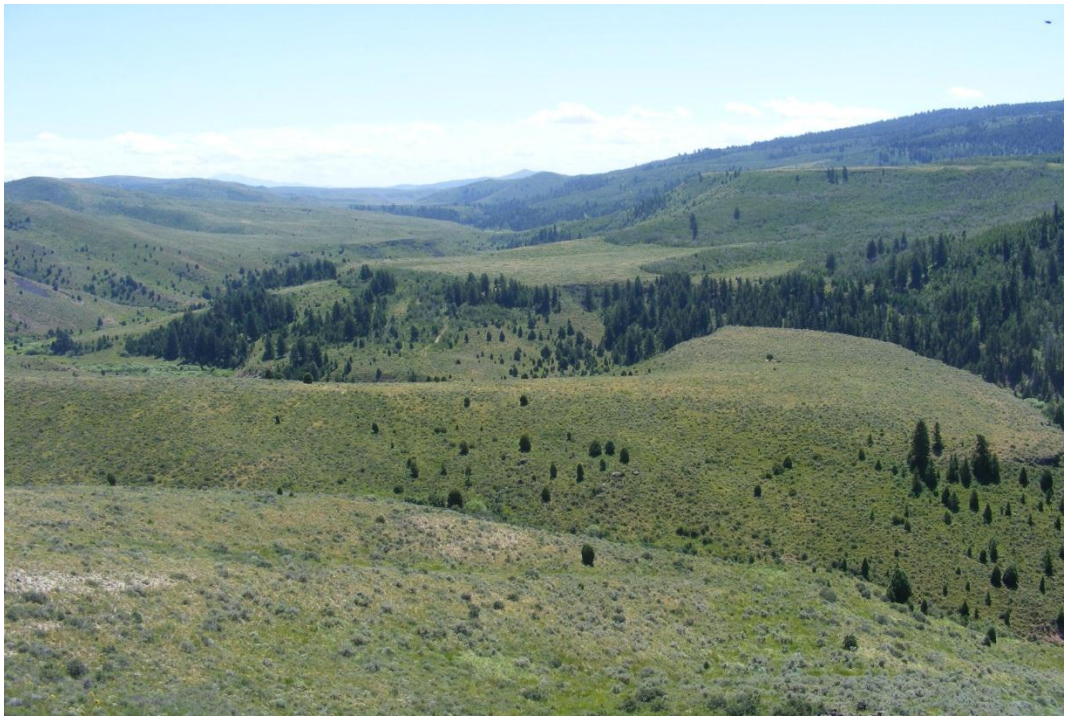
ENVIRONMENTAL ASSESSMENT

GRAZING PERMIT RENEWAL FOR HEART L AND HELL CREEK ALLOTMENTS

DOI-BLM-ID-I010-2014-0019-EA



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CHAPTER 1 - INTRODUCTION:

Background

There are several authorities which mandate or allow the Bureau of Land Management (BLM) to authorize livestock grazing on public lands as part of multiple-use management of natural resources. Livestock grazing is an accepted and valid use of public lands under the Taylor Grazing Act of 1934, the Federal Land Policy and Management Act (FLPMA) of 1976, and the Public Rangelands Improvement Act (PRIA) of 1978. This Environmental Assessment (EA) is prepared, pursuant to the National Environmental Policy Act (NEPA) of 1969, to address the request for continued livestock grazing on public lands in the Upper Snake Field Office.

The Heart L Allotment is located within Bonneville County approximately 20 miles southeast of Idaho Falls, Idaho (Figure 1). There are three separate parcels of public land (approximately 643 acres total) that comprise the Heart L Allotment, which are primarily bordered by State and private lands. The one authorization in the allotment permits 110 cattle AUMs each year. The Hell Creek Allotment borders two parcels of Heart L to the north. There are two pastures in the allotment which are comprised of approximately 1,107 acres of public land. There is one authorization for livestock grazing use within the allotment. The permittee is authorized to use 116 cattle AUMs each year. The allotment lies along the steep canyon of Gray's Lake Outlet and expands westward along rolling ridges and deep canyons.

Elevations within the allotments range from approximately 5,700 feet above sea level along Gray's Lake Outlet to 6,300 feet above sea level in higher elevations to the south. Wetland and riparian areas within the allotments consist of three distinct reaches of Grays Lake Outlet. Overall, sagebrush dominates the vegetative community across public lands within the allotments, but aspen groves are also present and play a larger role across private and State lands.

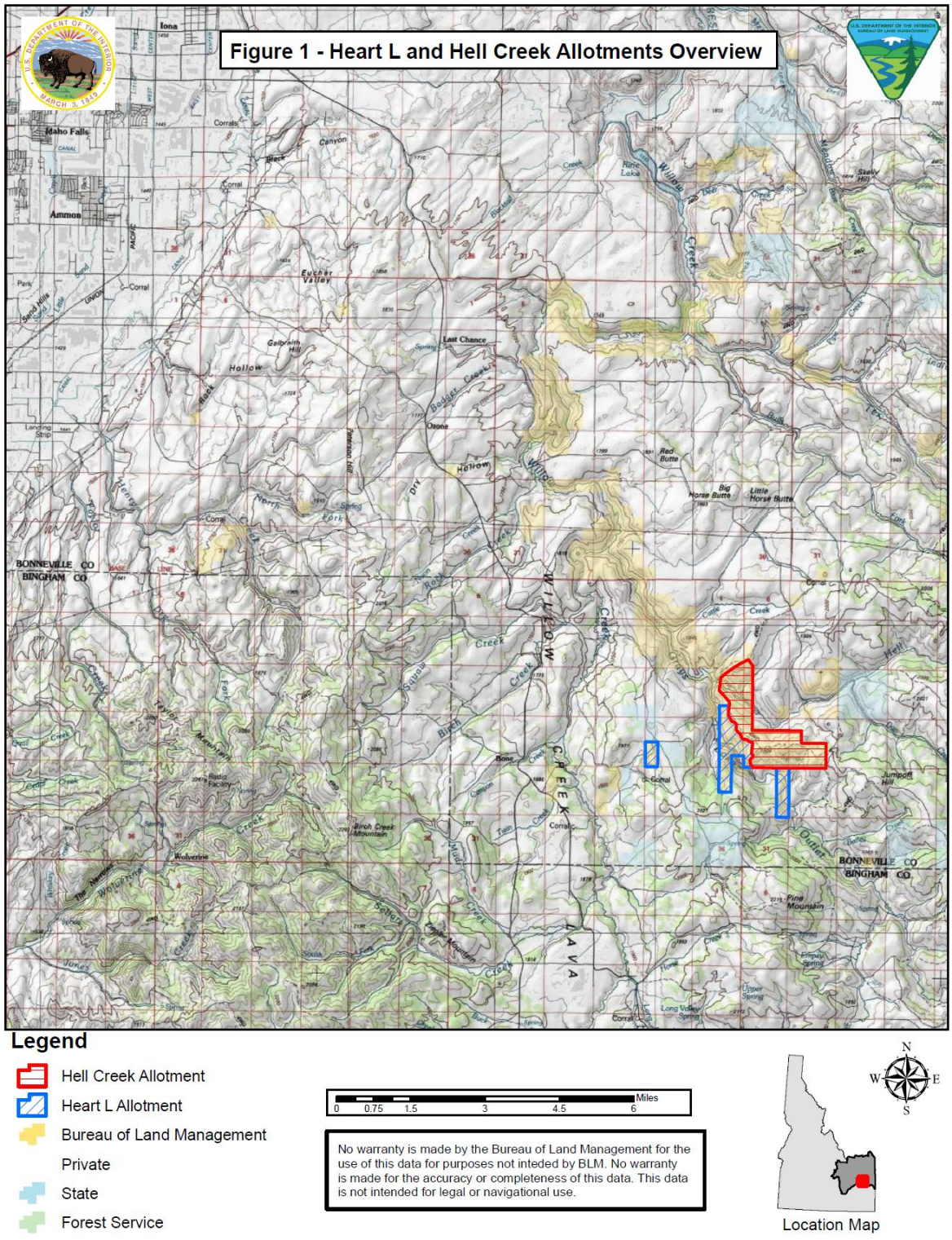
Purpose and Need for Action

The Medicine Lodge Resource Management Plan (RMP) identifies the Heart L and Hell Creek Allotments as available for domestic livestock grazing. Where consistent with the goals and objectives of the RMP, and Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management (1997), it is BLM policy to authorize allocation of forage for livestock grazing to qualified operators. The purpose of the proposed action is to authorize livestock grazing consistent with BLM policy and in a manner that maintains or improves project area resource conditions and achieves the objectives and desired conditions described in the Medicine Lodge RMP. The analysis and authorization are needed because the current leases are going to expire and the permittees have applied for a renewal with changes in livestock management.

Location

The Heart L and Hell Creek Allotments are located twenty miles southeast of Idaho Falls, Idaho in Bonneville County (Figure 1). The allotments are located in Townships 1 South, Ranges 40 and 41 East.

Figure 1. General Location of Heart L and Hell Creek Allotments



Conformance with Land Use Plan

The Proposed Action and alternatives have been reviewed for conformance with the Medicine Lodge RMP. The actions are in conformance with the RMP objectives:

> The watershed management objectives in the Medicine Lodge RMP states that soils will be managed to maintain productivity and to minimize erosion to no more than five tons per acres per year, except for some areas of local sand dune.
>
> The management objectives identified in the Medicine Lodge RMP is to maintain or improve existing perennial forage plants, maintain soil stability, stabilize areas currently in downward trend, and increase availability of perennial forage plants.

Relationship to Statutes, Regulations, Guidance, or Other Plans

The 1868 Fort Bridger Treaty, between the United States and the Shoshone and Bannock Tribes, reserves the Tribes right to hunt, fish, gather, and exercise other traditional uses and practices on unoccupied federal lands. Under the treaty, the federal government has a unique trust relationship with the Shoshone-Bannock Tribes. BLM has a responsibility and obligation to consider and consult on potential effects to natural resources related to the Tribes treaty rights or cultural use.

Grazing administration exclusive of Alaska is governed under the Federal Code of Regulations 43 CFR 4100 – Grazing Administration. The purpose is to provide uniform guidance for administration of grazing on public lands.

The Taylor Grazing Act of 1934 provides for the regulation of domestic livestock grazing on public lands (excluding Alaska) to improve rangeland conditions and regulate their use. The law provided for the establishment, protection and administration of grazing districts, permitted livestock use within the districts, provided for rangeland improvement projects, established grazing fees and distribution of fees, required management cooperation and required a process allowing decisions to be contested.

The Public Rangeland Improvement Act of 1978 requires inventory of public rangeland conditions and trends with the intent of managing, maintaining and improving public rangelands in accordance with management objectives and uses specified in land use plans. The law also set the grazing fee and the formula for calculating the fee.

The Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management, created in 1997, established that livestock management practices must be in conformance with the approved standards and guidelines.

6840 – Special Status Species Management Manual. This manual establishes policy of management of species listed or proposed for listing pursuant to the Endangered Species Act and Bureau sensitive species which are found on BLM-administered lands.

Greater Sage-Grouse Interim Management Policies and Procedures (Instruction Memorandum No. 2012-043). The IM provides interim conservation policies and procedures to the BLM field officials to be applied to ongoing and proposed authorizations and activities that affect the Greater Sage-Grouse and its habitat.

A Report on National Greater Sage-Grouse Conservation Measures: To ensure BLM management actions are effective and based on the best available science, the National Policy Team created a National Technical Team (NTT) in August of 2011. The BLM's objective for chartering this planning strategy was to develop new or revised regulatory mechanisms, through Resource Management Plans (RMPs), to conserve and restore the greater sage-grouse and its habitat on BLM-administered lands on a range-wide basis over the long term.

The East Idaho Uplands Local Working Group's Plan for Increasing Sage-Grouse Populations (USLWG 2011) provides local specific guidance to manage sage grouse and sage grouse habitats.

A Report from U.S. Fish and Wildlife Service titled*: Greater Sage-grouse Conservation Objectives*. This report delineates reasonable objectives, based upon the best scientific and commercial data available at the time of its release, for the conservation and survival of greater sage-grouse. The report also serves as guidance to federal land management agencies, state sage-grouse teams, and others in focusing efforts to achieve effective conservation for this species.

Under the Migratory Bird Treaty Act of 1918 (MBTA), it is illegal to "take" migratory birds, their eggs, feathers, or nests. Take is defined in the MBTA to include by any means or in any manner, any attempt at hunting, pursuing, wounding, killing, possessing, or transporting any migratory bird, nest, egg, or part thereof (without a USFWS depredation permit).

The Idaho Sage-Grouse Conservation Strategy of 2006 provides pertinent information regarding Greater sage-grouse and sagebrush ecology in Idaho, a summary of sage-grouse status in Idaho, identifies threats to sage-grouse and their habitats, provides conservation measures and guides research, monitoring and evaluation of sage-grouse in Idaho.

The Archaeological Resource Protection Act of 1979 governs the excavation of archaeological sites on federal and Native American lands in the United States, and the removal and disposition of archaeological collections from those sites.

National Historic Preservation Act of 1966 was passed to preserve historical and archaeological sites in the United States of America. The act created the National Register of Historic Places, the list of National Historic Landmarks, and the State Historic Preservation Offices. The act requires federal agencies to evaluate the impact of all federally funded or permitted projects on historic properties (buildings, archaeological sites, etc.).

The Heart L and Hell Creek Allotments were evaluated in 2013 to assess whether the allotments were meeting requirements of the Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management (ISRH). In January 2014, an Evaluation Report of Achieving Standards for Rangeland Health was issued for the allotments. The Evaluation Report for both Heart L and Hell Creek Allotments found that Standards 1, 2, 3, and 4 are being met, while Standards 7 and 8 were not meeting standards but making significant progress. Standards 5 and 6 were not applicable for both allotments. Livestock management practices within the Heart L and Hell Creek Allotments conform to all applicable Idaho Guidelines for Livestock Grazing Management.

Public Contact and Issue Identification

In the spring of 2013, the Upper Snake Field Office sent a letter to the permittees, interested publics, and other agencies inviting them to participate in the field assessments for the Heart L and Hell Creek Allotments. The permittees and Idaho Department of Fish and Game (IDFG) participated in the field assessments. In December 2013, the Allotment Assessments were sent to the aforementioned parties requesting comments and any additional data. No additional information was provided. In January 2014, the Upper Snake Field Office sent the Evaluation Reports and potential alternatives for both allotments to the parties and they were invited to identify issues and alternatives. No additional comments were received.

Climate Change is an issue that is considered but not analyzed in detail. The science on predicting future climate conditions is continuously evolving. Land management actions may contribute to changes in atmospheric greenhouse gas levels, which can affect global climate. Addressing effects on greenhouse gas (GHG) levels within the scope of NEPA is difficult due to the lack of explicit regulatory guidance on how to meaningfully apply existing NEPA regulations to this evolving issue, and due to the continuously evolving science available at varying levels.

The BLM's 2008 NEPA Handbook, H-1790-1, explains that a topic must have a cause-and-effect relationship with the proposed action or alternatives to be considered an issue (H-1790-1, p. 40). Climate change does not have a clear cause-and effect-relationship with the proposed action or alternatives. It is currently beyond the scope of existing science to identify a specific source of greenhouse gas emissions or sequestration and designate it as the cause of specific climate or resource impacts at a specific location. The proposed action and alternatives, when implemented, would not have a clear, measurable cause-and-effect relationship to climate change because the available science cannot identify a specific source of greenhouse gas emissions such as those from livestock grazing and tie it to a specific amount or type of changes in climate. Therefore, the effects of livestock grazing to the global climate will not be analyzed in detail in this EA.

CHAPTER 2 – NO ACTION AND OTHER ALTERNATIVES

Alternative A (No Action): Issue Unmodified Grazing Lease

Under a No Action alternative, the Upper Snake Field Manager would authorize continued livestock grazing under the same terms and conditions as the current leases. Under Alternative A, no additional improvements or projects would be authorized in the Heart L and Hell Creek Allotments. Renewing the current leases would meet the purpose and need for action. Alternative A includes the following:

Heart L Allotment

Authorized Use Changes

1. None

Projects

2. None

Grazing Plan

3. Continue three-pasture, three-year deferred rotation grazing system under a Custodial Use Designation:

Mandatory Terms and Conditions

Heart L Allotment (#04406) Permitted Use

Livestock number/kind	Season	%PL	Type Use	AUMs
225 Cattle	5/15 to 10/15	100	Active	110

Active AUMs	Suspended AUMs	Permitted Use
110	50	160

Other Terms and Conditions

The following Terms and Conditions would be followed, in accordance with 43 CFR 4130.3-2, to assist in achieving management objectives for the allotment:

1. This permit is for 110 AUMs on public land. Season and numbers are basically unrestricted so long as utilization does not exceed 55% of the current year's growth.

2. Key herbaceous riparian vegetation will have a minimum stubble height of 4 inches on the streambank, along the greenline, after the grazing season.

3. Key riparian browse vegetation will not be used more than 30% of the current annual twig growth that is within reach of the animals.

Hell Creek Allotment

Authorized Use Changes

1. None

Projects

2. None

Grazing Plan

3. Current two year deferred grazing rotation on a two year grazing cycle.

Year	Livestock number/Kind	Pasture	Season	AUMs
1	62 Cattle	West	5/17 to 6/15	50
		East	6/16 to 7/25	66
2	62 Cattle	East	5/17 to 6/25	66
		West	6/26 to 7/25	50

Mandatory Terms and Conditions

Hell Creek Allotment (#04281) Permitted Use

62 Cattle	5/17 to 7/25	81	Active	116

Active AUMs	Suspended AUMs	Permitted Use
116	117	233

Other Terms and Conditions

4. None

Alternative B (Proposed Action): Issue Modified Grazing Leases according to proposed allotment boundary adjustments and additional range improvements.

Alternative B includes the following:

Heart L Allotment

Authorized Use Changes

1. Adjust the northern allotment boundary to include approximately 230 acres of the Hell Creek Allotment into the Heart L Allotment. BLM acres in the allotment will change from 643 acres to 873 acres.

2. Due to terrain, no additional AUMs would be allocated to the Heart L Allotment.

Projects

3. Remove a portion of the existing boundary fence (~1 miles long) which is located in the bottom of the drainage and construct a new fence on top of the ridge. The new boundary fence would be approximately 1.5 miles long (Figure 2 and 2a). The fence would facilitate the proposed allotment boundary adjustment. Approximately 0.9 miles of the new fence (east-west oriented) would be comprised of a 3-strand wire fence and another 0.5 miles of fence (north-south oriented) would consist of a 4-strand wire fence.

between steel "T" posts. The four-strand fence would consist of 3 strands of barbed wire spaced at 42 inches, 30 inches and 24 inches from ground level, and 1 smooth wire located 16 inches from ground level. Green metal fence posts would be used between the braces and would be spaced 16.5 feet apart. A wire stay would be placed on the fence wire midway between steel "T" posts. To facilitate the north-south oriented portion of the fence blading and/or brush clearing would be authorized along the route identified. Fence wire would be marked along the entire new stretch of fence to alert wildlife of the hazard.

4. Authorize the construction of a riparian exclosure of approximately 2 acres (Figure 3) located at T. 1 S., R. 40 E., S 25 to enhance progress toward PFC on the spring. Riparian exclosures would be built with the four strand specifications outlined above.

