United States Department of the Interior
Bureau of Land Management
Burley Field Office

Jim Sage Allotment
Livestock Grazing Permit Renewal

Environmental Assessment DOI-BLM-ID-T020-2022-0011-EA

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Updates to EA due to protest of Proposed Decision

The Proposed Grazing Decision was mailed June 10th and was protested on June 29th by Western Watersheds Project. In order to address the protest points the following modifications were made to the EA in the following areas:

- Section 2.0.1 – Clarified wording regarding utilization.
- Section 4.0.1 – Included descriptions of general effects that livestock grazing has on riparian areas.
- Section 4.1.2 – Included descriptions of livestock grazing effects to riparian areas on the Jim Sage Allotment under the Current Management Alternative.

In addition, typographical errors were corrected as found throughout the entire EA.

1.0 Introduction

1.1 Background of Jim Sage Allotment

This Environmental Assessment (EA) has been prepared in response to the U.S. District Court for the District of Idaho Memorandum Decision and Order dated September 29, 2014, in *Western Watersheds Project v. Dyer* (Case No. 4:08-CV-435-BLW) to reevaluate grazing management on the Jim Sage Allotment. In the 2008 Permit Renewal for Jim Sage Mountain Area Allotments and Final Grazing Decisions, four allotments (Jim Sage, Cassia Creek, Almo-Womack, and Chokecherry) were combined into one large allotment, Jim Sage. For more details regarding the court case see discussion below in Section 1.2, Previous Litigation and Rulings.

The Jim Sage Allotment is located in south-central Idaho, south of the Snake River, due east of Elba and Almo, Idaho and two miles southwest of Malta, Idaho (Figure 1 & 2). The allotment acres were calculated through GIS and comprises of approximately 74,381 acres of public land, 4,120 acres of State of Idaho Lands and 2,172 acres of private lands. Elevations range from 4,600 feet on the eastern edge of the allotment to just over 8,000 feet on the highest mountain peak. Vegetation is dominated by sagebrush types with significant areas of juniper and native grasses. Several crested wheatgrass seedings and native cultivar seedings occur across the allotment. There are also 11 miles of perennial streams in the allotment with approximately 40 acres of riparian vegetation.

Unique characteristics on the Jim Sage Allotment include an 11,227-acre Special Recreation Management Area (SRMA). This SRMA is defined as lands above the 6,600-foot elevation and emphasizes primitive recreation opportunities (i.e., hiking and horseback riding). Use by recreationalist is infrequent, occurring mainly in the fall during hunting season and is not widespread. Access to the SRMA is generally limited to horse and foot travel. Partially included in the SRMA is the Jim Sage Research Natural Area/Area of Critical Environmental Concern (RNA/ACEC), which was created to preserve the relic Pinyon-Juniper plant community. This 620-acre RNA contains the Jim Sage Spring riparian exclosure and is in Jim Sage Canyon on the south end of the allotment.

Eighteen permittees utilize the allotment to graze livestock (up to 5,131 active AUMs (Animal Unit Months)). The allotment is comprised of seven different Use Areas and 28 pastures (Figure 2) which are managed independently (Table 3, p. 14). Permit Terms and Conditions provide flexibility allowing for changes in management for each Use Area as well as the flexibility to move livestock from one Use Area to another based upon resource conditions.

All Use Areas in the allotment are managed under an Adaptive Management Strategy which is utilized when current year's use deviates from what normally occurs, allowing for additional flexibility in grazing management to respond to changing environmental conditions. For example, if there is low forage production in a particular Use Area due to drought, all the livestock or a portion of the livestock that typically utilize the area can be moved to other Use Areas where forage production is adequate to support the extra livestock. This movement of livestock to another Use Area triggers the adaptive management response where additional monitoring is required to ensure resource conditions remain healthy.

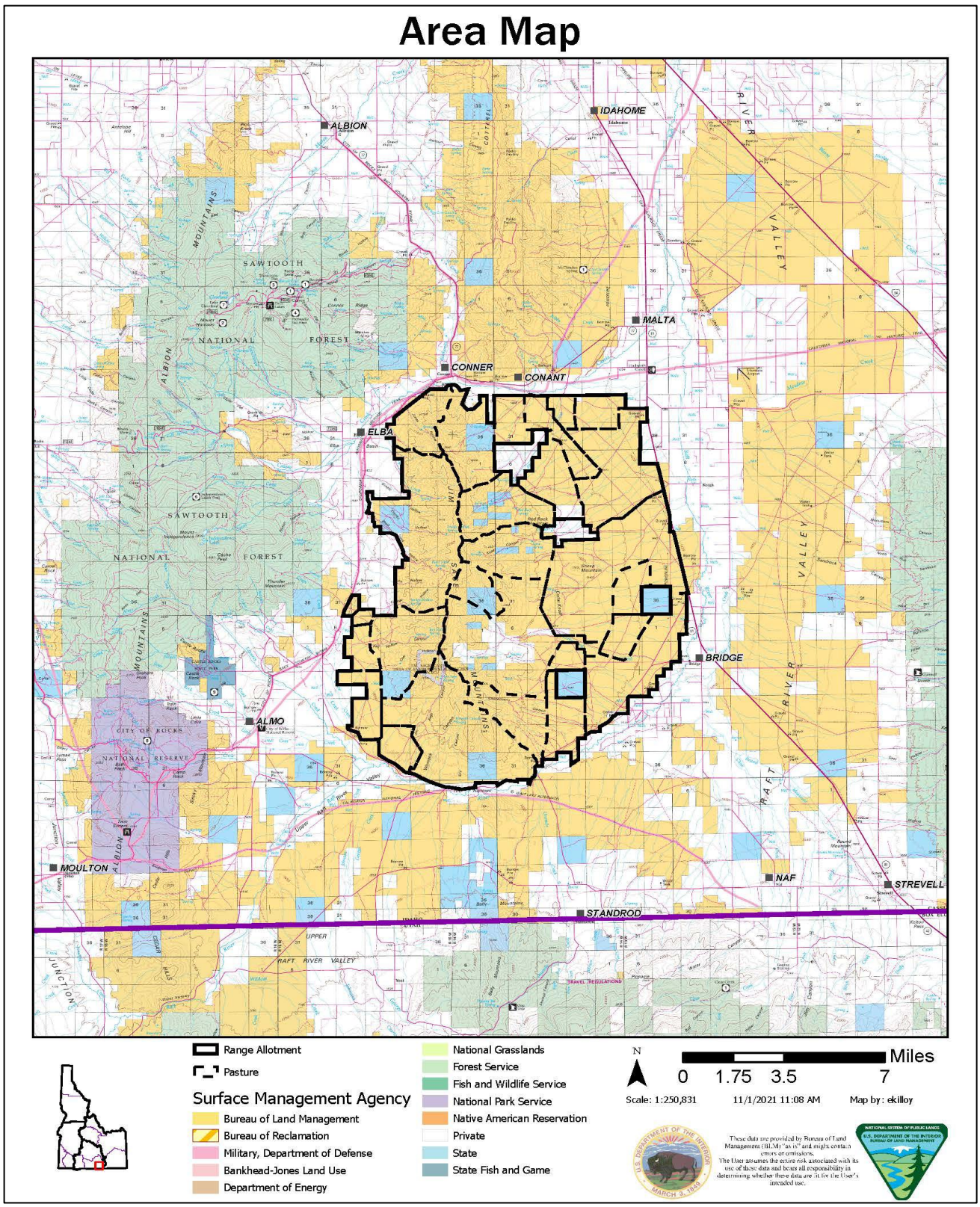

Figure 1. Area Map. The Jim Sage Allotment is outlined in black.

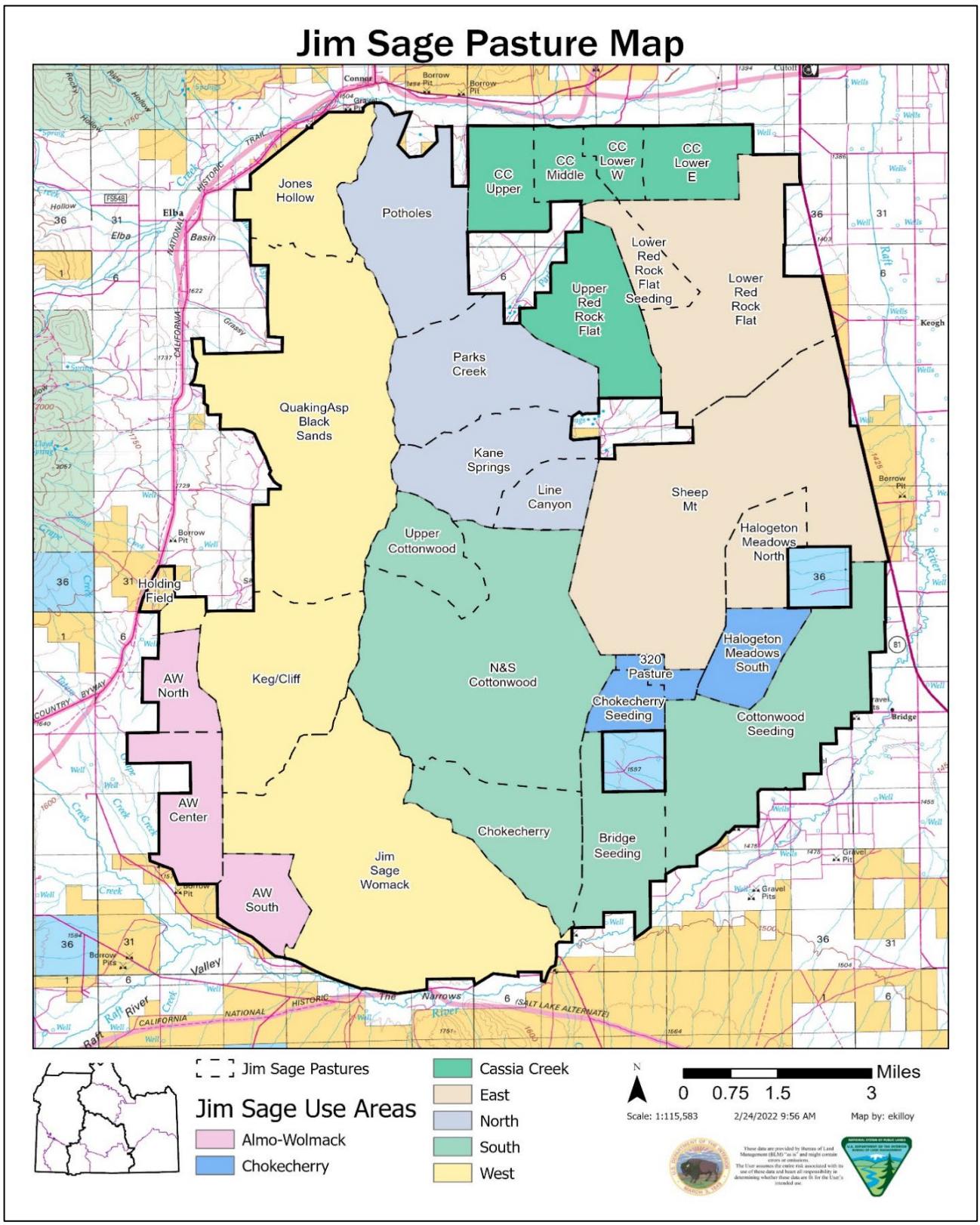

Figure 2. Jim Sage Pasture and Use Area Map.

A Rangeland Health Assessment (RHA) and Evaluation Report were completed to determine if the Jim Sage Allotment is in conformance with the Idaho Standards for Rangeland Health (ISRH) for the time periods of 2001 to 2003 and 2021. These assessments and subsequent evaluations are done to assist the Interdisciplinary (ID) Team in drawing conclusions about the status of rangeland health and trends in condition. The ISRH also provide resource objectives for the Jim Sage Allotment.

The ISRH also provide resource objectives for the Jim Sage Allotment. The *applicable* ISRH standards for the Jim Sage Allotment are as follows:

- **Standard 1** – Watersheds provide for the proper infiltration, retention, and release of water appropriate to soil type, vegetation, climate, and landform to provide for proper nutrient cycling, hydrologic cycling, and energy flow.
- **Standard 2** – Riparian-wetland areas are in properly functioning condition appropriate to soil type, climate, and landform to provide for proper nutrient cycling, hydrologic cycling, and energy flow.
- **Standard 3** – Stream channels and floodplain are properly functioning relative to the geomorphology (e.g., gradient, size, shape, roughness, confinement, and sinuosity) and climate to provide for proper nutrient cycling, hydrologic cycling, and energy flow.
- **Standard 4** – Healthy, productive, and diverse native animal habitats and populations of native plants are maintained or promoted as appropriate to soil type, climate, and landform to provide for proper nutrient cycling, hydrologic cycling, and energy flow.
- **Standard 5** - Rangelands seeded with mixtures, including predominately nonnative plants, are functioning to maintain life form diversity, production, native animal habitat, nutrient cycling, energy flow, and the hydrologic cycle.
- **Standard 7** - Surface and ground water on public lands comply with the Idaho Water Quality Standards.
- **Standard 8** - Habitats are suitable to maintain viable populations of threatened and endangered, sensitive, and other special status species.

Four RHAs were completed in the early 2000s, since there were four separate allotments (Cassia Creek, Jim Sage, Almo-Womack, and Chokecherry); these four allotments were later combined to create what is now the Jim Sage Allotment. Below, Table 1 depicts which Standards for Rangeland Health were or were not met during the early 2000s determinations, and whether those standard(s) were not being met due to current grazing management or other factors. During this time, the Bureau of Land Management (BLM) identified grazing management as an issue concerning riparian area conditions and associated habitat for riparian nesting songbirds (Standards 2, 3, 7, and 8). Additionally, the Cassia Creek Allotment failed to meet the seeding standard (Standard 5) in the Center Pasture due the then-current grazing management. The discussion following Table 1 describes changes in grazing management completed to address the deficiencies in the Standards for Rangeland Health attributed to livestock grazing during the early 2000s assessments.

Table 1. Idaho Standards for Rangeland Health (ISRH) Allotment Summary (2001 to 2003).

	Standards for Rangeland Health							
Allotment	#1	#2	#3	#4	#5	#6	#7	#8
Jim Sage	M	NM*	NM*	NM**	NM**	N/A	NM*	NM***
Cassia Creek	M	N/A	N/A	N/A	NM*	N/A	N/A	M
Chokecherry	M	NM*	NM*	N/A	M	N/A	NM*	NM**
Almo-Womack	M	N/A	N/A	N/A	M	N/A	N/A	NM**
M = Meeting the Standard; NM = Not Meeting the Standard; NMMP = Not Meeting but Making Progress; N/A = the Standard is Not Applicable on this allotment								
* These standards were not being met due to the grazing management at that time.								

	Standards for Rangeland Health
** These standards were not being met due to factors other than current livestock grazing. *** Standard not met due to current livestock grazing (riparian condition) and other factors not related to current grazing (juniper encroachment and historic grazing)	

1.1.1 Management actions taken to make progress towards meeting rangeland health standards

Standard 5 (Applies to management of the Cassia Creek Allotment only)

Annual reductions in livestock use occurred in this allotment after 2003, until the 2008 Jim Sage Allotment Permit Renewal EA and Final Grazing Decision (FGD). The 2008 EA and FGD combined the four allotments into one large allotment turning the Cassia Creek Allotment into the current Cassia Creek Use Area, and an additional 2,200-acre pasture, originally part of the North Use Area of the Jim Sage Allotment, was added to the management system of the Cassia Creek Use Area. The new pasture reduced the overall stocking rate from 5.5 acres/AUM to 8.5 acres/AUM. As a result, utilization levels decreased, and plants had more time to recover, leading to increased plant vigor and cover.

Standards 2, 3, 7 and 8 (Applied to Management of the Jim Sage and Chokecherry Allotments (Both now Use Areas in the larger Jim Sage Allotment))

Multiple riparian area improvement projects have been completed since 1994, described below (Appendix A: Figure 1). Some areas that were showing signs of degradation from overuse were excluded from cattle; management fences were constructed to reduce duration of use, and existing fences were extended to improve pasture integrity. In addition, changes to livestock grazing seasons were implemented to reduce livestock impacts on riparian areas.

Northeast Jim Sage Mountain Pasture Fences – Three fences were constructed in 2002 totaling approximately 3.5 miles. The fences allowed for the creation of a four-pasture grazing management system from a one-pasture system. The new pasture design reduced grazing duration on the Parks and Kane creeks in the North Use Area of the allotment from approximately 100 days to approximately 33 days.

Rock Ridge Fence Extension – This project was implemented in 2002 and consisted of extending an existing fence approximately 1.5 miles to facilitate a more rapid improvement of riparian conditions in Jim Sage and Womack Canyons (West Use Area). The fence allowed for improved control of livestock (i.e., kept livestock in the correct pastures for the correct amount of time).

Red Rock, Kane Springs, Franks Hollow, and Bridge Spring exclosures – The construction of these exclosures was completed in 2003. The exclosures were built to exclude livestock and facilitate riparian area improvement. The size of these exclosures is as follows:

- Red Rock – (950 feet of jack fence enclosing 1.25 acres) in the North Use Area
- Kane Springs Creek – (990 feet of conventional fence enclosing 1.25 acres) in the East Use Area
- Franks Hollow – (700 feet of conventional fence enclosing 0.25 acres) in the West Use Area
- Bridge Spring – (275 feet of jack fence enclosing 0.2 acres) in the South Use Area

Prior to the 2008 EA, the 2004 EA analyzed livestock management in what was the original Jim Sage Allotment and analyzed a permanent change to one operator's grazing season. The grazing season was reduced from 100 days (spring and summer) to 45 days (spring); permitted AUMs remained the same. The decrease in duration of use was intended to, and did, improve the riparian condition in the West Use Area (Black Sand Hollow) (2022 Jim Sage RHA and Evaluation Report).

Additional changes in livestock management were made within the terms and conditions of the existing grazing permit(s) to 1) increase emphasis on herding cattle away from the creeks, 2) change salting

practices to allow for better livestock distribution, 3) increase emphasis on moving cattle out of pastures and ensuring cattle stayed out of pastures to allow for vegetative re-growth in the riparian zone, and 4) implement informal grazing rotations to reduce the duration of use on creeks in the West Use Area, specifically Womack and Jim Sage Canyons.

Since projects and management changes mentioned above were already initiated prior to the 2008 EA and progress towards attainment of standards was being made, the primary focus of the 2008 EA was to permanently change grazing management in seedings in the Cassia Creek Use Area as described above. Additionally, BLM fully processed permits in 2008 to implement an adaptive management strategy that provides flexibility in grazing management for adapting to changing resource conditions, ensuring proper livestock management for both uplands and riparian areas.

Standards 4, 5, And Portions of Habitat for Standard 8 Were Not Met Due to Factors Other Than Current Livestock Grazing.

Early 2000s Rangeland Health Determinations showed that, as depicted in Table 1, Standards 4, 5 and 8 were also not being met on portions of the original Jim Sage Allotment for causes not related to current grazing management. Standards 4 and 8 were not being met due to poor native rangeland condition (high cover of cheatgrass and low overall cover of perennial plants) on the east flats of the allotment, as well as native sagebrush/grass sites that had been encroached by Utah Juniper. These juniper-encroached sites exhibited a reduction of native grasses, forbs and shrubs, an increase in bare ground and consequently, a reduction in soil stability.

The 2003 Jim Sage Allotment Determination attributed the poor condition in the east flats to unregulated, historic (late 1800s/early 1900s) grazing practices (USDI BLM, 2008). The Determination also concluded that both the east flats and the juniper-encroached areas had crossed an ecological threshold requiring restoration actions to bring the area back to appropriate ecological condition (USDI BLM, 2008). Standards 5 and 8 were not being met in some of the seeded rangelands due to an overall lack of sagebrush and reduced forb cover. The competitive nature of seeded grass species combined with site potential and recent fire activity resulted in the conditions of the area (USDI BLM, 2008).

Since 2008, the Burley Field Office (BFO) has completed several successful juniper removal and thinning projects totaling approximately 11,300 acres to improve areas found to be not meeting the Standards for Rangeland Health due to juniper-encroachment. Roughly 3,000 of these acres were seeded with a perennial grass mix to reduce cheatgrass expansion into newly exposed soils (2022 Jim Sage RHA and Evaluation Report, Figure 3). The BFO continues to treat re-sprouting juniper in these areas to ensure they continue to meet objectives for healthy native rangeland and wildlife habitat. Also, the BFO continues implementing vegetation treatments in the eastern flats of the allotment to address deficiencies in rangeland health described above. Chemical herbicide treatments began in 2020 and 2021, followed by drill seeding of native forbs, perennial grasses, and shrub species within approximately 1,600 acres.

As a result of the changes in livestock grazing management, range improvement project work and proactive vegetation treatments, six of the eight applicable ISRH are now being met or are making progress towards meeting in 2022 (Table 2). Standards 4 and 8 are not being met, due to cheatgrass dominance and lack of deep-rooted perennial bunchgrass in the eastern flats, and lack of sagebrush cover within recently burned areas with respect to Standard 8. Riparian areas in the Jim Sage Allotment contribute little to water quality of larger systems, and while most of the allotment is meeting Standard 7, portions of the Raft River watershed are still not meeting water quality standards. The Raft River is not meeting water quality standards along the 19-mile assessment unit, however only 0.75 miles of the assessment unit occur in the Jim Sage allotment. Except for the Raft River, none of the streams on Jim Sage Mountain are included in the State of Idaho's 303(d) list of impaired waterbodies. There are 0.75 river miles of Raft River located on BLM and are excluded from livestock use since 1980, with the exception of a 100-foot water gap.

This lack of meeting standards is not related to current grazing management. For detailed discussion of each standard, refer to the 2022 Jim Sage RHA and Evaluation Report.

Table 2. Idaho Standards for Rangeland Health Allotment Summary Comparison.

Jim Sage Allotment Standards for Rangeland Health								
Standard	#1	#2	#3	#4	#5	#6	#7	#8
2001-2003	M	*NM	*NM	*NM	M *NM Cassia Cr.	N/A	*NM	**NM
2021	M	M	M	**NMMP	M	N/A	**NMMP	**NM

* Standard not met due to livestock grazing management.

** These standards were not being met due to factors other than current livestock grazing.

*** Standard not met due to current livestock grazing (riparian condition) and other factors not related to current grazing (juniper encroachment and historic grazing)

1.2 Previous Litigation and Rulings

In 2008, the BFO completed the Jim Sage Mountain Area Allotments Permit Renewal Environmental Assessment (ID-220-2007-EA-3405) and issued twenty final grazing decisions renewing livestock grazing permits on the Jim Sage Allotment. In 2011, Western Watersheds Project (WWP) challenged several grazing decisions across three BLM Field Offices in Idaho in a lawsuit filed with the United States District Court for Idaho (Court). The 2008 Jim Sage Allotment grazing decisions were named in the Complaint. In 2014, the Court issued a Memorandum Decision and Order (Order) regarding the Jim Sage Allotment permits. The Order remanded the EA, Finding of No Significance (FONSI), and final grazing decisions back to the BLM based on its conclusions that the decisions violated the National Environmental Policy Act (NEPA), the Federal Land Policy and Management Act (FLPMA) and the Fundamentals of Rangeland Health (43 CFR 4180 (2005)). As a result of this ruling and subsequent negotiations with WWP, the BFO agreed to re-evaluate grazing management and permit renewal on the Jim Sage Allotment.

