their herders, but no measureable impacts to the spotted frog population in the project area would be realized.

3.9.1.2 *Alternative B*

There would be no impacts to spotted frogs from the selection of Alternative B. Trucks used to move livestock would stay on roads and bridges, and no riparian habitat would be altered or entered. Consequently, neither individual spotted frogs nor their habitat would be affected.

3.9.1.3 *Alternative C*

Impacts from Alternative C would be the same as for Alternative A but without the possible effects that could occur in Sheep Creek if spotted frogs occupy that area. Anywhere from zero to a few individuals could be trampled at the localized areas of Battle Creek and Mary's Creek, but there would be no measurable alteration to the population in the project area.

3.9.2 Cumulative Impacts – Columbia Spotted Frog

3.9.2.1 *Scope of Analysis*

Given the minimal impacts to spotted frogs from any alternative, the lack of these impacts affecting their decline (i.e., no alternative represents heavy grazing impacts to riparian areas), and the location of those effects (Map 34), the project area is adequate in size to describe cumulative effects to this species. At most, only a few individuals could be impacted from any of the three alternatives, and the areas where that could occur are far enough from the boundary of the project area to preclude impacts from extending beyond that border.

Ongoing and future actions that will be considered for how alternatives for this project could interact to cumulatively affect spotted frogs include the following from Table 3:

- Livestock Grazing
- Wildfire Suppression and ESR

3.9.2.2 *Cumulative Impacts of Alternative A*

Direct and indirect impacts to spotted frogs from Alternative A would be so minimal as to be immeasurable. When combined with grazing in the project area, which has not been shown to have a negative impact on spotted frogs if the grazing is light or moderate (Adams et al. 2009), the effects to spotted frogs would not amount to anything greater than those described by direct and indirect effects from Alternative A. Secondly, wildfire suppression and ESR activities will occur in the project area, and even though the locations and quantities of impacts cannot be predicted, the Boise District Fire Management Plan (USDI BLM 2011c) specifically prescribes for the protection of BLM special status species. Consequently, impacts from this alternative, when combined with effects from any other project that could occur in the project area, would not cumulatively result in measurable consequences to spotted frogs that were not already described with direct and indirect impacts.

3.9.2.3 *Cumulative Impacts of Alternative B*

The lack of direct and indirect effects to spotted frogs in Alternative B means that there would be no incremental effects to contribute to cumulative effects to this species.

3.9.2.4 *Cumulative Impacts of Alternative C*

Cumulative impacts resulting from the implementation of Alternative C would be the same as Alternative A. Since direct and indirect impacts would be so small as to be immeasurable and other projects that could occur in the project area would have no predictable negative consequences to spotted frogs, there would be no cumulative impacts to spotted frogs from this alternative beyond the aforementioned direct and indirect impacts.

3.10 Wildlife – Pygmy Rabbit

3.10.1 Environmental Consequences – Pygmy Rabbit

An analysis of associations of pygmy rabbit locations with four ESDs showed a correlation with deep loamy soils (see Section 3.7.1.3, *Pygmy Rabbit* under *Affected Environment*). Therefore, these ESDs were chosen as surrogates for potential habitat for pygmy rabbits in the subsequent analysis. Additionally, only trailing events that would occur from March 1 to July 15 were considered for the impacts analysis because this represents when natal burrows could be in use and when collapsing pygmy rabbit burrows could result in mortalities.

3.10.1.1 *Alternative A*

Map 35 illustrates potential pygmy rabbit habitat and the trailing events that traverse that habitat. Assuming a 1/8 mile buffer on each side of a trail, 6,088 acres of potential habitat would be traversed by livestock and their herders between March 1 and July 15. This represents roughly 2% of the 260,000 acres of potential pygmy rabbit habitat within the project area. Most of these potential impacts would occur on Mud Flat Road, Wickahoney Road, and some scattered routes in the southern portion of the project area.

As mentioned earlier, these impacts would decrease with the distance from the routes (i.e., cattle would be more concentrated along the roads they traverse), but impacts were not adjusted and all acres within 1/8 mile from the routes were counted. Impacts to pygmy rabbits would further be lessened since burrows would be afforded some protection from livestock movement given that pygmy rabbits generally dig burrows in clumps of sagebrush, while livestock would mostly traverse areas in shrub interspaces where travelling is easiest. During 2011, roughly eight miles of potential habitat along Wickahoney Road (Route 230A; Map 4A) were surveyed for a fuel break project (50 feet on both sides of the road), and only five currently occupied burrows were detected. Considering the declining impacts with distance from routes, the protective nature of the burrow systems, and the scarcity of active burrows at any one time, the likelihood of mortalities resulting from trailing activities would be small. At most, only a few individuals could experience mortalities from collapsed burrows, with no measureable impacts to the pygmy rabbit population residing within the project area.

3.10.1.2 *Alternative B*

There would be no direct or indirect impacts to pygmy rabbits from Alternative B because the crossing permits would be denied. Any trucking that may occur would take place along roads, where rabbits would not excavate burrows, and would likely transpire during the day when pygmy rabbits would likely be most proximate to dense cover for concealment.

3.10.1.3 *Alternative C*

Impacts from Alternative C (5,565 acres) would be similar to slightly less than under Alternative A (Map 35). Potential impacts would also occur on Mud Flat Road, Wickahoney Road, and some scattered routes in the southern portion of the project area. However, restrictions for constricting trailing activities on either side of a portion of the route on Mud Flat Road (Map 5C) would decrease the amount of area impacted, while trailing on Tokenbamby Road after June 30 (see Map 24C date restriction) would slightly increase the amount of area traversed during the natal period. The overall difference with Alternative C as compared to Alternative A is a decrease of 523 acres of traversed potential pygmy rabbit habitat. At most, only a few individuals could experience mortalities from collapsed burrows, with no measureable impacts to the pygmy rabbit population residing within the project area.

3.10.2 Cumulative Impacts – Pygmy Rabbit

3.10.2.1 *Scope of Analysis*

Since only a few individual rabbits would have the potential to experience effects with any alternative and a 0.4-mile diameter circle represents an average 62-acre home range for a male pygmy rabbit (Burak 2006), the project area was used to describe cumulative effects to this species. Given that not all of the potential habitat shown on the maps is occupied, it is unlikely that an impact to an individual rabbit would extend beyond the project area.

Ongoing and future actions that will be considered for how alternatives for this project could interact to cumulatively affect pygmy rabbits include the following from Table 3:

- Livestock Grazing
- Range Improvements
- Bruneau Fuel Breaks Project
- Upper Castle Creek Fuels Project
- Wildfire Suppression and ESR

3.10.2.2 *Cumulative Impacts of Alternative A*

Direct and indirect impacts from Alternative A could occur if pygmy rabbit natal burrows are collapsed during the natal period. Other projects that could impact pygmy rabbits include livestock grazing and range improvements. Livestock grazing and range improvements on BLM-managed lands would continue to move toward meeting Idaho Standards for Rangeland Health that would either enhance habitat for pygmy rabbits that are in poor condition or maintain those areas if they currently exist in good condition. Range improvement projects would account for impacts to special status species, including pygmy rabbits, and include designs to minimize or preclude those impacts. Additionally, livestock management on private lands is expected to

continue under current management so conditions on private lands are not expected to worsen and contribute toward increasingly negative impacts to pygmy rabbits.

Additionally, the Bruneau Fuels Breaks and Upper Castle Creek fuels projects will reduce the risk of wildfires consuming large areas of sagebrush habitat and enhance sagebrush habitat via juniper removal, respectively. Both of these projects will ultimately provide beneficial impacts to pygmy rabbits.

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 pygmy rabbits since they use similar intact areas of sagebrush. Consequently, it is unknown how much sagebrush habitat may be affected, but possible impacts will be minimized as a result of the aforementioned guidance.

Since the projects considered in the cumulative impacts area are expected to continue roughly as they have or will benefit pygmy rabbits via habitat enhancement and protection, the overall combination of the minimal 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 pygmy rabbit populations at any scale assessed.

3.10.2.3 *Cumulative Impacts of Alternative B*

Since there would be no direct or indirect effects to pygmy rabbits in Alternative B, there would be no incremental effects to contribute to cumulative effects to this species.

3.10.2.4 *Cumulative Impacts of Alternative C*

Direct and indirect effects from Alternative C would be slightly less than those resulting from Alternative A. Therefore, the minimal direct and indirect effects to pygmy rabbits resulting from Alternative C would interact similarly with other ongoing and future projects in the area, and there would be no measurable impacts to pygmy rabbit populations in the project area.

3.11 Wildlife – California Bighorn Sheep

3.11.1 Environmental Consequences – California Bighorn Sheep

Disturbance to bighorn sheep lambing activities were assessed relative to impacts to bighorn sheep from the activities covered with this EA. Conversely, forage competition and disease transmission were not considered vectors that could impact bighorn sheep in the BFO and were not included in this analysis (see Section 3.7.1.4, *California Bighorn Sheep* in *Affected Environment*).

3.11.1.1 *Alternative A*

None of the routes or the associated 1/8 mile buffer included in Alternative A overlap with bighorn sheep lambing habitat identified by IDFG (Jake Powell, pers. comm.). Although the lambing habitat identified by IDFG is not comprehensive, none of the trailing routes or the

buffers occur in bighorn sheep lambing habitat in the project area, which are the upper portions of canyon where slopes are gentler, especially in the lower elevation portions of canyons used by bighorn sheep. Therefore, there would be no direct or indirect effects to bighorn sheep from the implementation of Alternative A.

3.11.1.2 *Alternative B*

There would be no direct or indirect impacts to bighorn sheep from Alternative B. Any trucking would likely occur along roads and not in lambing habitat.

3.11.1.3 *Alternative C*

Alternative C would also not have any routes that traverse bighorn sheep lambing habitat so there would no direct or indirect effects to bighorn sheep.

3.11.2 Cumulative Impacts – California Bighorn Sheep

Since there would be no impacts to bighorn sheep from any of the alternatives, there was no need to define a cumulative impacts area; there would be no incremental effects to contribute to cumulative effects to this species.

3.12 Wildlife – Raptors

3.12.1 Environmental Consequences – Raptors

Since the impact from trailing includes potential disturbance to nest sites and reproductive failure, restriction buffers around raptor nests outlined in Information Bulletin ID-2010-039 (USDI BLM 2010b) will be used to assess impacts. These buffers comprise the following for the various species:

- Ferruginous Hawk – 1.0 mi.
- Prairie Falcon – 0.5 mi.
- Peregrine Falcon – 1.0 mi.
- Bald Eagle – 1.0 mi.
- Golden Eagle – 0.5 mi.
- Red-tailed Hawk – 0.33 mi.
- Western Burrowing Owl – 0.25 mi.

Trailing impacts were also limited to the February 1 through July 31 timeframe for all species except ferruginous hawks (March 1 through July 15) to account for the variety of nesting periods for all of the raptors analyzed.

3.12.1.1 *Alternative A*

Activities associated with Alternative A would include trailing by three ferruginous nest platforms and one recorded burrowing owl location (IFWIS 2011), all of which are in the lower elevation Snake River Plain portion of the project area. All of the ferruginous hawk nests were checked during 2010 and/or 2011, and none contained nesting raptors (USDI BLM 2010a, 2011b). No other raptors are known to nest along any of the routes, but systematic surveys for these species have not been conducted in the majority of the project area.

Since raptor occupancy in the project area has not been thoroughly catalogued, existing sightings likely underestimate the true occupancy. However, the project area does not contain much suitable habitat for some of the species reviewed (e.g., bald eagle). Most of the other species (except for burrowing owls and ferruginous hawks) utilize canyons or cliffs for their nesting activities. Since trailing events would entail movement of livestock of at least five miles per day and trailing routes proximate to canyon areas are few (Sheep Creek along Route 204A, Map 17A), disturbance to cliff-nesting birds would be negligible.