5. All troughs on pipelines in the allotment shall be floated.

6. All fences will be constructed outside of the migratory bird nesting season (April 1 to June 30) to minimize the potential impacts to nesting birds.

7. The Upper Snake Field Office archaeologist would complete a project specific cultural resource inventory prior to planned range improvement projects.

Grazing Plan

8. Continue the three-pasture, three-year deferred rotation grazing system already in place.

Allotment	Year	Use Period		
		5/15-7/4	7/5-8/24	8/25-10/15
Heart L	1	Upper	Middle	Lower
	2	Middle	Upper	Lower
	3	Lower	Middle	Upper

Mandatory Terms and Conditions

Heart L Allotment (#04406) Permitted Use

Livestock	Season	%PL	Type Use	AUMs

number/kind				
225 Cattle	5/15 to 10/15	100	Custodial	110

Active AUMs	Suspended AUMs	Permitted Use
110	50	160

Hell Creek Allotment

Authorized Use Changes

1. Adjust the southern allotment boundary to remove approximately 230 acres of the Hell Creek Allotment, which would be incorporated into the Heart L Allotment. BLM acres in the allotment would be reduced from 1,107 acres to 877 acres.

2. Active AUMs would be reduced from 116 to 95 AUMs and livestock numbers would be reduced from 62 to 51 pairs.

Projects

3. Remove a portion of the existing boundary fence (~1 miles long) which is located in the bottom of the drainage and construct a new fence on top of the ridge. The new boundary fence would be approximately 1.5 miles long (Figure 2 and 2a). The fence would facilitate the proposed allotment boundary adjustment. Approximately 0.9 miles of the new fence (east-west oriented) would be comprised of a 3-strand wire fence and another 0.5 miles of fence (north-south oriented) would consist of a 4-strand wire fence. The three strand fence would consist of two strands of barbed wire spaced at thirty eight inches and twenty six inches from ground level, and one smooth wire located sixteen inches from ground level. Spacing would be sixteen feet six inches between "T" posts. A wire stay would be placed on the fence wire midway between steel "T" posts. The four-strand fence would consist of 3 strands of barbed wire spaced at 42 inches, 30 inches and 24 inches from ground level, and 1 smooth wire located 16 inches from ground level. Green metal fence posts would be used between the braces and would be spaced 16.5 feet apart. A wire stay would be placed on the fence wire midway between steel "T" posts. To facilitate the north-south oriented portion of the fence blading and/or brush clearing would be authorized along the route identified. Fence wire would be marked along the entire new stretch of fence to alert wildlife of the hazard.

4. Authorize the construction of riparian exclosures of approximately 5 acres (Figure 4) located at T. 1 S., R. 41 E., S 20 to enhance progress toward PFC on the springs. Riparian exclosures would be built with the four strand specifications outlined above.

5. All troughs on pipelines in the allotment shall be floated.

6. All fence will be constructed outside of the migratory bird nesting season (April 1 to June 30) to minimize the potential impacts to nesting birds.

7. The Upper Snake Field Office archaeologist would complete a project specific cultural resource inventory prior to planned range improvement projects.

Grazing Plan

8. Continue to implement a two pasture deferred rotation on a two year grazing cycle.

Year	Livestock number/Kind	Pasture	Season	AUMs
1	51 Cattle	West	5/17 to 6/15	41
		East	6/16 to 7/25	54
2	51 Cattle	East	5/17 to 6/25	54
		West	6/26 to 7/25	41

Mandatory Terms and Conditions

Hell Creek Allotment (#04281) Permitted Use

Livestock number/kind	Season	%PL	Type Use	AUMs
51 Cattle	5/17 to 7/25	81	Active	95

Active AUMs	Suspended AUMs	Permitted Use
95	117	212

Other Terms and Conditions for Heart L and Hell Creek Allotments

The following other Terms and Conditions would be included as part of the grazing permit under Alternative B in accordance with 43 CFR 4130.3-2.

1. Range improvements must be maintained to BLM standards by the turnout dates for each allotment on this permit. All livestock water troughs must have a functional wildlife

escape ramp and be appropriately floated. Installation and maintenance of wildlife escape ramps are the responsibility of the permittee.

2. Distribution of livestock salt and mineral supplements shall be at least ¼ mile away from the nearest water source.

3. In connection with allotment operations under this authorization, if any human remains, cultural, archaeological, historical, paleontological or scientific objects and sites are discovered, the permittee shall stop operations in the immediate area of the discovery, protect such resources and immediately notify the BLM Authorized Officer (AO) of the discovery. The immediate area of the discovery must be protected until the operator is notified to resume by the AO.

4. The allotment(s) listed on this grazing permit is subject to requirements 43 CFR subpart 4180 – Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration. This permit shall be modified, if necessary, to meet the requirements upon completion of a standards and guidelines assessment and determination as scheduled by the authorized officer.

5. The permittee shall provide reasonable administrative access across private land to the BLM for the orderly management and protection of the public lands.

6. A certified actual use report is due within 15 days of completing your authorized annual grazing use.

7. If sage grouse fence strikes are documented in the future on existing pasture and allotment fences, the fences will be modified to minimize sage grouse strikes.

8. Riparian exclosures located within your allotment are closed to all domestic livestock grazing.

Grazing Use Indicators and Criteria

The following Grazing Use Indicators identify applicable monitoring methods and criteria used to indicate whether the allotment is meeting or making progress toward meeting the ISRH. Grazing Use Indicators and Criteria are not terms and conditions of the authorization, rather they are informative points used to gauge the effectiveness of the terms and conditions of the authorization.

1. *Riparian Condition* – Functioning condition of riparian areas would be assessed using riparian health assessments to determine proper functioning condition (PFC) (U.S. Lotic and Lentic Wetland Health Assessment Users Manual, 2005). Long- and short-term indicators of riparian vegetation, streambank, and stream channel conditions would be monitored to determine parameters that are achieving or making progress towards desired

conditions as determined by the Multiple Indicator Method (MIM) (Idaho Technical Bulletin 2007-01).

1. *Streambank Alteration* – Alteration would be measured using an approved BLM method with an objective of no more than 20% of the streambank disturbed by livestock hoof action annually (Idaho Technical Bulletin 2007-01).

3. *Upland Utilization* – Utilization studies would be conducted using approved BLM methods in key upland areas and use areas would be mapped by pasture. Average utilization should be no more than 50% of the annual growth of available forage species in the grazed pastures (Technical Reference 1734-3, 1999).

4. *Upland Trend* – Trend studies would be conducted in the uplands using approved BLM methods in key areas. One photo plot would be established at each key area. Long-term trend studies would be conducted using approved BLM methods (Technical Reference 1734-4, 1999).

5. *Browse Utilization* – Browse utilization studies would be conducted in key areas. Browse utilization by livestock would be no more than 30 percent of the annual growth of the key browse species (Technical Reference 1734-3, 1999).

6. *Sage Grouse Habitats* – Grazing use levels in pastures with sage grouse habitat would be monitored to evaluate if the grazing system is resulting in maintenance or improvement of vegetative characteristics in accordance with the Upper Snake Local Working Group's Plan for Increasing Sage Grouse Populations (USLWG, 2009), 2006 Conservation Plan for Greater Sage Grouse in Idaho (ISGAC, 2006), and Instruction Memorandum No. 2012-043 - Greater Sage-Grouse Interim Management Policies and Procedures.

Alternative C (No Grazing):

Under Alternative C, the Upper Snake Field Manager would not authorize livestock grazing within the Heart L and Hell Creek Allotments for a 10 year period from 2014 to 2024. The current operators would retain grazing preference within the allotment and may apply for grazing lease renewal after 2023.

Figure 2. Heart L and Hell Creek Allotment Boundary Change

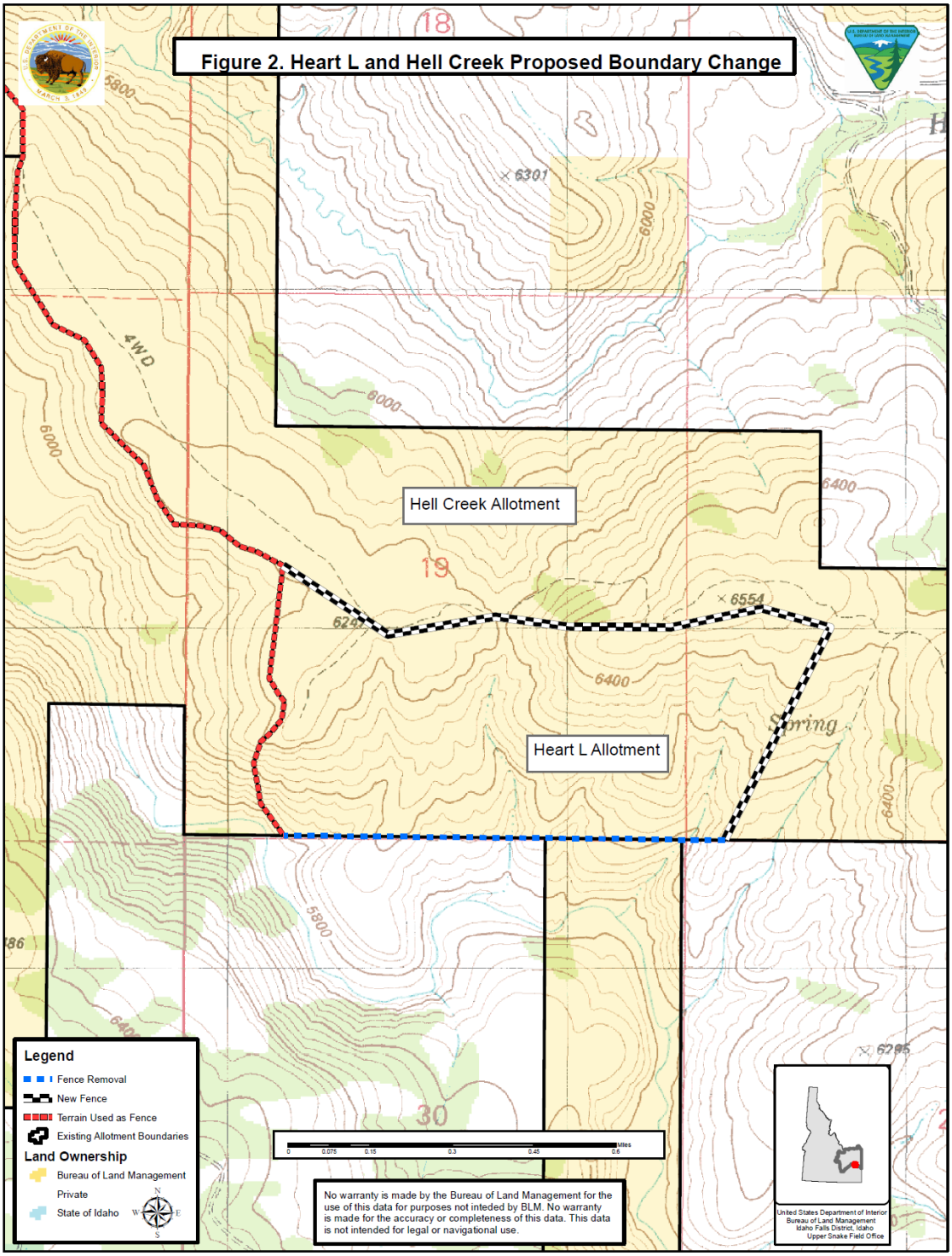


Figure 2a. New Allotment Boundaries for Heart L and Hell Creek After Proposed Boundary Change

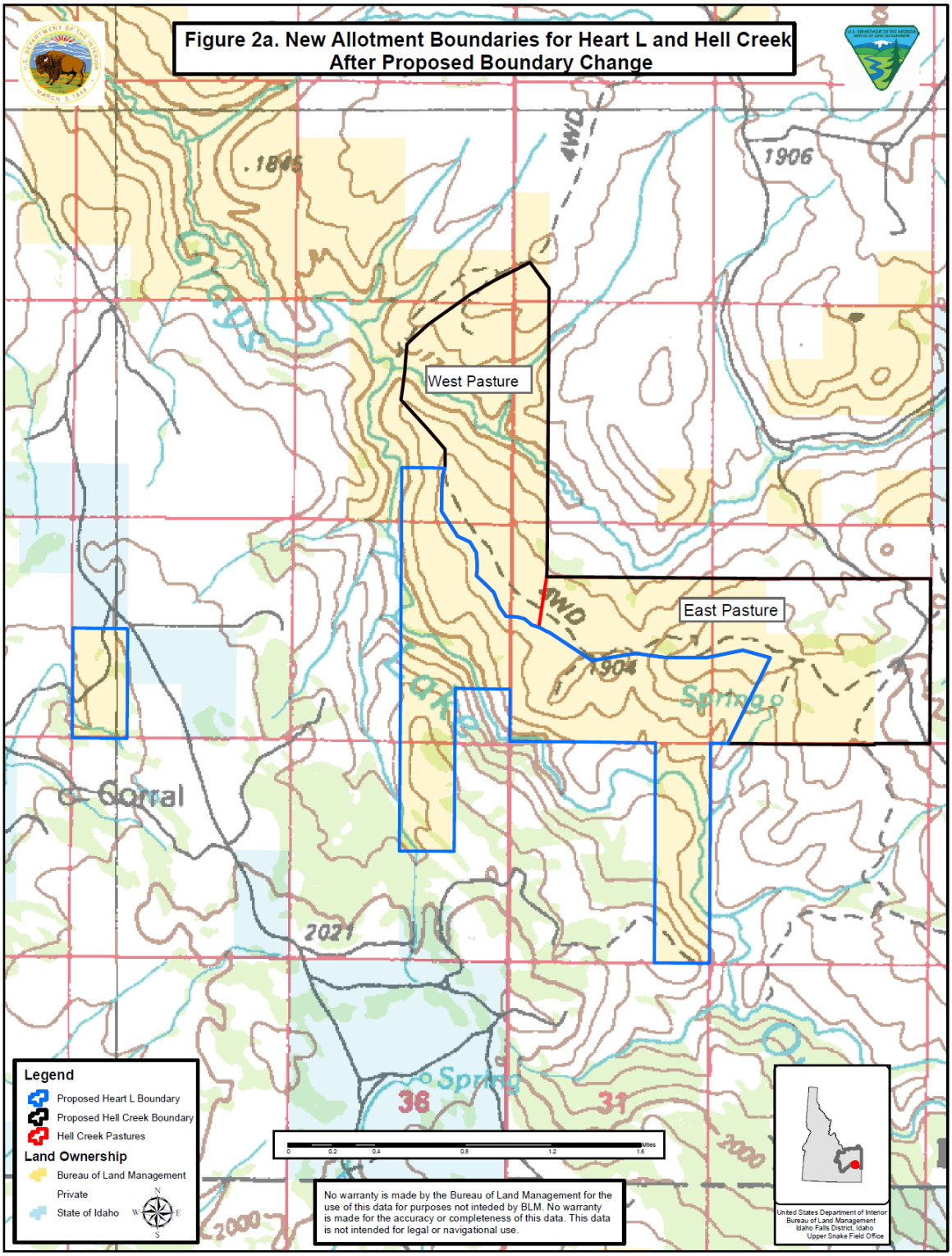


Figure 3. Proposed Spring Exclosure in the Heart L Allotment

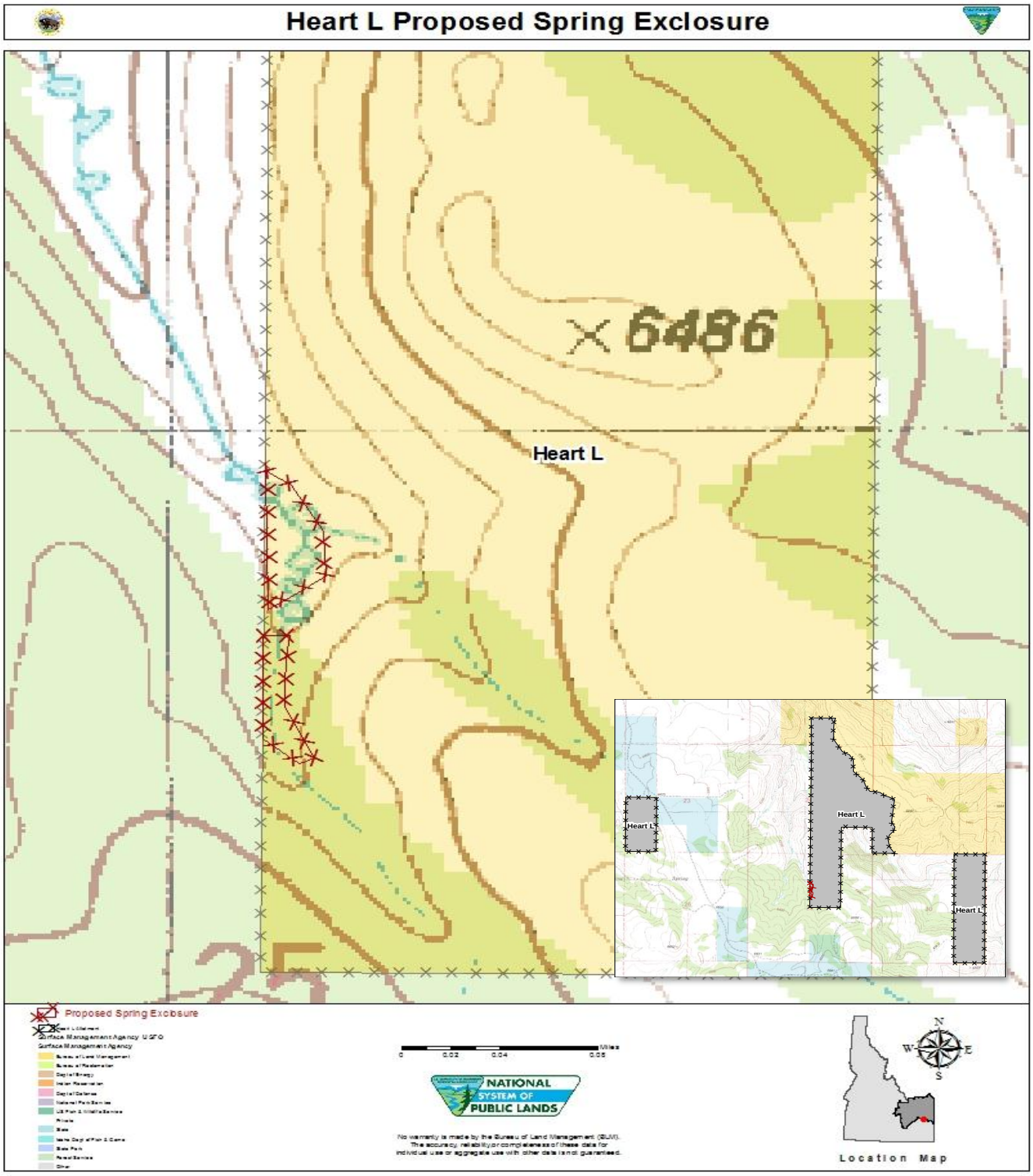
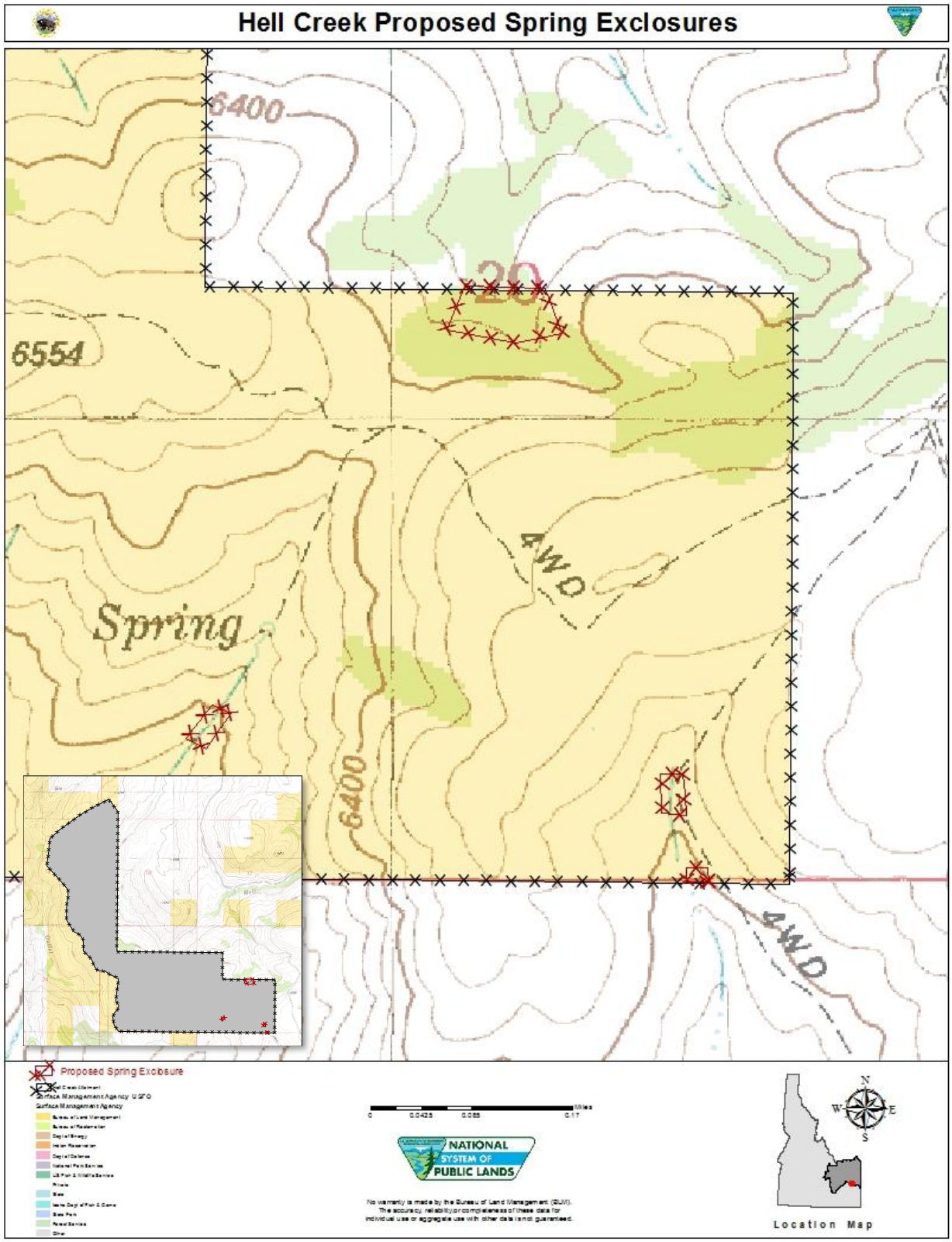