The 2014 Order identified the following deficiencies in BLM's 2008 Jim Sage decisions and supporting NEPA:

- Failure to Analyze a No grazing alternative
- Failure to adequately address cumulative impacts, specifically for sage-grouse
- Violations of the Fundamentals of Rangeland Health, as the 2008 grazing permits did not include terms and conditions addressing utilization, stubble height, woody browse, etc.
- Failure to conform to the Cassia Resource Management Plan (Cassia RMP)

1.3 Purpose and Need

The purpose of this action is to reevaluate grazing management on the Jim Sage Allotment in response to the U.S. District Court for the District of Idaho Memorandum Decision and Order dated September 29, 2014, in *Western Watersheds Project v. Ellis*. The Order remanded the 2008 Jim Sage Mountain Area Allotments EA and Final Grazing Decisions to the BLM for further action consistent with the Decision.

1.4 Decision to be Made

Based on the results of the NEPA analysis and other applicable information, the Authorized Officer will make an informed decision whether, and under what terms and conditions, to renew the grazing permits.

1.5 Land Use Plan Conformance

The Proposed Action and Alternatives analyzed in this document involve public lands and are in

conformance with, the Cassia RMP (USDI BLM, 1985), as amended by the 1988 Areas of Critical Environmental Concern Amendment and Decision (ID-020-87-32), the 1999 Bighorn Sheep Environmental Assessment and Decision (ID-024-99-023), and the 2015 Idaho and Southwestern Montana Greater Sage-Grouse Approved Resource Management Plan Amendment (ARMPA) (USDI BLM, 2015a).

The Cassia RMP, as amended, identifies Resource Management Guidelines that provide management direction and minimum standards for managing resources found on the public lands. The Cassia RMP, as amended, also contains Resource Objectives and Required Actions specific to the Jim Sage Management Area.

The 2015 ARMPA also contains Goals, Objectives, and Management Decisions specific to management actions in sage-grouse habitat. Idaho uses a conformance review to document how proposed alternatives and proposed management of public lands conforms to the Cassia RMP's sage-grouse management direction. The completed ARMPA conformance review is in Appendix B. The reissuance of the Jim Sage grazing permits would be in conformance with the following plan and subsequent amendments:

1.6 Relationship to Statutes, Regulations, Other NEPA Documents

The BFO prepared this EA to evaluate the impacts of the Proposed Action and Alternatives on the human environment, consistent with the purpose and goals of the National Environmental Policy Act (NEPA; 42 USC 4321 et seq.) and pursuant to the Council on Environmental Quality's implementing NEPA regulations at 40 CFR Parts 1500-1508 (1978). Additionally, this EA was prepared consistent with the Department of the Interior NEPA regulations (43 CFR Part 46); longstanding federal judicial and regulatory interpretations; and Administration priorities and policies including Secretary's Order (SO) No. 3399 requiring bureaus and offices to use "the same application or level of NEPA that would have been applied to a proposed action before the 2020 [CEQ NEPA regulations] went into effect."

Issuing grazing permits for these allotments is in conformance with statutes, regulations, and plans (Taylor Grazing Act of 1934, Federal Land Management and Policy Act of 1976, Public Rangeland Improvement Act of 1978, and 43 CFR Part 4000, Group 100) that concern livestock grazing on public lands. Grazing permit Terms and Conditions were developed under the direction of Incorporating Thresholds and Responses into Grazing Permits/Leases (IM 2018-23).

The Taylor Grazing Act of 1934 (43 USC 315) was enacted to stop injury to the public grazing lands by preventing overgrazing and soil deterioration; to provide for their orderly use, improvement, and development; and to stabilize the livestock industry dependent upon the public range. In accordance with the Taylor Grazing Act, the BLM established grazing districts within the project area, and allocated grazing preferences to qualified operators. In addition, the BLM developed programs to implement the Taylor Grazing Act's goal of providing for "the orderly use, improvement and development" of the public range lands. The Taylor Grazing Act was followed by FLPMA in 1976. Under FLPMA, the BLM adopted land use plans that provide management direction for multiple uses of public lands. The Public Range Improvement Act provides, in part that the BLM "manage, maintain and improve the condition of public rangelands so that they become as productive as feasible for all rangeland values."

Section 7 of the Endangered Species Act of 1973 (ESA) outlines the procedures for federal interagency cooperation to conserve federally listed species and designated habitat. Section 7(a) (2) provides that each Federal agency shall, in consultation with the Secretary of Interior, ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of their habitats. There are no current U.S. Fish and Wildlife Service listed Threatened or Endangered species in the project area.

Specific guidance regarding the BLM's responsibilities to conserve ESA listed and candidate species is provided in BLM Manual MS-6840 – *Special Status Species Management*. The objectives of the BLM

Special Status Species policy are to conserve and/or recover ESA-listed species and the ecosystems on which they depend so that ESA protections are no longer needed for these species, and to initiate proactive conservation measures that reduce or eliminate threats to Bureau sensitive species to minimize the likelihood of and need for listing of these species under the ESA. To comply with this policy, the Idaho list of BLM Special Status Species was reviewed for potentially affected species. Habitat evaluations were included in the 2022 Jim Sage RHA and Evaluation Report to determine habitat suitability for these species.

The Proposed Action and Alternatives are in accordance with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act, as amended. No harm to migratory birds is expected to result from either the Proposed Action or Alternatives. It is also in accordance with Executive Order 13186, dated January 11, 2001, which directs federal agencies to work with the U.S. Fish and Wildlife Service to develop an agreement to conserve migrating birds because migratory birds are of great ecological and economic value to this country and to other countries.

The Proposed Action and Alternatives are in accordance with the Archaeological and Historic Preservation Act of 1960 (P.L. 86-523, 16 USC 469- 469c-2), as amended, and the National Historic Preservation Act (NHPA) of 1966 (PL 89-665; 16 USC 470 et seq.). Consultation with the State Historic Preservation Office has occurred as required.

Incorporated by Reference:
USDI BLM. (2022). Jim Sage Rangeland Health Assessment (RHA) and Evaluation Report and Rangeland Health Determination – The Jim Sage Rangeland Health Assessment and Evaluation Report describes the condition and function of resources within the Use Area (https://eplanning.blm.gov/eplanning-ui/project/2018260/510) and is incorporated into this document by reference. The assessment and evaluation disclosure of land health conditions are only representative of BLM-administered public lands within the allotment, and do not represent State- or privately-owned lands. For more detailed information refer to the 2022 Jim Sage RHA and Evaluation Report on ePlanning. The Rangeland Health Determination describes whether or not a standard is being met and causal factor(s) for not meeting a standard.

1.7 Public Scoping

A scoping information package and cover letter were subsequently mailed to interested and affected parties on June 7, 2021. The letter invited comments to be used to identify pertinent issues and develop a range of alternatives for analysis. Comments received from scoping as well as permittee meetings were used to develop the alternatives. Scoping comments were received from Idaho Department of Agriculture, Idaho Department of Fish and Game (IDFG), and WWP. All comments received through scoping and the ID team's responses to the comments are located in Appendix C of this EA. See section 1.8 for a list of issues brought forward by the public.

1.8 Identification of Issues

The BLM ID Team identified issues concerning the Jim Sage Allotment through internal and public scoping. Internal scoping, which included knowledge and evaluation of allotment management and conditions over several decades, review of the Jim Sage RHA and Evaluation Report, Determination, and other data, identified the resources that would be impacted by livestock grazing and associated infrastructure on BLM-managed lands.

External (Public) Issues

Vegetation

- Concerns about remnant native perennial grasses from the proposed increase in AUMs to remove additional cheatgrass cover.
    - *Response:* This issue was used to develop the BLM Threshold and Response

Alternative.

Wildlife

- Inadequacy of alternatives to restore rangeland health for sage-grouse.
  - *Response:* Used to develop a No Grazing Alternative, Spring AUM Reduction Alternative, and a Threshold and Response Alternative
- Issue with the effects of spring grazing on sage-grouse habitat.
  - *Response:* A Spring AUM Reduction Alternative was developed.
- Issues with the effects of proposed range improvements on wildlife.
  - *Response:* This issue is addressed in the Permittee Proposed Action Analysis
- Concerns that the alternatives are not in conformance with ARMPA
  - *Response:* See ARMPA Conformance Review Appendix B

Internal (BLM) Issues

Vegetation & Wildlife

- The lack of sagebrush cover in recently burned areas that is limiting habitat suitability for sage-grouse in the Cassia Creek, East, South, and North Use Areas.
- Impacts of permittee proposed range improvements on vegetation and wildlife. Fences (North and East Use Areas) Pipelines and Troughs (South Use Area)

Vegetation

- Low elevation native rangeland in the South and East Use Areas lack mid-sized perennial bunch grasses and the understory vegetation is dominated by cheatgrass.

Socioeconomics

- Consider impacts of the alternatives to regional socioeconomic activity of livestock operations and Cassia County economy.

2.0 General Description of Alternatives

An ID team of resource specialists developed alternatives through internal and public scoping. Four components are used to describe the differences in grazing management between each alternative presented below. The components are Permitted Use, Grazing System, Range Monitoring, and Range Improvements. The Proposed Action and four Alternatives are briefly summarized below:

Current Management Alternative (Actual Use)– Continue the current terms and conditions, season of use, and grazing management that has occurred under the current grazing permits on the Jim Sage Allotment. Total AUMs under this alternative would be reduced to the actual use level of 4,545 AUMs.

Permittee Proposed Action – The Permittees proposed changes to grazing permit terms and conditions on three of the 18 permits, increase in AUMs in the Lower Red Rock Flat and Northeast Sheep Mountain Pastures, and new range improvements.

No Grazing Alternative – Grazing permits for the Jim Sage Allotment would not be renewed and livestock grazing would not occur for the next 10 years.

Threshold and Response Alternative – designed to use livestock as a management tool to 1) facilitate sagebrush recruitment by increasing livestock use in recently burned areas to reduce cover and competition from perennial bunchgrasses, and 2) reduce cheatgrass cover in portions of the East and South Use Areas.

Spring AUM Reduction Alternative – developed from public scoping comments that identified concern for sage-grouse nesting success as a result of grazing during the nesting period.

2.0.1 Elements Common to All Action Alternatives

Adaptive Management Strategy- Management Flexibility and Adaptive Management applies to grazing management in all the Jim Sage Use Areas. Adaptive management is utilized when general management deviates from what normally occurs, or resource monitoring indicates a negative change as a result of grazing management. Under adaptive management, permittees utilize any Use Area with their permitted livestock numbers and AUMs. While Use Areas are managed independently (Table 3, p. 16), depending on conditions, permittees may move livestock to different Use Areas within the allotment and all AUMs are allocated to the entire Jim Sage Allotment.

Seasons of Use – The seasons of use, in relation to vegetation growth, are defined as follows and apply to all alternatives.

- Spring – April 1 to June 30
- Summer – July 1 to August 30
- Fall – September 1 to November 30
- Winter – December 1 to March 31

Resource Management Objectives – Resource Management Objectives for the Jim Sage Mountain Area Allotments are found in the CRMP (pp. 36-38, *Management Area 10, Jim Sage*). These objectives pertain to the Jim Sage Allotment located within Jim Sage Management Area 10. The Idaho Standards for Rangeland health also provide resource management objectives for the allotment.

Range Improvement Maintenance and Construction – Cooperative agreements between the livestock operator and the BLM have assigned responsibility for rangeland improvement maintenance to the operator. The permittee(s) is required to maintain projects on the allotment. These cooperative agreements would remain in effect regardless of which alternative is selected, with the exception of No Grazing Alternative.

Monitoring – Monitoring studies would be conducted during the term of the grazing permits. Monitoring studies during the term of permits would include but are not limited to nested plot frequency, 3x3 photo plots, Line Point Intercept (LPI), Assessment Inventory Monitoring (AIM), Modified Assessment Inventory Monitoring (M-AIM), upland utilization, PFC, and riparian photo monitoring.

Utilization guidelines are intended to indicate a level of use or desired stocking rate to be achieved over a period of years (Smith et al., 2007). Attainment of specific use levels on a year-to-year basis is difficult due to unpredictable climate variables. As such, they should be targets across a 5 to 10-year time period (Holechek et al., 2004, p. 235).

Grazing utilization data combined with other monitoring data (e.g., actual use, climate, trend, photo points, etc.), would be periodically assessed as needed to determine achievement of resource management objectives described in the Cassia Resource Management Plan and Idaho Standards for Rangeland Health. Assessment of annual utilization may also be used to adjust grazing use the following year. Utilization will be used to identify use patterns, to help establish cause and effect interpretations of trend data and to aid in adjusting stocking rates when combined with other monitoring data (USDI and USDA, TR 1734-03).

Utilization monitoring will be collected at key areas which represent the effects of grazing management within the pasture over time.

- Pastures containing predominately seeded non-native species will be managed for maximum utilization levels of up to 60% on key forage species. These pastures are:
    - Cassia Creek Use Area *(Upper, Middle, Lower East, Lower West)*

    - Almo-Womack Use Area *(North, Center, South)*
    - East Use Area *(Lower Red Rock Flat Seeding, Halogeton Meadows North)*
    - South Use Area *(Bridge Seeding)*
    - Chokecherry Use Area *(Halogeton Meadows South, 320, Chokecherry)*
- Pastures with a mix of seeded non-native species, seeded native cultivars and native species will be managed for a maximum of 50% utilization overall. These pastures include:
    - South Use Area (*Cottonwood Seeding)*
    - Cassia Creek Use Area *(Upper Red Rock Flat).*
- Pastures containing predominately native vegetation will be managed for maximum utilization levels of up to 40% on key forage species. These pastures include those in the *West Use Area, North Use Area, South Use Area and the East Use Area with the exceptions of those pastures noted above.*

These utilization levels are defined in the Cassia RMP (Appendix H: p. 95) and 2008 Jim Sage Mountain Permit Renewal EA. Each pasture, depending on vegetation, is managed for up to 40% (native), up to 50% (native and non-native mix), or up to 60% (non-native) utilization

Existing terms and conditions (season of use, livestock number, AUMs and other terms and conditions) on the current grazing permits have resulted in the achievement of desired utilization levels over the past 13 years. After extensive review and analysis of these utilization levels, our data, records, and information have shown that this management will meet utilization objectives and therefore, utilization levels are not required to be included as terms and conditions to achieve Rangeland Health Standards. As described below, utilization is one of the management tools the BLM utilizes with other monitoring data to periodically assess grazing management.

Definitions of terms:

Active use means the current authorized use, including livestock grazing and conservation use. Active use may constitute a portion, or all, of permitted use. Active use does not include temporary nonuse or suspended use of forage within all or a portion of an allotment. (43 CFR 4100.0-5)

Actual use means where, how many, what kind or class of livestock, and how long livestock graze on an allotment, or on a portion or pasture of an allotment. (43 CFR 4100.0-5)

Actual use report means a report of the actual livestock grazing use submitted by the permittee or lessee. (43 CFR 4100.0-5)

Permitted use means the forage allocated by, or under the guidance of, an applicable land use plan for livestock grazing in an allotment under a permit or lease and is expressed in AUMs. (43 CFR 4100.0-5)

Deferred Rotation Grazing consists of two or more treatments, at least one of which systematically provides rest from grazing during the critical growing period for each pasture included in the allotment. Cassia Resource Management Plan (CRMP) (USDI BLM, 1985)

Rest-Rotation Grazing systematically provides a period (or "treatment") of rest for at least one continuous growing season for each pasture included in the allotments. In this allotment, the rest period is a full grazing season. (CRMP) (USDI BLM, 1985)

Seasonal Grazing is when grazing is restricted to a specific season. Grazing occurs the same time each year. (Cassia Resource Management Plan (CRMP) (USDI BLM, 1985)

Utilization is the proportion or degree of the current year's forage production that is consumed or destroyed by animals (including insects). The term may refer to a single plant species, a group of species, or to the

vegetation community as a whole. Utilization is synonymous with use. (USDI BLM, 1999)

Herbaceous Utilization Classes represent a numerical range of percent utilization. (USDI BLM, 1999). For this EA, the utilization classes are: none to slight use (0-5%), slight use (6-20%), light use (21-40%), moderate use (41-60%), heavy use (61-80%), severe use (81-94%).

2.1 Current Management Alternative (Actual Use)

2.1.1 Permitted Use for this Alternative

The Current Management Alternative reflects how the allotment was actually used by livestock, including the season of use and AUMs over the previous 12 years as a whole. Fluctuations in actual use include rest due to wildfire, drought and operational decisions made by permittees. Currently, total permitted use for the allotment is: Active AUMs - 5,131. Average actual use for the evaluation period 2008 through 2020 is 4,348 AUMs. Rest due to wildfires resulted in an annual reduction of AUMs in 2008 through 2009 and from 2018 to 2020. The average Actual Use excluding these years is 4,545 or 89% of active AUMs (2022 Jim Sage RHA and Evaluation Report, p. 14). As documented in the Actual Use, the Season of use has remained the same as the Permitted season of use.

This Alternative would continue implementing the current terms and conditions, season of use and grazing management that has occurred on the Jim Sage Allotment over the past 10 years (Table 3). Under this alternative, the number of permitted AUMs on the allotment would be reduced from 5,131 AUMs to 4,545 AUMs. This alternative serves as the baseline to which comparisons between alternatives can be made as it most closely represents the management which has resulted in the current environmental conditions. Although this alternative is similar to the Permittee Proposed Action in regard to livestock management, there is a slight difference in total AUMs.

Terms and Conditions on existing grazing permits:

- Any supplemental feeding or salting must be accomplished a minimum of 0.25-mile away from all springs, creeks and livestock watering facilities unless otherwise approved by the authorized officer.
- Livestock grazing management will be in accordance with the March 6th, 2008, Final Grazing Decision.
- Total AUMs include those that were part of the Almo-Womack, Chokecherry and Cassia Creek Allotments which are now Use Areas within the Jim Sage Allotment.
- In accordance with 43 CFR 4130.3-2 (D), submission of an actual use report is required within 15 days after completion of annual grazing use. Actual use will be submitted by pasture. This permit and associated resource management objectives and use area/pasture livestock grazing management constitute the functional equivalent of an allotment management plan. Billing for grazing use will occur after the fact in accordance with 43 CFR 4130.8-1 (E).

2.1.2 Grazing System

Rotation of the pastures in the allotment would incorporate a cycle of use between pastures, including rest and deferred rotations as described below in Table 3. The allotment is comprised of seven Use Areas containing 28 pastures (Figure 2).

Table 3. Grazing management on Jim Sage Allotment.

USE AREA	GRAZING SYSTEM	SEASON OF USE
West	2-Pasture Rest Rotation (northern portion) Seasonal (spring or winter for remainder of the Use Area)	05/01-07/01 Cattle 05/01-11/30 Horses 02/15-03/15 Cattle

USE AREA	GRAZING SYSTEM	SEASON OF USE
East	4-Pasture Deferred Rotation	04/01-06/10 and 09/16-11/22
North	4-Pasture Deferred Rotation	06/01-09/08
South	4-Pasture Deferred Rotation	05/01-10/15
Cassia Creek	5-Pasture Deferred Rotation	05/01-06/15 and 09/09-09/28
Chokecherry	3-Pasture Rest Rotation	05/01-06/15
Almo-Womack	3-Pasture Deferred Rotation	05/01-06/15 and 10/15-11/15

Management Flexibility: Management flexibility allowing for annual changes in management due to natural occurrences such as drought, unusually wet years and wildfire would be allowed so long as it is approved in advance by the authorized officer. Flexibility would include making adjustments for the on and off dates (2 weeks either side of permitted dates) and/or numbers and/or rotations so long as permitted AUMs are not exceeded. Any changes in rotations adhere to the Idaho Guidelines for Livestock Grazing Management (USDI BLM, 1997).

Adaptive Management: This strategy is utilized when current year's use deviates from what normally occurs on the individual use areas within the Jim Sage Allotment, since normal use is maintaining healthy vegetative conditions. The strategy is also adapted when monitoring indicates that resource conditions are beginning to negatively change, and changes are a result of grazing management. Negative changes would be measurable and observable changes, determined from photographs and data, in the resource condition which affect the ability to meet the resource objectives. Primary indicators that will be utilized to determine a negative change would be vegetative cover (uplands and riparian), woody riparian vegetation (riparian), vegetative composition (riparian and uplands) and channel characteristics (riparian). The following decision tree is used when adaptive management is implemented.

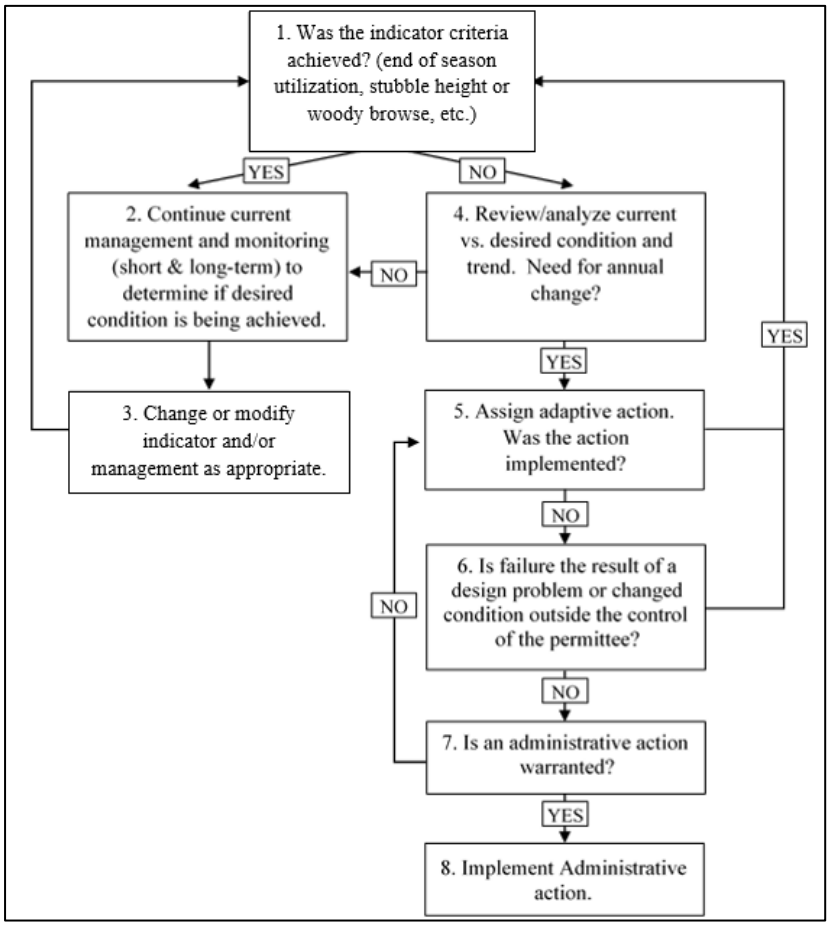

Figure 3. Decision Tree for Adaptive Management Strategies.

Use Indicators under adaptive management:

- An average of 50% incidence of use on available woody riparian species (percent of current years leaders on a single plant) and or a 4-inch stubble height on key hydric species at the end of the growing season.
- 21- 40% utilization on key native species in native pastures and 41-60% on key seeded species in seeded pastures.