Nesting ferruginous hawks have some potential to be disturbed, but nest platforms proximate to routes have been unoccupied in recent years. Burrowing owls could also incur impacts from trailing since suitable habitat for this species is abundant in the project area, but disturbance would be temporary and likely not cause adults to abandon nests. Collapse of nest burrows of burrowing owls could also occur, especially in sandy soils (Holmes et al. 2003). These impacts would decrease with the distance from the routes (i.e., cattle would be more concentrated along the roads they traverse), so less area than described by the 1/8-mile buffer would potentially be impacted. Additionally, grazing occurs in all of the areas being trailed across, and trailing has occurred in the past along the proposed routes, so the site fidelity exhibited by burrowing owls means that they have likely learned to avoid routes where soils are friable or have not even been measurably impacted by trailing activites. Their association with sparse, grassy vegetation (Holmes et al. 2003) also means that burrowing owls only use a small portion of the routes, and trampling associated with this activity has a low potential to elevate the risk of burrow collapse along these routes.

Overall impacts to nesting raptors would be small from Alternative A trailing, with potential for temporary displacement of individuals and a slight elevation of risk to collapsing burrowing owl burrows, but the likelihood of nest failure, abandonment, or destruction is minimal with no expected impacts to the populations of any of these species.

3.12.1.2 *Alternative B*

Since the trucking that is assumed to occur if Alternative B is selected would occur along routes that currently experience vehicle traffic, any nesting raptors along those routes would have become habituated to traffic. Consequently, there would not be any direct or indirect impacts to nesting raptors from Alternative B.

3.12.1.3 *Alternative C*

With Alternative C, routes would pass by the same three ferruginous nest platforms as under Alternative A, but a wildlife biologist would be required to check them for raptor occupancy before trailing would occur. If nests are being used, alternative routes would be authorized. Therefore, there would be lessened impacts to ferruginous hawks if any chose to use any of the aforementioned platforms. Routes for Alternative C would also pass by two burrowing owl sightings. It is unknown whether they were nest sites, but the possibility exists. However, impacts to burrowing owls would also likely be less than with Alternative A because the BLM-proposed routes have timing restrictions for sage-grouse and pygmy rabbits that would also protect nesting burrowing owls and constricting trailing buffers along many of the routes for other resources would mean that less area would be affected on those routes.

Effects to raptors would be slightly less under Alternative C as compared to Alternative A, but could also result in temporary displacement or burrow collapse of a few nesting raptors. However, nest failure, destruction, or impact to any population of raptors using the project area would be unlikely and not cause any effects to the populations of any of these species.

3.12.2 Cumulative Impacts – Raptors

3.12.2.1 *Scope of Analysis*

At most, impacts from any alternative to raptors could include temporary displacement during the nesting season with no overall impact to the population of any of the species. Considering the small spatial and temporal effect, the project area was deemed appropriate to describe cumulative effects to these species.

Ongoing and future actions that will be considered for how alternatives for this project could interact to cumulatively affect nesting raptors include the following from Table 3:

- Bruneau Fuel Breaks Project
- Upper Castle Creek Fuels Project
- Wildfire Suppression and ESR
- Special Recreation Permits (i.e., motorcycle races in competitive use area)

3.12.2.2 *Cumulative Impacts of Alternative A*

Direct and indirect impacts from Alternative A would include temporary displacement of nesting birds and a negligible risk of collapse of burrowing owl nest burrows. Other projects that could impact nesting raptors would include the Bruneau Fuels Breaks and Upper Castle Creek fuels projects, both of which will reduce the risk of wildfires consuming large areas of sagebrush habitat and enhance sagebrush habitat via juniper removal, respectively. Consequently, both projects will ultimately provide beneficial impacts to raptors that rely on prey species associated with sagebrush habitats. Additionally, junipers in the Upper Castle Creek fuels project represent human-caused encroachment (via fire suppression), and the project includes a design feature that retains old growth juniper to mitigate possible negative effects to nesting raptors.

Wildfire suppression and ESR activities will also 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 some raptor species that utilize sagebrush-associated prey species. 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.

The motorcycle races that typically occur during February and March each year also have the capacity to impact nesting raptors. However, the races normally occur before most raptors begin nesting in the project area, and areas within one mile of any ferruginous nesting platform are excluded from the race course.

Impacts from Alternative A include a potential to briefly disturb nesting raptors, while projects considered in the cumulative impacts area are expected to benefit prey species for some raptors (fuels reduction and fire suppression/stabilization) or have no discernible impacts (motorcycle races and retention of old growth juniper with Upper Castle Creek project). Given that the juniper being removed would not normally exist in the Upper Castle Creek area (if natural fire processes had been maintained) and old growth trees will be retained, impacts to raptors will not be measurable. 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 any population of raptor species.

3.12.2.3 *Cumulative Impacts of Alternative B*

Since there would be no direct or indirect effects to raptors in Alternative B, there would be no incremental effects to contribute to cumulative effects to any of these species.

3.12.2.4 *Cumulative Impacts of Alternative C*

Although impacts from Alternative C would be similar to Alternative A, they would be smaller since Alternative C includes design features to check ferruginous hawk nest platforms prior to trailing, constriction of some routes would reduce the acres being trailed, and most BLM-proposed routes would have timing restrictions precluding activities from March 1 through June 30 or July 15. Consequently, the minimal direct and indirect effects to raptors caused by Alternative C would interact similarly with other ongoing and future projects in the area, and there would be no measurable impacts to raptor populations in the project area.

3.13 Cultural Resources

3.13.1 Affected Environment – Cultural Resources

Cultural resources are cultural properties or traditional lifeway values that are identifiable through field inventory, document research, and ethnography. They include definite locations or sites, structures, historic trails, natural features, plants, or items that have traditional cultural or religious importance to a specific social or cultural group. Traditional lifeway values are religious beliefs, cultural practices, and social interactions that are important to the maintenance of a specific social or cultural group's existence and are passed from generation to generation via an oral tradition. Artifacts are the material goods of a culture and are defined as objects that show evidence of human manufacture, modification, or use.

Cultural resources are further recognized as fragile, irreplaceable resources that represent an integral part of our nation's heritage. The potential of a site containing datable features below the ground surface to reveal information regarding human adaptation to specific environments and ecosystems is considerable. For example the analysis of soils, pollen, and faunal materials found in a site can tell us what climatic changes have taken place over time, what types of game were available for subsistence, and what plants were used.

The area of potential effect (APE) for the crossing permits is described as the 1/4-mile wide trailing corridor along the proposed trailing routes and any overnighting areas. It is understood that not all trailing under these crossing permits will actually require or use the total 1/4-mile

width, but that width is adopted here as a standard for analyses and alternative comparisons. This described APE was sometimes narrowed to protect areas that have recently been burned in wildfire or for resource protection in Alternative C.

A GIS layer of each applicant's proposed trailing route was created to conduct an ID Team analysis of the cultural resources that are located within the APE for the proposed trailing corridors. The existing BLM cultural resource database consists of polygons that depict where archaeologists have inventoried the land parcels for cultural resource sites and a separate database containing point data that indicates where cultural resource sites have been recorded**.**

Since the majority of trailing corridors have not been systematically surveyed for cultural resources, site data is incomplete for the APE. Class III intensive archaeological surveys in the general vicinity include the inventories conducted for the Upper Castle Creek Juniper Treatments (Northwind 2007a; Northwind 2007b; Northwind 2008; Northwind 2010b; USDI BLM 2008; USDI BLM 2009; USDI BLM 2010c. the Flat Broke (AMEC 2001) and Crowbar (Northwind 2010a) ESR Projects, and Sagebrush Mowing for Wildfire Fuel Breaks (USDI BLM 2011e); these are in addition to the Class II Inventory of the Boise District (USDI BLM 1984). BLM records indicate that known cultural resources in the APE consist of a variety of site types including rock shelters, historic and prehistoric campsites, historic roads, historic artifact scatters, historic mining sites, a CCC Camp, petroglyphs and pictographs, rock alignments, lithic quarries, and lithic scatters. Ancestors of the Shoshone and Paiute peoples have inhabited southwest Idaho for a millennium and used it for camping and subsistence activities such as food gathering and hunting. The area has also been used historically for grazing livestock, mining, and recreational purposes.

3.13.2 Environmental Consequences – Cultural Resources

3.13.2.1 *General Discussion of Impacts*

Cultural resources are part of the natural and cultural resources that the BLM must consider when rendering decisions that may have an impact on those resources. Section 1.6, *Relationship to Statutes, Regulations, and Other Requirements*, addresses the primary cultural resource laws, regulations, and executive orders that the BLM Manager considers in the decision-making process.

Activities associated with livestock trailing include the movement or trailing; the overnighting; watering at stock ponds, troughs, and streams; and the presence of the livestock. Trailing livestock can impact cultural resources directly and indirectly. Direct impacts from these activities include surface disturbance and soil compaction with subsequent damage to and repositioning of artifacts through trampling. These impacts are greater when soils are soft during rainy seasons or early Spring. Cultural resources near existing water troughs, portable water troughs, reservoirs, and streambanks suffer additional, more concentrated impacts caused by livestock drinking, loafing, and trampling the areas adjacent to these watering locations. Overnighting livestock on cultural resource sites could cause all the impacts noted above. This overnighting activity may increase all the impacts noted above because the livestock are concentrated in that location for a longer time period.

The degree and rate of site impact in relation to the duration of trampling or number of livestock involved is unknown. In addition to artifact breakage, the impacts of cattle trampling could result in alteration of contextual information resulting in loss of site integrity and scientific information.

Indirect impacts of grazing include the removal of vegetative cover, which facilitates erosion and subsequent damage to or complete eradication of the characteristics that make the cultural sites eligible for listing on the National Register of Historic Places (NRHP). In the case of a highly stratified site with datable sub-surface features, such as hearths, this could potentially mean the loss of thousands of years' accumulation of cultural material.

To evaluate the proposed impacts to cultural resources, the following guidelines and protocol were implemented:

1. The cultural resource database created and shared by the BLM and the Idaho State Historic Preservation Office (SHPO) would act as a baseline of data.
2. Only BLM-administered lands were evaluated for impacts in this EA because it was determined that the applicants had other options such as trucking if their applications were denied, so transporting their livestock was not contingent on obtaining a BLM crossing permit.
3. All cultural resource sites are evaluated and assumed to be "Eligible for the NRHP" unless evaluated as " Not Eligible for the NRHP". A preliminary determination of eligibility was discussed between BLM and the Idaho SHPO for NRHP eligible sites in the Alternative C APE.
4. Sites not eligible for the NRHP are defined as a category of cultural resources, but do not require protection from adverse impacts.
5. The BLM and Idaho SHPO understand that these trailing events across these corridors have occurred for many years and have already impacted the cultural sites along the routes. It is estimated that the top 10 centimeters of a site may have already been disturbed by previous cattle trailing activities.
6. The BLM will inventory overnight areas, stream crossings, and spring areas and will re-visit and document impacts to eligible sites in the APE.

The trailing routes were incorporated into a useable GIS layer for these trailing events analyses. Using GIS tools, the BLM Archaeologist placed the applicant's route over the cultural resources data to determine if the proposed trailing event would impact any known cultural resource sites. The BLM Archaeologist evaluated the data and provided a recommendation to the ID Team and the BLM Manager. The recommendation was one of three outcomes: 1) to permit the trailing because it would not adversely impact any known cultural resources, 2) to deny the permit because the trailing would adversely impact cultural resources, or 3) to allow the trailing event but only with modifications or stipulations that would protect cultural resources from adverse impacts.

3.13.2.2 *Comparison of Impacts*

A summary of impacts to cultural resources resulting from the alternatives are displayed in Table 25. These impacts are described more fully in the sections for each alternative below.

Table 25. Comparison of Direct and Indirect Impacts to Cultural Resources in the Project Area.

Issue	Indicator	Alternative		
		Alternative A	Alternative B	Alternative C
Direct and indirect impacts of cattle trailing on cultural resources	Number of NRHP-eligible sites potentially being adversely affected by trailing	7	0	1
	Number of NRHP-eligible sites not affected by trailing[A]	9	3	6
[A] Sites are protected from trailing by fences or are hardened sites located on rocky outcrops or petroglyphs on vertical rock faces not likely damaged by cattle				

3.13.2.3 *Alternative A*

Alternative A consists of the trailing routes requested through crossing permit applications. It is assumed that applicants probably did not consider the impacts that the trailing event would have on any cultural resources that may be located along their chosen route, as the applicants' objective was to move livestock from one area on the ground to another area on the ground. The requested route is usually the shortest route in distance, the easiest route for trailing logistics, and the quickest route for timelines.