Figure 4. Proposed Spring Exclosures in the Hell Creek Allotment



CHAPTER 3 - AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter provides a description of the general environmental setting and resources within that setting that could be affected by the Alternative A, B, and C. In addition, the section presents an analysis of the direct and indirect impacts likely to result from the implementation of the three alternatives.

General Setting

The general topography in the Heart L Allotment lies along the steep canyon of Gray's Lake Outlet and expands westward along rolling ridges and deep canyons. The Hell Creek Allotment lies along the steep canyon of lower Hell Creek and an expansive bench area (locally known as Flatiron Bench) between Hell Creek and Gray's Lake Outlet. Elevations within the allotments range from approximately 5,600 feet above sea level along Gray's Lake Outlet to 6,600 feet above sea level in higher elevations to the southeast. The most common range sites within the allotment are Wyoming big sagebrush (*Artemisia tridentata ssp. wyomingensis*)/bluebunch wheatgrass (*Pseudoroegneria spicata*), mountain big sagebrush (*Artemisia tridentata ssp. vaseyana)*/Idaho fescue (*Festuca idahoensis*), low sagebrush (*Artemisia arbuscula*)/bluebunch wheatgrass and mountain big sagebrush/bluebunch wheatgrass. Northern aspects are primarily dominated quaking aspen (*Populus tremuloides*) and mixed shrub/conifer communities. Average annual precipitation in the area is 16 inches.

Resources Considered in the Impact Analysis:

The results of the site-specific assessment indicate that not all of the resources considered are present and/or would be impacted by the Alternative A, B, and C (Table 1). Direct and indirect impacts on those resources that are present and impacted are discussed in the following narratives.

Table 1 - Resources Considered in the Impact Analysis*.

Resource	Resource Status	Rationale
Access	Present, Not Impacted	The proposed action and alternatives would not result in changes in access to the area.
Air Quality	Present, Not Impacted	The implementation of the proposed action and alternatives would not result in the production of emission or particulate matter above incidental levels.
Areas of Critical Environmental Concern (ACECs)	Not Present	The proposed project area is not located within or near an ACEC.
Cultural Resource	Not Present	Programmatic consultation under the National Historic Preservation Act of 1966 (as amended) has been conducted in accordance with the BLM National Programmatic Agreement and the implementing Protocol agreement between Idaho BLM and the Idaho State Historic Preservation Office (ID-SHPO). Permit renewal in the Heart L and Hell Creek allotments would have no effect on known historic properties listed or eligible for listing on the National Register of Historic Places (NRHP). If eligible properties are discovered within the allotment boundaries in the future, mitigation measures to avoid impacts would be

Table 1 - Resources Considered in the Impact Analysis.*		
Resource	Resource Status	Rationale
		developed in consultation with the ID-SHPO. Prior to the implementation of any ground-disturbing activities, potentially affected areas would be surveyed for cultural resources as mandated by Section 106 of the National Historic Preservation Act (NHPA).
Economic and Social Values	Present, Impacted	Impacts are disclosed under **Environmental Consequences**
Environmental Justice	Not Present	There are no minority or low income populations residing near the proposed project area.
Existing and Potential Land Uses	Present, Not Impacted	The proposed action and alternatives would not affect the areas current and likely future use as a grazing allotment.
Fisheries	Present, Impacted	Impacts are disclosed under **Environmental Consequences**
Floodplains	Present, Impacted	Impacts are disclosed under Environmental Consequences
Forest Resources	Present, Not Impacted	The proposed action and alternatives would not affect the forest resources in the allotment.
Invasive, Non-Native Species	Present, Impacted	Impacts are disclosed under **Environmental Consequences**
Mineral Resources	Present, Not Impacted	The proposed action and alternatives would have no impact on mineral resources within the area.
Migratory Birds	Present, Impacted	Impacts are disclosed under **Environmental Consequences**
Native American Religious Concerns	Not Present	There are no known ceremonial sites or resources associated with ceremonial practices in the project area.
Paleontological Resources	Not Present	There are no known paleontological resources located in the area.
Prime and Unique Farmlands	Not Present	There are no prime or unique farmlands located within the allotment.
Soil Resources	Present, Impacted	Impacts are disclosed under **Environmental Consequences**
Threatened, Endangered, and Sensitive Plants	Not Present	There are no known threatened, endangered, and sensitive plants located in the project area.
Threatened, Endangered, and Sensitive Animals	Present, Impacted	Impacts are disclosed under **Environmental Consequences**
Threatened, Endangered, and Sensitive Fish	Present, Impacted	Impacts are disclosed under **Environmental Consequences**
Recreational Use	Present, Not Impacted	The proposed action and alternatives would have no measurable impact on recreational use.
Tribal Treaty Rights and Interests	Present, Not Impacted	The proposed action and alternatives would have no effect on the tribes' access to use the area to exercise their treaty rights and would have no known effect on resources they use for traditional purposes.
Vegetation	Present, Impacted	Impacts are disclosed under **Environmental Consequences**
Visual Resources	Present, Not Impacted	The proposed action and alternatives would have no impact on visual resources within the area.
Wastes, Hazardous and Solid	Not Present	There are no solid or hazardous wastes in the project area and none would be created during the implementation of the proposed action, and other alternatives.
Water Quality (Surface and Ground)	Present, Impacted	Impacts are disclosed under **Environmental Consequences**

Table 1 - Resources Considered in the Impact Analysis.*		
Resource	Resource Status	Rationale
Wetland and Riparian Zones	Present, Impacted	Impacts are disclosed under **Environmental Consequences**
Wild and Scenic Rivers	Not Present	There are no designated wild and scenic rivers near the project area.
Wild Horse and Burro HMAs	Not Present	There are no wild horse and burro HMAs in the region.
Wilderness	Not Present	There are no wilderness areas or WSAs within the proposed project area.
Wildlife Resources	Present, Impacted	Impacts are disclosed under **Environmental Consequences**

Economic and Social Values

Affected Environment

Two measures of economic impacts used in studies exploring impacts to livestock operations due to changes in federal grazing permits and leases are herd reduction and forage substitution (Rowe and Bartlett, 2001). Herd reduction may be a better indicator of operation efficiency rather than direct economic impact at the level of the individual operator (Rowe and Bartlett, 2001).
The impact on any single ranch operation of a reduction in public land AUMs may be enormous, depending on the flexibility of its nonfederal forage base and other factors (Harp et al, 2000).
The impacts of herd reductions resulting from federal land management policy changes that reduce federal land AUMs have been estimated at the community and county level (Harp et al, 2000), however, these estimates are based on evenly distributed federal land AUM reductions at a scale beyond the allotment level. Based on recent USDA cattle market reports (USDA, 2013) the average recent market steer (800lbs) price was $1,000 or $100 per AUM assuming a 10 AUM input. The average recent market price for replacement cows was $1,400 or $116 per AUM assuming 12 AUMs input. Therefore the change in gross revenue for the operators may range from $100 to $116 per AUM. Forage replacement has also been used as a proxy indicator of economic impact. Forage replacement values may range in cost from replacement from private pasture to replacement from hay versus the annual cost of forage on public land which was $1.35 per AUM in 2014. Average private pasture cost in Idaho in 2014 was $15.50/AUM and average local hay prices were $85/AUM. Therefore the forage substitution cost annually would range from $14.15 to $83.65 per AUM.

Additional costs to livestock operations associated with public lands grazing may include construction and maintenance of range improvement projects, transportation costs, and operating cost associated with herd maintenance and management. The cost or impact on the individual operator is difficult to quantify and is highly variable depending upon their specific situation. Some costs would occur on private grazing lands as well and are therefore not associated specifically with public land grazing.

Environmental Consequences

Alternative A – No Action

Alternative A would result in no changes in the mandatory terms and conditions for livestock grazing in the Heart L or Hell Creek Allotments. There would be no change in economic or social values under Alternative A which is the baseline for addressing economic and social values.

Alternative B – Proposed Action

Under Alternative B, there would be a reduction of AUMs in the Hell Creek Allotment because of the construction of a new boundary fence. The fence would result in approximately 230 acres being removed from the Hell Creek Allotment. The proposed boundary change would result in a 21 AUM reduction in the Hell Creek Allotment. For the season of use, this would translate to eleven fewer cattle authorized on the allotment annually. The forage substitution cost to replace 21 AUMs would range from approximately $297 to $1,757 annually. If the herd size is reduced as a result of the adjustment, the decreased gross revenue for the operators through herd reductions would range from approximately $2,100 to $2,436 annually. The proposed realignment of the boundary fence would result in additional cost for implementation. In the short term, the proposed fence realignment project would slightly increase the social and economic impact to the permittees, but in the long term, the impact would greatly diminish because of the reduced fence maintenance costs. Since the BLM would construct the riparian exclosures, the annual expense to maintain the exclosures by the permittees would be minimal under Alternative B.

Alternative C – No Grazing

Under Alternative C, the authorized use would be reduced by 226 BLM AUMs annually. The forage substitution cost to the permittees under Alternative C would range from approximately $3,220 to $18,904 each year, for the next ten years. If the herds are reduced as a result of decreased forage availability, the decreased gross revenue through herd reductions would range from approximately $22,600 to $26,216.

Fisheries and Threatened, Endangered, and Sensitive Fisheries

Affected Environment

Hell Creek and the Grays Lake Outlet are the two fisheries streams in these allotments. They are part of the Willow Creek watershed that is historical and occupied habitat for Yellowstone cutthroat trout (YCT)(*Oncorhynchus clarki bouvieri*). YCT is listed as Rangewide/Globally Imperiled – Type 2, meaning the species is experiencing significant declines throughout its range with a high likelihood of being listed in the foreseeable future due to its rarity and/or significant endangerment factors such as habitat loss.

In addition non-native brown trout (*Salmo trutta*) are also found in the drainage. Other native and non-native castomids (suckers), and cyprinids (minnows) are also found in the drainage.

There haven't been any quantified habitat inventories in either Hell Creek or Grays Lake Outlet, but qualitative monitoring has shown that while indicators for the health of special status fisheries are mostly in a functioning category, some parameters including: width/depth ratios, spawning temperatures, turbidity, nutrient levels, and cobble embeddedness are all functioning a risk. The reduced water flow is due to the irrigation demand in the Greys Lake outlet, which could reduce the fisheries functionality of the stream. The complete functionality assessment is shown below in Table 2. Any of the habitat indicators for YCT would also be indicators of quality habitat for other cold water species in Hell Creek and the Greys Lake Outlet.

Table 2 - Yellowstone cutthroat trout habitat indicator rating summary.

Pathway	**Indicators**	**Functioning (+)**	**Functioning at Risk**	**Not Functioning (-)**
Watershed Condition	Proper Functioning Condition	x		
	Change in Peak/Base Flow	x		
Channel Condition and Dynamics	Width/Depth Ratio		x	
	Streambank Stability	x		
	Floodplain connectivity	x		
Water Quality	Temperature-Spawning		x	
	Temperature-Adult Holding and Migration	x		
	Turbidity		x	
	Chemical contamination and Nutrients		x	
Habitat Elements	Cobble Embeddedness		x	
	Small Woody Debris	x		
	Pool Quality	x		
	Pool Frequency	x		
Habitat Access	Physical Barriers	x		
Refugia	Existence and Management	x		

The reason for the functioning at risk indicators is due to historical grazing and water manipulation. Neither is the result of the present grazing systems. Short term indicators show minimal bank alteration and utilization of bank gramnoids and shrubs.

No population surveys have been conducted in Hell Creek or the Greys Lake Outlet.

Environmental Consequences

Alternative A - No Action

Impacts to fisheries would continue as they are at present. With the stipulations for stubble height and woody browse utilization, there should be a gradual improvement in fisheries habitat conditions.

Alternative B - Proposed Action

Under Alternative B, there wouldn't be net gain or loss of fisheries habitat in the adjustment of the allotment boundaries. The effects would be the same as those under Alternative A.

Alternative C - No Grazing

With the removal of authorized livestock grazing, there should be an improvement in fisheries habitat condition. The rate of improvement should be swifter than in the other two alternatives.

Floodplains

Affected Environment

Heart L Allotment-Grays Lake Outlet

Three perennial reaches of Grays Lake Outlet were assessed in 2013. These reaches are described as: upper (1.03 miles long); middle (0.18 miles) and lower (0.63 miles). All three reaches were rated as Proper Functioning Condition (PFC) for channel and floodplain characteristics. These same reaches had previously been rated as PFC for channel and floodplain characteristics and riparian vegetation in 1996 and 2000.

The upper reach had an estimated 90% streambank stability, with only 1-5% bare ground. Streambank structural alteration was less than 5% and there was less than 5% alterations to the riparian area. The channel was not incised. The reach was densely vegetated with willow, water birch and dogwood. Active beaver dams were seen in this reach. Approximately 5% of the reach was accessible to livestock.

The middle reach had an estimated 85-95% streambank rootmass protection with larger cobble and boulders for substrate compared to the upper reach. The reach had 2-3% bare ground, with

2-3% streambank structural alterations. This reach is narrower than the upper reach. In addition to having dense willow, water birch and dogwood, the middle reach also has Douglas-fir and cottonwood. Only 5-10% of this reach was estimated as being accessible to livestock.

The lower reach had an estimated 95-98% streambank rootmass protection with large boulders and cobble armoring the reach. There was less than 1% bare ground, with no streambank structural alterations. The reach exhibited 1-2% alterations to the riparian area. This is another densely vegetated reach with a lot of shrub regeneration and rock armoring. Less than 5% of this reach was estimated as being accessible to livestock.

Hell Creek Allotment-Hell Creek

Two perennial reaches of Hell Creek were assessed in 2013 and were rated PFC for channel and floodplain characteristics. Past assessments show that these two reaches (upper reach is 0.33 miles; lower reach is 0.64 miles) were rated non-functional (NF) in 1996 and functional at risk (FAR) in 2002 for channel characteristics. Active beaver dams were observed on the stream. Both reaches had less than 5% of their banks structurally altered and 10-15% of the riparian area was altered due to livestock. The reaches had been incised from past flood events but have developed a new floodplain at a lower elevation.

The upper reach had 85-90% streambank rootmass protection. About 50% of the upper reach was estimated as being accessible to livestock. The lower reach had about 80% of its streambank protected by continuous rootmasses. Like the upper reach, there was virtually no bare ground, with a dense cover of both young and mature riparian-wetland shrubs. About 30-40% of the lower reach was estimated as being accessible to livestock.

Hell Creek Allotment-Unnamed Tributary to Hell Creek

This 0.3 mile intermittent reach was assessed in 2013 and rated PFC for channel floodplain characteristics. The reach had 80-85% of its banks protected by a deep, binding rootmass. The reach had little bare ground, less than 5% structural alterations to the bank, and few alteration to the rest of the riparian area. The reach was densely vegetated by willow. Like the other reaches in the allotment, this reach had been incised by past flood events. During the assessment, the streamflow was below ground just before the confluence of Hell Creek. About 60-70% of the reach was estimated as being accessible to livestock.

Environmental Consequences

Livestock can directly and indirectly affect stream conditions through soil compaction, bank shearing, or severing of roots of riparian vegetation, which are needed for plant survival and bank stability (Behnke and Raleigh 1978). Depending on site, soil, and substrate characteristics, channel degradation may take one of two forms. If a restrictive soil layer is in the channel bed, bank erosion causes channel widening and stream depth decreases. Conversely, if the restrictive

soil layer is lower, the channel can downcut, and the stream gradient and energy can increase and move excessive sediment downstream (USDI-BLM 2006).

Alternative A – No Action

Under Alternative A, with no changes in authorized use, stream channel and floodplain characteristics along all three reaches of Grays Lake Outlet in the Heart L Allotment would remain in PFC.

Under Alternative A, continuing to limit the riparian pasture to a one month use period in the Hell Creek Allotment, stream channel and floodplain characteristics along the two reaches of Hell Creek and an unnamed tributary to Hell Creek would remain in PFC.

Alternative B - Proposed Action

Heart L Allotment

Grays Lake Outlet
Impacts are the same as those described under Alternative A.