Triggers (utilization levels and stubble height) that initiate livestock movement out of a riparian area or out of a pasture may be established the following year if annual indicators were not met. Annual indicators may also be adjusted depending upon outcomes of monitoring data.

2.1.3 Range Monitoring

Monitoring, as described above common to all authorized grazing alternatives, would be used to evaluate the grazing management on the allotment (Section 2.0.1).

2.1.4 Range Improvements

There are no new range improvements included in this alternative.

2.2 Permittee Proposed Action

2.2.1 Permitted Use for this Alternative

This alternative represents the permittees proposal. Generally, the permittees, through their permit renewal applications, have requested to keep grazing management (5,131 AUMs, livestock numbers, season of use, grazing rotation, flexibility, and adaptive management) the same as the current permits. The 18 grazing permits on the Jim Sage Allotment would be renewed for a 10-year term under the existing terms and conditions with the following exceptions:

- One permit (Spencer Brothers) would be changed to reflect changes in percent public land and two permits (Jeffery Gregersen, and Todd and Alvin Carpenter) would be changed to adjust livestock numbers with no change in seasons of use or AUMs. The proposed changes are reflected in Table 4.

Table 4. Permits Mandatory Terms and Conditions which would change from Permittee Proposed Action.

Permittee	Use Area**	# Livestock-Kind		Grazing Period		% PL		AUMs *
		Current	Proposed	Current	Proposed	Current	Proposed	
Spencer Brothers	South	143-cattle 33-cattle	176-cattle N/A	05/01-10/15 05/01-10/15	05/01-10/15	85 100	88	854
Jeffery Gregersen	Cassia Creek & North	64-cattle 44-cattle	48-cattle N/A	05/01-05/31 06/01-09/28	05/01-09/28	100	100	238
Todd and Alvin Carpenter	Cassia Creek	13-cattle 81-cattle	100-cattle N/A	05/01-06/15 05/01-05/30	05/01-05/30	100	100	100
Carl Boden	West	5-horses 68-cattle		05/01-11/30 05/01-06/15		100 100		35 103
Bruce Durfee	West	84-cattle		05/01-6/15		100		127
Dennis Erickson	West	33-cattle		05/01-6/15		100		50
Denton Whitaker	West	90-cattle		05/01-6/15		91		124
Wynn Dewsnup Family Revocable Trust	West & Almo-Womack	33-cattle 64-cattle 35-cattle		05/01-06/30 05/01-06/15 10/16-11/15		100 100 100		66 97 36
Brent Jones	West & Almo-Womack	42 -cattle 51-cattle 58-cattle		05/01-06/15 05/01-06/15 10/16-11/15		100 100 100		64 77 59
Jones, R.O. and Sons	West & Almo-Womack	101-cattle 50-cattle 114-cattle		05/01-06/15 05/01-06/15 10/16-11/15		73 100 100		112 76 116
Doug Ward	South & Almo-Womack	145-cattle 50-cattle		05/01-10/15 10/16-11/15		92 100		737 51
Heglar Creek Cattle Co.	East & West	108-cattle 200-cattle 150-cattle		02/15-03/16 04/01-06/10 09/16-11/22		60 100 100		64 467 335
Cody & Kortney Ward	Cassia Creek & North	99-cattle 69-cattle 62-cattle 87-cattle		06/01-09/08 05/01-05/31 05/01-06/15 09/09-09/28		64 64 64 64		208 45 60 37
William Wickel	Cassia Creek & North	159-cattle 33-cattle		05/01-05/31 06/01-09/28		100 100		162 130
Ward Heritage Ranch	Almo-Womack	67-cattle 70-cattle		05/01-06/15 10/16-11/15		100 100		101 71

Permittee	Use Area**	# Livestock-Kind		Grazing Period		% PL		AUMs *
		Current	Proposed	Current	Proposed	Current	Proposed	
Branch Farms LLC	Almo-Womack	24-cattle		10/16-11/15		100		24
Larry and Darlene Kincade	Cassia Creek	66-cattle		05/01-06/15		100		100
Steve and Tonya Ward	Almo-Womack & Chokecherry	102-cattle 45-cattle		05/01-06/15 05/02-06/15		100 100		154 67

*Discrepancies in AUMs occur due to rounding errors associated with the calculation of AUMs.

** Permittees may utilize any Use Area with their permitted livestock numbers and AUMs. All AUMs are allocated to the entire Jim Sage Allotment.

2.2.2 Grazing System

The grazing system would be the same as the Current Management Alternative.

2.2.3 Range Monitoring

Monitoring, as described above common to all authorized grazing alternatives, would be used to evaluate the grazing management on the allotment (Section 2.0.1).

2.2.4 Range Improvements

Proposed range improvement projects (Appendix A: Figures 2 & 3):

- Three new pipeline extensions and trough locations off the existing Chokecherry Pipeline. This would entail approximately 5.5 miles of new pipeline construction and the placement of five additional trough sites. These projects occur in the South Use Area in the Chokecherry, Bridge Seeding and Cottonwood Seeding Pastures. The pipeline extensions would be along existing roads.
- One additional trough location off the existing Red Rock Pipeline. The new trough would be set along the existing pipeline at a historic temporary watering location. This project occurs in the Cassia Creek Use Area in the Upper Red Rock Flat Pasture.
- Four electric fences for roughly 5.5 miles (Appendix A: Figure 3). The permittees have requested that two of the four fences utilized for a sage-grouse and grazing study remain in place after the study ends (Fall 2021) to maintain improved livestock distribution. Two additional fences have been proposed for livestock management. One would separate the Upper Cottonwood and Kane Springs Pastures, the other would split the Parks Creek Pasture and would aid in better livestock distribution and avoiding poisonous tall larkspur patches. The electric wire from these fences would be put up and taken down annually.
- One conventional fence, roughly 1.5 miles long would be constructed in the Sheep Mountain Pasture. This fence would split the native vegetation by condition in the Sheep Mountain Pasture into two pastures allowing for better vegetation management (Sheep Mountain and Northeast Sheep Mountain Pastures). This fence has been a temporary electric in place since 2016 to facilitate the sage-grouse and grazing study.
- Roughly 1.5 miles of an existing temporary fire rehabilitation fence in the Lower Red Rock Flat Pasture would be made permanent.
- A water development, exclosure, and trough on an ephemeral seep (not part of or contributing to the Jones Hollow riparian area) west of the road in the Jones Hollow Pasture of the West Use Area was proposed.
    - However, this range improvement will not be brought forward for detailed analysis. This ephemeral seep has been dry for the last three seasons and does not provide a reliable water source. Due to these conditions this water development will not be considered with future

range improvements under this Alternative.

Required Design Features of Range Improvement Projects:

Conformance with the ARMPA sage-grouse Management Decisions and Required Design Features (Appendix B) would be applied to the installation of future range improvements. For example, the timing restrictions (6PM to 9AM) for construction activities in proximity to sage-grouse leks.

- Conventional fences within the 1.2-mile lek buffer will be marked with flight diverters.
- Wildlife escape ramps would be installed in all troughs.
- Pipeline installation would be done with a ripper to minimize ground disturbance.
- Following installation, disturbed areas would be seeded with a BLM-approved seed mix, typically with a broadcast seeder and harrow or small drill.
- All new water troughs would have functioning float valves to prohibit water from being spilled on the ground surrounding the trough.

2.3 BLM Threshold and Response Alternative

This is the BLM-developed alternative to address resource issues identified during the 2021 ISRH process and be consistent with 2015 ARMPA, MD LG 16. The following issues were identified:

1) Sage-grouse nesting and early brood-rearing and winter habitat suitability is affected by the lack of suitable sagebrush cover in some portions of the allotment, primarily within recent wildfires and some historic crested wheatgrass seedings.
2) Sage-grouse nesting and early brood-rearing habitat suitability and native rangeland health are affected by high amounts of cheatgrass cover and low perennial grass cover in portions of the east and southern flats of the allotment.

Current grazing management was not found to be a causal factor for these resource issues.

This alternative is designed to use livestock as a management tool to 1) facilitate sagebrush recruitment by increasing livestock use in recently burned areas to reduce cover and competition from perennial bunchgrasses and 2) Reduce cheatgrass cover and thatch, which interferes with herbicide uptake, in portions of the East and South Use Areas to help facilitate success of future vegetation treatments.

Terms and conditions and grazing management would be consistent with the Permittee Proposed Action with the following exceptions:

Under this alternative permitted livestock would be used as a management tool to achieve the desired resource objectives of increasing sagebrush cover and/or reducing cheatgrass cover. This would require the creation of a Jim Sage Grazing Association permit. This permit would allocate up to an additional 2,800 AUMs above the current allocation. These 2,800 AUMs would only be available in portions of the South, North, East and Cassia Creek Use Areas (described in detail below). The increased permitted use would occur through an extension of time during the September-February (fall /winter) in pastures identified in Section 2.3.2 – Thresholds. The proposed AUM increase is based upon actual use and utilization calculations. The estimated additional 2,800 AUMs would be needed to reach the desired utilization levels in identified pastures (Section 2.3.2 Grazing System – Thresholds). These AUMs would come from existing suspended allotment AUMs. The Jim Sage Grazing Association permit would be available to all Jim Sage Allotment permittees. The terms and conditions of the Association permit would identify the pastures to be used and the Thresholds and Reponses (Section 2.3.1 Permitted Use).

Additionally, the use indicators for riparian areas in the Parks Creek and Kane Springs Pastures (Adaptive Management Trigger) would be eliminated under this alternative because 40% utilization on upland grasses would likely never occur if the browse use standard is applied (Section 2.1.2 Grazing Systems).

The following pastures are identified as areas where increased utilization of existing vegetation could facilitate sagebrush recruitment (Appendix A: Figure 4):

- East Use Area
    - Lower Red Rock Flat Seeding (average utilization has been 17%)
- South Use Area
    - Cottonwood Seeding (average utilization has been 23%)
    - Bridge Seeding (average utilization has been 22%)
    - Chokecherry (average utilization has been 19%)
- Cassia Creek Use Area
    - Upper Red Rock Flat (average utilization has been 22%)
- North Use Area
    - Parks Creek (average utilization has been 17%)
    - Kane Springs (average utilization has been 32%)

The following pastures are identified as areas where increased grazing levels are intended to reduce the cover of annual grasses (Appendix A: Figure 4):

- East Use Area
    - Sheep Mountain (average utilization has been 12%)
    - Lower Red Rock Flat (average utilization has been 18%)
- South Use Area
    - Cottonwood Seeding (average utilization has been 23%)

2.3.1 Permitted Use for this Alternative

In this alternative, the current individual permits would not change from the Permittees Proposed Action, however one new grazing permit would be issued to the Jim Sage Grazing Association for up to 2,800 AUMs to be used during the September-February (fall/winter) grazing season.

Terms and Conditions (Same as Current Management Alternative with the following additions):

- The thresholds and responses as identified in the Final Decision are incorporated into this grazing permit as Terms and Conditions.
- The BLM will determine on an annual basis where the Jim Sage Association Permit AUMs will be available depending on the current year's rotation schedule for the treatment pastures listed above.

2.3.2 Grazing System

In addition to the objectives described above in the Management Actions Common to All Alternatives (Section 2.0.1), this alternative incorporates additional site-specific objectives (Thresholds and Responses) that are intended to manage livestock grazing to address the lack of meeting Standards 4 and 8.

Resource Objectives:

- Objectives for the Management Actions Common to All Alternatives apply to this alternative (Section 2.0.1).
- Improve nesting and early brood-rearing, and winter habitat suitability for sage-grouse in recently burned areas by increasing sagebrush cover and decrease invasive annual dominated areas to make progress towards meeting Standard 8.
- In native annual-dominated plant communities, reduce fine fuels and herbaceous competition to facilitate restoration goals and increase perennial grass to make progress in meeting Standard 4.

Thresholds (T)

- **T1:** Pastures containing a combination of seeded non-native grass species and seeded native cultivars would be managed for an average of up to 50% utilization at the end of the growing

season on key species which include crested wheatgrass, Russian wildrye and Snake River bluebunch wheatgrass. Pastures: *Cottonwood Seeding, Upper Red Rock Flat, Chokecherry.*

- **T2:** Pastures containing predominately seeded non-native grass species would be managed for an average of up to 60% utilization at the end of the growing season on key species which include crested wheatgrass and Russian Wildrye. Pastures: *Lower Red Rock Flat Seeding and Bridge Seeding.*
- **T3:** Pastures containing predominately native grass species would be managed for an average of up to 40% utilization at the end of the growing season on key species which include squirrel-tail, sand dropseed and bluebunch wheatgrass. Pasture: *Lower Red Rock Flat.*
- **T4:** Cheatgrass dominated pastures would be managed to reduce cheatgrass cover. Use levels for these pastures would be tied to T1 (50%) and T3 (40%) on the perennial grass species. Pastures: *Lower Red Rock Flat, Cottonwood Seeding and Sheep Mountain.*
- **T5:** Sagebrush canopy cover reaches an average of 10% across the sagebrush recruitment pastures. As measured at existing AIM, M-AIM, S&G, and Key Area locations. Pastures: *Lower Red Rock Flat Seeding, Cottonwood Seeding, Bridge Seeding, Upper Red Rock Flat, and Chokecherry.*
    - The 10% sagebrush canopy cover threshold was utilized based on the 2015 ARMPA Key Habitat descriptions (MDSS 8,13,16,17,18). Key Habitat includes areas of generally intact sagebrush cover that provide sage-grouse habitat during some portion of the year and perennial grass areas can be reclassified as Key Habitat once sagebrush cover is at least 10%.
- **T6:** Perennial grass cover increases to 30% across 80% of the pasture. Pastures: *Cottonwood Seeding, Lower Red Rock Flat and Sheep Mountain.*

Responses (R)

The responses listed below are intended to modify grazing management when thresholds have been met with respect to T5 and T6 or exceeded with respect to T1, T2 and T3. Application of one or more responses is expected to result in pastures/allotment continuing to meet, or make significant progress towards meeting, the Idaho Standards for Rangeland Health.

- **R1:** Livestock distribution would be shifted to another area of the pasture (e.g., turning troughs off/on, water hauling, placement of supplements, and/or herding).
- **R2:** Livestock would be removed from the pasture for the remainder of the grazing season.
- **R3:** Livestock grazing management would be modified within the pasture the following year(s) to allow for deferment of the pasture.
- **R4:** Livestock grazing management would be modified the following year(s) to allow for rest of the pasture.
- **R5:** When sagebrush canopy cover reaches 10% (across the pasture/averaged across monitoring sites), additional AUMs would no longer be authorized in the pasture. Grazing management would revert to the permittee's permitted use. Pastures include *Lower Red Rock Flat Seeding, Cottonwood Seeding, Bridge Seeding, Upper Red Rock Flat, and Chokecherry*
- **R6:** When perennial grass cover increases to 30% across 80% of the pasture additional AUMs would no longer be authorized in the pasture. Grazing management would revert to the permittee's permitted use. Pastures: *Cottonwood Seeding, Lower Red Rock Flat and Sheep Mountain.*

2.3.3 Range Monitoring

Currently, use supervision and utilization monitoring is conducted periodically throughout the grazing season (See Section 2.0.1 for monitoring objectives common to all authorized grazing alternatives). Additional monitoring would be required with the new Jim Sage Grazing Association permit. Increased permitted use in the Lower Red Rock Flat Seeding, Cottonwood Seeding, Bridge Seeding, Upper Red Rock Flat, South Chokecherry, Lower Red Rock Flat and Sheep Mountain pastures would be monitored as

follows:

- Utilization monitoring and compliance checks would occur a minimum of at least once every two weeks in pastures where grazing treatments are occurring.
- Vegetation monitoring to determine sagebrush canopy cover would occur every five years at current monitoring site locations within the treatment area.
- Post-annual grass treatment, vegetation monitoring would occur every three to five years to determine perennial grass cover at current monitoring site locations.

2.3.4 Range Improvements

There are no proposed range improvements under this Alternative.

2.4 No Grazing Alternative

Under the No Grazing Alternative permitted grazing would not be authorized on public lands within the Jim Sage Allotment for a term of 10 years.

2.5 Spring AUM Reduction Alternative

This Alternative was developed from public scoping comments that showed concern for sage-grouse nesting success regarding grazing during the nesting period. Western Watershed Project asked for the BLM to consider shortened seasons of use, specifically in the spring. Under this alternative, spring grazing (May 1 to June 30) and associated AUMs would be eliminated in all Use Areas within the sage-grouse Spring Seasonal Use Area (SUA) (See Appendix A: Figure 5). There are four permits in the West Use Area where no Spring SUA occurs, therefore grazing management would not change (Appendix A: Figure 5).

2.5.1 Permitted Use for this Alternative

This alternative's permitted AUMs would be reduced to 2,807 AUMs (Table 5). This would result in a 45% overall AUM reduction from permitted use and a 38% overall AUM reduction from the actual use. Grazing management (flexibility and adaptive management) would still apply the same as that described in the Current Management Alternative. Grazing would no longer occur from May 1 to June 30 on Jim Sage Allotment within the sage-grouse Spring SUA. Three permits have AUMs permitted only during May 1 to June 30, therefore these permits would not be used for 10 years.

Table 5. Grazing Permits for the Spring AUM Reduction Alternative

Permittee	Use Area***	# Livestock-Kind	Grazing Period		AUMs**	
			Current	Proposed	Current	Proposed
Carl Boden*	West	5-horses 68-cattle	05/01-11/30 05/01-06/15	05/01-11/30 05/01-06/15	35 103	35 103
Bruce Durfee*	West	84-cattle	05/01-6/15	05/01-6/15	127	127
Dennis Erickson*	West	33-cattle	05/01-6/15	05/01-6/15	50	50
Denton Whitaker*	West	90-cattle	05/01-6/15	05/01-6/15	124	124
Wynn Dewsnup Family Revocable Trust	West and Almo-Womack	33-cattle 64-cattle 35-cattle	05/01-6/30 05/01-06/15 10/16-11/15	 10/16-11/15	66 97 36	0 0 36
Brent Jones	West and Almo-Womack	42 -cattle 51-cattle 58-cattle	05/01-06/15 05/01-06/15 10/16-11/15	 10/16-11/15	64 77 59	0 0 59
Jones, R.O. and Sons	West and Almo-Womack	101-cattle 50-cattle 114-cattle	05/01-06/15 05/01-06/15 10/16-11/15	 10/16-11/15	112 76 116	0 0 116
Spencer Brothers	South	143-cattle 33-cattle	05/01-10/15 05/01-10/15	07/01-10/15 07/01-10/15	671 182	428 116

Permittee	Use Area***	# Livestock-Kind	Grazing Period		AUMs**	
			Current	Proposed	Current	Proposed
Doug Ward	South and Almo-Womack	145-cattle 50-cattle	05/01-10/15 10/16-11/15	07/01-10/15 10/16-11/15	737 51	469 51
Heglar Creek Cattle Co.	East and West	108-cattle 200-cattle 150-cattle	02/15-03/16 04/01-06/10 09/16-11/22	02/15-03/16 04/01-04/30 09/16-11/22	64 467 335	64 197 335
Jeffery Gregersen	North and Cassia Creek	64-cattle 44-cattle	05/01-05/31 06/01-09/28	 07/01-09/28	65 174	0 130
Cody & Kortney Ward	North and Cassia Creek	99-cattle 69-cattle 62-cattle 87-cattle	06/01-09/08 05/01-05/31 05/01-06/15 09/09-09/28	07/01-09/08 09/09-09/28	208 45 60 37	146 0 0 37
William Wickel	North and Cassia Creek	159-cattle 33-cattle	05/01-05/31 06/01-09/28	 07/01-09/28	162 130	0 89
Todd and Alvin Carpenter	Cassia Creek	13-cattle 81-cattle	05/01-06/15 05/01-05/30		20 80	0 0
Ward Heritage Ranch	West and Almo-Womack	67-cattle 70-cattle	05/01-06/15 10/16-11/15	 10/16-11/15	101 71	0 71
Branch Farms LLC	Almo-Womack	24-cattle	10/16-11/15	10/16-11/15	24	24
Larry and Darlene Kincade	Cassia Creek	66-cattle	05/01-06/15		100	0
Steve and Tonya Ward	Chokecherry and Almo-Womack	102-cattle 45-cattle	05/01-06/15 05/02-06/15		154 67	0 0
				Total AUMs	5,131	2,807

*Permits in the West Use Area where there is no nesting /early brood rearing SUA, and therefore will not have a changed start date.

**Discrepancies in AUMs occur due to rounding errors associated with the calculation of AUMs.

***Permittees may utilize any Use Area with their permitted livestock numbers and AUMs. All AUMs are allocated to the entire Jim Sage Allotment.

2.5.2 Grazing System

The allotment is comprised of seven Use Areas containing 28 pastures. All grazing systems would become Rest Rotation systems with various number of pastures, with most pastures receiving rest each year due to the lack of spring use (Table 6).

Table 6. Grazing management on Jim Sage Allotment for the Spring AUM Reduction Alternative.

USE AREA	GRAZING SYSTEM	SEASON OF USE
West	2-Pasture Rest Rotation (northern portion) (southern portion)	02/15-03/15 cattle 05/01-06/15 cattle (four permits not affected) 05/01-11/30 horses (one permit not affected) 05/01-06/30 No Use
East	4-Pasture Rest Rotation	04/01-04/30 09/16-11/22
North	4-Pasture Rest Rotation	07/01-09/08
South	4-Pasture Rest Rotation	07/01-10/15
Cassia Creek	5-Pasture Rest Rotation	09/09-09/28
Chokecherry	3-Pasture Rest Rotation	05/01-06/30 No Use
Almo-Womack	3-Pasture Rest Rotation	10/15-11/15

2.5.3 Range Monitoring
No additional monitoring proposed beyond what has been described above in Management Actions Common to All Alternatives (Section 2.0.1).

2.5.4 Range Improvements
There are no proposed range improvements under this Alternative.

3.0 Affected Environment and Environmental Effects
This chapter includes past and present actions and activities that have led to the current baseline resource conditions within the Jim Sage Allotment. This chapter also provides a framework for analyzing effects (direct, indirect, and cumulative) of the Proposed Action and Alternatives on resource concerns brought forward for analysis. Resources identified on the Jim Sage Allotment were split into two categories: Present, Impacted and Present, Not Impacted (Table 7). For a more descriptive rationale narrative on all resources, refer to Appendix D: NEPA Checklist.

Table 7. Resources Considered in the Impact Analysis.