Direct and indirect impacts of cattle trailing on cultural resources would occur within 1/8 mile of each side of trailing corridor defined as the APE. Impacts to sites determined eligible for listing on the NRHP are determined by accessibility to the sites by cattle crossing the APE and whether or not the effects of the cattle crossing or trailing would be adverse.

There are sixteen NRHP-eligible sites in the APE. Of those, seven NRHP-eligible sites are potentially being adversely affected. The remaining nine eligible sites are protected by fences or are hardened sites located on rocky outcrops or petroglyphs on vertical rock faces not likely to be damaged.

3.13.2.4 *Alternative B*

Under Alternative B, applications for crossing permits to trail livestock on public lands would be denied. The trucking routes that were assumed would be used to transport livestock under Alternative B were analyzed for potential adverse effects to NRHP-eligible sites. Direct and indirect impacts of cattle trucking on cultural resources would occur within 25 feet of each side of the road corridor defined as the APE. There would be no overnight areas or cattle crossing at streams in this alternative. Impacts to sites determined eligible for listing on the NRHP are determined by accessibility to the sites by cattle trucks crossing the APE and whether or not the effects of trucking cattle would be adverse.

There are three NRHP-eligible sites in the APE. There are no NRHP-eligible sites potentially being adversely affected.

3.13.2.5 *Alternative C*

Alternative C consists of the trailing routes requested through crossing permit applications as modified by the ID Team through the application of design criteria, where possible; Alternative C also includes additional routes proposed by the BLM. The ID Team incorporated modifications or stipulations to protect natural and cultural resources from adverse impacts caused by the proposed trailing events. The trailing route with restrictions in Alternative C has reduced impacts to cultural resources.

Direct and indirect impacts of cattle trailing on cultural resources would occur within 50 feet of each side of the center line of the trailing corridor defined as the APE. Impacts to sites determined eligible for listing on the NRHP are determined by accessibility to the sites by cattle crossing the APE and whether or not the effects of the cattle crossing or trailing would be adverse.

There are seven NRHP-eligible sites in the APE. Of those, one potentially NRHP-eligible site, 10OE-6706, is potentially being adversely affected. The remaining 6 eligible sites are protected by fences or are hardened sites located on rocky outcrops or petroglyphs on vertical rock faces not likely to be damaged by cattle.

As agreed upon between the BLM and the Idaho SHPO (meeting 3/1/2012), there would be Class III inventories conducted at all stream crossings, spring areas, and overnight areas to further consider the effects to cultural resources resulting from the issuance of the trailing permit. BLM will also revisit and document impacts to eligible sites in the APE.

3.13.3 Cumulative Impacts – Cultural Resources

3.13.3.1 *Scope of Analysis*

Geographic and Temporal Scope and Rationale

The geographic scope of analysis for cumulative impacts to cultural resources extends to the boundaries of the trailing corridors, overnight areas, watering areas, and perennial stream crossings where cattle trail in each alternative. This APE was selected because the actions associated with trailing have the potential to shape current and future conditions on NRHP-eligible sites in those areas. The integrity of cultural resources are dependent on soil stability, vegetation cover, and stream functioning within the trailing routes, and the condition of those resources are typically compared to known NRHP-eligible sites to infer potential condition of cultural resource sites.

The temporal scale for the analysis of cumulative effects from livestock trailing includes the timespan from 1906 through 2022. This temporal scale was selected because of the passage of the Antiquities Act in 1906, which protects “any historic or prehistoric ruin or monument, or any object of antiquity, situated on lands owned or controlled by the government of the United States,...” from appropriation, excavation, injury and destruction subject to fines and/or imprisonment. At that time BLM’s predecessor, the United States Government Land Office managed the lands discussed in this EA. BLM management began affecting the cultural resources in the project area after the adoption of the Taylor Grazing Act of 1934. Direct and indirect effects from the alternatives would last as long as trailing is authorized.

Past, Present, and Foreseeable Future Actions to be Considered

Past actions to be considered include livestock grazing, livestock trailing, road construction, range improvements, vegetation treatment projects, fire suppression, ESR projects, and OHV use. Actions that will continue into the foreseeable future include livestock grazing, noxious weed management, utility corridor ROW maintenance, and recreation. The Bruneau Field Office Fuel Breaks for Sage-grouse Habitat Maintenance and Restoration Project is a future action considered for analysis.

Effects of Past, Present, and Foreseeable Future Actions

The collective effect of past actions has contributed to the existing condition of cultural resources described in Section 3.13.1, *Affected Environment – Cultural Resources*. The effects of ongoing and future actions germane to the discussion of cumulative effects to cultural resources, soils, and vegetation are summarized below.

Permitted livestock grazing affects cultural resources directly by trampling and indirectly by affecting the vegetative cover and soil stability, creating erosion and potentially affecting cultural resources by de-stabilizing the context of sites. These effects can be significant if livestock are not managed appropriately. Appropriate grazing management, combined with annual monitoring practices, will prevent soil and watershed degradation on a landscape level. However, livestock grazing will likely result in localized impacts to cultural resources, soil surface degradation, and reduction of vegetative cover, resulting in adverse impacts to soils in localized areas adjacent to gates, watering areas, and dietary supplement areas in addition to perennial streams and overnight areas. The BLM and Idaho SHPO understand that these trailing events across these corridors have occurred for many years and have already impacted the cultural sites along the routes. It is estimated that the top 10 centimeters of a site may have already been disturbed by previous cattle trailing activities.

Motorized recreation will continue to loosen surface soils and potentially impact NRHP-eligible sites. However, OHVs are confined to existing routes, making the extent of the effects slight. Similarly, utility ROW maintenance involves periodic removal of vegetation around power poles along State Highway 51. Effects from the CJ Strike to Riddle 138 kV Transmission Line and associated maintenance have already been eliminated or mitigated through the compliance process of Section 106 of the NHPA (Plew & Willson 2005). The overall effect to soils is slight due to the small area affected. By preventing the loss of native habitats through weed control, it is expected that overall, long-term soil loss from erosion would be reduced, which, in turn, would reduce impacts to cultural resources.

The Bruneau Field Office Fuel Breaks for Sage-grouse Habitat Maintenance and Restoration Project could affect cultural resources by mowing and drill seeding equipment. Mowing equipment could create localized and short-term disturbance to soil surfaces on up to 1,115 acres. Mowing would not remove vegetation; therefore, erosion would not be expected to increase. Drill seeding equipment would disturb 400 acres of soils approximately 2 to 4 inches deep, creating more pronounced disturbance to the soil than mowing. Effects from this proposal have already been eliminated or mitigated through the compliance process of Section 106 of the NHPA (USDI BLM 2011e).

3.13.3.2 *Cumulative Impacts of Alternative A*

The trampling associated with permitted grazing is an additive impact to impacts from trailing. While the effects to cultural resources from trailing can be confined to localized areas and narrow timeframes, those of permitted grazing are dispersed both temporally and spatially, making comparison difficult. However, the cumulative effect to cultural resources, while potentially adverse, would be limited in both magnitude and extent. Surface disturbance, movement of artifacts and potential erosion impacting datable cultural deposits could occur in discrete areas, but any measurable increase in either the amount or rates of accelerated impacts to cultural resources in the project area would be very slight, if detectable at all.

Cumulative impacts to the cultural resources would be greatest in Alternative A because of the cross-country trailing along a wider corridor and proximity to a greater number of NRHP-eligible sites in the APE. The lack of trailing restrictions and design criteria would result in a greater amount of NRHP-eligible sites that could be adversely impacted than under Alternative C. The impacts to cultural resources from grazing across the project area are potentially moderate and combine with the impacts associated with trailing. Impacts to cultural resources that are within the trailing route would therefore combine with the effects of trailing to have a larger cumulative impact than in Alternatives B or C.

The effects to NRHP-eligible sites from the Bruneau Field Office Fuel Breaks for Sage-grouse Habitat Maintenance and Restoration Project, when combined with the effects to NRHP-eligible sites from issuing the crossing permits, would not result in additional impacts beyond the impacts from issuing the crossing permits. Effects from this proposal have already been eliminated or mitigated through the compliance process of Section 106 of the NHPA (USDI BLM 2011e). Drill seeding effects would result in a moderate acceleration of erosion to the extent that the two activities (i.e., trailing and drill seeding) overlap in the same year. Again, the effects of drill seeding have been eliminated or mitigated as above.

Recreation and OHV use could add slightly to the adverse effects of trailing on cultural resources. The adverse effects of recreation on cultural resources has become slight since the exclusion of cross-country OHV use in the project area that, when added to the adverse effects of livestock trailing, does not appreciably increase the extent of overall adverse effects. Erosion could be accelerated slightly where the two activities coincide.

The adverse effects to NRHP-eligible sites from utility corridor ROW maintenance, when combined with the adverse effects to soils from issuing the crossing permits, would be additive. The two activities, when considered together, would not measurably accelerate erosion in the project area.

3.13.3.3 *Cumulative Impacts of Alternative B*

There would be no measurable direct or indirect impacts to NRHP-eligible cultural resources from Alternative B. Consequently, there would be no cumulative effects to NRHP-eligible cultural resources resulting from Alternative B.

3.13.3.4 *Cumulative Impacts of Alternative C*

The overall cumulative effect of past, present, and reasonably foreseeable actions on NRHP-eligible sites would be adverse for the same reasons discussed under Alternative A though to a lesser degree. As with Alternative A, drill seeding effects would result in a moderate acceleration of erosion to the extent that the two activities (i.e., trailing and drill seeding) overlap in the same year. Mowing and livestock trailing would loosen soil surface aggregates. Recreation and utility corridor ROW maintenance add little cumulatively to the overall adverse effect due to the narrow extent of their effects in the project area.

Cumulative impacts to NRHP-eligible sites would be relatively low in Alternative C because the areas of high site density would be avoided, and cross-country trailing would be restricted.

3.14 Livestock Grazing

3.14.1 Affected Environment – Livestock Grazing

The BFO administers livestock grazing on 40 allotments and has issued 37 livestock grazing permits to 37 livestock operators (permittees). Livestock grazing in these allotments has either been addressed, is being addressed, or is scheduled to be addressed in a NEPA analysis. The decisions following the NEPA analysis modify livestock grazing as necessary to conform to Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management (Standards and Guidelines) and Bruneau MFP objectives.

Applications for crossing permits received by the BFO are described in Table 1 and Section 2.3.1 as Alternative A. Livestock operators plan their livestock trailing to avoid roads with high-speed traffic, existing concentrations of livestock, routes that have barriers or are longer than necessary, and impassable drainage crossings. Trailing routes take advantage of fenced fields with livestock water that the operators own or have permission to use for overnighting . Trailing along fence lines may also aid in controlling cattle. Locations of gates are also considered when pastures are trailed across. Livestock operators also consider soil and weather conditions and whether the destination allotments are open to grazing use based on range readiness and other factors.

3.14.2 Environmental Consequences – Livestock Grazing

3.14.2.1 *General Discussion of Impacts*

Trailing of livestock across an allotment at a time when permitted livestock grazing is occurring could result in direct and indirect impacts to permitted livestock grazing. These impacts include:

- Reducing availability of forage for permitted livestock,
- Interfering with the distribution or breeding of permitted livestock,
- Interfering with permitted livestock using the same routes at the same times,
- Separating permitted and trailing livestock causing expense to both permittees and non-permittees, and
- Creating resource conflicts through timing, intensity, or duration that would not be present under existing grazing permits.

Impacts to crossing permit applicants that could result from modifying or denying their applications for crossing permits include:

- Cost of trucking, trailing, or combinations of both;
- Modifications to trucking livestock as a result of road conditions;
- Inaccessibility of some portions of routes or allotments by trucks even under favorable road conditions;
- Lengthening of routes resulting in additional time to complete the livestock movement and/or additional overnight areas;
- Requiring overnight areas outside fenced fields that would contain cattle drift; and
- Additional herders for livestock control on trailing routes with restrictions.

3.14.2.2 *Comparison of Impacts*

A summary of impacts to livestock grazing resulting from the alternatives are displayed in Table 26. These impacts are described more fully in the sections for each alternative below.

Table 26. Comparison of Direct and Indirect Impacts to Livestock Grazing in the Project Area.