Hell Creek Allotment

Hell Creek and the Unnamed Tributary
Impacts are the same as those described under Alternative A.

Alternative C – No Grazing

Under Alternative C, no grazing would occur for 10 years in the Heart L and Hell Creek Allotments. There would be no impacts to stream channel and floodplain characteristics relative to authorized livestock grazing during this period. Similar to Alternatives A and B, all stream reaches would remain in PFC, though with fewer measurable impacts.

Invasive, Non-Native Species

Affected Environment
Noxious weed monitoring and treatment records for the public lands within the Hell Creek and Heart L Allotments, indicates occurrences of both Canada thistle (*Cirsium arvense*) and houndstongue (*Hieracium cynoglossoides)*. The large majority of the reported infestations of invasive, non-native species occur along the road systems within the allotments, as well as the drainage bottoms. The Upper Snake Field Office and cooperating agencies actively inventory, monitor, and treat occurrences of invasive non-native species within the field office area using the Standard Operating Procedures outlined in the Programmatic Environmental Assessment for Integrated Weed Management for the Upper Snake Field Office and Pocatello Field Office (USDI-BLM 2009b).

Environmental Consequences

Livestock are one vector in the Hell Creek and Heart L Allotments that could disperse invasive, non-native species. Other potential vectors in the area include but are not limited to vehicles, wind, recreationists, waterways, and wildlife, including birds.

Alternative A – No Action

The potential impacts of invasive, non-native species found in the allotments include degradation of native habitat. Under Alternative A, livestock would continue to be authorized in the allotments. The allotment evaluations identified that the allotments were meeting all applicable ISRH. By maintaining and/or improving the ecological health of the current native plant communities in allotments, the opportunity for expansion of invasive, non-native species would be reduced. All new and existing infestations in the uplands would continue to be treated.

Alternative B – Proposed Action

Under Alternative B, the potential impacts of invasive, non-native species could be slightly higher compared to Alternative A. The impacts to invasive/noxious weeds in relation to the number of livestock vectors would be slightly less due to the twenty one AUM reduction in the Hell Creek Allotment. The main difference between the two alternatives relative to invasive, non-native species is potential ground disturbance activities associated with moving the boundary fence between the two allotments and the construction of the riparian exclosures. Moving the fence would result in approximately 2 acres of ground disturbance that would be vulnerable to new weed infestations. The potential increase of invasive/noxious weeds would be higher because the proposed location of the fence would require vegetation removal prior to fence construction. However, all of the project areas would be monitored closely for new occurrences of noxious weeds. All new and existing infestations would continue to be treated. Noxious weed infestations, if not treated, can spread and alter healthy plant communities in the Hell Creek and Heart L Allotments. Continued noxious weed treatments by the BLM and the county would help ensure that the allotments continue to meet Standards 4 and 8.

Alternative C – No Grazing

Under Alternative C, no livestock grazing would be authorized in the allotments for 10 years. The potential establishment or expansion of invasive, non-native species would be slightly less than the other alternatives due to the removal of one of the vectors of dispersal.

Migratory Birds

Affected Environment

Migratory bird species associated with shrub-steppe, willow bottoms, aspen and coniferous forests found in the Hell Creek and Heart L Allotments that typically breed within the Upper Snake Field Office include species such as Brewer's sparrow, sage sparrow, sage thrasher,

vesper sparrow, western meadowlark, Bullock's oriole, and loggerhead shrike. Inventory and monitoring data are limited or absent for many migratory species, including sagebrush obligates associated with these allotments. Little is known about their population status or trends. Shrub-steppe birds that require sagebrush as nest sites would benefit from mostly intact mature sagebrush stands within the allotments. The allotments are also used for foraging during different seasons by migratory raptors such as rough-legged hawk, ferruginous hawk, Swainson's hawk, northern harrier, red-tailed hawk, prairie falcon, and short-eared owl. With the presence of nesting substrate found throughout these allotments it is assumed that many raptors not only use these allotments for foraging habitat but also for nesting habitat. Native habitats were rated in good ecological condition and provide for a diversity of bird species associated with habitat types found in these allotments.

Environmental Consequences

Migratory birds generally do not respond to the presence of grazing livestock, but to the impacts on vegetation as a result of grazing. The principal means by which livestock grazing impacts migratory bird populations is by altering habitat structure and food availability. Livestock have the potential to directly impact migratory bird species by reducing, at least temporarily, required understory grasses and forbs used for foraging, nesting, and cover from predators. Livestock grazing impacts include compaction of soil by hoof action, removal of plant materials, and indirect reduction of water infiltration, all of which can result in decreased vegetation density (Saab et al. 1995). Productive habitats are important for migratory birds to hide from predators, forage, mate and nest; especially during spring. However, songbirds may respond differently to livestock grazing impacts, primarily due to their forage and nesting requirements. For example, sage sparrow appear to respond positively to grazing; while vesper sparrow, Savannah sparrow and western meadowlark appear to respond negatively; and mourning dove, loggerhead shrike, lark sparrow, sage thrasher and Brewer's blackbird may be unresponsive or show mixed responses to grazing impacts (Bock et al. 1993).

Similar to songbirds, migratory raptors also show a range of responses to grazing with some species (i.e., northern harrier) requiring increased ground cover and other species (i.e., burrowing owl) responding positively to reduced ground cover or bare ground (Saab et al. 1995).

Alternative A (No Action)

Under a No Action alternative, the Upper Snake Field Manager would authorize continued livestock grazing under the same terms and conditions as the current permits. Under Alternative A, no additional improvements or projects would be authorized in the Hell Creek or Heart L Allotments. Both of these allotments were assessed in 2013, and the native plant communities were found to be meeting rangeland health standards. There is little trend information on migratory birds available for these allotments, however, as the allotments are meeting rangeland health standards it is expected that habitat requirements (e.g., cover, food, space) of migratory birds are being met and would continue to be met under Alternative A.

Alternative B (Proposed Action)

Proposed under Alternative B would be a change in the allotment boundary between the Hell Creek and Heart L Allotments. The boundary change would consist of removing portions of an existing fence approximately 1 mile long located in the bottom of the drainage, and a new 1.5 mile fence would be constructed on top of the ridge. Due to this boundary change the Heart L Allotment would gain 230 acres from the Hell Creek Allotment. Although acres will be gained, the AUMs in the Heart L Allotment will remain the same. The current use on the 230 acres is light due to the steep topography, but it is likely impacts from grazing in other portions in the Heart L Allotment will be reduced due to the reduced stocking rate. Under Alternative B the grazing plan for the Heart L Allotment would continue with a three-year deferred grazing rotation system currently in place.

The Hell Creek Allotment in turn will lose 230 acres, reducing active AUMs from 116 to 95. The current deferred grazing rotation and stocking rate would remain the same as in Alternative A. Impacts would be similar to those discussed in **Alternative A** and in the **Environmental Consequences** sections.

Potential impacts from the proposed fencing project to change the allotment boundary, which results in a net gain of 0.5 miles of fence would be increased perches for hunting, singing and territorial displays which may increase fitness and mating potential. It may also increase their visibility to potential predators. Further impacts would be potential fence strikes resulting in injury or possible mortality of individual birds, more likely larger birds such as hawks and owls. The entire new fence will be fitted with reflective markers to reduce fence collision risk. The fence will be constructed outside of the migratory bird nesting season (April 1 to June 30) to minimize the potential impacts to nesting birds (Sullivan et al. 2009).

Riparian areas proposed for protection under Alternative B would allow communities to make progress towards PFC which would provide the necessary vegetative requirements for nesting, foraging, and cover habitat for Neotropical migrants. If fence collision hazards are identified in these areas fences will be marked to alert wildlife and reduce collision risk. Migratory birds that make use of riparian areas should benefit from intact healthy riparian vegetation within these exclosures.

Alternative C (No Grazing)

Under Alternative C, no livestock grazing would be authorized within the Hell Creek or Heart L Allotments for a period of 10 years, from 2015 through 2024. Impacts to migratory birds from no grazing would vary by species as discussed under the Environmental Consequences. In general, understory cover (e.g., grasses and forbs) would increase in size and vigor and provide habitat critical to migratory bird life cycles. The increase in understory vegetation, and lack of disturbance and competition, would allow the allotments to continue to meet rangeland health standards and provide suitable habitat for migratory birds. There would be no displacement or disturbance of migratory birds during crucial breeding, nesting and brood-rearing seasons. No

riparian exclosures or new fence construction would be needed, and negative impacts described above would not occur.

As residual herbaceous and litter cover increases, the continuity of fine fuels would increase, thereby increasing the risk of a larger and more severe wildfire than would likely occur if the allotments were grazed. Wildfires would reduce the overall vegetation cover in the allotments which could be detrimental to resident migratory bird species.

Wetland and Riparian Zones

Affected Environment

Heart L Allotment

Approximately two miles of Grays Lake Outlet flows through public lands within the Heart L Allotment, forming about 19 acres of riparian-wetland habitat. The dominant vegetation is represented by a coyote willow (*Salix exigua*) community type and a Douglas fir/red-osier dogwood (*Pseudotsuga menziesii/Cornus sericea*) habitat type. Proper functioning condition (PFC) assessments have historically split Grays Lake Outlet into three reaches. The Montana Riparian and Wetland Association (MRWA) completed an initial inventory and evaluation of riparian-wetland vegetation conditions along Grays Lake Outlet in 1996. The Upper Snake Field Office (USFO) reassessed each reach in 2000 and 2013. The most recent assessments, conducted in 2013, indicate that all 19 acres of riparian-wetland vegetation are in PFC. The trend is 68% upward and 32% static. Approximately 96% of the riparian-wetland vegetation has maintained PFC since the 2000 assessment, while the remaining 4% has improved from functional at risk condition (FAR) to PFC.

Hell Creek Allotment

Approximately 1.3 miles of Hell Creek and an unnamed tributary to Hell Creek flow through public lands within the Hell Creek Allotment, forming about eight acres of riparian-wetland habitat. Three unnamed springs comprise an additional acre of wetland habitat. The dominant vegetation is represented by a Rocky Mountain juniper/red-osier dogwood (*Juniperus scopulorum*/*Cornus sericea*) habitat type. PFC assessments have historically split Hell Creek into two reaches. The Montana Riparian and Wetland Association (MRWA) completed an initial inventory and evaluation of riparian-wetland vegetation conditions along Hell Creek in 1996. Subsequent assessments conducted by the Upper Snake Field Office (USFO) in 2002 and 2013 included Hell Creek. In addition, the 2013 assessment included an unnamed tributary to Hell Creek, and three unnamed springs. In total, streams and springs assessed in 2013 comprise approximately nine riparian-wetland acres. The most recent assessments, conducted in 2013, indicate that approximately eight acres (87%) of riparian-wetland vegetation are in proper functioning condition (PFC), while the remaining one acre (13%) is in nonfunctional condition (NF). The trend is 76% upward and 24% unknown.

The sites with "unknown" trend have no previous assessments for determining trend, and include the unnamed tributary to Hell Creek (rated as PFC) and the three unnamed springs (all rated as NF). Contributing factors for the NF ratings at the spring sites include moderate to severe livestock trampling, loafing, and trailing, resulting in vegetation removal, increased bare ground, introduction/spread of invasive species (1-5% of the site) and other undesirable herbaceous species (10-35% of the site), browse utilization of trees and shrubs (25%), alterations to physical site characteristics (25-40%), and alterations to vegetation communities (25-40%). One of the springs is developed with a pipeline to a trough located approximately 100 feet below the springhead. The springhead has no surface flow because the trough, which lacks a float system, captures all the water and overflows into a drainage, creating an artificial wetland.

Environmental Consequences

Alternative A – No Action

Under Alternative A, no change in the existing livestock grazing management would occur in the Heart L or Hell Creek Allotments. Within the Heart L Allotment, all of the riparian-wetland vegetation acres have achieved PFC. Within the Hell Creek Allotment, approximately 87% of riparian-wetland vegetation acres have achieved PFC, while the remaining 13% are NF. Under this alternative, these areas would maintain their current condition, and the NF springs would continue to be impacted by livestock. Continued trampling, loafing, and trailing at the spring sites would result in further vegetation removal, increased bare ground, potential introduction/spread of invasive species/noxious weeds, browse utilization of trees and shrubs, physical and biological alterations, and surface water loss. However, overall the allotments would continue to meet the standard for wetland and riparian areas.

Alternative B – Proposed Action

Under Alternative B, 21fewer active AUMs would be authorized compared to Alternative A as a result of the boundary change between the Hell Creek and Heart L Allotments. In addition, this alternative would authorize construction of protective exclosures around a large spring complex in the Heart L Allotment and around the three NF springs in the Hell Creek Allotment. As a result of excluding livestock from these areas and reducing AUMs, increases would occur in vegetative cover, preferred tree and shrub establishment or regeneration, and overall site vigor. Conversely, decreases would occur in invasive species/noxious weeds and other undesirable herbaceous species, browse utilization and/or removal of trees and shrubs, bare ground, and human alterations to physical and biological site characteristics. This alternative would require all livestock water troughs to be floated; this would allow unused water to return to the spring source, thus providing more water to sustain existing riparian-wetland habitat and allowing establishment of additional habitat. Riparian-wetland areas would be protected to a greater extent compared to Alternative A, which would not change existing livestock grazing management in the Heart L or Hell Creek Allotments.

Alternative C– No Grazing

Under Alternative C, no grazing would be authorized for 10 years in the Heart L or Hell Creek Allotments. The potential for livestock grazing impacts associated with riparian-wetland areas would be removed during the 10-year period. Under this alternative, riparian-wetland areas would receive fewer impacts, and would thus, maintain or make faster and more sustained progress towards PFC compared to Alternatives A and B on the small area currently not rated PFC.

Soil Resources

Affected Environment

The soils across both the Heart L and Hell Creek Allotments are highly variable with approximately ten different soil series. The four main soil series found in the two allotments are Paulson, Ririe, Nielson, and Dranyon. The Paulson soil series consists of very deep well drained silt loam soils predominantly found on alluvial fans and valley filling sideslopes. The Ririe soil series is a very deep, well drained silt loam soil derived from loess. These soils are found on hills, mountain slopes and terraces. The Nielsen series are shallow, well drained soils formed in residuum and colluvium from sandstone and quartzite volcanic rocks. The Dranyon soil series consists of deep or very deep, well drained soils formed in colluvium from sandstone or rhyolite with loess influence. Like the other soil series, the Dranyon is predominantly found on mountain slopes. The dominant vegetation found on these soil series is either a vegetation type dominated by mountain big sagebrush or aspen/mixed conifers (Bonneville County Soil Survey, 1981).

Microbiotic Crusts
Microbiotic crusts are an important component of several ecological sites in the allotment. They function as living mulch by retaining soil moisture and discouraging annual weed growth. By occupying interspatial areas between larger plants, these crusts reduce wind and water erosion, and they enhance soil stability, soil moisture retention, and site fertility by fixing atmospheric nitrogen and contributing soil organic matter (Belnap, et al., 2001).

Microbiotic Crust primarily affect processes at the soil-air interface including, soil stability and erosion control, atmospheric N-fixation, nutrient contributions to plants, soil-plant-water relations, infiltration, seedling germination, plant growth, and invasive annuals control (Belnap & Gillette, 1998).

Environmental Consequences

The potential impacts to soils from livestock grazing include soil compaction and a reduction in the amount and distribution of ground cover resulting in accelerating erosion as evidenced by rills, pedestals, and flow patterns. Soil compaction by heavy objects, including trailing by livestock, has the potential to penetrate and compact soil material to depths of 15 to 20 inches, depending upon soil composition, particle size, and moisture content. Generally, the soils in the

allotment will have increased moisture levels in the spring compared with the summer or fall. The soil from the surface to a depth of four to six inches is typically released from compaction by frost action. The deeper soil compaction that is not affected by frost action may remain in the soil for years. Soil compaction resulting from intensive livestock use, such as along trails and next to water sites, is estimated to occur on less than one percent of the allotment area. Deep soil compaction restricts root growth and reduces soil productivity.

Mechanical impacts from livestock activities can negatively affect biological soil crusts that function as living mulch, retain soil moisture, provide stability, influence nutrient cycling, and discourage annual weed growth. Biological soil crust condition and spatial extent can be indicators of the ecological health of the plant community; thus, disturbance that results in losses of biological crusts can reduce site fertility and soil productivity and soil moisture retention, and further reduces soil surface stability and soil organic matter (Eldridge & Greene, 1994) (Belnap & Gillette, 1998).

Season of use by livestock has an effect on biological soil crust cover and species richness (Marble & Harper, 1989). Microbiotic crusts are only metabolically active when wet and as they dry out during the summer season they become brittle. Dry periods combined with physical disturbance tend to be the most destructive combination for crust. Microbiotic crust can also be disturbed in wet seasons, although biological soil crusts are not as fragile during moist periods and may continue to grow from late winter through early spring with favorable soil water conditions. Growth can be disrupted if excessive livestock surface disturbance persists during that time.

Alternative A – No Action

Under the No Action Alternative unmodified grazing permits would be issued. Grazing during the growth period, summer, and fall would continue. Continued grazing in this manner would have similar impacts as those that have occurred during the last ten years. Sufficient vegetative, biological crust, and litter cover would remain to provide adequate protection for the soil resource and Standard 1 would continue to be met.

Alternative B – Proposed Action

Under the Alternative B, the grazing season in both the Heart L and Hell Creek Allotments would remain the same. The only difference to livestock grazing would be the 21AUMs reduction in the Hell Creek Allotment because of the proposed realignment of the boundary fence. The amount of the soil disturbance in relation to hoof action would be minimal due to the fact that the majority of the additional acres in the Heart L Allotment were acres typically not accessible to livestock. The slight reduction of AUMs in the Hell Creek Allotment would exhibit a minimal decrease in soil disturbance associated with livestock.

The construction of the realigned boundary fence would have more impacts to soil resources than the construction of the riparian exclosures in both allotments. To facilitate the construction of

the boundary fence blading or brush clearing would be authorized, while there would be no authorization to blade the fenceline for the riparian exclosures. The amount of ground disturbance from the construction of the boundary fence would account for approximately 2 acres. Increased soil surface disturbance and compaction would be expected in a narrow area adjacent to the new fences, as livestock commonly trail along fences more intensively. The increase in compaction would occur on a small area of the total acreage of public lands and would not be a critical factor in achieving rangeland health. Because cattle are concentrated, livestock trailing has an increased potential to result in deep compaction; however, as described this occurs primarily along existing roads. The allotment would continue to support water infiltration and permeability rates appropriate to site potential.

Alternative C – No Grazing

Under Alternative C, the impacts to soil resources would be less than under Alternatives A or B described above. No livestock use would be authorized in the allotments for a period of 10 years under this alternative. Deep soil compaction resulting from intensive livestock use, such as trails and next to water sites, would no longer occur on the allotments. The limited soil compaction related to livestock use in the portion of the soil profile which is typically released annually through frost action, would not be subject to repeated compaction. Elimination of livestock use for the duration of the permits may reduce the areas affected by deep soil compaction. Deep soil compaction would persist but would likely decrease over time due to the course nature of the substrate. Soil conditions on the allotments as a whole would continue to support water infiltration and permeability rates appropriate to site potential.