Resource	Resource Status	Rationale
Vegetation	Present, Impacted	Impacts are disclosed under Vegetation for each alternative.
Invasive, Non-Native Species	Present, Impacted	Impacts are disclosed under Vegetation for each alternative.
Soils	Present, Impacted	Impacts are disclosed under Soils for the Permittee Proposed Action alternative in which effects to soils would occur.
Riparian Areas and Wetlands	Present, Impacted	Impacts are disclosed under Riparian for the alternatives in which effects to riparian resources would occur.
Water Quality	Present, not Impacted	As explained in Section 3.5, below, only two reaches within the Jim Sage Allotment are subject to Idaho DEQ water quality standards. Because management under all alternatives will lead to the same result, water quality is not analyzed in detail.
Wildlife Resources	Present, Impacted	Impacts are disclosed under Wildlife-Sagebrush Obligates and grassland species for all alternatives. Other wildlife species will be discussed in the Affected Environment section. For more information refer to Affected Environment: General Setting and Appendix D: NEPA Checklist.
Economic and Social Values	Present, Impacted	Impacts are disclosed under Socioeconomics for the No Grazing, Threshold and Response, and Spring AUMs Reduction Alternatives.
Fire and Fuels Management	Present, Impacted	Impacts to fire and fuels management are disclosed under Vegetation for each alternative.
Visual Resources	Present, not Impacted	The Jim Sage Allotment designated in the CRMP as Visual Resource management (VMR) classes III and IV. Neither the Proposed Action or Alternatives would affect the existing character of the landscape at moderate or high levels. In addition, livestock grazing is not considered an activity that would have potentially negatively affect visual resources. None of the alternatives, including the proposed range improvements, would impact visual resources.
Climate	Present, not Impacted	Climate would not be affected by the alternatives and the contribution of Greenhouse Gas (GHG) emissions from the level of grazing on the Jim Sage Allotment in the alternatives would be negligible or even undetectable, therefore climate will not be analyzed.

Resource	Resource Status	Rationale
Lands/Realty Authorizations	Present, not Impacted	None of the alternatives would have affects to lands and realty authorizations.
Ecology/Minerals/Energy	Present, not Impacted	None of the alternatives would impact access or availability to any mineral or energy resources in the areas.
Floodplains (EO 11988)	Present, not Impacted	There would be no effects to floodplains under any of the alternatives.
Migratory Birds	Present, not Impacted	Migratory Birds are discussed for more information refer to Affected Environment: General Setting.
Threatened, Endangered, and Special Status Species	Present, Impacted	There are no Threatened or Endangered species within the allotment. Therefore T&E species will not be discussed. Special Status Species affected by the Proposed Action and Alternatives will be discussed.
Threatened, Endangered, and Sensitive Plants	Present, not Impacted	Threatened, Endangered, and Sensitive Plants would not be discussed. Two special status plant species have been identified and monitored in the allotment and are located in areas that are either not accessible to livestock or are normally found where there is limited forage and livestock do not tend to concentrate. Livestock are not a threat to either of these species (see 2022 Jim Sage RHA and Evaluation Report, p. 140).
Threatened, Endangered, and Sensitive Aquatic Species	Present, not Impacted	There are no Threatened or Endangered Aquatic Species in the Jim Sage Allotment. However, the BLM sensitive Yellowstone cutthroat trout has been found in the Raft River. Livestock can only access the Raft River within a 100 feet-wide water gap. The Raft River was rated PFC and will not be analyzed. Additionally, per IDEQ (2021) since the 2013 assessment, "...observed improvements to the riparian areas and stream channel function, the current condition should no doubt reflect positively on water quality".
Environmental Justice (EO 12898)	Present, not Impacted	None of the alternatives would disproportionately affect minority or low-income populations or individuals in the area or region.
National Historic Trails	Present, not Impacted	There would be no effects to National Historic Trails under any of the alternatives. Approximately ¾ mile of the California trail occurs on the western portion for the Jim Sage Allotment. Current livestock management has no effects to the historic trail since no historic trails are located within the APE (Area of Potential Effects). There are no proposed range improvements near this trail.
Cultural Resources	Present, not Impacted	None of the alternatives impact Cultural Resources. None of the alternative's impact known Cultural Resources. There are no cultural sites that are eligible for the National Register of Historic Places within the APE (Area of Potential Effects) for existing and proposed livestock grazing and range improvements. Additional cultural resource inventory was completed for the proposed range improvements. The inventory concluded that the projects would have "No Effect" on historic properties.
Air Quality	Present, not Impacted	None of the alternatives would result in the production of emission or particulate matter above incidental levels.
Recreational Use	Present, not impacted	Implementation of the alternatives is not expected to have an impact on the limited, dispersed camping use or hunting opportunities of the allotment.
Tribal Treaty Rights and Interests	Present, not impacted	The Shoshone-Paiute and Shoshone-Bannock Tribes were consulted and no effects to tribal access to exercise their treaty

Resource	Resource Status	Rationale
		rights or effects on known resources they use for traditional purposes were identified for any alternatives.
Areas of Critical Environmental Concern (ACECs)	Present, not impacted	None of the alternatives would impact the values associated with the ACEC.
Wilderness/Lands with Wilderness Characteristics	Present, not impacted	None of the alternatives would impact the lands with Wilderness Characteristics. Current inventory indicates that a portion of the Jim Sage Allotment meets the Wilderness Characteristics criteria. The eligibility of these lands would not be affected by any of the alternatives analyzed.

3.1 General Setting

The Jim Sage Allotment is located due east of Elba and Almo, Idaho (Figure 1). The allotment is comprised of approximately 74,381 acres of public land, 4,120 acres of State of Idaho Lands and 2,172 acres of private lands. Elevations range from 4,600 feet on the eastern edge of the allotment to just over 8,000 feet at the peak of Jim Sage Mountain. Vegetation is dominated by sagebrush steppe with significant areas of juniper/pinion woodlands and native grasses. However, several crested wheatgrass seedings and native cultivar seedings occur across the allotment. There are 11 miles of perennial streams in the allotment with approximately 40 acres of riparian obligate vegetation.

Conditions within the Jim Sage Allotment have been affected by a variety of activities over time, including wildfire, range improvements, livestock trailing, gravel pits, geothermal, roads and other infrastructure, etc. (See following discussion).

- **Wildfire:** Records indicate 25 wildfires have occurred in the allotment since 1975 (2022 Jim Sage RHA and Evaluation Report, Figure 4, p. 13). Since 2007, four wildfires have burned approximately 21,000 acres. The 2018 Connor Fire comprised 65% of the acres burned between 2007 and 2020. The average fire size is approximately 1,200 acres. Most of the larger fires have occurred in the northeast and southeast portions of the allotment.
- **Range improvements:** developed springs, riparian exclosures, troughs/pipelines, ponds, wells, and fences. There are currently 39 miles of pipeline and 72 trough sites across all locations in the Jim Sage Allotment (Appendix A: Figure 2). Wildlife escape ramps are installed on all troughs which allow for an escape route in the case of accidental entrapment. Most trough systems include float valves to minimize overflow. and standing water next to the troughs. There is one trough system that overflows into a pond in the Middle Pasture, Almo-Womack Use Area. Fencing infrastructure on the Jim Sage allotment primarily consists of management fences and riparian exclosures. Currently, there are approximately 76 miles of interior management fences on the allotment, in addition about 95% of the allotment is surrounded by private land boundary fence. These interior management fences, or pasture fences, facilitate multiple types of grazing systems for proper livestock management. The fences are used to separate use areas and facilitate rest rotation and deferred rotation grazing patterns within seeded rangelands, native rangelands, and riparian systems.
- **Gravel pits:** There is one active Gravel pit operation, approximately 30 acres in size, located in the Cottonwood Seeding Pasture of the Jim Sage Allotment.
- **Geothermal:** There are two inactive Geothermal test wells on one pad, totaling less than five acres, including the access road. This area has been cleared of vegetation.
- **Roads:** There are roughly 50 miles of improved roads throughout the Jim Sage Allotment. The

majority are dirt roads with three roads being improved gravel roads. Road densities are low within the various watersheds, but some access roads do parallel and occasionally cross streams.

- **Utility ROWs:** Existing utility ROWs total approximately 20 miles of large and 4.5 miles of smaller distribution lines. Utility ROWs exist for each of the distribution lines on the Jim Sage Allotment. Permanent vegetation clearing around the power poles totals approximately 30 acres.

Climate

Long-term average yearly temperature is 45.9 ºF and was near normal over the last 12 years (2022 Jim Sage RHA and Evaluation Report, p. 15). The 30-year average annual precipitation ranges from over 20 inches in the higher elevations to less than 10 inches on the eastern portion of the allotment (Figure 4). Weather moves west to east across the Jim Sage Mountain resulting in a rain shadow effect in eastern low elevations, thus drier conditions. Timing and amount of precipitation affects perennial plant growth on any given year and results in fluctuations of herbaceous plants presence between years. Photos taken at the same low sage/bluebunch wheatgrass ecological site near Sheep Mountain depict yearly fluctuations in populations of perennial forbs (Figures 5 and 6).

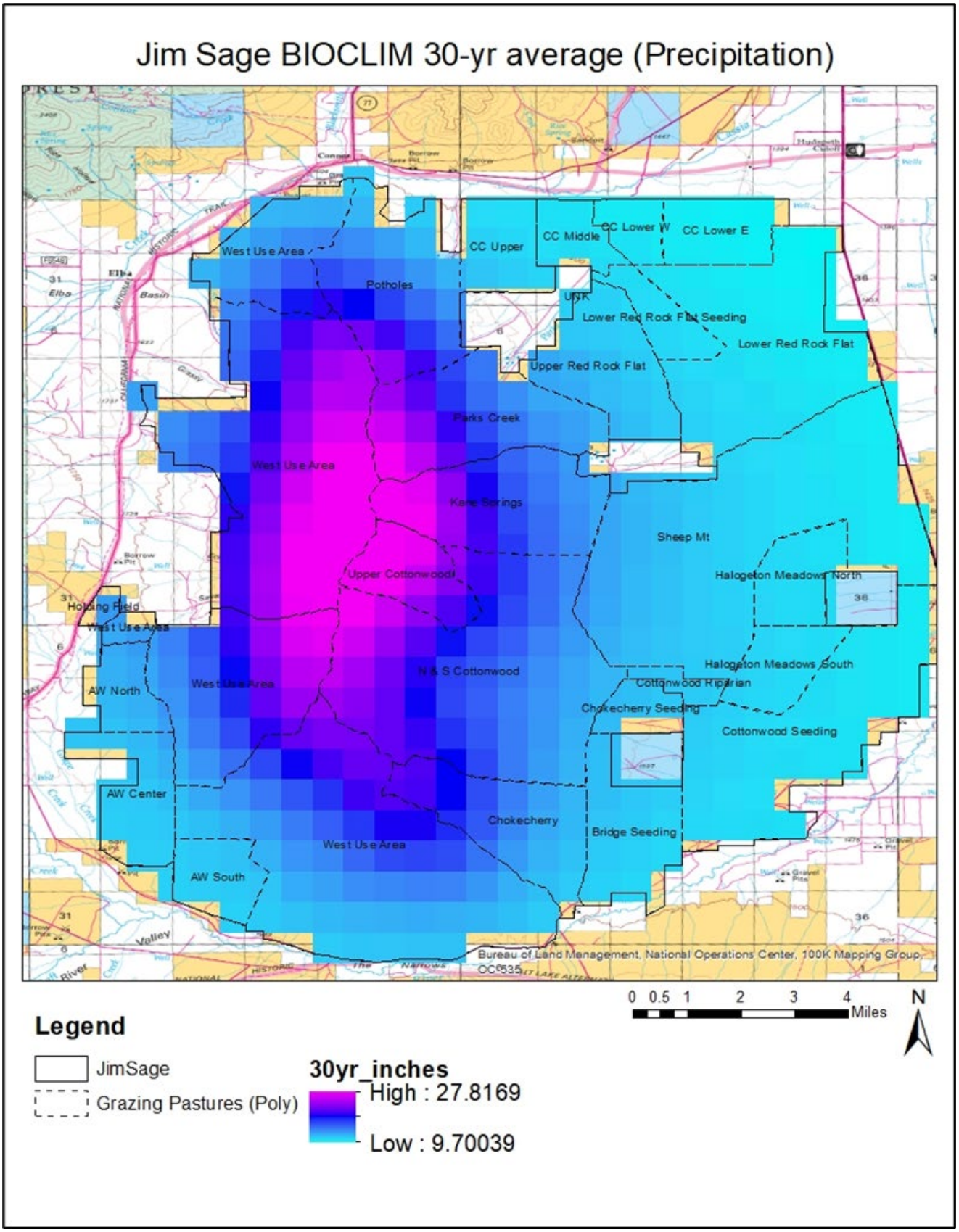

Figure 4. Prism climate data depicting 30-year average precipitation data.

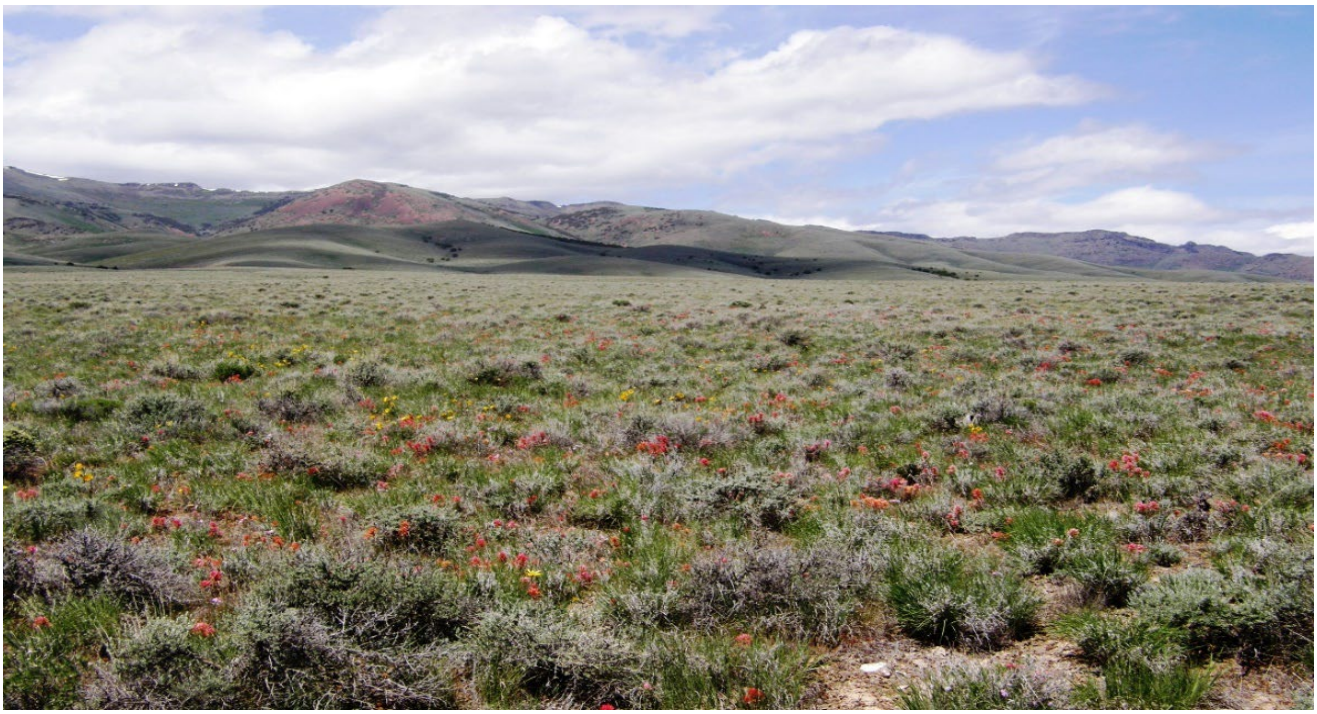

Figure 5. Mid elevation, low sage/bluebunch site (East Use Area) May 2013 – Note observable diversity and cover of perennial forbs.

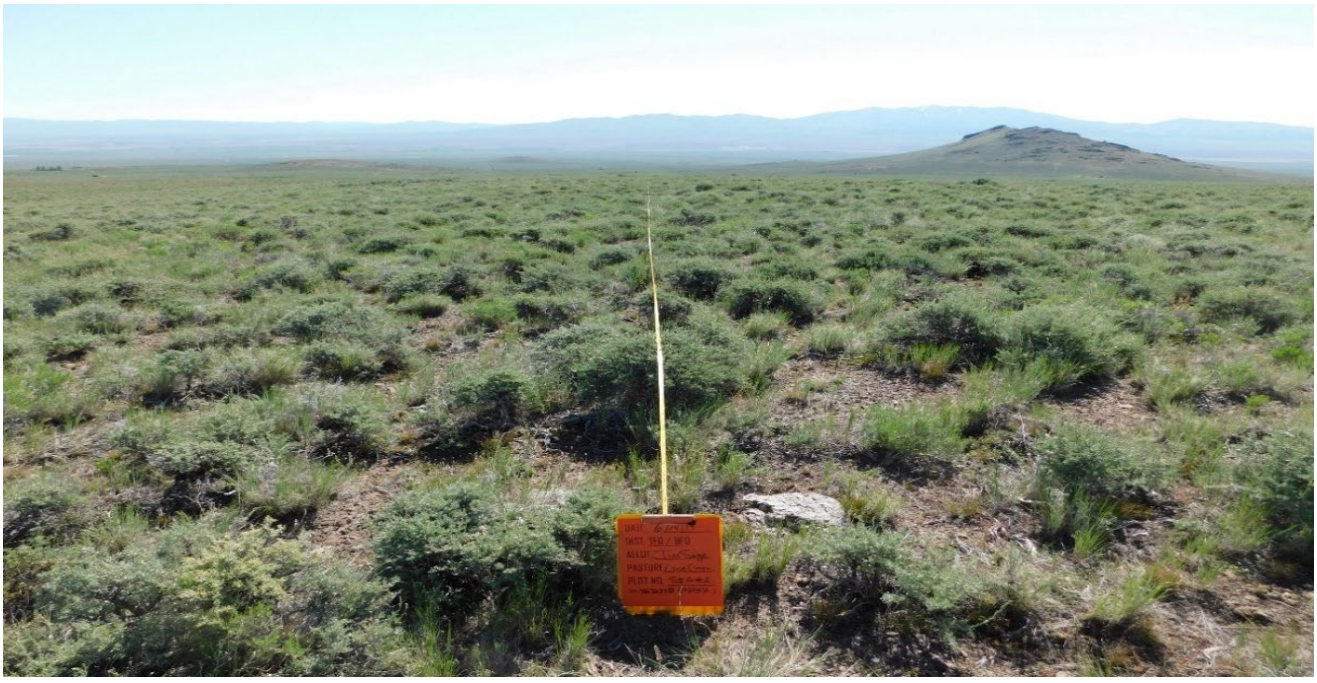

Figure 6. Same Mid elevation, low sage/bluebunch site (East Use Area) June 2020 – Note lack of observable perennial forb cover.

3.2 Grazing History

Beginning in 1840, livestock began to arrive on the Raft River Valley as settlers migrated to California and Oregon via the Oregon Trail. It is estimated that during the peak years, upwards of 180,000 head of livestock per year passed over the Oregon Trail. Early grazing was largely unregulated either by fences or a legal system and competition was intense among ranchers, homesteaders, and free-rangers as well as between cattle grazers and sheepherders (Donahue, 1999). In 1868, Shirley and Gamble drove the first large herd of cattle into the Raft River Valley and within the next 10 years six large cattle companies operated mainly in the Raft River Valley (Taylor, 1978). Young and Sparks (1985) reported that the Shirley herd totaled 10,000 head of cattle. Sheep entered the area soon after the cattle. This early unregulated grazing combined with the drought and dust storms of the 1930s led Congress to enact the Taylor Grazing Act of 1934 (TGA).

Despite the TGA, livestock numbers remained high in the Raft River Valley until the late 1950s when the grazing adjudication process was completed. During the adjudication process, the public lands were inventoried and assessed, allotments were established, and livestock numbers were adjusted based upon resource conditions. In 1958, the Jim Sage Unit (Cassia Creek, Almo-Womack, Chokecherry, and Jim Sage Allotments) implemented a 50% reduction (2022 Jim Sage RHA and Evaluation Report), leaving the permitted use in the four allotments at 5,431 active AUMs to be utilized by horses, cattle, and sheep.

In 1999, a sheep-to-cattle conversion was completed on the Jim Sage Allotment to allow for a re-introduction of bighorn sheep on Jim Sage Mountain resulting in the retiring of 300 sheep AUMs with the remaining 864 AUMs converted to cattle. This conversion resulted in a slight AUM reduction, and the removal of all domestic sheep grazing on the Jim Sage Allotment. No changes were made to the season of use.

Then in 2008, BLM combined four allotments (Chokecherry, Almo-Womack, Cassia Creek and Jim Sage) into one, the Jim Sage Allotment. During this permit renewal an adaptive management strategy was developed which provided flexibility to adapt to changing resource conditions and to ensure proper livestock management for both uplands and riparian areas.

3.3 Vegetation

Approximately 60,300 acres of native rangeland in the Jim Sage Allotment consists of multiple sagebrush steppe plant communities and pinyon/juniper plant communities. Over 80% of the native rangeland is meeting Standard 4. The remaining native vegetation within the allotment (East and South Use Areas) is not meeting Standard 4. Native rangeland exists primarily within four major soil associations within allotment. (See 2022 Jim Sage RHA and Evaluation Report, p. 9).

Lower elevation native sites, generally below 5,200 feet, primarily in the South and East Use Areas range from bluebunch wheatgrass/squirreltail sites and shadscale or Wyoming big sagebrush sites to greasewood/cheatgrass sites. The presence of perennial bunchgrasses (squirreltail, Sandberg's bluegrass) occurs at varying levels within the same pasture and under the same grazing management. Globemallow, a native perennial forb, is the primary forb in these lower elevation sites. See examples of lower elevation greasewood (Figure 7) and Wyoming big sagebrush (Figure 8).

The areas not meeting Standard 4 (Native Plant Communities) occur within the lower elevations of the South and East Use Areas, which is approximately 18% of the native rangeland in the allotment. These areas are generally dominated by either an overstory of Wyoming big sagebrush with an understory of cheatgrass and halogeton or isolated areas void of sagebrush and dominated by cheatgrass and/or halogeton. Sagebrush canopy cover in most of these areas is above the 25% threshold for sage-grouse habitat (>30%). These lower elevation sites exhibit high cheatgrass cover (50% to 78%) and generally lower amounts of perennial grass cover than expected in the Ecological Site Descriptions (ESDs) resulting

in less than desirable native vegetation conditions. This level of cheatgrass is considered to be invasive in nearly all ecological sites in the area and is therefore strongly indicative of a loss of biotic integrity. Approximately 3,000 acres of native vegetation in the Lower Red Rock Flat Pasture of the East Use Area is making progress towards meeting Standard 4 due to an increase in perennial grass cover (2022 Jim Sage RHA and Evaluation Report, Appendix 2: Figure 1).

The 2003 Rangeland Health Evaluation and Determination attributed the lack of meeting Standard 4 in the East and South Use Areas to historic livestock grazing practices. Besides the early 1900s excessive grazing and/or cultivation of native rangelands that may have allowed for cheatgrass to establish, another potential causal factor for cheatgrass introduction to the area may be due to the mechanization of large-scale cereal grain production. This mechanization encouraged custom harvest operators to move from place to place, bringing weedy grass seeds with them (Young & Clements, 2009, pp. 45-46). Additionally, annual brome grass species are self-invasive weeds; they can invade other communities without the conscious efforts of humans to introduce them (Young & Clements, 2009, p. 38). Some microsites within the Lower Red Rock Flat Pasture, lower elevation portions of the Sheep Mountain Pasture, and the Cottonwood Pasture, where cheatgrass is typically abundant, have minimal cheatgrass, likely due to specific site characteristics that are unfavorable for the plant. In summary, the dominance of cheatgrass, whether it is from historic grazing and/or simply the introduction of cheatgrass to a favorable site for its growth, current grazing is not a potential cause of the current conditions in these native sites. These Use Areas are managed in deferred grazing systems to allow for growing season rest, utilization levels have been light (<25% on average) and the areas are lightly stocked (ranging from 11 acres/AUM to 19 acres/AUM).