Issue	Indicator	Alternative		
		Alternative A	Alternative B	Alternative C
Reduced forage availability	AUMs licensed for authorized trailing	1,207 (<1% of permitted use)	0	1,199 (<1% of permitted use)
Interference with permitted livestock	Coincidence of trailing dates with permitted season of use	20 of 51 pastures- spring 15 of 42 pastures- fall	0 pastures- spring 0 pastures- fall	20 of 49 pastures- spring 15 of 40 pastures- fall
Additional resource conflicts in BLM-managed allotments	Conflicts with rationale for permitted use prescription for crossed allotments	2 riparian pastures crossed 58 of 93 pastures crossed outside of permitted season	0 riparian pastures crossed 0 pastures crossed outside of permitted season	2 riparian pastures crossed 58 of 89 pastures crossed outside of permitted season
Approximate cost of trucking	$7.82/loaded mile - $500 minimum	N/A	$78,000/year	N/A
Approximate cost of trailing	500 C or less = $28.13 750 C or less = $22.50 1,000 C or less = $20.45	$14,000/year	N/A	$13,000/year

3.14.2.3 *Alternative A*

<u>Impacts to Permittees</u>

If all of the applications for crossing permits were approved, crossing permits would add a maximum of 1,207 AUMs of livestock grazing use to the 128,582 AUMs of active use currently permitted on public land administered by the BFO, an increment of less than 1%. It is important to note that the number of AUMs authorized reflects the 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," in BLM's Rangeland Administration System (RAS), which creates a bill for a minimum of one day even if the actual trailing event

lasts less than a day (e.g., trailing for only two hours is still calculated by RAS as one day). In addition, when livestock are trailed, the amount of forage actually consumed would be less than what is billed, because livestock cannot consume as much forage when they are trailing as when they are not trailing. Where trailing involves overnighting, the AUMs calculated would be closer to actual forage consumption because livestock would have more time to consume forage. Any consumption of forage would occur along 437 miles of identified routes and at 9 different overnight areas located on public land.

Along or near (generally within ¼ mile) the proposed trailing routes, recent (2006-2011) upland utilization measurements recorded slight (6% to 20%) or light (21% to 40%) utilization except in small areas immediately adjacent to water, gates, or salt grounds in the Antelope Field, Tindall Reservoir Field, Crab Creek, Louse Creek, Blackstone, and China Creek, Highway Field, West Bull Creek, Trout Creek, Center, and Riddle. Most of the trailing routes have been in use each year, and in many cases forage consumption from trailing would be accounted for in the utilization data. Therefore, it is unlikely that trailing under these crossing permit applications would affect forage availability in the affected allotments.

Livestock trailing has some potential to disrupt cattle that have already been turned out in an allotment. Spring grazing has historically been defined as that occurring between March 1 and June 30. Out of the 24 pastures crossed by spring trailing events in the northern portion of the BFO, applicants would potentially encounter permitted cattle in 8, but none of the proposed overnight locations would be on public land within crossed allotments. All but one overnight location would be in corrals or small fenced fields on private or State land; the exception would be within a branding corral on public land. Permitted cattle typically use that corral only during the scheduled pasture move around May 1. Generally, spring trailing events that cross lower elevation pastures in this area could encounter permitted cattle already in the allotment. Spring trailing at higher elevations would cross pastures and private properties where there are not any livestock, because those pastures are generally permitted for summer use (July 1 to September 30).

Fall trailing events (generally October 1 to November 30) at higher elevations at the north end of the BFO are less likely to encounter cattle in an allotment, because most BLM summer pastures close by August 31, and cattle are then moved to private property or FFRs. Cattle trailing events after November 1 could encounter cattle in a few winter pastures. Out of the 18 pastures crossed by fall trailing events, applicants would potentially encounter permitted cattle in 2. The single overnight location on public land would be within a large pasture, but would be used more for resting than for overnighting. The entire trailing herd and permitted cattle would not be present.

Spring trailing events in the southeastern portion of the BFO extend into early July and could encounter permitted cattle. All allotments in that area, except Bull Creek Allotment, have both spring and fall grazing use; grazing ends no later than July 7. Except on the Bull Creek Allotment, which has summer grazing, cattle move to the Humboldt-Toiyabe National Forest during summer. Out of the 27 pastures crossed by spring trailing events, applicants would potentially encounter permitted cattle in 12; up to 4 of the proposed overnight locations would be on public land within crossed allotments while permitted cattle are present. An alternate proposed overnight location on private land is not within a corral or small fenced field.

Generally, after October 1, cattle from the National Forest move back to fall pastures and allotments in the southeast portion of the BFO. Therefore, cattle trailing after October 1 could also encounter permitted cattle. Out of the 24 pastures crossed by fall trailing events, applicants would potentially encounter permitted cattle in 13. Up to 2 of the proposed overnight locations would be on public land within crossed allotments while permitted cattle are present. An alternate proposed overnight location on private land is not within a corral or small fenced field.

The magnitude of disruption is low if cattle already in the allotment are dispersed and if breeding is not occurring at the time of trailing. Breeding bulls are typically turned out in May each year and may be incompatible, in terms of calf characteristics and ease of birth, with cows encountered en route. In rare cases, trailed herds could encounter cattle being moved among pastures, with substantial disruption to both herds. Trailing cattle bedded overnight have more potential for mixing with and disruption of cattle already in the allotment than cattle trailing through without overnighting.

Livestock trailing has potential to create resource conflicts or impacts that would not be present under existing grazing permits. Trailing through fire closure areas, riparian pastures, or areas not scheduled for use or overnighting would impose localized impacts. For example, riparian pastures are generally scheduled for use for a short period in late spring (June 15-30) or are closed until objectives are met or scheduled for rest, but trailing may occur at different times or levels. Spring trailing across upland pastures could occur during the critical growth period, affecting some individual perennial grasses along the route. Alternatively, fall trailing may result in additional localized impacts in pastures permitted for use in spring. Exclosures are closed to both trailing and permitted use.

Impacts to Crossing Permit Applicants

The trailing routes, timing, numbers, and overnight locations depicted in Alternative A are feasible and have previously been successful for the applicants. In the past, they have considered variations in weather conditions, range readiness, and operational needs when determining dates, numbers, number of trips, and distances per day traveled along the routes. They incorporated knowledge about stream crossings, watering points, gate locations, and fences that aid cattle movement into their applications.

Socio-economics

There are many socio-economic costs that could be considered when determining the cost of trailing. It is assumed that livestock would be trailed between 5 and 10 miles per day. The costs of trailing were determined using these assumptions.

- A minimum of 4 people are required to trail 500 cattle for distance of up to10 miles per day. (C.B. Jones, pers. comm.). The cowboy and his/her horse cost from $100 to $125 per day, or an average of $112.50 per day. So, trailing 500 cattle using 4 people costs the permittee $450 per day, or an average of $0.90 per cow per day.

- A minimum of 5 people are required to trail 750 cattle for distance of up to 10 miles per day. (C.B. Jones, pers. comm.). The cowboy and his/her horse cost from $100 to $125 per day, or an average of $112.50 per day. So, trailing 750 cattle using 5 people costs the permittee $562.50 per day, or an average of $0.75 per cow per day.

- A minimum of 6 people are required to trail 1,000 cattle for distance of up to 10 miles/day. (C.B. Jones, pers. comm.). The cowboy and his/her horse cost from $100 to $125 per day, or an average of $112.50 per day. So, trailing 1,000 cattle using 6 people costs the permittee $675 per day, or an average of $0.675 per cow per day.

Based on these assumptions, trailing under the conditions described under Alternative A would cost applicants approximately $14,000/year (Table 27).

Table 27. Estimated Cost of Each Alternative to the Applicants Per Year.

Applicant	Alternative A	Alternative B	Alternative C
	Estimated trailing cost per year with trailing as on applications	Estimated trucking cost per year if applications were denied	Estimated trailing cost per year with modified trailing[B]
John Anchustegui	$1,350	$5,591	$1,350
Joseph Black & Sons	$5,940[A]	$17,078	$5,940[A]
David Lahtinen	$367	$1,877	$367
Chester Sellman	$203	$938	$203
John Urquidi	$119	$861	$119
Mary's Creek LLC	$1,430	$5,146	$1,430
JR Simplot Company dba Wickahoney Cattle Company	$4,886	$31,233	$4,886
Simplot Livestock Company	$488	$1,728	$488
Strickland YT Ranch	$1,598	$2,047	$1,598
Tindall & Sons Ranches LLC	$2,250	$3,500	$1,980
Gordon King	$1,980	$6,130	$1,980
Hall Family Trust	$302	$2,000	$301
TOTAL COST PER YEAR	**$13,623**	**$78,129**	**$13,352**

[A] This estimate is for the Battle Creek, East Castle and West Castle Creek Allotment trailing. The Northwest Allotment trailing is estimated to cost approximately $1,980 more than the Battle Creek, East Castle and West Castle Creek Allotment trailing and would only occur in the spring.
[B] The cost to comply with stipulations and/or terms and conditions (e.g., cost for restricted trailing such as when near active leks, when trailing would only occur only between 10 am and 6 pm) was discussed in the analysis of Alternative C. But, this cost analysis does not account for that additional cost. However, because there is flexibility in the number of miles (5-10 miles/day) that can be trailed in a day (e.g., more active trailing could occur after the delay), trailing may be only slightly more expensive.

3.14.2.4 *Alternative B*

Impacts to Permittees

Under Alternative B, there would be no impacts to permitted cattle along trailing routes because the applications for crossing permits would be denied.

Impacts to Crossing Permit Applicants

Cattle trucks require minimum road conditions for safe and efficient travel. Loaded trucks (80,000 to 90,000 lbs.) require maintained roads that are bladed and graveled periodically. Maintained roads are firm and dry enough to support the loaded truck without sinking or sliding off the road surface. Road conditions limit the timing of livestock turnout or removal; in some

years snow drifts or wet road surfaces may prevent access and safe travel during April or after October 1 even on roads that are publicly maintained.

Other roads that are infrequently maintained may have an even narrower seasonal window for travel by trucks. Rough, stony, unbladed roads would cause excessive tire loss and possibly tip-over loaded trucks, and drivers of hired trucks would not be willing to use the routes in uncertain conditions.

Road conditions can also change rapidly, particularly during the cooler months of the year when precipitation is more frequent and drying of road surfaces is slower. Once en route, installing tire chains may be necessary to maintain traction and control, particularly on steeper routes, which slows travel.

BLM has identified 215 miles of routes within the BFO that would be suitable for use by cattle trucks as described above; these are depicted on Map 1B. There are routes suitable for trucks that reach nearly every destination for livestock movements necessary to allow permitted use. Some allotments do not have roads suitable for trucks along the same route as the applications, even if the movement would occur at a time when roads have been maintained and are dry enough for use. One of 16 spring crossing permit applications (including early July) is not feasible by truck alone, and others require roundabout movements. This hinders permittees' ability to make use of their permits. Road improvement may be feasible in some cases, but would not be authorized or completed in time to avoid added costs..

Related consequences of a shorter period for moving livestock into and out of allotments could include foregoing the use of early pastures, running out of water in areas where natural or manmade sources dry early, and losing the use of forage in FFR and privately owned pastures when road conditions become the primary consideration in vacating these pastures.

Socio-economics

The capacity of a cattle truck varies (32 cow/calf pair to 45 cows); however, for this analysis it was assumed that a truck can carry 40 cows. The cost per mile for a loaded truck is $7.82 with a $500 minimum (C. Alzola, pers. comm.). This rate accounts for travel on county- or BLM-maintained roads in Owyhee County and assumes that there would not be any use of unimproved (two-track) roads. In addition to State highways, the routes that could be used for trucking are shown on Map 1B.

Based on these assumptions, denying applications for crossing permits under Alternative B would cost applicants up to $78,000 /year (Table 27) assuming applicant's transported livestock to and from their allotment(s) via truck.

There would be an additional cost to maintain improved (publicly maintained) roads used for trucking, especially the roads that are predicted to be used more frequently, such as Mud Flat Road and Rowland Road. The additional road maintenance would be the responsibility of Owyhee County and BLM.