Threatened, Endangered, and Sensitive Animals

Affected Environment

All data known to the Upper Snake Field Office, including data from U.S. Fish and Wildlife Service, Idaho Department of Fish and Game, and the Idaho Natural Heritage Program has been considered to identify any plant or animal species currently listed under the Endangered Species Act (ESA). There are no threatened or endangered species within these allotments. There is one candidate species, greater sage-grouse, within Hell Creek and Heart L Allotments.

Table 3 lists special status species that have been identified as occurring or potentially occurring within the allotments. BLM includes the following as special status species:

(1) Species officially listed or proposed for listing as threatened or endangered under the ESA or candidates for listing as threatened or endangered under the ESA.

(2) Species listed by a State in a category such as threatened or endangered implying potential endangerment or extinction.

(3) Species designated by the BLM State Director as sensitive.

The probability of species occurring and rationale for occurrence are listed. Species not occupying seasonal ranges or not expected to occur within these allotments are not discussed in the assessment.

Table 3 - Special Status Species and Occurrence within Hell Creek and Heart L Allotments

Species	Status[a]	Occurrence	Rationale
Greater Sage-Grouse (*Centrocerus urophasianus*)	C	Potential	Preliminary General Habitat (PGH)
Bald eagle (*Haliaeetus leucocephalus*)	S	Present	Perching and foraging habitat
Brewer's sparrow (*Spizella breweri*)	S	Present	Breeding habitat present
Sage sparrow (*Amphispiza belli*)	S	Potential	Potential breeding habitat
Common garter snake (*Thamnophis sirtalis*)	S	Potential	Potential habitat though limited
Columbia Sharp-tailed Grouse (*Tympanuchus Phasianellus columbianus*)	S	Potential	Late brood-rearing and winter habitat
Prairie Falcon (Falco mexicanus)	S	Present	Forages throughout the allotment. Nest sites not identified.
Ferruginous Hawk (Buteo regalis)	S	Present	Breeding territories within allotment.
Pygmy rabbit (*Brachylagus idahoensis*)	S	Potential	No known observations. Suitable habitat present.
Northern Goshawk (*Accipiter gentilis*)	S	Potential	Potential breeding habitat present
Hammond's Flycatcher (*Empidonax hammondii*)	S	Potential	Potential breeding habitat present
Olive-sided Flycatcher (*Contopus borealis*)	S	Potential	Potential breeding habitat present

Willow Flycatcher (*Empidonax traillii*)	S	Potential	Potential breeding habitat present
Lewis's Woodpecker (*Melanerpes lewis*)	S	Potential	Potential breeding habitat present
Williamson's Sapsucker (*Sphyrapicus thyroideus*)	S	Potential	Potential breeding habitat present
Calliope Hummingbird (*Stellula calliope*)	S	Present	Observed within the allotment.

Status Codes: T=Federal Threatened Species; C=Candidate Species; XN=Experimental, Non-essential; S=BLM Sensitive Species

On March 23, 2010 the US Fish and Wildlife Service determined that listing the Greater sage-grouse was warranted, but precluded by higher listing priorities (USFWS 2010). Currently considered a Candidate species by the USFWS, greater sage-grouse are strongly correlated with the distribution of sagebrush habitats as they depend on a variety of shrub steppe habitats throughout their life cycle, and are considered obligate users of several species of sagebrush (USFWS 2010). They exhibit strong site fidelity to seasonal habitats (USFWS 2010). Habitat for sage-grouse within the BLM is currently managed under Instruction Memorandum No. 2012-043 - Greater Sage-Grouse Interim Management Policies and Procedures. Local management actions also follow the East Idaho Uplands Local Working Group's Plan for Increasing Sage-Grouse Populations (USLWG 2011) and the Conservation Plan for Greater Sage-Grouse in Idaho (ISGAC 2006).

Sage-grouse require large tracts of relatively continuous sagebrush cover throughout the entire year (Pehrson and Sowell 2011). In general, the Preliminary Priority Habitat (PPH) designation is based on sage-grouse populations as identified in *Sage-grouse Priority and General Areas in Idaho* (BLM 2011 and Makela and Major 2011). In particular, PPH is based on combined high male lek attendance, high lek density and high lek connectivity. Impacts in these areas result in impacts to sage-grouse population centers and movement corridors. In addition, these allotments are identified as key sage-grouse habitat (Makela and Major 2011) which is described as large-scale, intact sagebrush steppe areas with the potential for small inclusions of perennial grasslands, either native or introduced, or other habitats (e.g., mountain mahogany) to be present.

Sage-grouse within these allotments are considered part of the Snake-Salmon-Beaverhead ID population whose trend, as indicated by average number of males per lek, has declined by 57 percent from 1965–1969 to 2000-2007 (Garton et al. 2011). However, this population has been stable since 1992, fluctuating around 5,000 males (Garton et al. 2011). Garton et al. (2011) conclude through their population analysis that the Snake-Salmon-Beaverhead ID population has a zero percent chance of dropping below a minimum viable population of 500 males in the next 100 years.

There are no sage-grouse leks within the allotments, but within five miles of the allotments there are three active leks and one of undetermined status. Available lek data gathered by IDFG, US Forest Service and BLM within five miles of the allotments are not adequate enough to determine population trends.

The Hell Creek and Heart L Allotments are considered Preliminary General Habitat (PGH) and would potentially be used as upland summer (late brood-rearing) habitat, with some breeding and winter habitat potential for sage-grouse. Because this allotment falls within (PGH) for sage-grouse and suitable habitat is limited, only one habitat assessment was conducted in Hell Creek Allotment and no habitat assessments were conducted in the Heart L allotment in 2013, using the protocol established by Stiver et al. (2010) for assessing sage-grouse habitat. Breeding habitat indicators are as follows: (1) sagebrush canopy cover, (2) sagebrush height, (3) sagebrush growth form for nesting, (4) grass and forb heights, (5) perennial grass cover, (6) forb canopy cover, and (7) forb diversity. Upland summer habitat indicators are as follows: (1) sagebrush canopy cover, (2) sagebrush height, (3) perennial grass and forb canopy cover, and (4) forb diversity. Winter habitat indicators are as follows: (1) sagebrush canopy cover, and (2) sagebrush height. According to WRCC (2013) the highest snow depth in the Tex Creek area (approximately four miles from allotment) occurs in the month of January. These snow depths were recorded from 1955 to 2013 and yield an average of 9 inches (22.9 cm). This data was used to determine winter habitat suitability based on sagebrush height above snowpack. Table 4 includes the habitat assessment results for the Hell Creek Allotment, and Table 5 includes the habitat assessment overall ranking.

Table 4 - Sage-Grouse Breeding, Upland Summer, and Wintering Habitat Assessments

Habitat Indicators	Suitable	Marginal	Unsuitable
Breeding Habitat Indicators			
Average Sagebrush Canopy Cover	X		
Average Sagebrush Height – Mesic Site		X	
Sagebrush Growth Form	X		
Average Grass and Forb Height		X	
Average Perennial Grass Canopy Cover – Mesic Site	X		
Average Forb Canopy Cover – Mesic Site	X		
Preferred Forb Abundance and Diversity	X		

Habitat Indicators	Suitable	Marginal	Unsuitable
Upland Sumer Habitat Indicators			
Average Sagebrush Canopy Cover	X		
Average Sagebrush Height		X	
Average Perennial Grass and Forb Canopy Cover		X	
Preferred Forb Abundance and Diversity	X		
Winter Habitat Indicators			
Sagebrush Canopy Cover	X		
Sagebrush Height (availability during winter)		X	

Table 5 - Sage-Grouse Habitat Assessment Ranking

Allotment	Breeding Habitat	Upland Summer Habitat	Winter Habitat
Hell Creek	Suitable	Suitable	Marginal

Overall, breeding and upland summer habitats were suitable throughout the allotment and winter habitats were marginal due to snow depths.

West Nile virus has been identified as a threat to sage-grouse populations (USFWS, 2010). Incidences of West Nile virus peaked in eastern Idaho in 2007. There has been a very low incidence of West Nile Virus in the counties within or adjacent to the Upper Snake Field Office area in the last four years (USDI-USGS, 2013). West Nile virus is spread primarily through contact with infected mosquitoes. Livestock water sources (i.e. trough locations) may increase the distribution and abundance of mosquitoes that contribute to the spread of the West Nile virus if they have attributes beneficial to mosquitoes. These attributes include those that create shallow water depths, shade during the heat of the day, and vegetation and debris cover that provides shelter from predators of mosquitoes (Zou et al. 2006). Livestock watering facilities can become breeding habitat for mosquitoes if water is left stagnant long enough to become warm, and grow algae or other vegetation. While in use, livestock watering troughs do not hold standing water. Instead, there is a regulated flow of cold water from a well or storage tank, which livestock drink from throughout the day. The potential for standing water at

livestock troughs occurs once the livestock leave, and fresh water is not being added to the trough.

There are two bald eagle breeding areas on Ririe Reservoir approximately 8 miles from these allotments. Both nests were active and successful in 2012. The allotments lie approximately 20 miles to the south of the South Fork of the Snake River, one of the most important bald eagle breeding areas in the Greater Yellowstone Ecosystem. The allotments likely provide important wintering habitat for both resident and nonresident eagles.

Brewer's sparrows breed in shrublands where the average canopy height is usually less than 1.5 meters. Throughout most of its U.S. range it is most closely associated with landscapes dominated by big sagebrush (Rotenberry et al. 1999). Although there is little known about Brewer's sparrow population trend data in the area, Brewers sparrows have been observed in the area around the Hell Creek and Heart L Allotments.

Sage sparrows are closely associated with big sagebrush throughout their range and prefer semi-open habitats with evenly spaced shrubs one to two meters tall (Martin and Carlson 1998). Basin big sagebrush provides potential nesting and perching habitat within the allotments. Sage sparrows are expected to occur within both allotments.

Common garter snakes are found in a variety of habitats including grassland, woodland, scrub, chaparral, and forest where they tend to stay near water (Stebbins 2003). They are known to feed on small mammals, birds, earthworms, and amphibians (Carpenter 1952). Due to the presence of riparian vegetation in both allotments this species likely occurs, but context of occurrence is poorly documented.

Columbian Sharp-tailed grouse have declined significantly throughout their range during the 20th century. Idaho currently supports a larger population than any other state. Sharp-tailed grouse habitat generally consists of dense stands of herbaceous cover and a mixture of shrubs and they often rely on riparian areas or deciduous hardwood shrub stands during winter (Idaho Department of Fish and Game, 2005). Within five miles of the Hell Creek Allotment there are four active leks, six undetermined, and one of unverified status. Within five miles of the Heart L allotment there is one active lek, five undetermined, and on of unverified status. Although no sharp-tailed grouse were observed during the assessment, potential habitat exists within the allotment.

Northern goshawks nest in a variety of forest types including Douglas fir, various pines, and aspen. A high canopy closure is one of the most common habitat characteristics for goshawk nest sites. Foraging habitats can be very diverse and range from open sagebrush-steppe to dense forests (Squires and Reynolds 1997). Although no nest sites have been identified, potential breeding and foraging habitat exists within the Hell Creek and Heart L Allotments.

Hammond's flycatcher is primarily an aerial forager, capturing insect prey on the wing. However, it will also glean insects off leaves and other vegetation. It inhabits cool, dense forest

and breeds primarily in Douglas fir, mixed forests, and conifer and aspen forests (Sedgwick 1994). Little is known about the Hammond's flycatcher in the area, however Douglas fir stands within the Hell Creek and Heart L Allotments may provide potential nesting and foraging habitat.

The olive-sided flycatcher feeds almost exclusively on flying insects within forest clearings and semi-open forest. During the breeding season it primarily inhabits montane coniferous forests, where it nests and forages in forest openings and edges associated with natural openings (Altman and Sallabanks 2012). There has been no known documentation of this species within the Hell Creek and Heart L Allotments; however, the allotment does contain potential breeding and foraging habitat.

Although Lewis's woodpeckers are typically classified as burned pine forest specialists, breeding habitats include an open canopy, a brushy under story offering ground cover, dead or downed woody material, available perches, and abundant insects (Tobalske 1997). Little is known about Lewis's woodpeckers in this area but the Hell Creek and Heart L Allotments have patches of a variety of tree species with the associated dead or downed woody material.

Williamson's sapsuckers are an omnivorous woodpecker species that feed exclusively on conifer sap and phloem during the pre-nesting season, and switch to a diet of ants after young have hatched (Gyug et al. 2012). Its breeding habitat consists of middle to high elevation conifer and mixed forests, including Douglas fir forests. Although there is no known documentation of this species within the Hell Creek and Heart L Allotments, the Douglas fir stands within the allotment may provide potential nesting and foraging habitat for the Williamson's sapsucker.

The Calliope hummingbird is the smallest breeding bird in North America. It feeds on floral nectar and small insects and is found during the breeding season in open montane forest, mountain meadows, and alder and willow thickets (Calder and Calder 1994). During migration Calliope hummingbirds can also be found in lowland brushy areas and along desert drainages. Potential breeding habitat for this species exists within the allotments.

Prairie falcons inhabit dry environments of western North America where cliffs or bluffs punctuate open plains and shrub-steppe deserts (Steenhof 1998). The presence of nesting habitat of cliffs, trees and perches within the allotments provide potential foraging and nesting habitat for prairie falcons.

Ferruginous hawks inhabit grasslands, shrub steppes, and deserts of North America and use sparse riparian forests, canyon areas with features such as cliffs and rock outcrops, and isolated trees and small groves of trees in grassland and shrub steppe areas are for nesting (Bechard and Schmutz 1995). Potential nesting and foraging habitat for this species exists within both allotments.

Loggerhead shrikes are passerines that prey upon reptiles, mammals, other birds and a wide array of invertebrates (Woods and Cade 1996). They appear to be widely distributed throughout

southern Idaho and are often locally abundant where they occur (Woods and Cade 1996). Loggerhead shrikes are known to use a variety of habitats including prairies, pastures, sagebrush desert, fencerows or shelterbelts of agricultural fields, orchards, riparian areas, open woodlands, farmsteads, suburban areas, mowed road rights-of way, abandoned railroad rights-of-way, cemeteries, golf courses, and reclaimed strip mines (Dechant, et al. 2002). Habitat must include suitable nesting shrubs or small trees and hunting perches interspersed over a grassy or herbaceous ground cover with some bare areas, where shrikes find most of their prey (Cade and Woods 1997). There is little information available on loggerhead shrikes within these allotments. However, suitable habitat does exist and it is likely shrikes nest and breed there during the summer months.

Pygmy rabbits are sagebrush obligate species inhabiting dense, tall stands of big sagebrush growing on deep, friable soils that allow them to dig extensive burrow systems (Janson 2002). Landscape features include alluvial fans and hillsides, swales within rolling topography, floodplains, brushy draws, riparian channels, edges of rock and lava outcroppings, and mima mounds (IDFG 2005). Pygmy rabbit surveys have not been conducted for the allotment, and no rabbit burrows were found within the allotment. In a model developed to predict potential pygmy rabbit occurrence in Idaho (Rachlow, 2003), the allotment shows moderate to high rating as potential habitat.

Environmental Consequences

Direct impacts of livestock grazing on habitat used by special status species include nest or burrow trampling and the removal of vegetation that could otherwise be used for food or cover. Indirect impacts on habitat used by wildlife can occur if livestock grazing alters the vegetation composition, which can be beneficial or adverse depending upon the specific special status species and results of the impact. In general, native vegetation communities in late-seral to potential natural community (PNC) condition provide habitat conditions suitable to the largest number of native special status species.

Livestock grazing can have direct and indirect impacts on sage-grouse during nesting. Direct impacts may include flushing or disturbing hens incubating eggs or trampling of nests or grouse, which is considered rare (Beever and Aldridge 2011). Indirect impacts include the removal of vegetation used for scent, visual and physical barriers to potential predators by nesting sage-grouse (DeLong et al. 1993). Poorly managed livestock grazing can alter plant community composition and distribution of desirable vegetation species and facilitate invasive species establishment. Livestock management practices that provide for the sustainability of perennial grasses and forbs generally maintain or minimally impact sage-grouse habitat (ISGAC 2006).

Grass height and cover are considered important factors for sage-grouse nest sites (Connelly et al. 2000). Taller herbaceous vegetation surrounding a nest likely influences the success of nesting sage-grouse (Wik 2002, DeLong et al. 1995). Livestock grazing can remove herbaceous vegetation used for cover by nesting sage-grouse. In sagebrush habitats cattle graze herbaceous vegetation in shrub interspaces, and begin foraging on vegetation beneath shrubs as interspace

plants are depleted. Under light to moderate utilization levels, cattle use of sub-canopy vegetation has been documented as negligible (France et al. 2008). The degree of impact that livestock grazing has on sage-grouse nesting habitat is dependent on timing, intensity of use, vegetation composition, and other factors (ISGAC 2006). Nest success is not considered to be a widespread problem in Idaho with an average success rate of 49% (Connelly et al. 2004).

Livestock grazing may impact prairie falcons and ferruginous hawks indirectly by changing the vegetative composition in ways that influence prey species. Grazing reduces vegetative cover, at least temporarily, which increases exposure of prey species resulting in increased predation. Periodic rest or deferment of grazing allows small rodent populations to recover and produce increased numbers when compared to continuous grazing, thereby increasing the prey base (Douglass and Frisina 1993).

Impacts to pygmy rabbits could be positive or negative. Livestock use may result in increased sagebrush cover or density that would provide additional forage and cover for pygmy rabbits; however this may also result in decreased grass and forb cover that are important components of their diets (Thines et al. 2004). The potential for loss of habitat diversity and productivity is high in areas that receive repeated heavy utilization. Pastures receiving heavy use during the growing season would result in reduced forbs and grasses reducing habitat quality for pygmy rabbits during the spring and summer.

Impacts to other special status species such as Brewer's sparrow, sage sparrow, and loggerhead shrike are discussed under the **Migratory Bird** section of this analysis.

Alternative A - No Action

Under a No Action alternative, the Upper Snake Field Manager would authorize continued livestock grazing under the same terms and conditions as the current permits. Under Alternative A, no additional improvements or projects would be authorized in Hell Creek or Heart L Allotments. Impacts to special status species from grazing would be minimal. Potential impacts to pygmy rabbits would be potential crushing or collapsing of burrows. The fall livestock grazing use indirectly impacts special status species by reducing the amount of residual herbaceous vegetation available as forage or cover for these species and/or their prey bases during the following spring. Because both allotments are currently meeting rangeland health standards, the herbaceous species in both allotments would be expected to maintain their vigor and productivity to provide suitable foraging and cover habitat for special status species. In both allotments the native plant communities were found to be meeting rangeland health standards. Under this alternative, it is expected that habitat conditions and native plant composition would be maintained and continue to meet the needs for special status species within both allotments.

Alternative B - Proposed Action

Proposed under Alternative B would be a change in the allotment boundary between the Hell Creek and Heart L Allotments. The boundary change would consist of removing portions of an

existing fence approximately 1 mile long located in the bottom of the drainage, and a new 1.5 mile fence would be constructed on top of the ridge. Due to this boundary change the Heart L Allotment would gain 230 acres from the Hell Creek Allotment. Although, acres will be gained, the AUMs authorized in the Heart L Allotment will remain the same. The current livestock use on the 230 acres is light due to the steep topography, but it is likely impacts from grazing in other portions in the Heart L Allotment will be reduced due to the reduced stocking rate. Under Alternative B the grazing plan for the Heart L Allotment would continue with a three-year deferred grazing rotation system currently in place.