Although, some improvement has occurred in the East Use Area, the lower elevation flats in the South and East Use Areas have crossed an ecological threshold (2022 Jim Sage RHA and Evaluation Report) and would require restoration actions to improve ecological conditions dominated by deep-rooted, perennial plants. An ecological threshold is a boundary in space and time between two ecological states. Ecological threshold changes involve shifts in plant composition; changes in the physical, chemical, or biological properties of the soils; or changes in the basic ecological processes such as the nutrient cycles. They are not reversible on a practical timescale without human intervention (National Research Council, 1994, pp. 37-38) or by simply removing livestock grazing.

Figure 7. DS #1 S&G Site (May 2019) - Low elevation native site on southern flat (Cottonwood Seeding Pasture, South Use Area).

Figure 8. Lower Red Rock Flat Key Area #21 (September 2020) - Low elevation native site on southern flat (Lower Red Rock Flat Pasture, East Use Area).

Mid-to-upper elevation native sites, generally above 5,200 feet, consist of Utah juniper, single leaf pinyon, low, black and mountain sagebrush, aspen, mountain brush and mahogany communities. Douglas fir occupies a small amount of acreage in the upper portion of Parks Creek, within the North Use Area. Hooker's balsamroot, paintbrush, phlox, fleabane, death camas and larkspur along with Great Basin wildrye, bluebunch wheatgrass, and Sandberg's bluegrass are other common species occurring within these middle and upper elevation types. These areas are composed of healthy, diverse, native plant communities that exhibit very little departure overall in the rangeland health indicators from what is expected to occur on the sites (Figures 5, 9, and 10).

In the 1990s to early 2000s, juniper-encroached areas were noted to have reduced understory vegetation or were colonizing sagebrush habitat (Figure 11) and initial smaller scale treatments were implemented. Since 2001, approximately 17,000 acres of juniper-encroached sagebrush-steppe within the allotment have been mechanically treated to improve rangeland health and habitat for sage-grouse and mule deer (Figure 12). With the improvement in juniper-encroached areas since early 2000s, an additional 19% of native vegetation acres meets the standard. These areas now contain healthy watersheds and native plant communities. This, combined with the mid- to upper-elevation sagebrush communities that have remained healthy since the last assessment, has resulted in over 80% of the native rangeland on the Jim Sage Allotment now meeting Standard 4. Despite this, approximately 11,000 acres in the lower elevation Wyoming sagebrush and greasewood sites in the South and East Use Areas are not meeting the standard (2022 Jim Sage RHA and Evaluation Report, p. 104).

Figure 9. Example of upper elevation mixed juniper and low sagebrush site, June 2019 (Jim Sage/Womack Pasture, West Use Area).

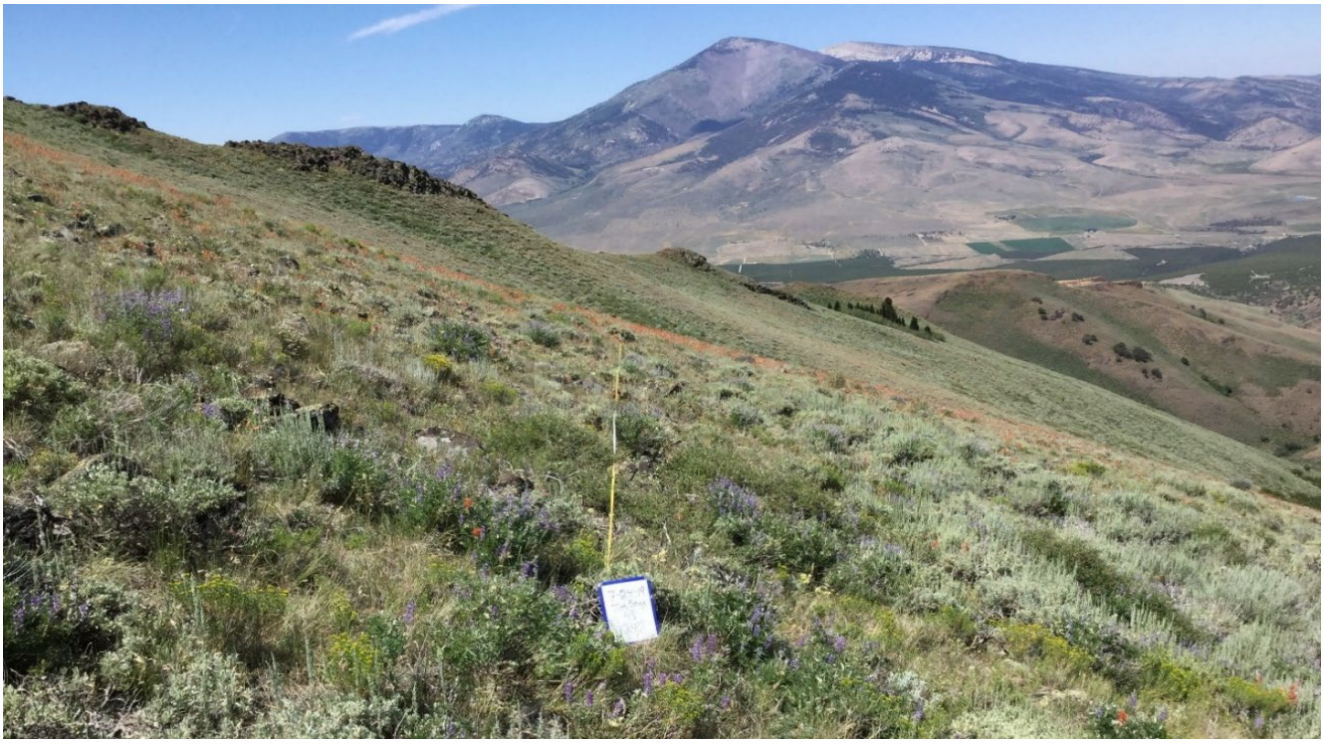

Figure 10. Example of upper elevation native site, July 2019 (Quaking Asp/Black Sands Pasture, West Use Area).

Figure 11. Mid-elevation juniper encroached DS5 site, pre-juniper treatment, June 2001 (North N&S Cottonwood Pasture, South Use Area).

Figure 12. Same mid-elevation juniper encroached DS5 site, post-juniper removal and seeding treatment (2004) (Photo taken in May 2019).

Seeded rangeland consists of a variety of non-native and native cultivars with varying levels of sagebrush cover (Figure 13). There are approximately 14,000 acres of seeded rangeland in the allotment. These seedings occur throughout the allotment and are the result of vegetation and fire rehabilitation projects. Seedings are the dominant vegetation in the Almo-Womack, Cassia Creek, and Chokecherry Use Areas and some pastures in the South and East Use Areas (2022 Jim Sage RHA and Evaluation Report, Appendix 2: Figure 1). Most of the crested wheatgrass and Russian wildrye seedings were established in the mid-1950s to recover depleted rangeland and control halogeton. The most recent seeding (non-native, native cultivar) occurred in 2020 in the lower elevations to address cheatgrass dominance and re-establish deep-rooted perennial bunchgrass. The seedings are currently meeting Standard 5 for ISRH and are maintaining lifeform diversity, production, and native animal habitat.

Figure 13. Example of seeded rangeland, May 2019 (Bridge Seeding Pasture, South Use Area).

The primary noxious weeds present in the allotment are scotch thistle and black henbane. Recent wildfires and some juniper treatments temporarily increased the presence of scotch thistle. However, these areas are actively monitored and treated to control presence and spread. Noxious weeds are cooperatively treated annually by BLM and Cassia County. Weed treatments have been successful and noxious weeds are not increasing on the allotment.

Vegetation within the Jim Sage Allotment has been affected by a variety of other activities over time, including gravel pits, geothermal, roads and other infrastructure. These projects have permanently removed vegetation and/or soil in these areas. Although these activities affect the extent of vegetation in the allotment, they do not affect the condition of the remaining vegetation and soils.

Vegetation may be affected by actions in all alternatives; therefore, this resource would be carried forward throughout the analysis in all alternatives.

3.4 Soils

The Jim Sage Allotment is meeting Standard 1 (Watersheds). Soils play an important role in watershed conditions by providing for proper infiltration, retention, and release of water appropriate to soil type, vegetation, climate, and landform to provide for proper nutrient cycling, hydrologic cycling and energy flow. Furthermore, observations at Modified Assessment Inventory Monitoring (M-AIM) terrestrial sites indicate stable watershed conditions as evidenced by the lack of rills, gullies, pedestals, indications of deposition and run-off, or presence of water flow patterns. Rangeland health indicators which evaluate soil/site stability and hydrologic function were very similar to what is expected to occur on the ecological sites. Plant cover and distribution is sufficient to protect the soil and prevent excessive erosion. Livestock management is resulting in healthy watershed conditions across the allotment.

The effects to soils will be discussed under each alternative.

3.5 Riparian and Water Quality

There are approximately 11 miles of creeks and their associated springs in the Jim Sage Allotment, totaling approximately 40 acres of riparian areas (2022 Jim Sage RHA and Evaluation Report, Figure 65). Cassia Creek, Almo-Womack, and Chokecherry Use Areas do not have any riparian areas. The four other Use Areas (East, West, North, and South) include 13 riparian areas. The Burley Field Office has actively monitored these riparian areas for over 20 years.

Most creeks in the Jim Sage Allotment are small, spring-fed, and often dry up at the lower elevations in the late summer (for example, see Figures 14 and 15). The vegetative community across the entirety of the riparian areas in the Jim Sage allotment is diverse and includes both evergreen and deciduous woody species. The understory is dominated by sedges, rushes, grasses, and forbs. Sagebrush and Wood's rose are present along the banks in some drier areas.

Figure 14. Jim Sage Creek (Fall 2019)

Figure 15. Chokecherry Canyon (Summer 2019)

A few additional springs are entirely developed for livestock use. The water flow at these sites is minimal and is captured within the water development. These areas include Keg Hollow (West Use Area), Savage Hollow (West Use Area), Kane Spring (East Use Area), and Bridge Spring (South Use Area).

Juniper removal treatments have been completed in Womack Creek, Jim Sage Creek and Quaking Asp Creek to improve quaking aspen regeneration in the riparian zone.

Riparian and wetland health across much of the allotment was originally assessed in 1994 by the Riparian & Wetland Research Program (RWRP) from the University of Montana for Proper Functioning Condition (PFC). The BLM rated the streams for PFC between 2001-2002 for the first rangeland health assessment/evaluation, which was completed in 2003. PFC ratings were conducted primarily using the lotic methodology. In the early 2000s, the majority of riparian areas were not in PFC. BLM modified management to address riparian condition as described in Section 1.1.1. BLM evaluated sites again in 2012 and 2019 and continued to document further improvement in vegetation establishment and floodplain stability; demonstrating that the modifications from 2003 addressed the concerns that were found at that time (Appendix E for riparian photos and comparisons). Currently all riparian areas, except for one portion of the Raft River are meeting Standards 2 and 3 of the ISRH (2022 Jim Sage RHA and Evaluation Report, pp. 66-91).

The Idaho Final Integrated Water Quality Report was released by Idaho Department Environmental Quality (IDEQ) in Spring 2021. Within that report, the Raft River Sub-Basin Assessment reviewed all waterbodies contributing to the Raft River watershed. This unit includes two waterbodies, Raft River and Grape Creek, monitored by IDEQ for water quality. Portions of both Raft River and Grape Creek are adjacent to the Jim Sage allotment. Only Raft River has two sections of its channel located on BLM within the West Use Area of the Jim Sage allotment. Whereas the main fork of Grape Creek is fed by several ephemeral creeks from

the West Use Area of Jim Sage allotment on occasion. Based on 2021 data from IDEQ, sections of Raft River are not meeting water quality standards due to low flow alterations, temperature, and sedimentation. Grape Creek is fully supporting water quality standards. At the time of the last assessment, Raft River was not fully supporting all beneficial use classes, but water quality has improved and is now meeting the Primary Contact Recreation beneficial use class. Because of this known improvement and PFC ratings throughout the allotment, Standard 7 (Water Quality) was found to not be meeting but is making significant progress.

Water quality will not be carried forward for further analysis because only one small portion of Raft River within the allotment is assessed by IDEQ. Less than one river mile of Raft River is located on BLM and has been excluded from livestock use since 1980, with the exception of a 100-foot water gap. All other waterbodies on the Jim Sage allotment are not assessed because IDEQ considers them to be ephemeral/intermittent, or an inaccessible reach (IDEQ, 2021).

The 2019 PFC surveys and ratings of riparian areas within the allotment all speak to the system being in proper functioning condition. It is the ID team's opinion that improving riparian areas to meet PFC contributes to improved water quality. If any streams on an exceptionally high precipitation year flow to the Raft River or Grape Creek waterbodies, they should contribute positively. Furthermore, IDEQ in communication stated that "there have been significant improvements [to Jim Sage riparian areas]… the riparian areas were limited but in good condition… observed improvements to the riparian areas and stream channel function, the current condition should no doubt reflect positively on water quality." (Tyana Weaver, personal communication, November 17, 2021)

3.6 Socioeconomics

The Jim Sage Allotment is in Cassia County, Idaho. The population of Cassia County is approximately 23,664 (University of Idaho Cooperative Extension, 2018-2019). As described in the Cassia County Situation Statement 2018-2019, Cassia County is rated #1 in Idaho in total value of agricultural products sold. Average value of agricultural products sold per farm is $1,584,136.00. The value of livestock, poultry, and their products as a percentage of the total market value of agricultural products sold is 62.46%. Livestock and dairy farming are the largest contributors to the economic health of the area. Rangelands in the county support grazing of an average of 125,000 cattle and 14,000 sheep annually. Publicly and privately-owned rangelands are being utilized by the livestock producers. Agriculture, with its associated enterprises, is the number one industry in Cassia County bringing in more than $954 million annually into the county economy. Farms and ranches are critical to the economy of the area (University of Idaho Cooperative Extension, 2018-2019). The Jim Sage Allotment, and the associated grazing permits, are important components of the permit holders' year-round livestock grazing operation.

Balancing livestock grazing on public lands with forage production on private lands allows permittees to maintain economic viability of their agricultural investment. The BLM does not have extensive knowledge of the ranching interests or alternative grazing options, or access to the financial and business records of the permittees. Financial institutions and livestock operators recognize a financial value of grazing permits and associated AUMs. The livestock industry is an important component of the local economy as evidenced by the statistics previously discussed. It provides employment and income, directly and indirectly, for much of the local population. For example, livestock operation owners hire workers that reside locally and would spend any income made from the livestock operation within the local community (i.e., housing, restaurant dining, and associated living costs). This would also apply to operating costs associated with running a livestock operation (i.e., purchasing supplies, equipment, livestock feed/hay, and fuel for equipment and vehicles).

Socioeconomics will be analyzed in each alternative.

3.7 Wildlife

Wildlife on the Jim Sage Allotment includes amphibians, reptiles, birds, and mammals. In order to address the large number of common wildlife in the Jim Sage Allotment, species occurring in similar habitats were placed into habitat groups. This approach allows for analysis of impacts at a larger scale without analyzing each species individually (Wisdom et al., 2000). Migratory birds are also included in the habitat group discussions in the Special Status Species discussion (Section 3.7.2).

3.7.1 General Wildlife

Common mammal species occurring throughout the Jim Sage Allotment include mule deer, elk, moose, pronghorn antelope, coyote, red fox, bobcat, yellow-bellied marmot, western spotted skunk, badger, long- and short-tailed weasel, ground squirrel, least chipmunk, pocket gopher, several species of mouse, cottontail rabbit, and black-tailed jackrabbit. IDFG IFWIS database details observations of gray wolves within Cassia County, but not specifically within the Jim Sage allotment. Transient gray wolves could potentially be observed but are not known to currently inhabit the allotment.

The Jim Sage Allotment provides 56,350 acres of general winter range for mule deer. Winter aerial survey have been conducted periodically, by IDFG, since the late 1990s and show that deer numbers have increased over time from 773 in 1997 to roughly 1,800 in 2017. The CRMP requires BLM to have 2,415 AUMs available for antelope and mule deer on the Jim Sage Allotment. Through forage calculations derived from ESDs production descriptions, factoring in the highest permitted livestock AUMs described in the alternatives, between 46,660 (Low) and 134,422 (High) AUMs remain for wildlife on the Jim Sage Allotment. At the lowest production years 46,660 AUMs are available for mule deer and pronghorn which is 800 times more than the requirement from the CRMP. Therefore, adequate amounts of AUMs for forage are available to big game species and other wildlife under all alternatives.

Roughly 3,900 acres of juniper have been mechanically removed within mule deer winter range in the southern portion of the West and Almo-Womack Use Areas to improve rangeland health and habitat for sagebrush obligate species such as the greater sage-grouse. Drainages and some intact stands of Phase 3 (closed canopy with reduced understory) juniper were omitted from treatment in those areas to provide thermal cover for big game during the winter season. To conserve and improve big game habitat, 1,830 acres within the Grape Creek-Keg Hollow (Almo-Womack and West Use Areas) were treated in 2019 to decrease the spread of juniper into the lower elevations. These treatments also benefit mule deer by promoting browse vegetation to meet the nutritional requirements for wintering mule deer.

BLM considers general wildlife to be animals other than Migratory Birds and Threatened, Endangered, or BLM Sensitive Species. The 2022 Jim Sage RHA and Evaluation Report shows general wildlife habitat is suitable and abundant across the allotment in conjunction with the current livestock utilization levels that have been authorized through existing permits. BLM expects habitat conditions to remain similar under each of the grazing alternatives since the existing authorized utilization levels would not change (Section 2.1.2; 21-40% on native and 41-60% on seeded species). Current grazing management, guidelines and grazing systems are expected to maintain or improve nesting and foraging availability in multiple habitat types across the Jim Sage Allotment. The application of design features (installation timing and location) the proposed range improvements analyzed under the Permittee Proposed Action (6 troughs, 4 electric fences, 1 new conventional fence) are not expected to measurably effect big game distribution or mule deer winter habitat. Effects to wildlife habitat from the installation of the range improvements will be analyzed. Due to current suitable habitat conditions and the negligible short and long-term effects of the proposed action and alternatives on habitat suitability, general wildlife will not be carried forward for analysis under each alternative.

3.7.2 Special Status Species (SSS)

The BLM State Director designates special status species in accordance with the national policy provided in BLM Manual MS-6840, *Special Status Species Management*. ..BLM Special Status Species include those federally listed under the Endangered Species Act, and Critical Habitat; and BLM Sensitive Species. The latter include all federally designated candidate species, proposed (ESA) species and ESA species delisted in the past 5 years.

BLM Sensitive Species must be native species found on BLM-administered lands for which BLM has the capability to significantly affect the conservation status of the species through management, and either: 1) There is information that a species has recently undergone, is undergoing, or is predicted to undergo a downward trend such that the viability of the species or a distinct population segment of the species is at risk across all or a significant portion of the species range, or 2) The species depends on ecological refugia or specialized or unique habitats on BLM-administered lands, and there is evidence that such areas are threatened with alteration such that the continued viability of the species in that area would be at risk."

Mammals

Bighorn Sheep (upper elevations of the North, South, and West Use Areas)

In February 2000, 30 California bighorn sheep were relocated to Jim Sage Mountain from Oregon. In 2001, 15 additional ewes were translocated from Hart Mountain, Oregon (Fowles, 2001). As of July 2002, bighorn sheep numbers were estimated at 48 to 59 animals (Randy Smith, IDFG, personal communication, July 2002). Predation by mountain lions accounted for 12 of the 17 mortalities between the initial release and September 2001; eight occurred within the first four months of the initial release (Fowles, 2001). Due to the predation by mountain lions roughly 2,300 acres of juniper were removed in 2014 in the West and North Use Areas. These juniper treatments were focused on the upper elevations of Jim Sage Mountain from Echo Hollow to Jones Hollow. They were designed to reduce the amount of juniper cover utilized by mountain lions, and to provide bighorn sheep with a larger viewshed as they travel from the rocky ridges on the top of the mountain to the water sources available in these drainages, thereby potentially reducing predation.

IDFG utilizes aerial surveys to estimate bighorn sheep populations on the Jim Sage Mountain. As of 2021, approximately 100 bighorn sheep occupy the Jim Sage Mountain range year-round (J. Powell, IDFG, personal communication). The population is currently stable and mainly utilizes the rocky slopes in the upper elevations of the North, South, and West Use Areas. Since bighorn sheep move between Use Areas and because livestock grazing at these elevations is not expected to measurably affect bighorn sheep forage or distribution, bighorn sheep will not be carried forward for analysis under any alternative.

Pygmy Rabbits (Cassia Creek, Chokecherry and South Use Area)

Pygmy rabbit surveys have been conducted in each Use Area, but the only documented pygmy rabbit presence is in small, isolated areas of the Cassia Creek, Chokecherry, and South Use Areas. As a sagebrush obligate species, pygmy rabbits are typically found in contiguous stands of sagebrush, but are also found in other shrub types, such as greasewood (Green & Flinders, 1980) and salt desert shrub. Pygmy rabbit populations in the Raft River area are often found along drainages and swells of loose, friable soil. Accordingly, observations along big sagebrush drainages in the allotment have resulted in some detections of pygmy rabbit occupancy. Pygmy rabbits usually locate their burrow entrances under sagebrush (Green & Flinders, 1980). Sagebrush and other shrubs offer some protection of pygmy rabbit burrows from livestock trampling (Camp et al., 2014). Other potential habitat for pygmy rabbits occurs within the Almo-Womack, Cassia Creek, East, and South Use Areas. Known locations of pygmy rabbits on Jim Sage are consistent with the findings from Green and Flinders (1980) and recent modeling data completed by University of Idaho graduate students (Smith et al., 2019; Rush et al., 2021) and are found within an overstory of thick

big sagebrush drainages with limited understory access to livestock grazing.

Under the current grazing management system, suitable habitat occurs at known burrows and grazing management under the proposed action and alternatives will stay within current authorized utilization levels which is expected to retain understory vegetation. Camp et al. (2014) found within grazing treatments there was no influence of the integrity to burrow systems where livestock were presented when compared to pre-grazing conditions. The Threshold and Response Alternative may have a positive effect to pygmy rabbit habitat expansion through the increase of sagebrush cover. This is consistent with Camp et al. (2014) findings which suggested that grazing might increase shrub cover and that security and cover available to pygmy rabbits was not altered between grazed sites and long-term rested sites (10 years). However, the long-term benefit of increased sagebrush is not expected to be realized within the ten-year permit term because pygmy rabbits would not be expected to utilize younger pockets of sagebrush. Due to current suitable habitat conditions and the negligible short and long-term effects of the proposed action and alternatives on habitat suitability, pygmy rabbits will not be carried forward for analysis under each alternative.