3.14.2.5 *Alternative C*

Impacts to Permittees

Under Alternative C, the crossing permit applications would add a maximum of 1,199 AUMs to the 128,582 AUMs currently authorized within the BFO, an increment of less than 1%. The same caveats for estimating the amount of forage that would actually be consumed by trailing livestock described under Alternative A also apply here. Any consumption of forage would occur along 394 miles of identified routes and at 11 different overnight areas located on public land.

Livestock trailing under Alternative C has some potential to disrupt use by permitted cattle that have already been turned out. Although routes described in the crossing permit applications were modified in places to reduce or eliminate potential resource conflicts, this did not result in moving the routes into different pastures than those considered under Alternative A. Therefore, the potential impacts to permitted cattle would be the same as under Alternative A for routes that are retained in Alternative C.

Livestock trailing under these modified crossing permit applications has less potential to create resource conflicts or impacts that would not be present under existing grazing permits than under Alternative A because of the design criteria that have been incorporated into Alternative C.

Impacts to Crossing Permit Applicants

Under Alternative C, the applicants' routes decreased from a total length of 437 miles in Alternative A to a total of 394 miles to avoid sensitive resources. In several cases, the route under Alternative C was moved away from fences that aid trailing or was made less direct than the original application. Eight routes used by three applicants were dropped entirely, accounting for most of the difference in mileage. Under Alternative C, time constraints on spring trailing would apply to routes that pass near sage-grouse leks during breeding. Trailing past these locations must occur between 10 am and 6 pm to avoid any potential disruption of breeding. This potentially would interact with weather, day length, and other influences on rate of travel to require alternative overnight stops to those identified so that the applicants can comply with the time passage restriction.

In 7 cases, exclusive of removed routes, the applicants' requested overnight locations were modified to reduce potential impacts to sensitive resources near the original location. Under Alternative A, several of the applications specified overnight locations on privately owned lands along the route or at least on other ownerships. This was done to reduce impacts to public lands and also reduce/avoid potential conflicts with resources. These locations were also within smaller fenced fields or corrals that would contain any overnight straying of trailing cattle, eliminating the need to hunt strays and thus expediting movement the following day. In 4 of 7 cases, unfenced, less sensitive locations on public lands were substituted for fenced fields; in 3 of 7 cases other unfenced locations at different points along the route were chosen. These modifications could potentially interact with weather, soil conditions, and time passage restrictions to require more days for completion of the movement or different overnight locations than are described in the alternatives.

In Alternative C, 55 miles of the original or modified routes have additional restrictions requiring that livestock stay on the route to avoid sensitive resources, with the expectation that any strays

are kept to within 50 feet of the route. While active trailing keeps livestock within a short distance of the road, additional sensitivity along these segments may require additional herders to conform to the proposed restrictions. Routes that have particularly long segments of restrictions that could require additional herders include those applied for by John Anchustegui (Maps 2C and 3C), Joseph Black & Sons (Maps 5C and 6C), Mary's Creek LLC (Map 8C), and J.R. Simplot Co. (Map 10C).

Socio-economics

Based on the assumptions regarding the cost of trailing described under Alternative A, trailing under the conditions described under Alternative C would cost applicants approximately $13,000/year (Table 27), similar to the amount under Alternative A.

Impacts to Both Crossing Permit Applicants and Permittees

In Alternative C, BLM has also identified 173 miles of additional trailing routes that are potentially available for trailing upon application to BLM. There are also 6 designated overnight locations along the Rowland Road routes. While these are primarily along publicly maintained roads, some routes have been adjusted to avoid potential conflicts with sensitive resources, including season of use restrictions near sage-grouse leks. These would be a feasibility consideration for any applications that are received in the future to trail over these routes.

In addition, the chosen routes include 49 miles of additional restriction to confine livestock movement to the route, with the expectation that any strays are kept to within 50 feet of the route. These would also be a feasibility consideration for any applications that are received in the future to trail over these routes. Some additional allotments and portions of allotments that are potentially affected by the existing crossing permit applications would also be affected by these routes. Out of 29 pastures crossed by these routes, 19 potentially have permitted cattle present during the trailing event.

3.14.3 Cumulative Impacts – Livestock Grazing

3.14.3.1 *Scope of Analysis*

Geographic and Temporal Scope and Rationale

The geographic scope of the analysis for impacts of livestock trailing upon permitted livestock use is the area within the BFO boundaries, since the BFO has no authority to regulate livestock trailing beyond its own administrative boundaries. The temporal scale for the analysis of cumulative effects to permitted livestock use includes the timespan from 1934 through 2022. This temporal scale was selected because BLM management began affecting livestock grazing in the project area after the adoption of the Taylor Grazing Act of 1934. Direct and indirect effects from the alternatives would last as long as trailing is authorized.

Past, Present, and Foreseeable Future Actions to be Considered

Past actions to be considered include livestock grazing, livestock trailing, and wildland fire. Actions that will continue into the foreseeable future include livestock grazing and grazing administration actions, such as transfers.

Effects of Past, Present, and Foreseeable Future Actions

Livestock use different pastures and/or allotments in order to maintain forage quality and availability for their herds. Livestock are moved between pastures and/or allotments as required by forage and water conditions. Resource considerations may also prompt pasture and/or allotment moves to avoid over-use or to allow for regrowth. If allotments are contiguous to home ranches and to each other, it is not necessary to cross another permittee's allotment(s). However, past BLM range adjudication and allotment boundary agreements could not create contiguous allotments that also met seasonal forage requirements for all operators, and BLM provided for trailing among them.

Other livestock operations within the project area that do not rely upon federal land may also make seasonal movements among pastures for the same operational reasons. These are primarily small operations in the northern part that rely upon irrigated pastures for a substantial part of their forage base.

Variations in weather among years may influence the timing and impacts of trailing events because of its influence upon water and forage availability, soil conditions, and other pertinent factors. Other events such as wildland fires could force atypical livestock movements to vacate burned pastures or to avoid mortality from the fire itself. Transfer of permits to other livestock operators or changes in existing livestock operations may also require a future deviation from typical livestock movements for BFO permittees, for non-permittees, and for livestock operators that use lands in the adjoining BLM Jarbidge Field Office, the Humboldt-Toiyabe National Forest, and the Duck Valley Indian Reservation.

3.14.3.2 *Cumulative Impacts of Alternative A*

Impacts to Permittees

Although 425 miles of routes would cross 17 allotments under this alternative, impacts to permittees on those allotments from disruption or mixing of turned-out cattle, forage consumption, incidental grazing use, or hoof impact that conflicts with existing allotment objectives would be minimal and would not undermine the management prescriptions for those allotments. Permittees also generally coordinate with neighboring permittees nton ensuren mixingof livestock does not occur.

Routes authorized under Alternative A have been used for many years and include the majority of known trailing routes. Management has been adjusted in completed permit renewals in the East and West Castle Creek Allotments, the Battle Creek Allotment, the Northwest Allotment, and the Blackstone Allotment to address known livestock impacts, including trailing. The limited numbers of crossing permit applications processed in the past (a subset of those included in Alternative A) addressed known potential conflicts with allotment management prescriptions; crossing permits were not issued for movements without potential conflicts, particularly if they occurred along publicly maintained roads.

The BFO consists of large areas of blocked federal lands except along the northern boundary, near Rough Mountain, along Battle Creek, and near the town of Riddle. Consequently, there are expected to be few cumulative impacts to permittees on public land and other ownerships from non-permittee trailing beyond those described for Alternative A.

Impacts to Crossing Permit Applicants
Ttrailing along these routes would allow existing permittees use of their allotments . This use is consistent with Standards and Guidelines in allotments where permit renewals have been completed. Specifically, use of pastures and availability of water and forage would not be affected by BLM action on their crossing permit applications, and there would be no cumulative impacts to these livestock operations.

3.14.3.3 *Cumulative Impacts of Alternative B*

Impacts to Permittees
Since trailing would not be authorized across their allotments by non-permittees, there would be no cumulative impacts to permittee livestock operations or ability to comply with permit Terms and Conditions or Annual Indicator Criteria, as there would be no direct or indirect impacts to permittees. If the crossing permit applicants can and do elect to substitute trucking for trailing, immeasurably small impacts from cattle trucks traversing suitable roads would result.

Impacts to Crossing Permit Applicants
Denial of the crossing permit applications would result in higher costs in most cases where suitable trucking routes exist and would hinder necessary livestock movements under existing permits where they do not, undermining BLM's management of the affected allotments.

3.14.3.4 *Cumulative Impacts of Alternative C*

Impacts to Permittees
The few crossing permit applications processed by BFO in the past were intended to address known potential conflicts with allotment management prescriptions. However, additional design criteria intended to protect habitat for sage-grouse, consistent with BLM IM 2012-043, were used in development of Alternative C. Cumulative impacts to permittees of the 17 allotments that would be crossed would be the same as under Alternative A or less because these additional design criteria have been incorporated into the design of Alternative C.

Impacts to Crossing Permit Applicants
Additional requirements and modifications to trailing routes could potentially interact with weather, soil conditions, and time passage restrictions to require more days for completion of the movement or different overnight locations than are described in this alternative. Additional herders could be required where resources require closer herding to avoid impacts extending over 50 feet from the road. However, continuation of trailing along even modified routes would allow existing permittees to continue established livestock operations and use of permitted allotments in a similar manner to Alternative A and would not cumulatively impact livestock operations in the project area even if it may impose some additional time and expense.

Impacts to Both Crossing Permit Applicants and Permittees
BLM's additional 173 miles of trailing routes have substantial restrictions that may limit their use or attractiveness, particularly for livestock that must be moved in spring to support a livestock operation. However, the seasonal restrictions also greatly limit potential cumulative impacts to allotments and to other lands traversed by potential applicants. These routes cross an additional 5 allotments not included in the crossing permit applications.

3.15 Recreation

3.15.1 Affected Environment – Recreation

The proposed livestock trailing would occur primarily along and adjacent to motorized vehicle routes with the exception of trails depicted on Maps 10A, 10C, 12A and 12C. Recreational use of the vehicle routes proposed for livestock trailing varies from approximately 50 vehicles per year on the remote two-track vehicle routes to about 3,000 vehicles annually for improved and maintained vehicle roads such as Mud Flat, CCC, and Wickahoney Roads based on 2011 traffic counter data from similar vehicle routes in the BFO. The heaviest recreational use of these vehicle routes in the project area occurs in the fall (September through October), with the exception of the northern portion of the project area (East and West Castle Creek Allotments) where motorcycle use occurs on existing trails and washes primarily in the winter months (December through February).

Recreation opportunities within the project area are primarily dispersed in nature, meaning the activities are resource dependent where visitor services and recreational developments are minimal. There are few improved and maintained vehicle roads, hiking trails, directional signs, informational kiosks, or other facilities in the project area. Access throughout most of the project area requires a high-clearance four-wheel-drive vehicle, which may not account, by itself, for the relatively low visitation to the project area as one in three Idahoans (Cordell et al. 2008) participate in off-highway vehicle activities. It is likely visitation to the area is further limited by the amount of time it takes to drive long distances (30-100 miles) on two-track vehicle routes, at about 5 mph. Also, low visitor use may be a function of the distance from population centers and the amount of other public lands available for recreation in Idaho. Vehicle access is limited in many areas by private property effectively closing some of the vehicle routes from public use.

Activities common in the project area include hunting, hiking, primitive camping, backpacking, fishing, non-motorized boating, horseback riding, off-road driving for pleasure, sightseeing, and vehicle-dependent camping. Most recreational use occurs from mid-May to early November, with the majority of fall uses associated with hunting. About 20 total California bighorn sheep tags are issued each year by IDFG in Owyhee County, with about half of the tags available within portions of the project area. Currently, populations of wild sheep hunt units available in the project area include Big Jacks Creek (hunt unit 41-1), Little Jacks Creek (41-2), Owyhee River (42), and Bruneau River (46). The hunting season for almost all of these California bighorn tags is August 30 through September 8 in 2012 (IDFG regulations). Several hundred pronghorn antelope tags are issued each year in the project area, with the majority issued for mid-August through mid-September hunts. California bighorn sheep and pronghorn antelope hunting are considered exceptional recreation opportunities in the project area because of the abundant high quality habitat for these species in combination with the large quantity of public lands available to hunters. Other game species commonly pursued by hunters include elk, mule deer, and chukar partridge.

About 2-3 commercial and 2-3 competitive special recreation permits are authorized annually in the project area for guided backpacking, nature viewing, outfitted hunting, and competitive endurance horse and motorcycle racing.