The Hell Creek Allotment in turn will lose 230 acres, reducing active AUMs from 116 to 95. The current deferred grazing rotation and stocking rate would remain the same as in Alternative A. Impacts would be similar to those discussed in **Alternative A** and in the **Environmental Consequences** sections.

Potential impacts from proposed fencing for the allotment boundary change, which results in a net gain of 0.5 miles of fence, would include potential disturbance and displacement during installation phase. Fence posts and wires that may provide perches for predators and the fence may pose a collision hazard (Stevens et al. 2011, Connelly et al. 2004). According to Connelly, placement of new fences and structures should be avoided within 1 km (0.6 mi) from occupied leks (Connelly et al. 2000), and the BLM IM-2012-043 direction is to evaluate any new fences within 1.25 miles of leks that have been active within the past 5 years. There are no known leks within 1.25 miles of the proposed fence. The top strand of the fence will be marked with reflective markers to make it more visible to wildlife and reduce the risk of a collision. Human activity associated with periodic maintenance of the fence may cause some nesting bird species to become temporarily displaced or even abandon their nest sites. The fence will be constructed outside of the migratory bird nesting season (April 1 to June 30) to minimize the potential impacts to nesting birds (Sullivan et al. 2009).

Riparian areas proposed for protection under Alternative B would allow communities to make progress towards PFC which would provide the necessary vegetative requirements for nesting, foraging, and cover habitat for special status species. If fence collision hazards are identified in these areas, fences will be marked to alert wildlife and reduce collision hazards. Special status species that use these riparian areas should benefit from intact riparian vegetation within these allotments.

Alternative C - No Grazing

Impacts to special status bird species from no grazing would vary by species as discussed under **Migratory Birds**. The potential impacts on vegetation from livestock grazing would be removed. In general, understory cover (e.g., grasses and forbs) would increase in size and vigor providing increased cover and forage for special status species and/or their prey base. Some species like the ferruginous hawk and prairie falcon may be negatively impacted by a reduction in prey availability due to increased vegetative cover (Douglass and Frisina 1993). Species such as the sage sparrow and Brewer's sparrow prefer patchy habitat that is often associated with

livestock grazing. Other species such as the sage-grouse and sharp-tailed grouse would benefit from the additional residual herbaceous available in the spring. There would be no displacement or disturbance of special status bird species during critical breeding, nesting and brood-rearing seasons. Impacts to burrowing species would consist of a lack of disturbance or potential crushing or collapsing of burrows.

Impacts to special status species from an increase in fuel load would be similar to those discussed under **Migratory Birds.**

Vegetation

Affected Environment

Due to the high vegetative variability on public lands within the Heart L Allotment and the relatively small acreage, one upland native plant community site was assessed in the Heart L Allotment using techniques described in Interpreting Indicators of Rangeland Health – Technical Reference 1734-6 (BLM 2005). The assessment was intended to represent vegetation within multiple ecological sites which were intermingled on public lands. Mountain big sagebrush (*Artemisia tridentata vaseyana*)/bluebunch wheatgrass (*Pseudoroegneria spicata*) and aspen grove (*Populus tremuloides*) were the largest ecological sites on public lands. Average annual production of the native plant communities in the allotment are highly variable depending on the amount and timing of precipitation, among other factors. Annual production for the mountain big sagebrush/bluebunch wheatgrass ecological site ranges from 600 lbs/acre in unfavorable years, 1,200 lbs/acre in average years and up to 1,800 lbs/acre in favorable years. Annual production for the aspen grove ecological site ranges from 4,632 lbs/acre in unfavorable years, 5,790 lbs/acre in average years and up to 6,948 lbs/acre in favorable years. Under the aspen range site, approximately 90% of the production in made up of shrubs and trees. Production estimates are based on Natural Resource Conservation Service (NRCS) ecological site descriptions.

Grass and grass like plants are the preferred forage for cattle and the average grass production of each ecological site discussed above is used in Table 6 and 7 to calculate a potential grass (forage) production in pounds annually in both Hell Creek and Heart L Allotments. For example in the Hell Creek Allotment the annual grass production would be 441,600 pounds. This would equate to approximately 276 AUMs of potential forage for livestock based on the assumption that the amount of forage needed to support on AUM is 800 pounds ((441,600/800)/2). This calculation assumes production on an average year with all ecological sites at potential and with livestock distributed equally throughout the allotment utilizing exactly 50% of the forage. Actual average grass production available to livestock is expected to be less due to not all ecological sites being at potential natural condition, vegetation removed by native herbivores, including insects, and unequal distribution of livestock due to such factors as topography and distance to water.

Table 6 – Potential Cattle Forage Production in Hell Creek Allotment

Ecological Site	**Average Grass Production (Forage) (a)**	**Range site acres (b)**	**Ave. Pounds of Forage (a) x (b)**	**AUMs**
Bluebunch/ Mountain Big Sagebrush	600	156	93,600	117
Quaking Aspen	300	320	96,000	120
Wet Meadow	2,900	24	69,600	87
Other	300	608	182,400	228
Total		**1,108**	**441,600**	**552**
50% Use Factor				276

Table 7 – Potential Cattle Forage Production in Heart L Allotment

Ecological Site	**Average Grass Production (Forage) (a)**	**Range site acres (b)**	**Ave. Pounds of Forage (a) x (b)**	**AUMs**
Bluebunch/ Mountain Big Sagebrush	600	132	79,200	99
Quaking Aspen	300	253	75,900	95
Wet Meadow	2,900	37	107,300	134
Other	300	221	66,300	83
Total		**6437**	**328,700**	**411**
50% Use Factor				206

Three upland native plant community sites were assessed in the Hell Creek Allotment using Interpreting Indicators of Rangeland Health. Assessments were completed in mountain big sagebrush/bluebunch wheatgrass 13-16" precipitation zone, mountain big sagebrush/bluebunch wheatgrass 16-22" precipitation zone and aspen grove ecological sites. Average annual production of the native plant communities in the allotment are highly variable depending on the amount and timing of precipitation, among other factors. Annual production for the lower precipitation mountain big sagebrush/bluebunch wheatgrass ecological site ranges from 600 lbs/acre in unfavorable years, 1,000 lbs/acre in average years and up to 1,400 lbs/acre in favorable years. Annual production for the higher precipitation mountain big sagebrush/bluebunch wheatgrass ecological site ranges from 600 lbs/acre in unfavorable years, 1,200 lbs/acre in average years and up to 1,800 lbs/acre in favorable years. Annual production for the aspen grove ecological site ranges from 900 lbs/acre in unfavorable years, 1,500 lbs/acre in average years and up to 2,500 lbs/acre in favorable years.

Three field assessments were conducted across the native range in the Hell Creek Allotment, while there was one field assessment conducted in the Heart L Allotment. In general, no indicator was rated higher than a slight to moderate departure from site potential in the Hell Creek Allotment. The one exception was invasive plants in the area of Site 3. Annual

production was slightly reduced over the study sites and the functional structural groups were also slightly altered. The majority of the indicators in the Heart L Allotment were rated none to slight for departures from site potential. Functional/Structural Groups and Annual Production were rated Slight to Moderate departure, due to a reduction in the abundance of large bunchgrasses.

One step-point cover transect was completed in the Hell Creek Allotment during the field assessment. The results of the cover surveys are summarized in Table 8. Step-point cover data was not previously collected in the allotment.

Table 8 – Summary of Step-point cover transect

HAF Study Site	Grass basal cover (%)	Grass canopy cover (%)	Forb canopy cover (%)	Sagebrush canopy cover (%)	Other Shrub canopy cover (%)	Litter (%)	Gravel/Stone (%)	Bare ground (%)	Vegetation (%)
1	3	23	30	24	10	25	0	9	66

A utilization pattern map was completed in Hell Creek Allotment in 2011, while a use pattern map was completed in the Heart L Allotment in 2013. Grazing utilization was mapped in five categories based upon livestock use or removal of available forage species: No Use – 0 to 5%, Slight Use – 6 to 20%, Light Use – 21 to 40%, Moderate Use – 41 to 60%, Heavy Use – 61 to 80%, and Severe Use – 81 to 100%. Utilization was concentrated on the eastern portion of the Hell Creek Allotment in 2011. Average utilization across the Hell Creek Allotment was light (17%) in 2011, while the average utilization across public lands within the Heart L Allotment was light (39%) in 2013.

Environmental Consequences

Direct and indirect impacts to vegetation result from herbage removal or damage by foraging animals. Appropriate grazing or utilization levels can have the effect of stimulating plants, resulting in increased plant production if energy reserves are adequate. If the amount of grazing use or utilization is high for a given year, or especially for a sequence of years, the composition of the vegetative community may become modified as the more desirable, and more utilized species lose vigor and decrease in density throughout the site. The Evaluations for both the Hell Creek and Heart L Allotments found that the native plant communities were meeting Standard 4for Rangeland Health.

Rangeland livestock eat grass-dominated diets in all seasons of the year, although forbs make up a higher percentage of sheep diets compared to cattle and horses. Generally, livestock diet of sagebrush is less than ten percent (Crawford et al. 2004, Ngugi et al. 1992). Poorly managed

livestock grazing can negatively impact soil and site stability, biotic integrity and hydrological function in sagebrush-steppe rangelands. Properly managed livestock grazing can allow rangeland plants to build their root systems and increase nutrient storage, leading to increased survival and more robust plants, as well as increased forage production (McGinty et al. 2009). Davies et al. (2014) concluded that long-term rest compared with properly managed livestock practices generally produce similar or indistinguishable results. Strand et al. (2014) found that livestock grazing at low to moderate levels (less than 50 percent utilization) generally has little influence on the cover of perennial grasses and forbs.

Native sagebrush grassland communities that have been altered by wildfire and/or non-native seedings can benefit from livestock grazing. Livestock grazing can facilitate sagebrush establishment and proliferation, particularly in non-native seedings (Frischknecht and Harris 1968, Angell 1997). Livestock can be an effective tool used to promote shrub establishment in rangelands impacted by wildfire. Densities of sagebrush and other shrubs can be increased when sagebrush communities are grazed in the spring and summer (Launchbaugh 2012). Livestock grazing can act to reduce fuel accumulations, continuity, and height which can lessen the impacts of wildfire within sagebrush ecosystems. Long-term rest causes an accumulation of fine fuels that increases wildfire risk, increases fire severity and subsequently the cost of fire suppression efforts and increases the likelihood of conversion to exotic annual grasslands (Davies et al. 2014). Livestock grazing focuses primarily on herbaceous grasses and forbs which directly affect the source of fuels for wildland fires (Launchbaugh 2012). Davies et al. 2009 found that grazed sagebrush steppe (30-40% utilization of available forage) had greater perennial bunchgrass and forb cover, and decreased cheatgrass cover post-fire than areas that had not been grazed. Additionally, areas with long-term protection from livestock grazing followed by fire resulted in substantial increases in cheatgrass and annual forbs, resulting in a shift from perennial vegetation dominance to annual vegetation dominance (Davies et al. 2009). Spring livestock grazing of cheatgrass can reduce and modify fuel loads and fuel bed depth in a way that can moderate flame lengths and rates of spread of wildfires, thus reducing the potential spread and extent of wildfires (Diamond et al. 2009).

Alternative A – No Action

Under Alternative A, the season of use and authorized AUMs would remain at their current levels in both allotments. The amount of authorized use in the Hell Creek and Heart L Allotments are appropriate for the site potential and is not expected to result in a loss of site productivity. Plant litter accumulation and standing dead matter after grazing on any given year is sufficient to allow decomposition and leave onsite nutrients for cycling. Under Alternative A, the allotments would continue to meet Standard 4 of rangeland health.

Alternative B – Proposed Action

Under Alternative B, the northern boundary fence between the Hell Creek and Heart L Allotment would be adjusted resulting in an addition of 230 acres in the Heart L Allotment and a subtraction of acres in the Hell Creek Allotment. Due to the steepness of the majority of the

terrain on the 230 acres, the permitted use in the Heart L Allotment would not increase. According to Holcheck (1988), livestock use greatly decreases up to 60% on slopes ranging from 31-60% and slopes greater than 60% could potentially eliminate utilization by livestock. There would be approximately two acres of ground disturbance associated realigning the boundary fence between the two allotments and constructing the identified riparian exclosures. Increased utilization and trampling of the vegetation would be expected in a narrow area adjacent to the new fences, as livestock commonly trail along fences more intensively, but the impacts would lessen as distance from water increases.

Permitted use in the Hell Creek Allotment would be decreased by 21 AUMs because of the loss of acres which were considered in the original stocking rate calculation. Under Alternative B, the amount of authorized AUMs in the Heart L Allotment would remain and the amount of AUMs in the Hell Creek Allotment would slightly be reduced as compared to Alternative A. The Heart L and Hell Creek Allotments, which was previously identified as meeting Standard 4 of the ISRH, would be expected to continue to meet. The level of herbage removal by authorized livestock on an annual basis would not alter the condition of the native plant communities within the allotment. The allotments would continue to provide a diversity of native plant species in healthy condition.

In addition to the allotment boundary change, the deferred grazing rotations in both allotments would continue to be implemented. Deferred rotational grazing provides an opportunity for preferred plants and areas to maintain or gain vigor as plants have the opportunity to store carbohydrates and set seed every other year. Under the current grazing rotation in the Heart L Allotment, each pasture would receive growing season rest once every three years. Each pasture in the Hell Creek Allotment would receive some growing season deferment every other year. Continuing to implement the deferred grazing rotation, the native plant communities in both of the allotments would continue to meet standards for rangeland health.

The amount of authorized use in the allotments is appropriate for the site potential and is not expected to result in a loss of site productivity. Plant litter accumulation and standing dead matter after grazing on any given year is sufficient to allow decomposition and leave onsite nutrients for cycling. Alternative B would ensure that the allotments continue to meet standards for rangeland health.

Alternative C – No Grazing

Under Alternative C, all livestock grazing would be discontinued in Hell Creek Allotment and Heart L Allotment for a ten year period. This would increase the vigor and productivity of the native herbaceous plants in those areas of the allotments where livestock grazing has influenced the vegetative community, and allow them to increase in cover and density. This in turn would allow the ecological condition on the allotments to continue to meet or make significant progress toward meeting Standards for native plant community health and threatened, endangered, and sensitive species habitat health. Livestock grazing can act to reduce fuel accumulations, continuity, and height which can lessen the impacts of wildfire within sagebrush ecosystems.

The effects of removing livestock grazing on fuel accumulations and cheatgrass were described under general environmental consequences, above.

Under Alternative C, no livestock grazing would be authorized within the two allotments for a period of 10 years, from 2015 through 2024. The potential impacts, including removal of vegetation and/or damage by livestock, would be removed from the allotment for a ten year period. The potential for higher than desired utilization levels in preferred areas, which may lead to changes in composition of the vegetative communities, would be removed. Increased biomass would be left on-site throughout both the allotments, increasing the amount of residual cover and litter. Over time, abundant residual biomass can decrease plant vigor if it is not removed by grazing or some other manner. However, this would not be anticipated to occur within the 10 year permit term. Vegetation throughout both the allotments was meeting standards and would continue to meet standards for native plant community health under Alternative C. Alternative C would provide for the physiological needs of vegetation to a larger degree than Alternatives A and B.

Water Quality

Affected Environment

Heart L Allotment

Water quality indicators were assessed in 2013. Grays Lake Outlet is not listed on the 2010 Idaho Department of Environmental Quality (DEQ) Section 303(d) list of water quality-limited streams. Water quality indicators were split between "plus" and "at risk": beneficial uses, turbidity, dissolved oxygen, macroinvertebrates and best management practices were rated as "plus"; while water temperature, excess nutrients and sediment as surface fines were rated "at risk". Water temperature was measured as 19° C during the assessment. A fine sediment layer covered the substrate along most of the stream. Although the riparian-wetland area was densely covered by willow, water birch, dogwood and other species, natural sediment sources such as oversteepened, mass-wasting hillslopes exist. Active beaver dams were observed allowing some sediment to settle on substrate. A large variety and number of macroinvertebrates were observed, including stoneflies, caddisflies and mayflies. Best management practices were rated "plus" due to the riparian vegetation and channel characteristics being in PFC since at least 1996.

Hell Creek Allotment

Water quality indicators were also assessed for two reaches of Hell Creek in 2013. Hell Creek is not listed on the 2010 Idaho DEQ Section 303(d) list of water quality-limited streams. All indicators except dissolved oxygen and best management practices were rated "at risk". Dissolved oxygen and best management practices were rated "plus". A water temperature at the time of the assessment was 12° C on the lower end and 16° C was observed on the upper end. The water column was slightly turbid with no cows in the allotment on the date of the field assessment. The upper reach appeared to have algal populations in the stream. The channel bed

had a small layer of fine sediment covering the substrate. Some caddisflies were seen in the stream. The best management practices were rated "plus" due to the vast improvement of the overall riparian health condition ratings, from NF in 1996 for both reaches to PFC in 2013.

Environmental Consequences

Alternative A – No Action

Heart L Allotment

Under Alternative A, with the associated grazing plan and terms and conditions, water quality characteristics would likely continue to be split between "plus" and "at risk" conditions, as they are at the present time. The fine sediment layer observed in the stream would likely continue as there are many sediment sources in the watershed, including naturally oversteepened, mass wasting hillslopes. A large variety and number of macroinvertebrates would also continue to be present. Since livestock accessibility to the three BLM stream reaches would remain at only 5-10%, and riparian condition would be expected to remain in PFC, livestock impacts would continue to be a minor sediment source.

Hell Creek Allotment

Under Alternative A, limiting the riparian pasture to a one month use period, water quality would continue to be in "plus" and "at risk" condition. Water temperature would continue to be "at risk." Some macroinvertebrates would continue to be present. Best management practices would continue to be rated "plus" due to overall riparian health conditions, which would continue to be in PFC. The fine sediment in the stream would continue to be present; however, with only 30-70% of the reaches being accessible to livestock grazing, with both reaches remaining in PFC for riparian vegetation condition, few sediment sources would be due to livestock grazing along the riparian habitat.

Alternative B – Proposed Action

Impacts to stream channel and floodplain characteristics in both allotments would be similar to Alternative A.

Alternative C – No Grazing

Under Alternative C, no livestock grazing would be authorized in either allotment for a 10 years period. Although stream channel and floodplain characteristics would generally remain in PFC as in Alternatives A and B, impacts would be reduced with the removal of authorized livestock grazing. Livestock grazing would not be a sediment sources in either allotment for the 10 year period.

Wildlife Resources

Affected Environment

The allotments are within designated critical habitat for deer and elk and portions of the allotments are within the Tex Creek Wildlife Management Area. Big game populations within the WMA include about 80 to 100 elk, 200 mule deer, and a small number of white-tailed deer in the summer. Resident elk produce 20 to 30 calves and deer produce 80 to 100 fawns each year. Numbers of elk and mule deer wintering on Tex Creek have increased dramatically during this period from a few hundred of each species when Tex Creek was formed. Tex Creek currently provides critical winter range for an estimated 3,200 elk, 4,000 to 5,000 mule deer. These populations extend south to the allotments. Radio-collared data was obtained from Idaho Fish and Game which includes findings from two research projects focusing on winter range habitat use on the Tex Creek WMA. While this was a sample of a few animals that may be found in this area it show ample use by elk and mule deer in throughout the winter.