Special Status Species Bats (East, West, South, North)

Several bat species use cracks and crevices in cliffs as roost sites and possible hibernacula (Vaughan & O'Shea, 1976; O'Shea & Vaughan, 1999; Neubaum et al., 2006; Lacki & Baker, 2007; Chambers et al., 2011; Snider et al., 2013; Johnson et al., 2017). Townsend's big-eared bats in southern Idaho appear be more closely associated with caves and lava tubes for hibernation (Gillies et al., 2014) but their use of cliff crevices in poorly documented. Some bat species roost in talus (Neubaum, 2018). California, fringed, small footed, and Yuma myotis as well as big brown bat, little brown bat, pallid bat, spotted bat, and Townsend's big-eared bat are present within the BFO. A variety of bat species may use pinyon-juniper woodland because it is the transitional vegetation type between upper elevation, mesic forests and lower elevation, arid shrublands and grasslands (Chung-MacCoubrey, 2005). No bat maternity roosts, or winter hibernacula have been documented within the Jim Sage Allotment; however, there has been little inventory or telemetry work. Bats use riparian areas to forage for insects (Hagen & Sabo, 2014). Bats use open water such as creeks, ponds, and springs for drinking as well as livestock troughs (Tuttle et al., 2006) when water is present.

Reptiles, Amphibians, and Fish

Reptiles

No special status reptile species have been documented within the Jim Sage Allotment.

Amphibians

Western Toad

No western toads have been documented within the Jim Sage Allotment.

Northern Leopard Frog

Northern leopard frogs have been recorded within the Chokecherry Creek riparian exclosure in the South Use Area. As mentioned under Standard 2 of the 2022 Jim Sage RHA and Evaluation Report (p. 75), the 0.3-mile section of Chokecherry Creek was rated at PFC and showed that the riparian area is well established with sedges, rushes, grasses, and that aspens are expanding. Northern leopard frogs have also been recorded immediately south of the Jim Sage Allotment within portions of the Raft River. Other streams or springs in the allotment that are persistent throughout most of the year provide potential additional habitat however, no Leopard frogs have been observed in these areas over the last several decades.

Special status amphibian presence within the Jim Sage Allotment is rare because suitable habitat is limited in the allotment. Where habitat is suitable, amphibian targeted surveys have only documented

Northern Leopard Frogs within the Chokecherry Creek riparian exclosure. Since livestock grazing is restricted, amphibian habitat within the exclosure is unlikely to be affected by the proposed action or alternatives. Therefore, livestock management analyzed in the proposed action and alternatives would not affect special status reptiles or amphibians and they will not be discussed further in this EA.

Fish

The only fish bearing stream within the Jim Sage Allotment is the Raft River, which contains populations of Yellowstone Cutthroat and other native non-game fish. No other water bodies within the Jim Sage Allotment contain fish species, likely because they are small, intermittent and do not connect to larger bodies of water. BLM does not expect any changes in condition to riparian or water quality under any Alternatives since livestock management would not change on the Raft River. Therefore, fish will not be carried forward for further analysis.

Birds other than sage-grouse

A variety of habitat conditions exist within the overall Jim Sage Allotment (2022 Jim Sage RHA and Evaluation Report). However, there are no Threatened or Endangered (T&E) species or associated critical habitats within the Allotment. BLM Sensitive bird species occurring or potentially occurring in the evaluation area are summarized by habitat in Table 8. Habitat groups specific to the Jim Sage Allotment are sagebrush steppe, grassland, riparian/wetland, and juniper/pinyon woodlands. These species are all expected for the site and no expected BLM sensitive species are absent. Most raptors hunt throughout the Jim Sage Allotment and use cliffs or trees for nesting.

Table 8. BLM Sensitive bird species expected to occur in the Jim Sage Allotment.

	Scientific Name	Common Name	Typical Habitat	Expected Use Area Occurrence
Birds	*Artemisiospiza nevadensis*	Sagebrush sparrow	Low/Mid-elevation shrub steppe	All
	Amphispiza bilineata	Black-throated sparrow	Low/Mid-elevation shrub steppe	All
	Aquila chrysaetos	Golden eagle	Low/Mid-elevation shrub steppe	All
	Buteo regalis	Ferruginous hawk	Low/Mid-elevation shrub steppe	All (except North Use Area)
	Centrocercus urophasianus	Greater sage-grouse	Low/Mid-elevation shrub steppe	All
	Lanius ludovicianus	Loggerhead shrike	Low/Mid-elevation shrub steppe	All
	Falco mexicanus	Prairie falcon	Low/Mid-elevation shrub steppe	All
	Oreoscoptes montanus	Sage thrasher	Low-elevation shrub steppe	All
	Ammodramus savannarum	Grasshopper sparrow	Grassland, low elevation shrub steppe	All

	Scientific Name	Common Name	Typical Habitat	Expected Use Area Occurrence
	Asio flammeus	Short-eared owl	Grassland, low elevation shrub steppe	All
	Athene cunicularia	Burrowing owl	Grassland, low elevation shrub steppe	All
	Numenius americanus	Long-billed curlew	Grassland	All
	Gymnorhinus cyanocephalus	Pinyon jay	Pinyon-juniper woodland	East, North, South, West
	Leiothlypis virginiae	Virginia's warbler	Pinyon-juniper woodland	East, North, South, West
	Empidonax traillii	Willow flycatcher	Riparian	East, North, South, West
	Pipilo chlorurus	Green-tailed towhee	Mixed coniferous forest, Mountain shrub	North, South, West

Grassland/low-elevation shrub steppe - Short-eared owl, burrowing owl, long-billed curlew, and grasshopper sparrow primarily use grassland habitats throughout the allotment for breeding and foraging. Short-eared owl and burrowing owl are also found in sagebrush habitats. Grasshopper sparrows and short-eared owls appear to prefer tall, dense, ungrazed grasslands for nesting, but also hunt in most other open habitats (Wiggins et al., 2006). In contrast, burrowing owls and long-billed curlews, are grassland species that prefer open grasslands with varying degrees of bare ground and short grasses. Generally, the 13,500 acres of wildlife habitat in seeded rangelands described in Section 3.1.2 is available for a combination of grassland- and sagebrush-obligate sensitive wildlife species. Grasslands provide birds with nesting and perching habitat and nest-building materials. Grasslands also provide food for birds in the form of insects and/or seeds. Areas containing a variety of residual herbaceous plant heights provide suitable habitat for all grassland species. Most grassland habitats in the Jim Sage Allotment are the result of past fire where time since burning has not been adequate to reestablish shrub-dominated plant communities and historic crested wheatgrass seedings.

Although some of the historic crested wheatgrass seedings do not reach the 15% sagebrush cover threshold to be suitable for sage-grouse nesting habitat, shrub cover was present in most of these sites and is expected to provide some level of habitat for both grassland and low elevation shrub steppe species. This includes sagebrush obligate songbirds such as Brewer's sparrows and sage sparrows as well as numerous raptor species. These sites are also providing suitable perennial grass height and cover. In addition to seeded rangelands, grassland species would also be expected to utilize recently burned habitat from the 2018 Connor Fire and portions of the 2007 Jim Sage Fire where sagebrush recruitment post-fire has been limited. Surveys of recently burned sites show that most post fire rehabilitation efforts have been successful, and these areas had suitable perennial grass height, cover, and forb diversity. Fire is a natural occurrence and would be expected to continue throughout the allotment. Although previous fires are expected to return to pre-fire conditions in the absence of new fires, future fire-rehabilitated areas would provide habitat to grassland species.

Grassland species would be analyzed in each of the alternatives below. For the analysis, short grass habitats refer to those areas where grazing reduces vegetation height, whereas tall grass habitats are those lightly grazed areas with more residual cover. This does not necessarily mean a species shift from deeper- rooted bunchgrasses to shallow-rooted Sandberg bluegrass would occur.

Low/Mid/High-elevation shrub steppe- Species that require sagebrush steppe habitats for all, or part of their life cycle are considered sagebrush obligates. Birds that breed and nest in sagebrush steppe habitats are predominantly migratory species such as lark sparrow, gray flycatcher, and vesper sparrow. Resident species include the sage-grouse, which is discussed below. A few birds, such as northern shrike or gray-crowned rosy-finch, breed in the northern United States and Canada but spend all or part of the winter in sagebrush communities. Brewer's sparrows, sagebrush sparrows, and sage thrashers prefer to nest in sagebrush habitats with dense shrub cover and large patch size (Knick & Rotenberry, 1995; Reynolds et al., 1999). Brewer's sparrows forage in sagebrush habitats, gleaning insects from leaves and seeds on the ground (Rotenberry et al., 1999). Sagebrush sparrows breed primarily in big sagebrush, or sagebrush mixed with other shrubs (Martin & Carlson, 1998). Similarly, sage thrashers primarily occupy low-elevation sagebrush steppe habitats. These species breed in mid- to late-April into July (Reynolds et al., 1999).

Sagebrush provides structure to support the nests of shrub-nesting birds, overhead cover for ground-dwelling species, and hiding cover. Some species forage on sagebrush itself, while others forage on insects found on sagebrush stems and leaves. Wildlife also consume grasses and forbs found in sagebrush steppe habitats. Dead brush stems and branches are used for nests by some raptors such as red- tailed and Swainson's hawks.

Native sagebrush steppe vegetation/habitat varies more than seeded habitats. Native habitats found to be meeting Standard 4 described in Section 3.1.2, had 80% suitable habitat with flourishing native plant communities and a diversity of native species being maintained. This includes the higher quality mountain sagebrush communities found in the upper elevations of the Jim Sage Allotment.

The Jim Sage Allotment was previously assessed in 2003 and determined to be not meeting Standard 8 partly because of juniper encroachment in the North and South Use Areas as well as the southern portion of the West Use Area. At that time, several S&G evaluation sites did not meet Standard 8 for sage-grouse because they were at risk of encroachment and rated as marginal nesting/early brood-rearing habitat for sage-grouse. Since 2001, 17,000 acres of juniper have primarily been treated within the Almo-Womack, North, South, East, and West Use Areas. Treatments in the early 2000s (2001-2006) primarily focused on the northwest portion of the West Use Area near Wildland Urban interface. In addition, roughly 3,000 acres were treated in 2014 in the upper elevations of the West and North Use areas within bighorn sheep habitat to reduce predation by mountain lions. Since 2009, in combination of the Burley Landscape Project (BL1) and the 2018 Burley Landscape II Project (BL2), roughly 16,000 acres of Phase 1, 2, and 3 junipers have been treated using a variety of mechanical methods (i.e., lop and scatter, pile/burn, mastication). Treatments were initiated with the primary focus to improve the health, vigor, and acreage of the native sagebrush-steppe vegetation and promote natural resiliency by reducing Utah juniper. An additional objective was to maintain habitat at the landscape level for sage-grouse and other sagebrush obligate BLM sensitive wildlife species. Of the 17,000 total treated acres, 14,000 acres occur within Spring, Summer, and Winter Seasonal Use Areas for sage-grouse.

Sage-grouse are considered an umbrella species for other sagebrush-associated special status wildlife and actions taken to benefit sage-grouse are assumed to result in benefits to other sagebrush-associated species. Therefore, the analysis below for sage-grouse under each alternative would also apply to low/mid elevation shrub steppe species identified above in Table 8.

The Jim Sage Allotment lies within important nesting habitat for the BLM sensitive ferruginous hawk. As of 2020, 13 active ferruginous hawk nests occurred within the Jim Sage Allotment. Ferruginous hawks are only present in the Allotment during and shortly after the breeding season (March through July). Locally, ferruginous hawks utilize sagebrush steppe habitat, especially where isolated junipers are available for

nesting. They infrequently nest on the ground or on the upper edge of steep slopes and rock outcrops. Ferruginous hawk nests occur in Almo-Womack, South, East, and Cassia Creek Use Areas. Although wildfire has reduced the amount of sagebrush steppe within portions of these Use Areas, nesting habitat remains suitable for this species. Furthermore, current grazing management is facilitating healthy sagebrush steppe habitat available for ferruginous hawk prey species and would continue within each of the alternatives. Design features for the installation of rangeland improvement projects has been included within the Proposed Action, which is expected to eliminate impacts to nesting ferruginous hawks. Since there is suitable habitat and the proposed action and alternatives are not expected to affect this habitat, this species will not be carried forward for analysis under any of the alternatives.

Pinyon-juniper woodland- Available habitat for pinyon/juniper and mixed coniferous forest species is also present in the allotment. Habitat dominated by pinyon/juniper woodlands occur throughout the Jim Sage Allotment but are mostly found in the North, South, and West Use Areas totaling approximately 19,500 acres. Although juniper treatments have been conducted throughout the low to mid-elevations of shrub steppe communities, intact stands of Phase 3 and old growth juniper were largely left untreated. These areas would be expected to provide habitat for all the pinyon/juniper species present on Jim Sage Allotment (Table 8). Mixed coniferous forest habitat is available some areas within the upper elevations of Parks Creek. These areas would be expected to be providing habitat to species such as the green-tailed towhee. Pinyon/juniper woodland habitat is not expected to be affected by livestock grazing within the proposed action or alternatives. Some reduction is grass cover is expected adjacent to the edge of pinyon/juniper woodland habitat, but the effects are expected to be negligible in the short and long-term for pinyon/juniper woodland species. Therefore, these species will not be carried forward for further analysis under any of the alternatives.

Riparian Habitat- Riparian and wetland areas provide high-value habitat for wildlife. The proximity of these vegetation communities to water usually results in increased plant species richness and structural diversity, which provides greater availability and diversity of nesting habitat for birds, as well as food and cover for other wildlife. The availability of water in riparian and wetland habitat also attracts wildlife from other habitat groups.

Riparian areas/springs were analyzed in 2003. At that time BLM determined that multiple reaches analyzed under Standard 2 (Wetlands and Riparian Areas) were not meeting the standard due to the lack of woody cover or regeneration directly resulting from livestock impacts. These conditions were impacting the riparian-nesting songbird habitat throughout the allotment. Since 2000, management changes (discussed under Section 1.1.1) within the allotment resulted in an upward trend in woody cover and diversity of riparian vegetation. Currently, Standards 2 and 3 are being met and due to the diversity of these systems, these sites are providing suitable habitat not only for riparian songbirds but also for amphibians and other wildlife. Furthermore, management actions (enclosures and grazing timing) to reduce impacts to riparian areas have succeeded.

Overall, the allotment contains healthy riparian habitat and a sufficient variety and abundance of vegetation. The current upward trend of the riparian systems within the Jim Sage Allotment are expected to continue under the Proposed Action and Alternatives, except for potential effects of the Threshold and Response Alternative. Due to the potential increase of AUMs within the Parks Creek and Kane Springs riparian areas under this alternative, effects from grazing to riparian nesting songbirds will be analyzed.

Greater Sage-grouse (sage-grouse)

Sage-grouse Habitat on the Jim Sage Allotment

Within the Jim Sage Allotment, sage-grouse are found in communities dominated by big sagebrush, low sagebrush, black sagebrush, mountain shrub, and salt desert shrub; in meadows; and in some instances, native and non-native perennial grass seedings. Key habitat is defined as areas of generally

intact sagebrush (10% cover) that provide sage-grouse habitat during some portion of the year (USDI BLM, 2015a). Key habitat may or may not provide adequate nesting and early brood-rearing and winter cover due to elevation, snow depth, lack of early season forbs, limited herbaceous cover, or small sagebrush patch size (USDI BLM, 2015a). Sage-grouse depend on large, contiguous areas of sagebrush habitat that support adequate shrub canopy cover and perennial grass and forb understories for breeding, nesting, brood-rearing, and wintering (Connelly et al., 2000; Connelly et al., 2004).

Sage-grouse hens usually place their nests under sagebrush, but also use other shrubs, such as antelope bitterbrush, yellow rabbitbrush, rubber rabbitbrush, spiny hopsage, saltbush, and mountain snowberry (Connelly et al., 1991; Schroeder et al., 1999). In a summary of sage-grouse nesting studies in Idaho, nest success was lower when non-sagebrush shrubs were used (Connelly et al., 1991). Areas used by sage-grouse broods typically have more forbs than random areas in Wyoming (Klott & Lindzey, 1990), and higher forb availability and diversity are positively correlated with increased sage-grouse production (Drut et al., 1994).

Sage-grouse habitat on Jim Sage is currently fragmented, primarily due to past wildfires and anthropogenic disturbances, for example, large transmission lines in the South and East Use Areas. Jim Sage is also surrounded by private land and agricultural fields. However, detailed studies on habitat fragmentation and patch size are scarce. Existing anthropogenic disturbances and improved roads influence sage-grouse habitat by fragmenting habitat patches and facilitating predator movements and weedy plant invasion (Appendix F: HAF Summary Report). The loss of habitat patches and wildlife movement corridors reduces connectivity and genetic interchange between sage-grouse populations (Idaho Sage-grouse Advisory Committee, 2006).

Habitat Management Areas

The Jim Sage Allotment is located within the Upper Raft River Analysis Area (URRAA) (HAF Summary Report Appendix F) and consists of 55,884 acres of Important Habitat Management Area (IHMA) (45.4% of URRAA) and 24,163 acres of General Habitat Management Area (GHMA) (7.8% of URRAA). The Jim Sage Allotment originally did not have any designation of Priority Habitat Management Area (PHMA) however, in 2019, the 2015 Idaho ARMPA hard adaptive management population triggers for sage-grouse were tripped within the Southern Idaho Conservation Area IHMA. Per the ARMPA, once a population trigger is tripped, all IHMA in Southern Idaho Conservation Areas will be managed as PHMA until the population recovers to pre-2011 thresholds. Causal factor analysis is not yet complete. However, preliminary analysis for three of the four other Conservation Areas in Idaho identified habitat change due to wildfire (primarily loss of sagebrush) as a potential primary factor. Predation by ravens and anthropogenic disturbance, including agriculture, contributed to the tripped trigger (Ellsworth et al., 2019; Moser, 2019) and are included within Cumulative Effects discussion Section 4.6. For livestock grazing, management actions associated with PHMA are no different than the management actions described for IHMA. Therefore, the management under the alternatives and effects analysis in this EA remains the same.

Within Habitat Management Areas, modeled sage-grouse habitat occurs within three mostly overlapping Seasonal Use Areas (SUAs) on Jim Sage. These SUAs include approximately 46,300 acres of nesting and early brood-rearing (Spring), 50,260 acres of upland summer and late brood-rearing (Summer), and 41,030 acres of winter (Winter). These Jim Sage SUAs are expected to support sage-grouse through their specific life cycle timeframes.

Seasonal Habitat Assessment and Monitoring

Sage-grouse habitat suitability within the SUAs was analyzed at multiple scales within the Upper Raft River Analysis Area and the Jim Sage Allotment (Stiver et al., 2015). Sage-grouse habitat assessments were conducted in 2018 across the Jim Sage Allotment and seasonal habitat indicators were evaluated against desired conditions described in the Habitat Objectives Table 2.2 in the ARMPA (USDI BLM, 2015a) as well as the Habitat Assessment Framework (HAF) Technical Reference (Stiver et al., 2015). The

Jim Sage Allotment was found to be positively contributing to sage-grouse habitat within the Upper Raft River Analysis Area for each of the five associated seasons: 1) lekking, 2) nesting and early brood-rearing, 3) upland summer and-brood-rearing, 4) riparian summer/late-brood rearing and 5) winter habitat (2022 Jim Sage RHA and Evaluation Report, Appendix 3) because Jim Sage is in better overall condition than the Upper Raft River analysis area for each of the five associated seasons. All monitoring occurred within mapped SUAs, and data was collected during the appropriate sage-grouse seasonal timeframes. Three of the five seasons are tied to specific desired habitat conditions within Table 2.2 to meet Standards with each SUA. When rated against the desired habitat conditions, 31% of nesting and early brood-rearing habitat SUA met standards (objective: 80% of habitat meeting desired conditions); 41% met Upland summer and late brood-rearing SUA habitat standards (objective: >40% of habitat meeting desired conditions), and 56% met Winter SUA habitat standards (objective: >80% of habitat meeting desired conditions) (Appendix A: Figures 6 and 7).

The HAF Summary Report and the Management Unit Supplemental Habitat Suitability Report (2022 Jim Sage RHA and Evaluation Report, Appendix 3) were specifically developed to inform management decisions related to sage-grouse habitat within the Jim Sage Allotment.

Lek Attendance

IDFG and BLM have cooperatively monitored lek attendance in the Jim Sage Allotment since the late 1970s. During the 1970s and 1980s, male sage-grouse lek attendance was sporadic. At several leks, male sage-grouse attendance declined to zero in the early 1990s. Of the eight historical leks identified, only one lek (4C057) had a relatively complete data set. Monitoring at this site documented a high of 62 males in 1979 to a low of zero in 2003. Since 2002, four new lek locations on public land and one on private land have been monitored as well. Two historical leks (4C053, 4C057) continue to be occupied every year. Total lek attendance on Jim Sage has fluctuated from 2002-2020 from a low of zero in 2003 to a high of 154 in 2016. The highest lek attendance occurred from 2008-2017 where an average of 130 sage-grouse were counted per year on seven different leks. Over the last few years, sage-grouse lek occurrence at the same sites has declined by nearly 50%. The decline of lek attendance on Jim Sage is consistent with the decline of sage-grouse within the larger Southern Idaho Conservation Area described above. Until recently, populations on Jim Sage were trending up for 15 years, see Figure 16 below for lek attendance trends. At this time, no specific conclusions have been reached as to the causal factors for the declines.