As recreation opportunities in the project area are primarily resource dependent, the affected environment and impacts from proposed projects to resources such as vegetation (upland and riparian) and wildlife are considered as they relate to the quality of the visitor's experience.

3.15.2 Environmental Consequences – Recreation

3.15.2.1 *General Discussion of Impacts*

General impacts to the visitor to the area from trailing may include disruption of their activity from the direct contact with the sights and sounds of livestock management activities. Because motorized access to the project area is necessary for visitors, direct impacts would occur when trailing and recreational use of vehicles happen to be using common routes at the same time. While visitors to the area may pursue diverse recreation activities from Leave No Trace backpacking to driving for pleasure, the recreation opportunities in the project area are primarily resource dependent. Therefore, indirect impacts to recreation may occur from changes to wildlife habitat, upland vegetation, and riparian areas as they relate to a visitor's quality and availability of recreation experiences.

3.15.2.2 *Comparison of Impacts*

A summary of impacts to recreation resulting from the alternatives are displayed in Table 28. These impacts are described more fully in the sections for each alternative below.

Table 28. Comparison of Direct and Indirect Impacts to Recreation in the Project Area.

Issue	Indicator	Alternative		
		Alternative A	Alternative B	Alternative C
Direct contact between recreational use and trailing livestock	Number of recreational visitors using trailing routes when livestock are being trailed	Fewer than 100	n/a	Fewer than 100
	Number of trails occurring during high recreational use periods.	5	n/a	5
Direct contact between outfitters and trailing livestock	Number of special recreation permits overlapping trailing dates	1	n/a	1
Degradation of vehicle access routes through livestock trucking	Use of improved roads by heavy trucks to transport livestock	Less than under Alt B	More than under Alts A & C	Less than under Alt B

3.15.2.3 *Alternative A*

There may be some minor direct adverse impacts to the individual recreational visitor throughout the year when the public and the proposed livestock trailing activities come into contact utilizing the same vehicle routes and areas. Trailing activities occurring during September through October are likely to affect the most visitors, as the majority of recreational use in the project area occurs during this period. The livestock trailing displayed on Maps 3A, 7A, 9A, and 12A occur during this time of year. Proposed fall livestock trailing along the Mud Flat Road on Map

3A could impact an estimated 100 visitors if it were to occur on a weekend, but during non-weekend dates, the activity would likely impact many fewer visitors. It is unlikely the livestock trailing would occur on a weekend as the relatively high recreational vehicle use of this road would be inconvenient to the livestock operator as well.

One of the 5-6 special recreation permits typically authorized each year in the project area may come into contact with the proposed Map 7A trailing activities for a short period. The timing and area of this trailing route may impact visitors during the California bighorn sheep hunting season or guided/outfitted activities in in western portion of hunt unit 41-1 (Big Jacks Creek) and/or the eastern portion of hunt unit 41-2 (Little Jacks Creek). If disturbances to the recreating visitor were to occur, they would be short in duration. Further, the proposed livestock trailing would occur towards the end of California bighorn sheep hunting season (October 1-10); therefore, adverse impacts are considered to be minimal as the majority hunting-related activity would occur earlier in the season (early September). The other 4-5 special recreation permits typically authorized in the project area do not overlap at the time of year when the proposed livestock trailing activities would occur. For the recreational visitor, the impacts of waiting for livestock trailing activities to pass are limited to a relatively short duration (10-45 minutes) and would likely be considered by many visitors as a minor inconvenience.

No known areas used by the public for dispersed camping were selected as over-night areas for multi-day livestock trailing. Cross country vehicle use related to livestock trailing activities would not be authorized; therefore, no new impacts should occur from vehicle use off of existing vehicle routes on proposed livestock trails (Maps 10A and 12A) that list the method of herding as a combination horse and motorized.

3.15.2.4 *Alternative B*

Overall, impacts to recreation opportunities and visitors to the project area under this alternative would be minor. It is likely that an increase in truck traffic to transport livestock would have a minor direct adverse impact to the visitor also driving these same roads at the same time. While the improved and maintained roads are wider than the two-track vehicle routes in the project area, they still only allow one vehicle to pass the other (usually the heavy vehicle driven by the livestock operator), while the other needs to pull off the road into the shoulder area. A minor adverse indirect impact to visitors would be the likely degradation of vehicle access routes in the project area from the many vehicle trips needed (assuming 40 livestock transported per trip) to haul livestock. The use of heavy trucks throughout the year would create ruts when routes are wet and may increase the wash-boarding of these routes when conditions are dry in areas where vehicle drivers tend to use their brakes or accelerate (on slopes, before corners). As all of the vehicle routes where trucking may occur are maintained by the County or BLM, it would be difficult to quantify the indirect adverse impacts to recreational access from livestock truck use. It is recognized that many of the vehicle routes in the project area, particularly the unimproved roads, would not allow or be feasible for livestock trucking use.

3.15.2.5 *Alternative C*

The impacts to recreation opportunities under Alternative C would be the same as described under Alternative A for the routes depicted on Maps 2C through 21C. None of the modifications made to Alternative A relative to these routes would affect recreation opportunities differently.

The additional routes under Alternative C (Maps 22C through 28C) would have similar impacts as the other routes.

3.15.3 Cumulative Impacts – Recreation

3.15.3.1 *Scope of Analysis*

Geographic and Temporal Scope and Rationale

The analysis area for cumulative impacts to recreation is the project area boundary. The area was selected as the trailing routes overlap with recreation access vehicle routes throughout the year and area.

The temporal scale for the analysis of cumulative impacts to recreation includes the timespan from 1976 through 2022. This temporal scale was selected because BLM management of recreation on public lands began in 1976 with the passage of FLPMA. Direct and indirect effects from the alternatives would last as long as trailing is authorized.

Past, Present, and Foreseeable Future Actions to be Considered

Past and present livestock grazing and administration have the greatest potential to influence visitors' experience in the area. Past military training use, conversion of native range to exotic plant species after wildfire, and range improvements including drill seeding and facilities are considered to have less influence to the present quality of recreation opportunities available to the visitor. Wilderness designation in 2009 is thought to influence visitor perception and expectations within the project area. The Omnibus Public Land Management Act of 2009, part of which designated wilderness, allowed for the donation and retirement of permitted livestock grazing uses and acquisition of private lands (from willing sellers) within wilderness, which would have beneficial impacts to overall recreation opportunities. These past and present actions are expected to continue to influence the visitor experience.

Effects of Past, Present, and Foreseeable Future Actions

The direct presence of livestock and administrative facilities are by far the most pervasive impact to the quality of recreation opportunities across the landscape in the analysis area. Livestock grazing indirectly impacts the quality of recreation activities by leaving feces, creating trails, and damaging riparian areas at sites attractive to visitors.

Deep canyons and steep topography often function as livestock barriers or fenceless pastures in the much of analysis area, reducing the amount of livestock management facilities. A relatively high concentration of livestock facilities (i.e., fencing, troughs, pipelines, and roads) are located in the analysis area near Grandview where the primary recreation activity is motorcycle riding. Participants in this activity are not thought to be adversely impacted by sight of livestock management facilities as compared to the visitor participating in activities allowed in wilderness.

The beneficial effects to recreation associated with voluntary donation of permitted grazing uses and acquiring public lands (wilderness inholdings) are difficult to quantify as it would be guessing at which livestock operators and landowners are interested sellers. While it is too speculative to guess an amount of grazing that may be retired in the foreseeable future through this process, several private property parcels have been acquired in the past several years improving public access and recreational opportunities within the project area.

Recent attention and advertising include cover photo and article in National Geographic (November 2011), Outdoor Idaho "Canyonlands Calling" video on public television (2010), substantial increases in informational signing in the project area (5 additional kiosks installed in 2011), and wilderness information prominently displayed on BLM websites. The press coverage and elevated priority in BLM has raised the awareness of the area with the public, which result in higher expectations from the public for improved visitor services and information.

Conversion of native range to exotic plant species after wildfire has reduced the quality of scenery, primarily in the east central portion of the project area. While it not possible to measure these impacts to visitors as these changes have been occurring for many decades, impacts to scenic quality indirectly degrade the quality of opportunities for activities such as nature viewing, hiking, hunting, and driving for pleasure.

3.15.3.2 *Cumulative Impacts of Alternative A*

Overall, the cumulative impacts to recreation from past, present, foreseeable future actions in combination with trailing under this alternative would be negligible. The trailing of livestock, similar to that described in this document, has been occurring in the past for many years. The quality of opportunities would be maintained under this alternative. Recreation opportunities could be slightly enhanced in the foreseeable future if lands are acquired which would provide improved public access or if areas are retired from grazing.

3.15.3.3 *Cumulative Impacts of Alternative B*

Some impacts would likely occur from increased truck traffic on vehicle routes used by the recreating public anticipated under this alternative and discussed under the direct and indirect impacts. These impacts in combination with past, present, and foreseeable actions would not be measurable or would be negligible to overall recreation opportunities within the analysis area.

3.15.3.4 *Cumulative Impacts of Alternative C*

The cumulative impacts would be similar to those described for Alternative A. The quality of opportunities would be maintained under this alternative.

3.16 Visual Resources

3.16.1 Affected Environment – Visual Resources

Trailing routes would occur across a wide variety of Visual Resource Management (VRM) classes including public areas managed for VRM Class I (Wilderness, Wild & Scenic Rivers), VRM Class II (travel corridors along Highway 51 and Mud Flat Road and former/released Wilderness Study Areas), and VRM Class III and IV objectives. Class I objectives are the most stringent, with Class IV objectives being the least restrictive to changes in the character of the landscape. Management objectives for Class I include to provide for preservation of the existing character of the landscape. This management class does not preclude limited management activities such as continued use for livestock grazing and maintenance of existing livestock management facilities such as fences, water troughs, and reservoirs.

3.16.2 Environmental Consequences – Visual Resources

3.16.2.1 *General Discussion of Impacts*

Impacts to visual resources can be categorized as none, weak, moderate, or strong depending on the degree of change likely (contrast created) to the land/water and vegetative components (collectively referred to as the characteristic landscape). Also considered are visual impacts of structures, facilities, and developments, which are not part of this project proposal. If visual impacts can be measured and quantified using a visual contrast rating sheet, they often can be reduced or mitigated through the use of project design criteria. Visual contrast rating is used by BLM to document the level of contrast expected as compared to the level of change allowed within an area's assigned VRM class. For proposed facilities and developments, the visual contrast rating is employed. Activities such as trailing would be difficult to quantify using a visual contrast rating method. Therefore, this analysis compares, by alternative, the areas in which trailing occurs within VRM Class I, as it allows the lowest level of change to the characteristic landscape.

3.16.2.2 *Comparison of Impacts*

A summary of impacts to visual resources resulting from the alternatives are displayed in Table 29. These impacts are described more fully in the sections for each alternative below.

Table 29. Comparison of Direct and Indirect Impacts to Visual Resources in the Project Area.

Issue	Indicator	Alternative		
		Alternative A	Alternative B	Alternative C
Impacts to sensitive visual resources	Acres of VRM Class I potentially affected by livestock trailing corridors	2,269 (1% of Class I areas)	0	1,329 (<1% of Class I areas)

3.16.2.3 *Alternative A*

Approximately 2,269 acres of the 217,574 of VRM Class I acres within the overall project area boundary may be affected by the proposed livestock trailing corridors (1/8 mile each side of some proposed livestock trails) where the corridors intersect with designated wilderness. Approximately 784 acres of VRM Class I (over 1/3 of the acres affected) would be affected by Route 204 on Map 17A.

The proposed trailing would meet management class objectives. Overall, the landscape character would be preserved. No changes to the appearance of the land/water component of the visual landscape are likely as a result of the trailing activities. Direct impacts to the vegetation features of the characteristic landscape would be expected to be weak to none as viewed across the landscape or from travel corridors such as State Highway 51 or Mud Flat Road. The proposed livestock trailing would primarily utilize existing vehicle routes, which would minimize introducing new visual impacts to the landscape from this activity. While some of the proposed livestock trailing corridors of 1/8 mile on each side of a proposed trail intersect with small portions of VRM Class I areas, the majority of the livestock would primarily be trailing on or very near the existing vehicle routes and therefore outside the VRM Class I areas. The activity would be present along the route for a very short period (days) of time while trailing to an authorized grazing allotment and/or from the allotment to private property. There would be no

impact to the land/water component. The alternative would be unlikely to result in a detectable direct or indirect vegetative change to the characteristic landscape partially because this activity has been occurring for many years or decades. Impacts to visual resources from the proposed trailing routes are considered to be un-measurable as these same areas have livestock grazing use for longer periods of the year over a much larger (landscape) area.