These allotments are primarily used as ungulate transition range and summer range. Transition ranges are used by migratory animals moving between winter and summers ranges and are important for accumulation or replenishment of energy reserves and as fawning/calving habitat. Similarly, summer range is also used for accumulation of energy reserves and as fawning/calving habitat.

Resident bird species found in the allotments include horned lark, American kestrel, common raven, and black-billed magpie. Other small mammals such as bats, voles, ground squirrels, coyote and badger as well as reptiles such as short-horned lizard and western fence lizards are also likely to use the allotments. However, there is no trend data available for resident birds, small mammals or reptiles within the area.

Environmental Consequences

The principal means by which livestock grazing impacts wildlife species is by altering habitat structure and food availability. Grazing reduces the height and ground cover of grasses, at least temporarily, reducing cover and forage sought by some wildlife species. Vegetation attributes may change in response to livestock grazing; these attributes include plant community composition, distribution, production and plant species diversity (USDI-BLM 2006) which in turn, can affect the health and viability of native wildlife species. The presence of livestock could also potentially impact wildlife through livestock-wildlife interactions that may result in wildlife displacement or disease transmission.

Alternative A - No Action

Under Alternative A, grazing on the allotments would continue under the same terms and conditions as the current permit. Fall cattle grazing may affect wildlife by removing vegetation

which species such as elk, moose, and mule deer utilize during the critical winter season. Late-season grazing can also indirectly impact wildlife by reducing the amount of residual herbaceous vegetation available as forage or cover for various wildlife species and/or their prey bases during the following spring. However, these allotments were evaluated in 2013 and the native plant communities were found to be meeting rangeland health standards in both allotments. Evaluation of these allotments indicate that native plant communities (flora and microbiotic crusts) are maintained or improved to ensure the proper functioning of ecological processes and continued productivity and diversity of native plant species. The diversity of native species is maintained. The amount and distribution of ground cover, including litter, for the identified ecological site are appropriate for site stability. While excessive grazing during the late summer would reduce residual cover and forage for wintering big game, the available data indicates that this is not occurring on these allotments. No projects would be authorized and impacts of the proposed fence and riparian exclosures would not exist. Riparian areas proposed to be exclosed would still be accessible to cattle and continue current functioning trends. In general, habitat is currently providing for the needs of wildlife within these allotments and it is expected that renewing the grazing permit at the existing levels would continue to provide habitat for a wide range of native wildlife species.

Alternative B - Proposed Action

Proposed under Alternative B would be a change in the allotment boundary between the Hell Creek and Heart L Allotments. The boundary change would consist of removing portions of an existing fence approximately 1 mile long located in the bottom of the drainage, and a new 1.5 mile fence would be constructed on top of the ridge. Due to this boundary change the Heart L Allotment would gain 230 acres from the Hell Creek Allotment. Although, acres will be gained the AUMs in the Heart L Allotment will remain the same. The current livestock use on the 230 acres is light due to the steep topography, but it is likely impacts from grazing in other portions in the Heart L Allotment will be reduced due to the reduced stocking rate, ultimately providing more forage for big game and other general wildlife species. Under Alternative B the grazing plan for the Heart L Allotment would continue with a three-year deferred grazing rotation system currently in place.

The Hell Creek Allotment in turn will lose 230 acres, reducing active AUMs from 116 to 95. The current deferred grazing rotation and stocking rate would remain the same as in Alternative A. Impacts would be similar to those discussed in **Alternative A** and in the **Environmental Consequences** sections.

Potential impacts from fencing proposed for the allotment boundary change, which results in a net gain of 0.5 miles of fence would be minimal. The current fence that is proposed for removal is old and in places posed a hazard/barrier to big game. The new fence will be built to BLM wildlife friendly standards and will allow easy passage of big game occupying the area. As fences would be built outside of the nesting/fawning/calving season there is little concern of disturbance to wildlife during this critical season. Further impacts to birds will be similar to those discussed under the **Migratory Bird** section.

Riparian areas proposed for protection under Alternative B would allow communities to make progress towards PFC which would provide the necessary vegetative requirements for nesting, foraging, and cover habitat for wildlife. To mitigate impacts of the new fence, it will be built to BLM wildlife friendly specs to allow safe passage of wildlife. Wildlife species that use these riparian areas should benefit from intact riparian vegetation within these allotments. Further impacts to birds will be similar to those discussed under the **Migratory Bird** section.

Alternative C - No Grazing

Under Alternative C, no livestock grazing would be authorized within the allotments for a period of 10 years, from 2015 through 2024. In general, understory cover, composed of grasses and forbs, would increase and provide habitat necessary in sustaining wildlife populations. Improved seed production would increase potential for establishment of native or seeded species. These changes would result in increased diversity, cover, and height of grasses and forbs, which would improve habitat quality for a wide variety of wildlife species. There would be no competition between big game and livestock for forage, cover and space; and there would be no potential displacement or disturbance to wildlife species by livestock during important breeding, nesting, calving, fawning, wintering, and brood-rearing seasons. Browsing of woody plant species would be minimal and potentially increase browse for big game and nesting habitat for various bird species.

Impacts to wildlife from an increase in fuel load would be similar to those discussed under **Migratory Birds.**

CHAPTER 4 - CUMULATIVE IMPACTS

This section of the document discloses the incremental impacts that Alternatives A, B and C are likely to have when considered in the context of impacts associated with past, present, and reasonably foreseeable future actions that have occurred, or are likely to occur in the area. The Willow Creek Cumulative Impact Assessment Area (CIAA) for the purposes of this analysis includes the northern portion of the Willow Creek Fourth Level Hydrologic Unit (HUC), portions of the southwest region of the Idaho Falls Fourth Level (HUC) and a small portion of the northeast corner of the American Falls Fourth Level (HUC) (Figure 5). The Willow Creek CIAA is bordered by the Pocatello Field Office area to the south and the Snake River/Henry's Fork River CIAA to the north. The Willow Creek CIAA contains approximately 264,650 total acres and is contained entirely within Bonneville County. Surface ownership within the CIAA is summarized in Table 9:

Table 9 - CIAA Surface Ownership

	Acres	Percent of CIAA
State of Idaho	26,268	10%
Department of Energy	40	<1%
Bureau of Reclamation	6,229	2%
Private Land	201,395	76%
U.S. Forest Service	18,402	7%
BLM	12,316	5%
Total	**264,650**	**100%**

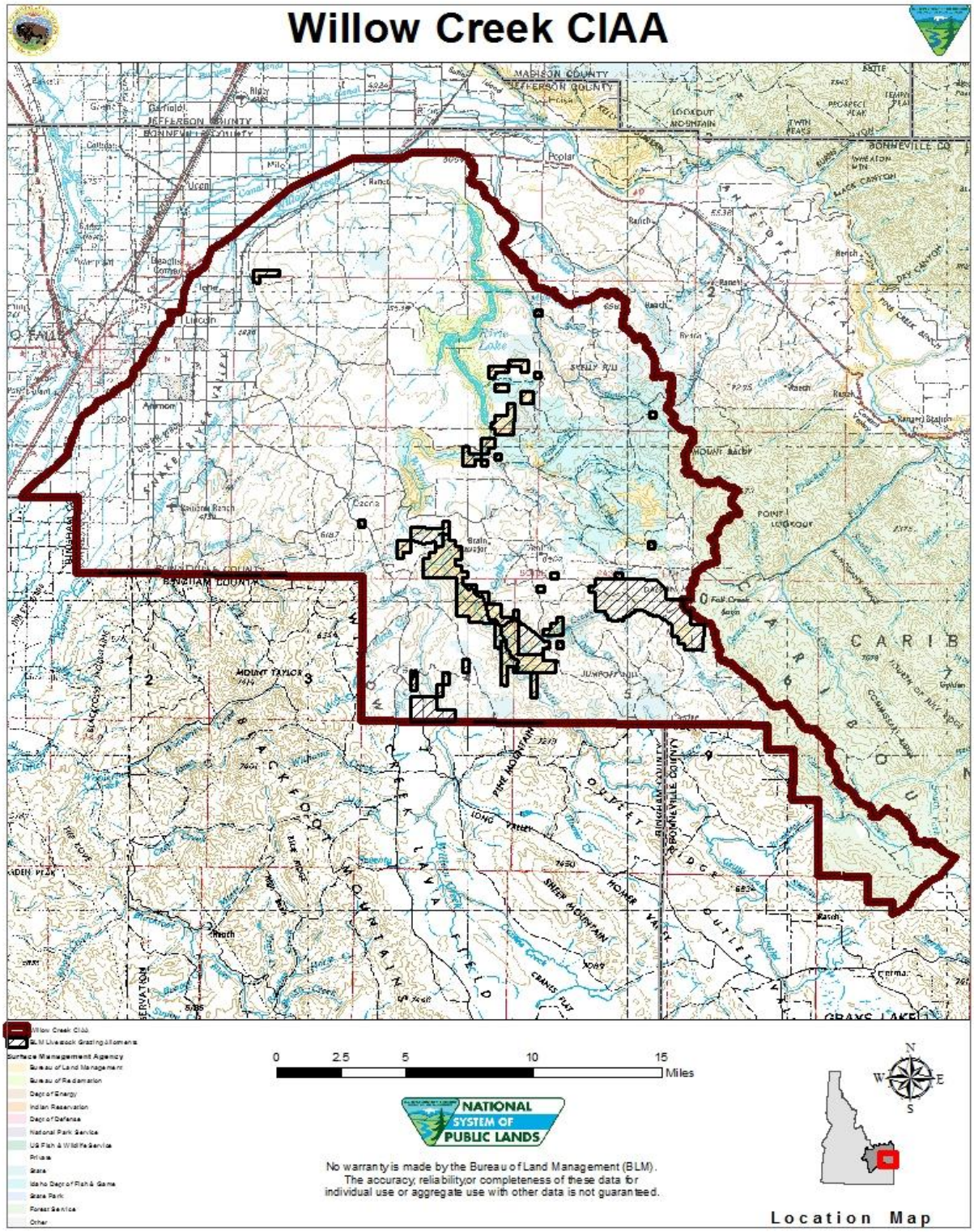
The dominant land and vegetation features throughout the CIAA are summarized in Table 10:

Table 10 - Dominant Land and Vegetation Features

	Acres	Percent of CIAA
Perennial Grasslands	19,342	7%
Annual Grassland	18,829	7%
Shrublands	66,159	25%
Riparian and Wetland	13,448	5%
Forested	44,158	17%
Agriculture	83,906	32%
Urban	11,672	4%
Rock, Cliffs and Canyons	5,816	2%
Other	1,319	<1%
Total	**264,650**	**100%**

Agricultural lands dominate the CIAA with 83,906 acres (32% of CIAA) within the analysis area being developed for agricultural purposes. Shrublands are also quite prevalent, comprising approximately 25% (66,159 acres) of the CIAA. Forests, grasslands and riparian and wetland areas also comprise a large area. Over time these vegetative communities have been affected by drought, human caused disturbance, invasive species, wildfire and a variety of other factors. In general, BLM managed public lands within the CIAA are comprised of small parcels of public land widely scattered across the area being intermingled with private and State of Idaho lands.

Figure 5 – Willow Creek Cumulative Impact Analysis Area (CIAA)



Past and Present Actions

Past and present actions identified for the Willow Creek CIAA which have impacted the human environment to varying degrees include agricultural development, urban development, infrastructure (i.e. communication sites, roads, fences and water troughs), wildfire and livestock grazing. Table 11 details acreage associated with the disturbances identified within the CIAA:

Table 11 - Past and Present Actions in the CIAA.	
Type of Activity	**Impact**
Agricultural Development	
Number of Acres	83,906 Acres developed for Agriculture.
Percent of CIAA	32%
Urban Development	
Number of Acres	11,672 Acres developed by Urbanization
Percent of CIAA	4%
Infrastructure (Roads, fences and water troughs)	
Number of Acres	740 Miles of road affecting *1,076 acres 100 Miles of fence affecting *48 acres 40 Water troughs affecting *20 acres 14 Communication sites affecting *7 acres 100+ Renewable Energy Wind Turbines**
Percent of CIAA	<1%
Wildfire	
Number of Acres	49 Fires over 30 years affecting 15,323 acres
Percent of CIAA	6%
Livestock Grazing	
Number of BLM Allotments	19 Allotments; 8 Allotments not meeting standards; 4 of the 8 allotments not meeting due to livestock grazing; 1 Allotment not meeting but making progress; 5 Allotments meeting standards; 6 Vacant Allotments
Number of Acres	12,643 Acres in 19 Allotments; Estimated acres of the 13 Allotments not meeting standards: 10,316; Acres not meeting standards within the 4 Allotments where livestock grazing has been identified as a contributing factor: 4,751.
Percent of CIAA	BLM acres within allotments: 5%; 8 Allotments not meeting: 4%; Area within the 4 Allotments not meeting standards due to livestock grazing: 2%
*Area affected by roads assumes an average impact area of 12 feet surrounding all roads. *Area affected by fencing assumes an average impact area of 4 feet surrounding all fences. *Area affected by water troughs assumes an average impact area of ½ acre surrounding all troughs. *Area affected by communication sites assumes an average impact area of ½ acre surround all sites.	
**Renewable wind energy turbines have proliferated within the CIAA. With most associated infrastructure occurring on private lands it is difficult to quantify the area affected by this activity. Given the nature and size of these facilities it is expected that wind energy developments would have a large impact contributing to the overall cumulative impact within the CIAA. However,	

much of the development is occurring on private lands already affected by agricultural development.

Agricultural development has a long history in the CIAA. Though Lewis and Clark first entered, what would later become the state of Idaho, in 1805, settlers were not attracted to the region until the 1880s. Although it is just outside of the defined CIAA boundary the city of Idaho Falls greatly influences development within the CIAA. Human populations within the CIAA are centered in cities around Idaho Falls. Urban development transitions into agricultural development and then into undeveloped open spaces moving southeast of Idaho Falls within the CIAA. The 2010 census placed the population estimate of Bonneville County at approximately 104,000. The majority of the total population of Bonneville County resides outside of the CIAA. It is estimated that 4% of the CIAA has urban development. Private property makes up approximately 76% of the land base in the CIAA. Not all private ground is suitable for farming and those areas not used for crop production are often used for grazing livestock or other purposes. Approximately 32% of the CIAA has been developed for agricultural purposes.

Infrastructure development within the CIAA has increased over time, mostly in the form of conversion to agricultural lands. However, the majority of the land base in the CIAA remains undeveloped. Residential development is higher in proximity to the developed agricultural base and urban areas in the northwest portion of the CIAA. There are approximately 740 miles of existing roads within the CIAA, ranging from two lane paved routes to residential roads and undeveloped access routes. Using an average impact area of 12 feet along all roads the total area affected by roads is approximately 1,076 acres, which is less than 1% of the total area within Willow Creek CIAA. Proliferation of approved, constructed and maintained roads within the CIAA is expected to be minimal in the foreseeable future. Proliferation of unauthorized roads is expected to continue, particularly as a result of OHV recreation. The extent to which unauthorized road proliferation will occur in the future is difficult to anticipate and quantify.

Livestock grazing has a long history in the region, dating back to the settlement of the area in the late 1800's. In the early settlement years, cattle and sheep were raised to support the surrounding miners and settlers. Within the CIAA, ranching has declined over time since its peak in the early to mid-20th century as more lands were devoted to agriculture. Livestock production has been relatively stable within the CIAA over the last 20 years and livestock production is a major economic segment of the CIAA. There are currently all or portions of 19 BLM grazing allotments authorized for livestock grazing within the CIAA. Grazing use is also common on private lands and public lands managed by the USFS. Most of the public lands within the CIAA are authorized for livestock grazing.

Recreation use within the CIAA has increased over time. Recreation use is primarily a dispersed activity within the CIAA, but is highly influence by private lands being developed for recreational purposes. Dispersed campsites are found throughout the area and most are located adjacent to flowing water. Popular areas include Willow Creek and suitable portions of the public and Forest Service lands. Access to public lands tends to be difficult due to the amount of private lands surrounding those areas. Big game hunting, camping, fishing, and motorized

vehicle use are the primary recreational pursuits within the CIAA. Many of the 740 miles of roads within the CIAA are used for motorized recreation.

Reasonably Foreseeable Future Actions

Reasonably foreseeable future actions include continuation of the past and present actions as described above. The level and character of agricultural development is anticipated to remain consistent into the foreseeable future as most suitable private property within the CIAA has been developed and additional water resources that would facilitate new development are limited. Wind energy renewable energy projects have proliferated in recent years within the CIAA. Most wind energy and associated infrastructure developments have occurred on private lands. Given the amount of growth renewable energy has experienced to date and the amount of private land available it is reasonable to conclude that growth in this area will continue into the foreseeable future. Residential developments within the CIAA and the level of existing infrastructure is anticipated to continue to grow beyond current levels as populations increase and agricultural lands are replaced by urban developments. Populations in Bonneville County, Idaho have consistently increased over the past 40 years. Populations in the county are expected to continue growth or remain near current levels.

The level and character of livestock grazing within the CIAA is expected to remain at or near current levels barring any significant policy change regarding grazing on federal lands. Such a change would likely have limited effect on livestock grazing because public lands compose such a small portion of the CIAA. Annual authorizations for livestock use would continue to fluctuate on an allotment and individual operator level due to the demands of the individual operations and variability in resource conditions such as drought. Recreational use is expected to continue to increase over time and the potential exists for development or expansion of recreation facilities on public lands within the CIAA. Many of the 740 miles of roads within the CIAA are used for motorized recreation. Proliferation of unauthorized roads resulting from unauthorized motorized recreation is expected to continue as recreation activities increase in the area. The extent to which unauthorized road proliferation would occur in the future is difficult to anticipate and quantify.

Changes in greenhouse gas levels affect global climate. Ring et al. (2012) reviewed scientific information on greenhouse gas emissions and climate change, including the four Assessment Reports of the Intergovernmental Panel on Climate Change between 1990 and 2007, and recognized a growing consensus within the scientific community that most of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations.

Impacts Associated with Past and Present Actions

Past and present actions have resulted in varying degrees of impact to the resources considered in the analyses. Impacts are higher for agricultural developments which have resulted in direct habitat loss and fragmentation of approximately 32% of the CIAA. Agricultural development

has altered or removed the native vegetation communities, changed soil characteristics and introduced elements like accelerated erosion, irrigation and concentrated fertilization that have altered and would continue to alter the characteristics of the natural landscape.

Observable impacts associated with urban development have resulted in direct habitat loss and fragmentation of approximately 4% of the CIAA. These actions have introduced non-natural elements that have altered hydrology, energy cycles, soil characteristics and native vegetative communities within the CIAA.

Impacts associated with infrastructure development have resulted in direct habitat loss and fragmentation of less than <1% of the CIAA. Infrastructure often affects natural habitats differently than agriculture or urban development. In the case of roads and fences the impacts are often drawn out over a linear area rather than large concentrated blocks as agriculture and urban development are. Although infrastructure may influence natural areas in different ways the impacts act similarly by removing the native vegetation communities and introducing non-natural elements into the natural landscape.

Over the past 30 years, 49 wildfires have burned 15,323 acres, which amounts to approximately 6% of CIAA. Wildfire can remove and/or permanently alter native vegetation communities. Often, invasive species and noxious weeds are able to establish within fire disturbance areas. Perennial grasses and forbs are generally able to recover well after wildfire if their composition and health were adequate prior to the fire and fire intensity is not too severe. If shrubs are removed by wildfire, recovery to pre-fire conditions can take much longer. Fire can act to reinvigorate vegetation in an area by returning available nutrients to the soil and making them readily available for existing vegetation.