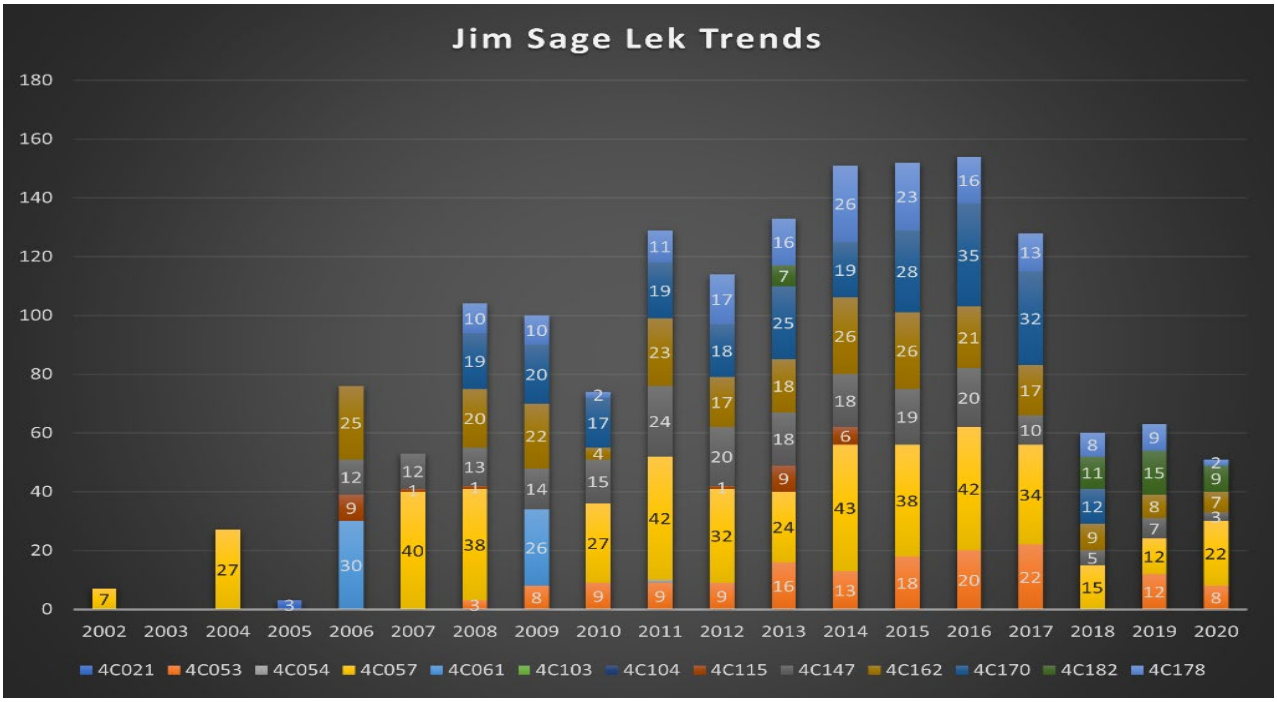

Figure 16. Jim Sage Lek Attendance Trends

Nesting and early brood-rearing

An estimated 31.7% of sage-grouse habitat within the Spring SUA was rated as Suitable (Appendix A: Figure 5) (Appendix G). Suitable habitat was primarily found in the native vegetation consisting of low sagebrush or black sagebrush plant communities with areas of Wyoming sagebrush and basin-big sagebrush in the drainages. Other habitat components (i.e., grasses, and forbs) were present in these areas, providing suitable sage-grouse habitat throughout the growing season. Throughout the allotment, perennial grass height was rated as suitable in 90% of the plots and perennial grass cover was rated as suitable in 76% of plots (Appendix G). This is consistent with the grass heights findings from the "The Grouse & Grazing Project" on the Jim Sage Allotment conducted by the University of Idaho (Tisdale et al., 2020). Between 2015-2020, this study documented generally light to moderate utilization estimates in the Kane Springs area, North and East Use Area, Jim Sage Allotment (Tisdale et al., 2020). The suitability ratings shows that ARMPA habitat objectives for perennial grass cover and height can be met in most portions of the allotment under current management. Additionally, areas in the allotment containing taller Wyoming big sagebrush are available for sage-grouse breeding and upland summer habitat. The low and black sagebrush communities provide sage-grouse habitat at different times of the year. In some areas with rocky shallow soils, site potential may be limited because the lower heights and growth forms associated with these species may reduce screening cover for nesting and early brood-rearing. However, 84% of the low and black sagebrush communities are rated as suitable for spring nesting and early brood-rearing habitat with most of the remaining 16% having burned in the 2018 Connor Fire. Standard 4 (native vegetation) was determined to be meeting standards in 80% of the native rangeland with a diversity of native species being maintained. These areas are suitable for most BLM sensitive species that are present. In addition, roughly 19% of the historic crested wheatgrass and Russian wildrye seeding treatments on Jim Sage are providing suitable sage-grouse habitat (2022 Jim Sage RHA and Evaluation Report, Appendix 3).

An estimated 25% of sage-grouse habitat within the Spring SUA was rated as Marginal (Appendix G). Marginal breeding habitat was found in roughly 20% of the historic crested wheatgrass and Russian wildrye seedings because they lack suitable sagebrush and forb cover. The native vegetation within the Alkali Flats and the Wyoming big sagebrush/bluebunch wheatgrass ecological type (South and East Use Areas) were rated as marginal due to the reduced cover of perennial grass understory and forbs. The lower

elevations of the South and East Use Areas encompasses roughly 16.5% (9,450 acres) of the Spring SUA on Jim Sage. The habitat within these Use Areas consists of a combination of Wyoming big sagebrush/greasewood as well as areas of shadscale.

Finally, an estimated 43.3% of sage-grouse habitat within the Spring SUA was rated as Unsuitable (Appendix G). Unsuitable habitat was found within the perimeter of the 2018 Connor fire which burned roughly 10,300 acres of sage-grouse Spring SUA on the north side of the mountain. Sagebrush has yet to re-establish within the burn perimeter and the area lacks the ability to meet sage-grouse nesting habitat suitability due to lack of shrubs. Recently burned areas contributed to roughly 36% of the total unsuitable plot ratings on Jim Sage, which would be expected for these sites. Unsuitable habitat within historic crested wheatgrass and Russian wildrye seedings within the Chokecherry Use Area contributed to roughly 41% (7,790 acres) of the unsuitable habitat within Spring SUA. Most of these seedings are stable with suitable grass cover but are not reaching the sagebrush and forb diversity thresholds to be rated as suitable. The remainder of the unsuitable habitat plot ratings were found in the southern portion of the South Use Area (23.5%).

Nesting and early brood-rearing suitability thresholds mostly had unsuitable ratings for perennial forb cover and perennial forb height within the Jim Sage Allotment. The reduced average perennial forb cover and height is attributed to the preponderance of low-growing forbs that are typically expected for these ecological sites. However, these low measurements may be partially attributed to natural limitations associated with the low precipitation ecological sites and year-to-year variability within the allotment (see images under Climate Section, (p. 26). Low forb canopy cover ratings may also be partially attributed to the inefficacy of capturing small-growing forbs, such as those found throughout most of the allotment, through a line-point intercept data-gathering process. The preferred forb abundance and diversity indicator, measured through the Modified AIM forb diversity and availability sweep, may be a more effective method for capturing small forbs within a transect and is measured relative to site potential. Preferred forb availability and diversity within sage-grouse nesting and early brood-rearing habitat was rated as 56% suitable, 35% marginal, and 9 % unsuitable.

Upland summer and late brood-rearing

Upland summer plots were stratified in conjunction with the Modified AIM plots assessed during the spring timeframe. Plots that fell within upland summer and-brood rearing SUA were sampled on or after July 1 and prior to October 1 (Appendix G).

An estimated 41.1% of sage-grouse habitat within the Summer SUA was rated as Suitable (Appendix A: Figure 6). These areas have a high diversity of plant species within mountain sagebrush communities and offer suitable forage and cover for sage-grouse. Unsuitable sites occurred in the recently burned portions of the 2018 Jim Sage and Connor fires, as well as the 2019 Geothermal fire. In addition, the entirety of the Chokecherry Use Area was rated as unsuitable due to the lack of sagebrush. Some of the lower elevation Wyoming big sagebrush sites are currently unsuitable due to the absence of forbs and perennial grass in the understory (South and East Use Areas). Some of these sites are unlikely to meet suitability requirements without active restoration (herbicide treatments, seedings, etc.). The lower elevation greasewood sites (South Use Area) do not have the potential to meet the suitability thresholds for sage-grouse (i.e., sagebrush cover and forb availability) based on the ecological conditions expected at these sites.

Riparian summer and late brood-rearing

Riparian summer habitat suitability is assumed to be related to riparian and wetland site suitability, as reflected by functioning condition class (Stiver et al., 2015). In 2019, nine riparian-wetland habitat site assessments were conducted within the Jim Sage Allotment; 67% were considered suitable, and 33% were considered marginal, which is well above the 40% Suitable riparian benchmark standard (Appendix G). All riparian areas surveyed meet the thresholds for PFC and preferred forb availability and were rated as suitable. Four sites did not meet the threshold for proximity to sagebrush cover. This, however, is not an

indication of negative riparian health or forb abundance, but a lack of sagebrush which burned in the 2018 Connor Fire. The functionality of the riparian system is evident post-fire because these sites remained at PFC (2022 Jim Sage RHA and Evaluation Report, Appendix 3). These sites continue to provide sage-grouse hens and broods with forbs late into the summer season post fire.

Winter

Sage-grouse winter habitat on Jim Sage is widespread and contiguous. Suitability ratings were completed for plots completed between 2011 and 2019. Winter habitat indicators are as follows: (1) sagebrush canopy cover above snow, and (2) sagebrush height above snow. The sagebrush height indicator is measured as available sagebrush above the snowpack, and a height of 25 cm or greater above snowpack is suitable (Stiver et al., 2015; USDI BLM, 2015a).

An estimated 55.5% of sage-grouse habitat within the Winter SUA was rated as Suitable (Appendix A: Figure 6). Winter habitat suitability varied across Jim Sage with 73% of the plots rated within the Winter SUA as suitable or marginal (Appendix G). Of the 16 sites rated as unsuitable, 11 (69%) were found in recently burned areas and seedings in the South and East Use Areas, lacking adequate sagebrush cover, or the Wyoming big sagebrush/greasewood ecological sites. These sites were also rated as unsuitable for nesting and early brood-rearing due to the lack of sagebrush cover and height.

Table 9. Overall rankings for the Upper Raft River Analysis Area sage-grouse habitat assessment.

Lekking: *Plot Counting*	Nesting and early Brood-Rearing: *Proportional Analysis*	Upland summer and-Brood Rearing: *Proportional Analysis*	Riparian Summer/Late-Brood Rearing: *Plot Counting*	Winter: *Proportional Analysis*
Suitable	Unsuitable	Suitable	No data available	Marginal

Table 10. Overall ranking for the Jim Sage Allotment sage-grouse habitat assessment.

Lekking: *Plot Counting*	Nesting and early Brood-Rearing: *Proportional Analysis*	Upland summer and-Brood Rearing: *Proportional Analysis*	Riparian Summer/Late-Brood Rearing: *Plot Counting*	Winter: *Proportional Analysis*
Suitable	Marginal	Suitable	Suitable	Marginal

Livestock grazing was not a casual factor in the Jim Sage Allotment not meeting Standard 8 (2022 Jim Sage RHA and Evaluation Report). Current grazing management has shown to be effective in meeting the perennial grass thresholds found in the Habitat Objectives Table 2.2 in ARMPA (USDI BLM, 2015a, pp. 2-5). Standard 8 was specifically not met due to the Spring SUA not meeting the 15% sagebrush cover threshold for nesting/early brood rearing habitat and reduced perennial grass cover in the South and East Use Areas. The Winter SUA did not meet Standard 8 due to the absence of sagebrush cover. The conditions at these sites reduced the potential for sage-grouse nesting and early-brood rearing (31% suitable) and winter (56% suitable) SUAs to meet the 80% threshold required for suitability (2022 Jim Sage RHA and Evaluation Report, pp. 124-140). In contrast, lek sites, upland summer and late brood-rearing habitat, and riparian summer/late-brood rearing habitat were found to be meeting their respective suitability thresholds (Tables 9 and 10).

Sage-grouse are a sagebrush obligate species that require a large landscape of sagebrush ecosystems through different life stages and managing for these ecosystems helps proved for and facilitate management of other sagebrush obligate species. Therefore, the analysis for sage-grouse in the Proposed Action and Alternatives in Section 4.0 could also apply to all sagebrush obligate species.

Sage-grouse seasonal habitat suitability for each Use Area is described below. Each of the seasonal habitat maps generally summarizes where suitable, marginal, and unsuitable habitat occurs within nesting and early brood-rearing (Appendix A: Figure 5), Upland summer and late brood-rearing (Appendix A: Figure 6), and winter habitats (Appendix A: Figure 7).

3.8 Allotment Use Areas Conditions

To better understand where resources and resource conditions occur across the various portions of the Jim Sage Allotment which has distinct elevational, precipitation, and vegetation, the following section discusses conditions within each Use Area. A map of the Use Areas and pastures in each Use Area is in Section 1.1 Background of Jim Sage Allotment (Figure 2). To help understand the grazing terminology please refer to Section 2.0.1, Common to All Alternatives - Definitions of terms, for a list of defined terms.

Grazing management varies across the allotment in response to permittees needs, resource conditions, and

to manage different types of vegetations (i.e., seedings, native sites, riparian areas). Pastures within each Use Area are managed for specific utilization levels depending on vegetation type (Section 2.0.1, pp. 13-14). For a table of all the utilization by pasture for the last 13 years, refer to the 2022 Jim Sage RHA and Evaluation Report, Appendix 1: Table 1, p.153. Fluctuations in Actual Use (defined on p. 14) are the result of rest due to wildfire, drought and operational decisions made by permittees.

3.8.1 Almo-Womack Use Area

Grazing Management

Grazing management within the Almo-Womack Use Area consists of a three-pasture deferred rotation grazing system, AW North, AW Center, and AW South. Two pastures are used in the spring from 05/01-06/15 and one pasture is used in the fall from 10/15-11/15. Seven permittees graze this Use Area with 277 head of cattle during the spring season and 351 head during the fall season.

Water for livestock is made available via pipelines and troughs from one well and two developed springs. The spring developments originate in the West Use Area but are piped into this use area. Forage production can be highly variable from year to year depending on the amount and timing of spring precipitation. This variability has resulted in delayed turnouts and reductions of time particularly during dry years. Adaptive management has been utilized to address reductions in forage. Adaptive management allows livestock that generally utilize this use area to be moved to other areas of the allotment where adequate forage is available. For example, one operator who grazes in this Use Area also grazes in the Chokecherry Use Area during the same spring season. Forage production in the Chokecherry Use Area has allowed him to take all or a portion of his cattle that would typically graze in the Almo-Womack Use Area to the Chokecherry Use Area.

The average actual use over the last 13 years (2008-2020) has been 501 AUMs, with a high of 689 AUMs and a low of 293 AUMs. Utilization over the same 13 years has averaged 36%, from three sites, with a high of 49% and a low of 19% (2022 Jim Sage RHA and Evaluation Report, Appendix 1: Table 1, 153).

Vegetation and Riparian Areas

The Almo-Womack Use Area is approximately 3,685 acres. Located on the southern end of the allotment, it is one of the driest areas, receiving the least amount of annual precipitation. This area incorporates three crested wheatgrass and Russian wildrye seeded pastures. Sagebrush cover varies throughout the area and photo trend has shown an increase in sagebrush cover in the North pasture. Seeded vegetation is meeting Standard 5. This Use Area contains no riparian areas.

Wildlife

Sage-grouse

Leks- One occupied lek (4C178) (Suitable) occurs within the Almo-Womack South Pasture.

Nesting and early brood-rearing- Sage-grouse nesting and early brood-rearing habitat occurs on roughly 3,595 acres (~98%) within the Use Area. Suitable habitat is found within roughly 28% of the Use Area primarily within the AW North Pasture. Marginal habitat encompasses 72% of the Use Area within the AW Center and AW South Pastures.

Upland summer and late brood-rearing- Within the Almo-Womack Use Area sage-grouse Upland summer and late brood-rearing habitat occurs on roughly 3,461 acres (~94%). Roughly 29% of the habitat within Use Area is rated suitable (AW North Pasture) and 71% of the habitat rated as marginal (AW Center and AW South Pastures).

Winter- Within the Almo-Womack Use Area winter habitat occurs within roughly 3,440 acres (~93%). Suitable habitat occurs in roughly 86% of the Use Area within the entirety of the AW South and AW North

Pastures. Habitat within the eastern portion of the AW Center Pasture is also Suitable, while the western half is rated as Marginal habitat (14% of Use Area).

Table 11. Sage-grouse Habitat Suitability

Almo-Womack *3,685 acres*	**Total SUA Acres**	**Suitable**	**Marginal**	**Unsuitable**
Nesting and early brood-rearing	3,595 acres (~98%)	1,009 acres (~28%)	2,587 acres (~72%)	0 acres
Upland summer and late brood- rearing	3,461 acres (~94%)	1,004 acres (~29%)	2,456 acres (~71%)	0 acres
Winter	3,440 acres (~93%)	2,975 acres (~86%)	473 acres (~14%)	0 acres

Grassland Species

Most of the Almo-Womack is seeded rangeland primarily consisting of crested wheatgrass and Russian Wildrye. Wyoming big sagebrush and Black sagebrush is also found throughout the Use Area with varying percentages of cover. The majority of this Use Area is currently providing suitable habitat for grassland species.

3.8.2 Cassia Creek Use Area

Grazing Management

Grazing management within the Cassia Use Area consists of a five-pasture deferred rotation grazing system, CC Lower East, CC Lower West, CC Middle, CC Upper, and Upper Red Rock Flat. Generally, two to three pastures are used in the spring from 05/01 to 06/15 and one to two pastures are used in the fall from 09/09 to 09/28. Five permittees use the Use Area in the spring with 514 head of cattle and three of the five use it in the fall with 164 head of cattle. The cattle that graze the Use Area in the fall come from the North Use Area after their use there is completed. As described below in the North Use Area description, there are times when livestock stay in the North Use Area instead of coming to this Use Area as scheduled. This results in occasional rest of pastures in this Use Area. Livestock are watered via pipelines and troughs that originate from two developed springs in the North and Cassia Creek Use Areas.

The average actual use over the last 13 years (2008-2020) has been 485 AUMs with a high of 651 AUMs and a low of 426 AUMs. Utilization over the same 13 years has averaged 31%, from six sites, with a high of 46% and a low of 12% (2022 Jim Sage RHA and Evaluation Report, Appendix 1: Table 1, p.153).

Vegetation and Riparian Areas

The Cassia Creek Use Area is approximately 6,267 acres. The Use Area is dominated by crested wheatgrass and native-like cultivars with very little sagebrush cover. The lack of sagebrush cover is due to the recent (2018) Connor Fire, which burned the majority of the Cassia Creek Use Area.
This area incorporates five seeded pastures, which are meeting Standard 5.

Even though this Use Area is named Cassia Creek, the actual Cassia Creek riparian area is located northwest, outside of the Jim Sage allotment. There are no riparian areas located in this Use Area.

Wildlife

Sage-grouse

<u>*Leks-*</u> Two occupied leks occur within this Use Area. One lek (4C162) (Marginal) occurs within the Upper Red Rock Flat Pasture and one lek (4C147) (Suitable) occurs within the CC Upper Pasture.

<u>*Nesting and early brood-rearing-*</u> Sage-grouse nesting and early brood-rearing habitat occurs on 5,942 acres (~73%) within the Use Area. Suitable habitat occurs within roughly 23% of the Use Area primarily within the far north portions of the CC Upper, CC Middle, CC Lower West, and CC Lower East Pastures

(CC Pastures). Unsuitable habitat is found on 4,464 acres and encompasses ~75% within the remaining portions of the above pastures and the entirety of the Upper Red Rock Flat Pasture. Unsuitable habitat is due to the 2018 Connor Fire, which removed sagebrush cover.

Upland summer and late brood-rearing- Within the Cassia Creek Use Area sage-grouse Upland summer and late brood-rearing habitat occurs on roughly 5,741 acres (~92%). Upland summer and late brood-rearing habitat suitability is similar to the nesting and early brood-rearing habitat suitability in percentages and location with approximately 23% suitable and 77% unsuitable.

Winter- Within the Cassia Creek Use Area winter habitat occurs within roughly 5,869 acres (~94%) within the lower elevations to the south and west. Suitable winter habitat occurs within roughly 23% of the Use Area and is found within the far north portion of the CC Upper, CC Middle, CC Lower West, and CC Lower East Pastures. Unsuitable habitat is found within the 2018 Connor Fire area and encompasses all the Upper Red Rock Flat Pasture and the southern portions of each of the CC pastures.

Table 12. Sage-grouse Habitat Suitability

Cassia Creek *6,267 acres*	**Total SUA Acres**	**Suitable**	**Marginal**	**Unsuitable**
Nesting and early brood-rearing	5,942 acres (~95%)	1,362 acres (~23%)	0 acres	4,464 acres (~75%)
Upland summer and late brood- rearing	5,741 acres (~92%)	1,295 acres (~23%)	0 acres	4,423 acres (~77%)
Winter	5,869 acres (~94%)	1,398 acres (~24%)	0 acres	4,471 acres (~76%)

Grassland Species

The majority of the Cassia Creek Use Area is seeded rangeland primarily consisting of crested wheatgrass with Wyoming big sagebrush only found within portions of the CC Upper Pasture. The majority of this Use Area is currently providing suitable habitat for grassland species and long-billed curlew are mostly found within this Use Area.

3.8.3 Chokecherry Use Area

Grazing Management

Grazing management within the Chokecherry Use Area consists of a three-pasture rest rotation grazing system, Halogeton Meadows South, 320 Pasture, and Chokecherry Seeding. Two pastures are used in the spring from 05/01-06/15 and one pasture rested the entire year. One permittee runs in this Use Area with 102 head of cattle.

Livestock are watered via pipelines and troughs from one well and one developed spring. The spring development system originates in the South Use Area and the well system in the East Use Area. The permittee in this Use Area also simultaneously grazes in the Almo-Womack Use Area. During years when forage production is low in the Almo-Womack Use Area, the permittee would move some or all cattle from that Use Area to the Chokecherry Use Area where the forage is usually more reliable.

The average actual use over the last 13 years (2008-2020) has been 182 AUMs with a high of 227 AUMs and a low of 181 AUMs. Utilization over the same 13 years has averaged 26%, from two sites, with a high of 43% and a low of 14% (2022 Jim Sage RHA and Evaluation Report, Appendix 1: Table 1, p.153).

Vegetation and Riparian Areas

The Chokecherry Use Area is approximately 2,182 acres. This Use Area consists of three lower-elevation crested wheatgrass/Russian wildrye seeding pastures, which are meeting Standard 5. Sagebrush cover varies throughout the Use Area and has slightly increased over time. There are no riparian areas in the

Chokecherry Use Area.

Wildlife

Sage-grouse

Leks- No occupied leks occur within this Use Area. One undetermined lek occurs within the Halogeton Meadows South Pasture.

Nesting and early brood-rearing- Sage-grouse nesting and early brood-rearing habitat occurs throughout the entire Chokecherry Use Area. The Chokecherry Use Area was rated as unsuitable due to the lack of sagebrush.

Upland summer and late brood-rearing- Within the Chokecherry Use Area sage-grouse Upland summer and late brood-rearing habitat occurs on roughly 1,596 acres (~73%). Upland summer and late brood-rearing habitat is rated as unsuitable due to the lack of sagebrush.

Winter- Within the Chokecherry Use Area winter habitat occurs within roughly 2,182 acres (~100%) within the lower elevations to the south and west. Suitable winter habitat was found within the western half of the South Halogeton Meadows Pasture and marginal habitat is found within the eastern half. Unsuitable habitat is found throughout the 320 and Chokecherry Seeding Pastures.

Table 13. Sage-grouse Habitat Suitability

Chokecherry *2,182 acres*	**Total SUA Acres**	**Suitable**	**Marginal**	**Unsuitable**
Nesting and early brood-rearing	2,182 acres (100%)	0 acres	0 acres	2,182 acres (100%)
Upland summer and late brood- rearing	1,596 acres (~73%)	0 acres	0 acres	1,596 acres (100%)
Winter	2,182 acres (100%)	591 acres (~27%)	600 acres (~28%)	989 acres (~45%)

Grassland Species

The majority of the Chokecherry Use Area is seeded rangeland primarily consisting of crested wheatgrass with Wyoming big sagebrush found within portions of the Halogeton Pasture. The majority of this Use Area is currently providing suitable habitat for grassland species.

3.8.4 East Use Area

Grazing Management

Grazing in this Use Area occurs from 04/01 to 06/10 and 09/15 to 11/10. Generally, only one permittee uses these pastures with 200 cattle in spring and 150 cattle in fall on a four-pasture deferred rotation system. These pastures include Sheep Mountain, Halogeton Meadows North, Lower Red Rock Flat, and Lower Red Rock Flat Seeding. Due to the number of pastures and available forage, this Use Area is occasionally used by permittees from other Use Areas under adaptive management. This typically involves increasing livestock numbers in this Use Area with a corresponding decrease in livestock numbers in another Use Area. Water for livestock is piped from a developed spring source in the North Use Area. In addition, water is delivered from the Sheep Mountain well, which is located in the East Use Area.