3.16.2.4 *Alternative B*

The No Action Alternative would meet VRM class objectives throughout the project area. Some trucking of livestock would likely occur if trailing were not authorized for livestock to access their permitted allotment. This alternative would have no impacts to visual resources. No livestock trailing in VRM Class I areas is considered beneficial to visual resources as compared to Alternatives A and C.

3.16.2.5 *Alternative C*

Approximately 1,329 acres of the 217,574 of VRM Class I acres within the overall project area boundary may be affected by the proposed livestock trailing corridors (1/8 mile each side of some proposed livestock trails) where the corridors intersect with designated wilderness. The overall impacts would be similar to Alternative A, except for Route 204A on Map 17A, which would not be included under Alternative C. There would be slightly fewer acres of VRM Class I areas affected under this alternative as compared to Alternative A.

3.16.3 Cumulative Impacts – Visual Resources

As direct and indirect visual impacts to the characteristic landscape would be negligible and would not be detectable to the viewer across the landscape, no cumulative impacts to visual resources would occur. Visual resources will not be discussed in the further in the cumulative effects section.

3.17 Wilderness and Wild & Scenic Rivers

3.17.1 Affected Environment – Wilderness and Wild & Scenic Rivers

As part of the Omnibus Public Land Management Act of 2009, six Wilderness areas were designated and sixteen river segments were designated as Wild & Scenic Rivers (WSRs) in Owyhee County. Section 4(d)(4)(2) of the Wilderness Act allows domestic livestock grazing to continue where established prior to wilderness designation. Congress has directed managers to not reduce grazing simply because an area is designated wilderness.

The BFO manages approximately 217,574 acres within 5 wilderness areas and 189 miles of 12 WSR segments within the project area boundary. One trailing route (Map 17A, Route 204A) would be within the Bruneau-Jarbidge Rivers Wilderness and Sheep Creek WSR. In addition, five livestock trailing corridors (Maps 3-7A & C) intersect with Big Jacks Creek, Little Jacks Creek, and Owyhee River Wilderness areas and the Battle Creek WSR (Maps 4A & C). In each of these livestock trails where Wilderness or a WSR may be affected, except Route 204A on Map 17A, the route is located along an existing vehicle route with a 1/8 mile corridor on each side of the route as the livestock trailing corridor.

Potentially affected wilderness includes approximately 220 acres within the Owyhee River Wilderness, 691 acres within Big Jacks Creek Wilderness, 574 acres within Little Jacks Creek Wilderness, and 784 acres of the Bruneau-Jarbidge Rivers Wilderness. The trailing corridor on Map 4 for Alternatives A and C also intersects/overlaps with about 600 feet of the Battle Creek WSR within the Owyhee River Wilderness. Route 204A on Map 17A would affect about 4.9 miles of the Sheep Creek WSR and is within the Bruneau-Jarbidge Rivers Wilderness. There are no proposed trailing overnight areas within Wilderness or WSRs in any alternative.

Wilderness characteristics are the individual qualities of wilderness. Wilderness characteristics that may be affected include the area's naturalness (ecological health), undeveloped quality, opportunities for and quality of solitude and primitive recreation. Supplemental values have not been well described for these wilderness areas at this time but would likely include California bighorn sheep habitat, greater sage-grouse habitat, cultural sites, and special status plant habitats. These qualities are to be maintained or enhanced from time of designation (2009), which may not equate to pristine or historic conditions. The affected WSRs, Battle Creek WSR and Sheep Creek WSR, have Outstandingly Remarkable Values (ORVs) that are to be maintained or enhanced from the conditions existing at the time of designation (2009). The ORVs that may be affected by the proposed project include scenic and recreational (photography, wildlife viewing).

3.17.2 Environmental Consequences – Wilderness and Wild & Scenic Rivers

3.17.2.1 *General Discussion of Impacts*

Direct impacts to wilderness character could occur from trailing. It is possible to degrade the overall naturalness of wilderness by damage to vegetative communities through trampling. Opportunities for solitude and primitive recreation can also be impacted by the sights and sounds of activities associated with trailing. Disturbance to cultural sites, wildlife, and plant species could indirectly adversely impact overall naturalness and/or supplemental values, while impacts to visual resources and recreation could indirectly adversely affect ORVs for WSRs.

3.17.2.2 *Comparison of Impacts*

A summary of impacts to Wilderness and WSR resulting from the alternatives are displayed in Table 30. These impacts are described more fully in the sections for each alternative below.

Table 30. Comparison of Direct and Indirect Impacts to Wilderness and WSRs in the Project Area.

Issue	Indicator	Alternative		
		Alternative A	Alternative B	Alternative C
Impacts to wilderness character	Acres of wilderness potentially affected by trailing corridors			
	Little Jacks Creek Wilderness (Maps 3, 5, 6, and 7)	574 acres	0	418 acres
	Big Jacks Creek Wilderness (Map 4)	653 acres	0	653 acres
	Owyhee Rivers Wilderness (Map 4)	220 acres	0	220 acres

Issue	Indicator	Alternative		
		Alternative A	Alternative B	Alternative C
	Bruneau-Jarbidge Rivers Wilderness (Map 17)	784 acres	0	0 acres
Impacts to ORVs	Length of WSRs potentially affected by trailing corridors			
	Battle Creek WSR (Map 4)	600 ft	0	600 ft
	Sheep Creek WSR (Map 17)	4.9 miles	0	0 miles

3.17.2.3 *Alternative A*

There would be no impact to the undeveloped wilderness quality or characteristic as no developments are proposed.

The livestock trailing route on Map 4Ais considered an alternate to the route depicted on Map 5A used by the livestock operator during wetter-than-normal spring condition years when snow conditions would not allow use (access) of herding routes within the permitted allotment from deeded land (private property) at the north end of permitted allotment (Big Springs) to the south end of the allotment. When this alternate route is used, the livestock travel along a two-track vehicle route paralleling the eastern edge of Big Jacks Creek Wilderness and the northern edge of portions of the Owyhee River Wilderness. Although about 600 feet of the Battle Creek WSR overlap with this trailing corridor downstream of the Lower Battle Creek Crossing area, a gap fence exists that would prevent livestock from accessing the WSR. Overall, the impacts are considered negligible to Wilderness and the wilderness visitor's experience. The short duration of livestock being present in any one area would minimize the chances to negatively impact visitors' opportunities to experience solitude or influence the overall naturalness of these wilderness areas. Furthermore, these areas experience very low wilderness visitation during the time of year (spring) when the proposed activity would take place.

The livestock trailing route depicted on Map 7A bisects both Big Jacks Creek Wilderness and Little Jacks Creek Wilderness along the El Paso Pipeline. The boundary for Big Jacks Creek Wilderness adjacent to the pipeline is offset by 1/8 mile and the boundary of Little Jacks Creek Wilderness is offset by 30 feet from the two track vehicle route accessing the pipeline. Although the affected area of wilderness for Alternatives A and C include 316 acres of Little Jacks Creek Wilderness and 38 acres of Big Jacks Creek Wilderness, the potentially impacted area within wilderness is thought to be much smaller based on the variable widths of the pipeline right-of-way and the two-track vehicle road, which creates a 1/4- to 3/4-mile gap between the two wilderness areas. While the livestock trailing corridor may be up to 1/4 mile wide, the rough terrain would tend to funnel the livestock onto the existing vehicle route as it would be the easiest path of travel in this area, except the northern portion of the trail along Little Jacks Creek Wilderness where the topography flattens out. Impacts to these wilderness areas from livestock trailing would be negligible to the visitor's ability to experience solitude and would be very short in duration; the opportunities to participate in primitive types of recreation activities would be unchanged by the livestock trail.

The primary adverse effects from Alternative A to Wilderness and WSR would be from the trailing Route 204A depicted on Map 17A, as this livestock trail would trail in and along the Sheep Creek WSR and within the Bruneau-Jarbidge Rivers Wilderness. It would likely cause direct adverse impacts to the ORVs of the WSR, including scenery and recreation. Furthermore, it would likely degrade naturalness and opportunities for and quality of solitude and primitive recreation in wilderness. The presence of livestock in a WSR is a direct impact to recreation and can be an indirect impact to areas used by recreationists for camping. These are often the same areas in which livestock typically loaf (flat benches, with shade), which results in removal of much of the vegetation and leaving manure at the site. This segment of the Sheep Creek WSR is currently rated as functioning at risk, so this would indicate the riparian vegetation likely not resilient to further impacts such as trampling and grazing.

The livestock trailing depicted on Maps 3A, 5A, and 6A include a slightly larger number of Wilderness acres affected compared to Alternative C. These trails essentially travel along the Mud Flat Road, at the same time of year, and the levels of livestock would be the same (intensity) under Alternatives A & C. As this road is maintained and improved to an approximate roadbed of 50 feet and travels through steep slopes off of the road, which would require the livestock to side-hill, the cattle should tend to be concentrated on the existing road surface. As this alternative does not specifically emphasize livestock to stay on the Mud Flat Road, it would likely have slightly more indirect effects to the fringe or trail buffer area from livestock trampling to soils and vegetation. Under this alternative, there would be a potential to increase invasive plants (see Section 3.3.2.1*Upland Vegetation, General Discussion of Impacts*), which would degrade wilderness naturalness slightly more than under Alternative C.

3.17.2.4 *Alternative B*

If livestock trailing were not permitted, beneficial impacts to naturalness would be expected as compared to Alternatives A & C. Beneficial direct and indirect effects would be expected to naturalness (ecological health) if livestock were not trailed in wilderness. Opportunities to experience solitude and participate in primitive types of recreation would benefit from removing the sights and sounds of activities associated with trailing livestock within wilderness. Alternate means of moving livestock such as trucking would occur outside of wilderness.

However, grazing and herding (moving) of livestock in wilderness would continue, because these areas are subject to 10-year grazing permits; therefore, the beneficial impacts of not authorizing livestock trailing are considered of negligible benefit to naturalness. The nuances of authorized herding livestock between pastures within an allotment versus livestock crossing/trailing to and from an allotment, or outside an authorized season of use would not be discernible to the wilderness visitor.

3.17.2.5 *Alternative C*

As livestock trailing routes on Maps 4C and 7C affecting Wilderness and WSRs would have identical timing, duration, and intensity in both Alternatives A and C, they would have the same impacts to Wilderness and WSRs as the livestock trailing routes on Maps 4A and 7A that were described for Alternative A above.

Under Alternative C, Route 204 depicted on Map 17A would not be authorized. This route was not included in Alternative C as trailing in WSRs would not be authorized according to the design criteria used to develop the alternative. Therefore, the direct and indirect impacts from livestock trailing the 4.9 miles of the Sheep Creek WSR within the Bruneau-Jarbidge Rivers Wilderness would not occur.

The indirect impacts associated with fringe or buffer areas of livestock trails (Maps 3C, 5C, & 6C) would intersect with less wilderness acreage compared to Alternative A (Maps 3A, 5A, & 6C).

3.17.3 Cumulative Impacts – Wilderness and Wild & Scenic Rivers

3.17.3.1.1 Scope of Analysis

Geographic and Temporal Scope and Rationale

The scope of the cumulative impacts analysis area for Wilderness and WSRs include five wilderness areas in Owyhee County that are located wholly or partially within the project area. This analysis area was selected as portions of two wilderness areas within Owyhee County are outside the project area boundary and would not be affected by factors affecting Wilderness within the project area. Wilderness areas included in the cumulative impacts analysis area include Big Jacks Creek, Little Jacks Creek, Pole Creek, Owyhee River, and Bruneau-Jarbidge Wilderness. The Owyhee River Wilderness and Bruneau-Jarbidge Wilderness are partially within the project area boundaries. The cumulative impacts analysis area also includes the WSRs within the boundaries of these wilderness areas.