Of the 19 BLM grazing allotments in the CIAA eight have been documented to be not meeting the Standards and Guidelines for Healthy Rangelands. Three allotments were identified that were not meeting standards, but concerns identified were not attributed to livestock grazing. BLM administered lands within the four allotments where standards are not meeting due to livestock grazing cover an area of approximately 4,751 acres (2% of CIAA). One allotment was not meeting standards, but progress towards meeting the standards was being made. The total area of BLM allotments is estimated at 12,643 acres, which includes areas meeting and not meeting standards within the 19 allotments. The Heart L Allotment was determined to be meeting Standard 1 (Watersheds), Standard 2 (Riparian Areas and Wetlands), Standards 3 (Stream Channel/Flood Plain) and Standard 4 (Native Plant Communities) in 2010. The allotment was not meeting Standard 7 (Water Quality) and Standard 8 (Threatened and Endangered Plants and Animals), but livestock were not considered to be contributing to the lack of achievement of these standards at that time. The Hell Creek Allotment was determined to be meeting Standard 1 (Watersheds) and Standard 4 (Native Plant Communities) in 2002. The allotment was not meeting Standards 2 (Riparian Areas and Wetlands) and livestock were determined to be a significant contributing factor to the rating. Standards 3 (Stream Channel/Flood Plain), 7 (Water Quality) and 8 (Threatened and Endangered Plants and Animals) were not being met, but were making significant progress toward being met at that time. In

2013, both allotments had made progress toward achieving standards. Standards 7 and 8 were still not meeting standards, but were making significant progress toward reaching the criterions.

Unmanaged livestock (horses, cows, and sheep) grazing in the first half of the 20th century resulted in altered ecological conditions in the riparian areas and the uplands in the Willow Creek CIAA. Use was historically higher adjacent to available water with reduced use in the areas away from springs, creeks, and rivers. As livestock grazing became more carefully managed in the area on the remaining native vegetation, the ecological health of the rangelands and riparian areas improved.

Fencing is commonly used as a livestock management tool and there are approximately 100 miles of fence occurring throughout the CIAA. This estimate is associated with BLM grazing allotments and likely underestimates total fenced area due to the amount of private land in the CIAA. However, this is the best available data. Using an average impact area of 4 feet along all fences, the total area affected by fencing is approximately 48 acres, which is less than 1% of the total area within the Willow Creek CIAA. Another livestock management tool often used in the CIAA is the use of water troughs to improve livestock distribution. There are a minimum of 40 livestock water troughs documented in the CIAA, which is also likely an underestimation due to the amount of private lands. Using an average impact area of 0.5 acres surrounding water troughs the total disturbance area is 20 acres, which is less than 1% of the total area within the Willow Creek CIAA.

Activities that occur on public and private lands, such as agricultural practices; infrastructure development; recreational use such as camping, hunting, and ATV use; and livestock grazing management affect wildlife use patterns, the quantity and quality of habitats, and population viability. Many species of wildlife including birds, bears, and big game require large intact habitats for their continued survival. Urbanization and recreational properties on adjacent private lands reduces their value to wildlife habitat through fragmentation of existing habitats. Potential cumulative impacts of livestock grazing on wildlife habitat include compaction of soils, reduction of available forage and hiding cover, and disturbance of riparian vegetation. Maintaining intact habitats and having the flexibility to modify grazing schedules to meet the specific needs of vegetation and wildlife will help maintain rangelands in good ecological condition.

Drought is a recurring, unpredictable, environmental feature. Drought has been defined by the Society of Range Management as: "(1) a prolonged chronic shortage of water, as compared to the norm, often associated with high temperatures and winds during spring, summer, and fall; and (2) a period without precipitation during which the soil water content is reduced to such an extent that plants suffer from lack of water" (Bedell, 1988). Impacts associated with drought can be widespread. All plants and animal species depend on water. When drought occurs, available forage for consumption as well as habitat can be damaged. Potential environmental impacts include but are not limited to: loss or destruction of fish and wildlife habitat, lowering of water levels in reservoirs, lakes and ponds, loss of wetlands, and increased threat of wildfires. Some additional impacts include wind and water erosion of soils, reduced shoot and leaf growth,

reduced reproductive potential, induced senescence, and plant death (National Drought Mitigation Center, 2013).

A number of researchers, including Lapage et al. (2012) while recognizing the inherent variability within and appropriate application of global and regional climate models, have recognized the potential impact to agricultural production that climate change scenarios, including altered temperature and precipitation regimes at the regional level may induce. Neilson et al. (2005) in summarizing output from seven models and possible scenarios of regional climate change in the Great Basin identified long-term trends toward greater precipitation and warmer temperatures, although noted inter-annual and inter-decadal variability that could account for short-term records that may differ. A similar summary of the available studies and models is presented by Chambers and Pellant (2008).

Possible consequences to vegetation communities resulting from climate change in the Great Basin include a dramatic increase and expansion of woody frost-sensitive species at the expense of shrubland and a corresponding increase in fire. Bradley (2009) modeled the consequences that altered summer precipitation and winter temperature could have on the potential risk of cheatgrass expansion or contraction, noting that climatic change will affect the potential geographic distribution of cheatgrass and will likely affect other plant invaders as well. Ash et al. (2012) identified that adaptation options will be required in different rangeland regions in response to climate change to enhance the development of sustainable livelihoods with both social and ecological resilience. Technical input to the 2013 National Climate Assessment identified the process of adjustment to actual and expected climate and its effects in order to moderate harm or exploit beneficial opportunities on biodiversity, ecosystems, and ecosystem services (Staudinger, et al., 2012).

With consideration for anticipated stressors induced by climate change, appropriate livestock management and other land use practices that improve and maintain healthy and functioning vegetation communities which provide for proper nutrient cycling, hydrologic cycling, and energy flow remains the primary adaptation against changing precipitation and temperature regimes.

The U.S. Fish and Wildlife Service (USFWS) identified primary and other threats to Greater sage-grouse in its 12-Month Findings for Petitions to List the Greater Sage- Grouse (*Centrocercus urophasianus*) as Threatened or Endangered (USFWS 2010). The primary cause of sage-grouse population decline identified by the USFWS was fragmentation of sagebrush habitats due to: habitat conversion for agriculture or urbanization, infrastructure within sagebrush habitats (powerlines, communication towers, fences, roads, railroads, etc.), wildfire and energy development (specifically roads and energy related infrastructure). Other important threats included: inadequate regulatory mechanisms, invasive plants (annual grasses and noxious weeds), climate change, collisions (with fence, powerlines, etc.), conifer invasion, contaminants, disease (West Nile virus), poorly managed livestock grazing, hunting, mining, predation, prescribed fire/vegetation treatments, recreation (OHV use) and water developments (USFWS

2010). It is often the cumulative impact of various disturbances that have the greatest effect on sagebrush ecosystems, rather than any single disturbance (Knick et al. 2011).

Key sage-grouse habitats are large scale, intact sagebrush steppe areas that provide sage-grouse habitat (Sather-Blair et al. 2000). Sage-grouse Preliminary Priority Habitats (PPH) are those areas of highest conservation value due to high male lek attendance, high lek density and high lek connectivity (Makela and Major 2011). None of the area within Willow Creek CIAA are considered PPH sage grouse habitat. Preliminary General Habitats (PGH) are habitats occupied by sage-grouse not contained within PPH. PGH areas are characterized by lower lek densities that may serve as important connectivity corridors between PPH (Makela and Major 2011). Within the Willow Creek CIAA there are approximately 134,300 acres of PGH sage-grouse habitat, which is approximately 51% of the CIAA. Table 12 summarizes known impacts within PGH areas in the Willow Creek CIAA:

Table 12 – Known Impacts in the Willow Creek CIAA

Impact	PGH Acres Affected % of PGH	% of CIAA
Agricultural Development	11%	6%
Urban Development	<1%	<1%
***Infrastructure**	<1%	<1%
Wildfire	10%	5%
****Livestock Grazing**	4%	2%

*Note: Infrastructure is a combination of communication sites, roads, fences, renewable energy sites and water trough sites.

** Action describes areas identified as not meeting ISRH and livestock grazing management was determined to be the primary factor. In situations where the specific location of acres, not meeting due to current livestock the applicable standards, were not delineated in a GIS data base and available for analysis relative to delineated PGH areas, the assumption was made if the allotment included PGH habitat, all of the acres not meeting the applicable standard were considered to be within PGH areas. While this assumption may inflate that acreage impacted by livestock grazing in PPH or PGH habitat, respectively, it insures that potential PGH acreages impacted by livestock grazing are not excluded.

Wildfire and development (agricultural and urban) provide the greatest cumulative impact to sage-grouse within the CIAA. Aside from the direct impacts of habitat alteration, these disturbances may alter sage-grouse behavior causing them to avoid impacted habitats or displace populations to more suitable areas.

Although livestock grazing was not identified as a primary threat, it is one of the more widespread uses occurring in sage grouse habitat (Connelly et al. 2004). There is limited evidence to suggest direct impacts to sage-grouse by livestock, but livestock grazing does directly affect sage-grouse habitats by removing vegetation (foraging) or changing species composition under poor management practices (Connelly and Braun 1997). Assuming that all acres not meeting standards are in PGH, approximately 4% of PGH habitat and 2% of the CIAA

have been identified as not meeting the Standards and Guidelines for Healthy Rangelands where livestock grazing was identified as a contributing factor.

Livestock grazing has occurred within the CIAA since the late 1800s. Impacts to sagebrush ecosystems were likely the greatest during this time as unregulated grazing occurred into the early 1900s (Knick et al. 2003). The Taylor Grazing Act (1934) was the foundational law for livestock management on public lands, and although it was intended to regulate livestock use, it also benefited sage-grouse habitat within the CIAA by curbing unregulated grazing. Since then other laws, improved science, improved management cooperation (interagency and with private landowners) and improving adaptive management have provided more safeguards for sage-grouse habitats.

Sage-grouse within the CIAA are part of a larger population known as the East-Central Idaho population. This sage-grouse population occurs between the Snake River and the Wyoming border being separated from other populations by mountainous terrain and distance. The population is relatively small and existing data is limited to make long-term persistence analysis impossible.

No new primary threats such as conversion of sage-grouse habitat for agriculture or urbanization, or infrastructure (roads, powerlines, energy development, etc.) are proposed on public lands in the CIAA. However, such development would be expected to continue on private lands within the CIAA. Invasive species and wildfire continue to be threats that cannot be anticipated in frequency or intensity. Impacts associated with wildfire are likely to continue to be one of the greatest threats to sage-grouse populations in the CIAA. Managing for healthy habitats in the CIAA provides the most protection against invasive species and resiliency to disturbances such as wildfire.

The renewal of the grazing permit for the Heart L and Hell Creek Allotments would continue livestock grazing for 10 years. The allotments are expected to maintain the current status of meeting or making significant progress toward meeting the Standards and Guidelines for Healthy Rangelands (including the needs of sage-grouse) into the foreseeable future and provide for improved habitats within the CIAA. Other grazing permits within the CIAA would continue to be evaluated, modified as needed and renewed according to law and BLM policy in the future. Other threats such as invasive plants, climate change, collisions, contaminants, disease, hunting, mining, predation, vegetation treatments, recreation (OHV use) and water developments are likely to continue in the CIAA, but the extent to which they affect sage-grouse are difficult to quantify. No new vegetation treatments or mining are proposed in this EA. Some fencing and spring developments are proposed and the associated impacts are analyzed in their respective alternatives. Other such proposals may occur within the CIAA in the future, but would be subject to law and BLM policy to ensure that the cumulative effect to sage-grouse does not inhibit the viability of populations in the CIAA or for the East-Central Idaho population.

Contribution of the Alternatives to the Cumulative Impacts in the CIAA

Alternative A – No Action

Alternative A would contribute very little to the collective impact associated with past, present and reasonably foreseeable future actions. Livestock use would remain at current levels, and there would be no new structural developments which would contribute no change to the collective impact relative to non-natural elements of form, line, and color within the landscape. The number of road miles within the area would not increase as a result of implementing Alternative A. The amount of suitable habitat for wildlife species that occur in the CIAA would remain about the same. The actions described in Alternative A would not substantially alter the current or expected future conditions of natural resources in the CIAA.

Alternative B – Proposed Action

Alternative B would also contribute very little to the collective impact associated with past, present and reasonably foreseeable future actions. Livestock use would remain at current levels in the Heart L Allotment and slightly reduced levels in the Hell Creek Allotment. There would be the realignment of one structural development and construction of a number of riparian exclousres which would contribute a minor change to the collective impact relative to non-natural elements of form, line, and color within the landscape. The number of road miles within the area would not increase as a result of implementing Alternative B. The number of livestock watering troughs in the CIAA would remain the same. The number of fence miles would slightly increase as a result of implementing Alternative B because of the boundary fence and riparian exclosures that are proposed in this alternative. The total impact would be slight because the majority of the boundary fence realignment would be replacing the existing boundary fence. This acreage is negligible in terms of the percent of acreage disturbed by rangeland improvements in the CIAA. The proposed projects would result in approximately two acres of habitat disturbance associated with infrastructure, an increase of approximately 0.0008% within the CIAA.

Alternative C – No Grazing

The cumulative impacts of Alternative C would be the same as the cumulative impacts of Alternative A. Removing livestock grazing from Heart L and Hell Creek Allotments for ten years would not change number of BLM acres being improved to ensure the proper functioning of ecological processes and continued productivity and diversity of native plants. The number of road miles within the area would not increase as a result of implementing Alternative C. The amount of suitable habitat for wildlife species that occur in the CIAA would remain about the same. The actions described in Alternative C would not substantially alter the current or expected future conditions of natural resources in the CIAA.

CHAPTER 5 – SUMMARY AND CONCLUSIONS

The assessment indicates that Alternative A, which includes no changes in the current mandatory terms and conditions, would continue to meet Standards 1, 2, 3, and 4, and would continue to make significant progress towards meeting Standards 7 and 8 of the Idaho Rangeland Health Standards in both allotments. Overall, the allotments would continue to provide habitats suitable to maintain viable populations of native wildlife species, including special statues species. Under Alternative A, there would be no change in economic or social values.

The assessment indicates that Alternative B would continue to meet Standards 1, 2, 3, and 4 as well as continue to make significant progress toward meeting Standards 7 and 8. Under Alternative B, the Heart L and Hell Creek Allotments would be expected to continue to meet or make significant progress toward meeting the applicable standards. The level of herbage removal by authorized livestock on an annual basis would not alter the condition of the native plant communities within the allotment. The allotments would continue to provide a diversity of native plant species in healthy condition. In addition, the deferred grazing rotations in both allotments would continue to be implemented. Deferred rotational grazing provides an opportunity for preferred plants and areas to maintain or gain vigor as plants have the opportunity to store carbohydrates and set seed every other year.

The proposed boundary change would result in a 21 AUM reduction in the Hell Creek Allotment. For the season of use, this would translate to eleven fewer cattle authorized on the allotment annually. The forage substitution cost to replace 21 AUMs would range from approximately $297 to $1,757 annually. Moving the fence would also result in approximately 2 acres of ground disturbance that would be vulnerable to new weed infestations. The potential increase of invasive/noxious weeds would be higher because the proposed location of the fence would require being cleared or bladed before construction. However, all of the project areas would be monitored closely for new occurrences of noxious weeds. All new and existing infestations would continue to be treated. In addition to the increased potential of invasive/noxious weeds, increased soil surface disturbance and compaction would be expected in a narrow area adjacent to the new fences, as livestock commonly trail along fences more intensively. The increase in compaction would occur on a small area of the total acreage of public lands and would not be a critical factor in achieving rangeland health. Another potential impact associated with the construction of the boundary fence as well as the riparian exclosures is the disturbance and displacement during the installation phase and the addition of perches for predators. The addition of new fences may also pose a collision hazard to migratory birds and other wildlife species, but special status species as well as other wildlife species that use these riparian areas should benefit from intact riparian vegetation within these allotments. As a result of excluding livestock from the springs and reducing AUMs in the Hell Creek Allotment, increases would occur in vegetative cover, preferred tree, and shrub establishment or regeneration, and overall site vigor would continue to make significant progress toward meeting riparian standards on the springs. Under Alternative B, the riparian vegetation on the streams in both allotments would continue to remain in PFC, anchoring and stabilizing the streambanks and floodplain.

The environmental assessment indicates that Alternative C, which includes no livestock grazing in the allotments for a 10 year period, would continue to meet standards and continue to provide habitats suitable to maintain viable populations of special statues species and improvement in habitat condition. Under Alternative C, the authorized use would be reduced by 226 BLM AUMs annually. The forage substitution cost to the permittees under Alternative C would range from approximately $3,220 to $18,904 each year, for the next ten years. If the herds are reduced as a result of decreased forage availability, the decreased gross revenue through herd reductions would range from approximately $22,600 to $26,216. Under Alternative C, there would be no additional cost for project maintenance.

CHAPTER 6 - CONSULTATION AND COORDINATION

Persons and Agencies Consulted

Jim Fisher – Permittee
Heart L Ranch - Permittee
Idaho Department of Fish and Game
Idaho State Dept. of Agriculture
Chairman, Land Use Policy Committee, Shoshone-Bannock Tribes
Northwest Band of Shoshone Nation
Chairman, Tribal Business Council, Shoshone-Bannock Tribes
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List of Authors

Jordan Hennefer and Scott Minnie: Economic and Social Values/Invasive, Non-Native Species/Vegetation/Soils
Arn Berglund: Fisheries, Threatened, Endangered, Sensitive Fisheries
Devin Englestead: Migratory Birds/Wildlife Resources/Threatened, Endangered, Sensitive Animals
Marissa Guenther: Cultural Resources
Dan Kotansky: Stream Channel/Floodplain, Water Quality
Deena Teel: Wetland and Riparian Areas

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APPENDIX A – DETERMINATION DOCUMENT FOR HEART L ALLOTMENT

SECTION 1 – IS A DETERMINATION REQUIRED?

_X_ All Standards are met or making significant progress towards meeting and there is conformance with the guidelines. **No Determination is required, review is complete.**

___ One or more Standards is not being met or there is non-conformance with the guidelines. **An Authorized Officer's Determination is required; continue with Section 2.**

SECTION 2 –DETERMINATION

The Determination documents the authorized officer's finding that existing grazing management practices or levels of grazing use on public lands either are or are not significant factors in failing to achieve the standards and conform to the guidelines within a specified geographic area. (H-4180-1 page I-3)

APPENDIX B – DETERMINATION DOCUMENT FOR HELL CREEK ALLOTMENT

SECTION 1 – IS A DETERMINATION REQUIRED?

_X_ All Standards are met or making significant progress towards meeting and there is conformance with the guidelines. **No Determination is required, review is complete.**

___ One or more Standards is not being met or there is non-conformance with the guidelines. **An Authorized Officer's Determination is required; continue with Section 2.**

SECTION 2 –DETERMINATION

The Determination documents the authorized officer's finding that existing grazing management practices or levels of grazing use on public lands either are or are not significant factors in failing to achieve the standards and conform to the guidelines within a specified geographic area. (H-4180-1 page I-3)