The temporal scale for the analysis of cumulative impacts to Wilderness begins in 1991, when BLM designated these as Wilderness Study Areas and began managing them for their wilderness character; the temporal scale for the analysis of cumulative impacts to WSRs begins in 1976, when BLM determined the Bruneau River to be suitable for designation as a Wild and Scenic River and began managing that river to maintan its ORVs. The timespan for analysis continues until 2022, as direct and indirect effects from the alternatives would last as long as trailing is authorized and actions implementing provisions of the Omnibus Public Land Management Act of 2009 should be largely completed.

Past, Present, and Foreseeable Future Actions to be Considered

Livestock grazing and installation of livestock facilities such as reservoirs and fencing has occurred for many decades. The amount of livestock grazing authorized and livestock facilities existing in 2009 (time of designation) is considered the wilderness baseline inventory. Foreseeable future actions are to maintain the present levels of grazing. It is foreseeable that a slight decrease in overall wilderness grazing could occur, which would improve wilderness character. Livestock grazing was retired on 11,051 acres of the North Fork Owyhee River Wilderness in 2011 under a voluntary donation. This action has not occurred within any of the five wilderness areas within the cumulative impact analysis area at this time.

There are no proposed livestock trailing activities occurring in wilderness within the Owyhee and Jarbidge Field Offices in addition to those discussed in Section 3.17.2 above.

Effects of Past, Present, and Foreseeable Future Actions

While reduced grazing would likely improve wilderness naturalness, and slightly enhance opportunities for solitude and primitive recreation, the current authorized levels would likely be sufficient to maintain wilderness character. There could be a slight reduction of livestock grazing in the foreseeable future, but close to current levels of grazing are expected into the foreseeable future.

3.17.3.2 *Cumulative Impacts of Alternative A*

Trailing within wilderness outside of the project area is currently not proposed or a foreseeable action, and livestock grazing is likely to continue nearly at the same timing and intensity as authorized in 2009. Cumulative impacts from this activity would be identical to those discussed under the direct and indirect impacts section.

3.17.3.3 *Cumulative Impacts of Alternative B*

Cumulative impacts would be the same as described for Alternative A.

3.17.3.4 *Cumulative Impacts of Alternative C*

Cumulative impacts would be the same as described for Alternative A.

3.18 Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management

Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management (USDI BLM 1997) include standards for watersheds (Standard 1), riparian areas and wetlands (Standard 2), stream channel/floodplain (Standard 3), native plant communities (Standard 4), seedings (Standard 5), exotic plant communities other than seedings (Standard 6), water quality (Standard 7), and threatened and endangered plants and animals (Standard 8). Not all standards apply to every allotment; the resources within each allotment determine which standards apply.

Rangeland health assessments and evaluations of whether allotments are meeting or making significant progress toward meeting Standards have been completed for the following allotments: Battle Creek, Big Springs, Camas Creek Pocket, East Castle Creek, and Nahas FFR. Based on the level and types of impacts presented in this EA, the areas in these allotments that are meeting or making progress towards meeting Standards would continue to do so regardless of the alternative selected here. Also based on the analysis in this EA, the actions associated with trailing would not prevent the areas found to not meet Standards from making progress toward meeting them.

Conditions in other allotments in the project area have not yet been adequately studied to make an evaluation with respect to achievement of Standards. However, based on the levels and types of impacts described in this EA, whether or not those allotments meet or make progress toward meeting Standards is not dependent upon the alternative selected here.

The 20 guidelines for livestock grazing management direct the selection of grazing management practices and livestock management facilities to promote meeting or making significant progress

toward meeting the Standards. Nine of these guidelines are not applicable to livestock trailing in the BFO (Guidelines 2, 6, 11, 14, 15, and 17 through 20). The actions proposed under Alternative C are consistent with the remaining 11 guidelines (Guidelines 1, 3, 4, 5, 7 through 10, 12, 13, and 16).

3.19 Mitigation

3.19.1 Mitigation of Potential Impacts to Cultural Resources

As discussed in Section 3.13.2.5, which describes impacts to cultural resources resulting from Alternative C, the BLM will conduct Class III inventories at all stream crossings, spring areas, and overnight areas to further consider effects to cultural resources resulting from the issuance of the crossing permits. If NRHP-eligible sites are found and are determined to be impacted by livestock trailing, additional mitigation measures would be identified and implemented.

3.19.2 Mitigation of Potentially Adverse Impacts to Cultural Site 10OE-6706

As discussed in Section 3.13.2.5, one potentially NRHP-eligible site, 10OE-6706, is potentially being adversely affected. In order to assess whether or not impacts are occurring to the characteristics that would make site 10OE-6706 eligible for listing on the NRHP, the following would occur:

- Document the current condition of the site including historic manifestations of human activity and any impacts that are taking place (e.g., removal of vegetation, leaving the site vulnerable to erosion and artifact collectors).
- Determine if the surface of the site lacks integrity (e.g., determining whether the soil on the site is powdered).
- Determine if the current and future levels of impact have the potential to impact the sub-surface cultural deposits, should they exist. The following monitoring protocol would take place over the next five years.
    - Establish monitoring points of potential impact by pounding wooden stakes over a cross section of the site so that they are flush with the compacted ground surface.
    - Each year following trailing events, monitor impacts to the site by relocating the wooden stakes and measuring vertical and horizontal movement, if any has occurred.
    - The threshold of significant impacts to the site would be quantified as 5-10 centimeters of soil movement at any point during the five years of monitoring the impact points.
- If impacts are documented to have occurred, further measures would be taken to mitigate impacts. Measures may include, but not be limited to, adjusting the location of the route or otherwise preventing cattle from accessing the site.

4.0 Consultation and Coordination

4.1 List of Preparers

This EA was prepared by an ID Team shown in Table 31 below.

Table 31. Preparers of the Bruneau Field Office Livestock Trailing EA.

Name	Title	Responsibility
Holly Beck	Botanist	Special status plants
Aimee Betts	Assistant Field Manager	Review and editing
Mike Boltz	Rangeland Management Specialist	Livestock grazing
Gene Dana	GIS Specialist	Maps
David Draheim	Outdoor Recreation Planner	Recreation, visual resources, wilderness, Wild & Scenic Rivers
Jon Haupt	Rangeland Management Specialist	Livestock grazing
Kavi Koleini	Ecologist	Upland vegetation and soils
David Mays	Fish Biologist	Fisheries, riparian areas, water quality
Lois Palmgren	Archaeologist	Cultural resources
Arnold Pike	Field Manager	Review and editing
Bruce Schoeberl	Wildlife Biologist	Wildlife

4.2 List of Agencies, Organizations, and Individuals Consulted

BFO sent a trailing scoping document, dated December 15, 2012 that solicited comments on the crossing permit applications depicted in Table 1 and Maps 1A through 21A and proposed design criteria. The letter was sent to the individuals listed below:

- John Anchustegui
- George & Donna Bennett
- Joseph Black & Sons - Chris Black
- John Carothers
- Blaine Collett
- Brian D Collett
- Bob & Ruth Collett
- J. Terry Field
- Craig Gillespie
- Hall Family Trust – Chuck Hall
- Les & Leona Hatch
- Gordon King
- David Lahtinen
- Dana Rutan
- Chester Sellman
- John Urquidi
- Blair J Wilson
- Bill Sedivy
- Rusty Tews
- Ross Cameron
- William Platts
- Clark Collins
- Bill Marlett
- Ramona Pasco
- Chad Gibson
- David Hayes
- Russ Heughins
- Stuart Murray
- John Barringer
- Marty Marzinelli
- Richard Bass
- Steve Jakubowics
- Paul Shepherd
- Mike Stanford
- Herb Meyr
- Brian Goller

The scoping document was sent to the agencies, organizations and corporations listed below:

- Shoshone-Bannock Tribes
- Shoshone-Paiute Tribes

- Idaho Department Fish and Game
- Idaho Department of Health and Welfare
- Idaho Department of Lands
- Idaho Department of Parks and Recreation
- Idaho State Department of Agriculture
- Owyhee County Commissioners
- Owyhee Land Use Planning Committee
- Dickshooter Cattle Company
- Western Watersheds Project
- Idaho Sporting Congress
- Golden Eagle Audubon Society
- Idaho Environmental Council
- Natural Resources Defense Council
- Oregon Natural Resources Council
- Oregon Natural Desert Association
- Idaho Rivers United
- Bruneau Rodeo Association
- Committee for High Desert
- The Wilderness Society
- Idaho Outfitters and Guides
- Blue Ribbon Coalition
- Oregon Natural Desert Association
- Boise District Grazing Board
- Idaho Conservation League
- High Desert Coalition
- Idaho Wildlife Federation
- High Desert Ecology
- Idaho Cattle Association
- Sierra Club
- Western Resource Advocates
- Idaho Native Plant Society
- J-K Cattle Company
- J R Simplot Company
- Stowell Ranches
- Tindall and Sons Ranches LLC
- Strickland YT Ranches
- Mary's Creek LLC
- Sierra Del Rio
- Riddle Ranches

The BFO conducted government-to-government consultation with the Shoshone-Paiute Tribes through the Wings and Roots Program Native American Campfire. Consultation was conducted on December 6, 2011, January 19, 2012, February 16, 2012, and March 15, 2012. BLM initiated consultation with the Idaho State Historic Preservation Office on March 1, 2012.

BFO provided briefings on trailing and this EA during coordination meetings with the Owyhee County Board of Commissioners on November 21, 2011, January 23, 2012, February 27, 2012, and March 19, 2012. BFO also provided information on trailing to the Boise District Resource Advisory Council on September 30, 2011.

4.3 Public Participation

Written comments submitted in response to the scoping document were provided by the following:

- Owyhee County Board of Commissioners – Jerry L. Hoagland
- Western Watersheds Project – Katie Fite
- Idaho Department of Lands – Rebecca Rutan
- Idaho State Historical Society – Kenneth Reid
- Idaho Department of Fish and Game – Scott Reinecker
- Simplot Livestock – Chuck Jones

These comments are summarized in Section 1.7, *Scoping and Development of Issues.*

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6.0 List of Acronyms

ACEC	Area of Critical Environmental Concern
AIC	Annual Indicator Criteria
AIRFA	American Indian Religious Freedom Act of 1979
APE	Area of Potential Effect
ARPA	Archaeological Resources Protection Act of 1979
ATV	All-Terrain Vehicle
AUM	Animal unit month
BFO	Bruneau Field Office
BLM	Bureau of Land Management
CFR	Code of Federal Regulations
cfs	Cubic feet per second
cfu	Colony forming units
CWA	Clean Water Act of 1972
CWMA	Cooperative Weed Management Area
EA	Environmental Assessment
EIS	Environmental Impact Statement
ESA	Endangered Species Act of 1973
ESD	Ecological Site Description
FAR	Functioning At Risk
FFR	Fenced Federal Range
FLPMA	Federal Land Policy and Management Act of 1976
GIS	Geographic Information Systems
GPS	Global Positioning Systems
ID Team	Interdisciplinary Team
IDAPA	Idaho Administrative Procedures Act
IDBCP	Idaho Bird Conservation Plan
IDEQ	Idaho Department of Environmental Quality
IDFG	Idaho Department of Fish and Game
IM	Instruction Memorandum
LUP	Land Use Plan
MFP	Management Framework Plan
mL	milliliter
MLRA	Major Land Resource Area
NAGPRA	Native American Graves Protection and Repatriation Act of 1990
NEPA	National Environmental Policy Act of 1969
NF	Non-Functioning
NHPA	National Historic Preservation Act of 1966
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
OHV	Off-Highway Vehicle
ORV	Outstandingly Remarkable Value
PFC	Proper Functioning Condition
PRIA	Public Rangelands Improvement Act of 1978
RAS	Rangeland Administration System

ROW	Right of Way
SE	Standard Error
SHPO	State Historic Preservation Office
TGA	Taylor Grazing Act of 1934
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UI	University of Idaho
VRM	Visual Resource Management
WNv	West Nile Virus
WSR	Wild and Scenic River

7.0 Maps

All maps are included in separate pdf files and include the following.

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Map 7C. Alt C – Dave Lahtinen, Chet Sellman, & John Urquidi Trailing Routes.
Map 8C. Alt C – Marys Creek LLC Alternative Trailing Routes.
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