The average actual use over the last 13 years (2008-2020) has been 781 AUMs with a high of 836 AUMs and a low of 448 AUMs. Utilization over the same 13 years has averaged 19%, from four sites, with a high of 35 % and a low of 11% (2022 Jim Sage RHA and Evaluation Report, Appendix 1: Table 1, p.153).

Vegetation and Riparian Areas

The East Use Area includes approximately 16,274 acres located on the east side of the allotment (Figure 2).

Vegetation within the East Use area is a mix of seeded and native vegetation. Seeded vegetation pastures (primarily crested wheatgrass and Russian wildrye) are healthy and meeting the Standard 5 for Rangeland Health according to the 2019 Assessments. Native vegetation pastures within this Use Area are a mix of Not Meeting, Not Meeting but Making Significant Progress, and Meeting for Standard 4. Mid-elevation native areas are Meeting Standard 4 and are comprised of a diverse native plant community with little departure from what is expected for these areas.

Lower Red Rock Flat Pasture and northeast portion of Sheep Mountain Pasture are low-elevation native areas, generally dominated by either an overstory of Wyoming big sagebrush with an understory of cheatgrass and halogeton or isolated areas void of sagebrush and dominated by cheatgrass and/or Halogeton. Squirreltail, Sandberg's bluegrass and globemallow make up a small percentage of the overall vegetative composition in the low-elevation areas. These low-elevation areas have crossed an ecological threshold and were evaluated in 2019 as either Not Meeting or Not Meeting Standard 4 but making progress.

There is one riparian area within the Sheep Mountain Pasture. Approximately 900 feet of Kane Creek runs near the northern edge of the Sheep Mountain pasture. The Kane Creek exclosure (approximately 1.25 acres) was constructed in 2003 to protect this reach from livestock. This portion of Kane Creek was rated at PFC during the last assessment (2019).

Wildlife

Sage-grouse

Leks- Two occupied leks and 4 undetermined leks occur within the Use Area. One occupied lek (4C057) is within the Sheep Mountain Pasture (Suitable) and the other occupied lek (4C170) is located in the Lower Red Rock Flat Pasture (Suitable). Three undetermined leks occur within the Sheep Mountain Pasture and one undetermined lek is in the Halogeton Meadows North Pasture.

Nesting and early brood-rearing- The East Use Area is roughly 16,274 acres and sage-grouse nesting and early brood-rearing habitat occurs on roughly 13,858 acres (~85%). Suitable habitat is found within roughly 45% of the Use Area primarily within mid-elevation sagebrush steppe of the Sheep Mountain Pasture and the western half of the Lower Red Rock Flat Pasture. Marginal habitat is found in roughly 36% of the Use Area within the northeast portion of the Sheep Mountain Pasture and the eastern portion of Lower Red Rock Flat Pasture. Unsuitable habitat encompasses 19% of the Use Area within North Halogeton Meadows and the Lower Red Rock Flat Seeding Pastures.

Upland summer and late brood-rearing- Within the East Use Area sage-grouse Upland summer and late brood-rearing habitat occurs on roughly 13,174 acres (~84%). Overall Upland summer and late brood-rearing habitat suitability is similar to the nesting and early brood-rearing habitat suitability in percentages and location with roughly 46% rated as suitable, roughly 35%, rated as marginal and roughly 19% rated as unsuitable.

Winter- Within the East Use Area winter habitat occurs across approximately 14,892 acres (~92%). Suitable habitat is found throughout the Sheep Mountain and Lower Red Rock Flat Pastures and within portions of the North Halogeton Meadows Pasture. The 8% marginal habitat is found within portions of the Lower Red Rock Flat pasture. Unsuitable habitat is found within the North Halogeton Meadows and Lower Red Rock Flat Seeding pasture.

Table 14. Sage-grouse Habitat Suitability

East *16,274 acres*	**Total SUA Acres**	**Suitable**	**Marginal**	**Unsuitable**
Nesting and early brood-rearing	13,858 acres (~85%)	6,263 acres (~45%)	4,911 acres (~36%)	2,675 acres (~19%)

East *16,274 acres*	Total SUA Acres	Suitable	Marginal	Unsuitable
Upland summer and late brood- rearing	13,714 acres (~84%)	6,263 acres (~46%)	4,863 acres (~35%)	2,587 acres (~19%)
Winter	14,892 acres (~92%)	11,397 acres (~77%)	1,255 acres (~8%)	2,238 acres (~15%)

Grassland Species

Habitat for grassland species occurs throughout the East Use Area. Habitat consists of a combination of perennial grass seedings with varying levels of sagebrush overstory mostly in the north and south portions of the Use Area. Native shadscale and squirrel tail sites are found within the middle portion of the Use Area while greasewood sites dominate the lower elevations to the east. Native low sagebrush and bluebunch sites occur within the western portion of the area. Long-billed curlew are known to occupy the northern portion of the Use Area that was burned in the 2018 Connor Fire and in grassland patches throughout the Use Area. The combination of these habitat conditions through the Use Area is providing suitable nesting/foraging habitat for grassland species.

3.8.5 North Use Area

Grazing Management

Grazing in this Use Area generally occurs from 06/01 to 09/08, with use by three permittees with 176 cattle. This Use Area is made up of four pastures: Potholes, Parks Creek, Kane Springs, and Line Canyon. The pastures are used mainly in spring or summer through a deferred system. The Line Canyon Pasture is primarily used in conjunction with Kane Springs Pasture. Two pastures (Kane Spring and Parks Creek) contain riparian areas and duration of use is approximately 35 days per pasture. Two pastures (Potholes and Line Canyon) provide livestock water though three developed springs and associated troughs, while in the remaining two pastures (Kane Spring and Parks Creek) livestock have direct access to the creeks. Historically, when excess forage was available, livestock remained in this Use Area beyond September 8 under adaptive management.

The average actual use over the last 13 years (2008-2020) has been 430 AUMs with a high of 576 AUMs and a low of 380 AUMs. Utilization over the same 13 years has averaged 23%, from five sites, with a high of 30% and a low of 14% (2022 Jim Sage RHA and Evaluation Report, Appendix 1: Table 1, p.153).

Vegetation and Riparian Areas

The North Use Area includes approximately 9,738 acres of native rangeland located on the northeast portion of Jim Sage Mountain (Figure 2). The pastures were created in 2002 by installing three fences to reduce grazing duration on Kane and Parks Creeks (Northeast Jim Sage Mountain Pasture Fences; Appendix A: Figure 1). Native vegetation is diverse and is what is expected for the area, thus Standard 4 is being met.

The North Use Area contains three riparian areas:

<u>*Red Rock Creek*</u> is a small spring-fed stream on BLM managed lands in the Parks Creek Pasture. In 2003, the Red Rock Spring Exclosure was built to exclude 1.25 acres from livestock in order to facilitate riparian area improvement. Red Rock Creek only contains a short segment of perennial water and is the only riparian exclosure in the use area. Streambanks are well vegetated with riparian species. In 2018, almost the entire North Use Area burned including Red Rock Creek. Vegetation immediately adjacent to the creek is dominated by species associated with recent fire disturbance, mostly nettle and thistle. The site is recovering and was rated in 2019 as PFC because riparian vegetation is recovering, helping to meet criteria for streambank stability, and diversity of species composition, and age classes present.

<u>*Kane Creek*</u> is another small, spring-fed stream on BLM lands in the Kane Creek Pasture whose system is intermittent along the entire reach. Vegetation along the stream segments that flow through the use area is

diverse, with high woody and herbaceous species cover. In 2019, the creek segments were rated as PFC with an upward trend due to an increased presence of woody vegetation.

Parks Creek is an intermittent stream made up of two forks (Main and North) spanning private, state, and a small portion BLM land in the Parks Creek Pasture. Much of this creek burned during the 2018 Connor Fire. The vegetation is regenerating quickly following the fire. Vegetation is dominated by woody species primarily aspen, dogwood and willow with a variety of understory herbaceous species. In 2019, this creek was rated as PFC with an upward trend due to an increased presence of woody vegetation regeneration.

Wildlife

Sage-grouse

Leks- One occupied lek (4C053) (Suitable) occurs within the Line Canyon pasture of the Use Area.

Nesting and early brood-rearing- The North Use Area is roughly 9,738 acres and sage-grouse nesting and early brood-rearing habitat occurs on roughly 5,611 acres (~57%) within the eastern half of the Kane Springs, Parks Creek, and Potholes Pastures, and the entire Line Canyon Pasture. Roughly 22% of the Use Area is rated as suitable. Suitable habitat is found in the eastern and southern portions of the Line Canyon Pasture, the southeast corner of the Kane Springs pasture and the northeast portion of the Pothole pasture. Unsuitable habitat occurs throughout 4,381 acres (~78%) primarily within the Parks Creek and Kane Springs pastures due to loss of sagebrush from 2018 Connor Fire.

Upland summer and late brood-rearing- Within the North Use Area sage-grouse Upland summer and late brood-rearing habitat occurs on roughly 6,892 acres (~71%). Roughly 21% of the habitat within Use Area is rated as suitable. Suitable habitat is patchy and occurs within portions of each pasture. There is roughly 5,425 acres (~79%) of unsuitable habitat primarily within the Kane Springs and Parks Creek Pastures that loss sagebrush cover from the 2018 Connor Fire.

Winter- Within the North Use Area winter habitat occurs within roughly 1,964 acres (~20%). Roughly 47% of the Use Area is rated as suitable. Unsuitable winter habitat occurs within 1,048 acres (~53%) and is found primarily within the 2018 Connor Fire.

Table 15. Sage-grouse Habitat Suitability

North *9,738 acres*	**Total SUA Acres**	**Suitable**	**Marginal**	**Unsuitable**
Nesting and early brood-rearing	5,611 acres (~57%)	1,228 acres (~22%)	0 acres	4,381 acres (~78%)
Upland summer and late brood- rearing	6,892 acres (~71%)	1,465 acres (~21%)	0 acres	5,425 acres (~79%)
Winter	1,964 acres (~20%)	916 acres (~47%)	0 acres	1048 acres (~53%)

Grassland Species

Potential habitat for grassland species within the North Use Area is determined by elevation and topographical features within the Use Area. The majority of the Use Area was burned in the 2018 Connor Fire, which removed shrub overstory, and provided potential habitat for these species. However, elevation ranges from roughly 5,400 feet to 7,400 feet with open ridges and steep slopes that may limit the potential for occupancy since these species primarily prefer open grasslands within flat and rolling landscapes.

3.8.6 South Use Area

Grazing Management

Grazing management within the South Use Area consists of a five-pasture deferred rotation. There are five

pastures: four native pastures (N&S Cottonwood, Cottonwood Seeding, Chokecherry, and Upper Cottonwood), and one seeded pasture composed of crested wheatgrass and Russian wildrye (Bridge Seeding). Generally, two permittees use these pastures with 321 cattle from 05/01 to 10/15. The Upper Cottonwood Pasture is used in conjunction with the N&S Cottonwood Pasture. Water for livestock is provided through a pipeline and trough system, fed by a developed spring source in the North Use Area, the Sheep Mountain Well in the East Use Area, Cottonwood Creek, and a pipeline from Chokecherry Canyon.

The average actual use over the last 13 years (2008-2020) has been 1,422 AUMs with a high of 1,487 AUMs and a low of 1,329 AUMs. Utilization over the same 13 years has averaged 20%, from five sites, with a high of 30% and a low of 13% (2022 Jim Sage RHA and Evaluation Report, Appendix 1: Table 1, p.153).

Vegetation and Riparian Areas

The South Use Area is approximately 19,069 acres. There are five pastures: four native pastures (N&S Cottonwood, Cottonwood Seeding, Chokecherry, and Upper Cottonwood), and one seeded pasture composed of crested wheatgrass and Russian wildrye (Bridge Seeding). Some areas within native pastures contain a mix of native-like and non-native seeded species due to previous fire rehabilitations (2022 Jim Sage RHA and Evaluation Report, Table 4, p. 12,). Native vegetation is diverse and is what is expected for the area, thus Standard 4 is being met in most of the use area. One exception occurs in the eastern portion of the Cottonwood Seeding Pasture. This portion of the pasture is lower elevation generally dominated by either an overstory of Wyoming big sagebrush with an understory of cheatgrass and halogeton or isolated areas void of sagebrush and dominated by cheatgrass and/or halogeton. Squirreltail, Sandberg's bluegrass and globemallow, found within some of these areas, make up a small percentage of the overall vegetative composition. These low-elevation areas have crossed an ecological threshold and were evaluated in 2019 as Not Meeting Standard 4. Mid-elevation native areas are Meeting Standard 4 and are comprised of a diverse native plant community with little departure from what is expected for these areas. Seeded vegetation is healthy and meeting Standard 5.

The South Use Area contains three riparian areas:

The Chokecherry Canyon Creek occurs in the Chokecherry Pasture and was entirely excluded from livestock grazing with a fence in 1994 to improve riparian condition. Riparian vegetation has improved along the creek through an increase in shrub regeneration and plant diversity. In 2019, this creek rated as meeting PFC with an upward trend.

Cottonwood Creek occurs mostly on private land with a small portion occurring on BLM land near the mouth of Cottonwood canyon in the N&S Cottonwood Pasture. The creek is densely vegetated with willows and other woody cover and is mostly inaccessible to cattle. In 2019, the creek was rated as PFC with upward trend due to an increase in diversity and regeneration of woody riparian vegetation.

Two portions of the Raft River are included in the Jim Sage allotment and are monitored by the BLM. One portion occurs in the South Use Area and was entirely excluded from livestock grazing with a fence in the late 1990s in order to improve riparian conditions. The other portion of the Raft River is in the West Use Area and will be discussed in the next section. The reach in the South Use Area was last assessed in 2012 and determined to be "Functional-at-Risk" with an upward trend; rationale discussed a narrowing of the channel, with a corresponding expansion of the riparian area.

Wildlife

Sage-grouse

Leks- No occupied or undetermined leks occur within this Use Area.

Nesting and early brood-rearing- The South Use Area is roughly 19,069 acres and sage-grouse nesting and early brood-rearing habitat occurs on roughly 9,497 acres (~50%). Suitable habitat is found within roughly

25% of the Use Area primarily within western portions of the Cottonwood Seeding Pasture and the mid-elevation sagebrush steppe in the eastern portion of the N & S Cottonwood Pasture. Marginal habitat is found in roughly 30% of the Use Area, occurring within the lower elevations of the of the Cotton Seeding, Sheep Mountain, and Lower Red Rock Flat Pastures. Unsuitable habitat encompasses 45% of the Use Area within Bridge Seeding Pasture, the east site of the Chokecherry and N&S Cottonwood Pastures, and the upper west corner of the Cottonwood Seeding Pasture. The majority of unsuitable habitat within the Use Area is due to the 2007 Jim Sage Fire which removed much of the sagebrush cover.

Upland summer and late brood-rearing- Within the South Use Area sage-grouse Upland summer and late brood-rearing habitat occurs on roughly 13,373 acres (~77%). Roughly 52% of the Use Area is rated as suitable. Suitable Upland summer and late brood-rearing habitat is found within upper elevations of the Upper Cottonwood and N&S Cottonwood pastures, as well as the western portion of the Cottonwood Seeding pasture. Marginal habitat is found within roughly 2,993 acres and occurs within the lower elevations of the Cottonwood Seeding Pasture. Unsuitable Upland summer and late brood-rearing habitat occurs on 3,432 acres and is primarily due to the 2007 Jim Sage Fire which removed much of the sagebrush cover.

Winter- Within the South Use Area winter habitat occurs within roughly 8,521 acres (~45%). Roughly 58% of winter habitat in the Use Area is rated as suitable. Suitable habitat is found throughout Cottonwood Seeding pasture and within a small eastern portion of the N&S Cottonwood pasture. Marginal habitat is found within a small section (2%) of the Cottonwood Seeding pasture. The remaining 40% of winter habitat in the Use Area was rated as unsuitable. Unsuitable habitat is found within the Bridge Seeding pasture and in the western side of the Cottonwood Seeding pasture due to the loss of sagebrush cover from the 2007 Jim Sage Fire and 2019 Geothermal Fire.

Table 16. Sage-grouse Habitat Suitability

South *19,069 acres*	**Total SUA Acres**	**Suitable**	**Marginal**	**Unsuitable**
Nesting and early brood-rearing	9,497 acres (~50%)	2,417 acres (~25%)	2,763 acres (~30%)	4,317 acres (~45%)
Upland summer and late brood- rearing	13,373 acres (~77%)	6,948 acres (~52%)	2,993 acres (~22%)	3,432 acres (~26%)
Winter	8,521acres (~45%)	4,922 acres (~58%)	174 acres (~2%)	3,423 acres (~40%)

Grassland Species

Habitat for grassland species within the South Use Area is similar to the habitat described in the East and North Use Areas above. A variety of habitat exists consisting of Wyoming big sagebrush/cheatgrass sites in the lower elevations to the east and a combination of seedings and low sagebrush/bluebunch sites through the center of the Use Area. The upper elevations consist of a combination of juniper sites and mountain shrub communities. Burrowing owls have been documented within the Wyoming big sagebrush sites. Grassland species are most likely to occupy the lower elevations within the southern and eastern portion of this Use Area.

3.8.7 West Use Area

Grazing Management

The West Use Area contains four pastures (Jim Sage/Womack, Jones Hollow, Quaking Asp/Black Sands, and Keg/Cliff) that are primarily separated by natural topography and used seasonally and include. There are two short drift fences, one in the Jones Hollow Pasture and one in Keg/Cliff Pasture that limit drift between different herds of livestock and pastures. Other than these drift fences, herds of livestock are separated by steep topography and limited water availability. Water is provided to livestock through a

combination of creeks, one trough that receives its water from well in the Almo-Womack Use Area. Additionally, six springs have been developed for livestock use with a system of troughs. Livestock grazing during the winter season utilize a water gap along the Raft River and water sources on private land.

There are five separate cattle herds and each herd grazes in their own pasture for a total of 559 cattle and 5 horses. Three separate cattle herds graze from 05/1 to 06/15, and one herd of cattle graze from 05/01 to 06/30. The fifth herd grazes during the winter on the southern end of the Use Area on a mix of public and state land from 02/15 to 03/15. The horses graze from 05/01 to 11/31 in the Jones Hollow Pasture.

The average actual use over the last 13 years (2008 to 2020) has been 570 AUMs with a high of 701 AUMs and a low of 436 AUMs. Utilization over the same 13 years has averaged 21%, from four sites, with a high of 41% and a low of 7% (2022 Jim Sage RHA and Evaluation Report, Appendix 1: Table 1, p.153).

Vegetation and Riparian Areas

The West Use Area is approximately 23,054 acres with numerous narrow, steep, rocky canyons comprised entirely of native sagebrush steppe and Juniper/Pinion woodlands. This Use Area includes the Jim Sage RNA/ACEC located in Jim Sage Canyon. This Use Area is meeting Standard 4 due to having suitable and diverse native vegetation. The BFO has conducted juniper removal treatments to improve populations of perennial grasses and shrubs in sagebrush steppe areas with encroaching juniper.

The West Use Area includes the most (8 of 13) riparian areas in the allotment.

Black Sand Hollow is a small intermittent creek with approximately 0.7 miles of riparian area in the Quaking Asp/Black Sands Pasture. Aspen and shrub regeneration is occurring along the reach with large amounts of vegetative cover from perennial grasses and forbs. In 2019, this creek was rated as PFC with an upward trend due to an increase in aspen regeneration and streambank stability.

Franks Hollow is a small spring that was developed in 1941 into a flow-through trough system in the Quaking Asp/Black Sands Pasture. This system allows water from the spring to be piped into the trough, then back out to the creek channel below the trough. Livestock have been excluded from the riparian area with fencing below the trough. In 2019, Franks Hollow was rated as PFC with upward trend due to the site showing no signs of erosion and having increased composition and age diversity of woody and non-woody vegetation.

Jim Sage Creek is a small, spring-fed creek with a springhead at the head of Jim Sage Canyon in the Jim Sage/Womack Pasture. In 1989, the Jim Sage springhead was excluded from livestock grazing with fencing to protect riparian resources in the Jim Sage RNA/ACEC. Along the creek, which is accessible to livestock, deep-rooted, bank-stabilizing plants are common. The riparian vegetation is expanding due to improved water retention. Populations of aspen and willow are increasing, and riparian vegetation is establishing in previously bare areas. In 2019, this creek was rated as PFC with an upward trend due to an increased presence in woody and other vegetation regeneration.

Jones Hollow is a small spring fed stream, occurring in the Jones Hollow Pasture. Riparian vegetation is diverse with expanding woody species and aspen regeneration. In 2019, this stream was rated as PFC with an upward trend due to an increase presence in woody vegetation.

Knight Spring is a small spring fed stream, occurring in the Jones Hollow Pasture. Vegetation is dense and consists mainly of quaking aspen and red osier dogwood. In 2019, this stream was rated as PFC with an upward trend due to expanding woody vegetation.

Quaking Asp Creek made up of three forks, is one of the longest creeks on Jim Sage Allotment consisting of small intermittent spring-fed creeks in the Quaking Asp/Black Sands Pasture. Riparian vegetation is continuing to improve through the expansion riparian plants along the banks. In 2019, all segments of this stream were rated as PFC with an upward trend due to an increase woody vegetation regeneration.

Two portions of the Raft River are included in the Jim Sage allotment and are monitored by the BLM. The portion occurring in the Jim Sage/Womack Pasture is primarily excluded from livestock except for a 100-foot water gap. The reach in the West Use Area was last assessed in 2012 and determined to be PFC with an upward trend due to an expanding riparian area with diverse vegetation.

Womack Canyon is a small, spring-fed system, occurring in the Jim Sage/Womack Pasture. Streambanks are well vegetated with a diversity of riparian plant species. In 2019, this stream was rated as PFC with an upward trend due to increased cover of wood riparian species.

Wildlife

Sage-grouse

Leks- No occupied or undetermined leks occur within the Use Area.

Nesting and early brood-rearing- The West Use Area is roughly 23,054 acres and sage-grouse nesting and early brood-rearing habitat occurs on roughly 4,950 acres (~21%) within the southern and western portions of Keg/Cliff and Jim Sage/Womack Pastures. Of the 21% of available habitat roughly 99% was rated as suitable.

Upland summer and late brood-rearing- Within the West Use Area sage-grouse Upland summer and late brood-rearing habitat occurs on roughly 3,733 acres (~16%) within the lower elevations of the Keg/Cliff and Jim Sage/Womack Pastures, as well as the higher elevations of the Quaking Asp/Black Sands, Keg/Cliff, and Jim Sage/Womack pastures. Roughly 89% of the habitat within the Use Area is rated as suitable. Unsuitable habitat is found within approximately 368 acres of the Quaking Asp/Black Sands Pasture which lost sagebrush cover during the 2018 Jim Sage Fire.

Winter- The West Use Area has 3,615 acres (~16%) of winter habitat within the lower elevations to the south and west. Roughly 99% of the Use Area is rated as suitable. A small percentage (~1%) of unsuitable habitat is found in the southeast corner of the Jim Sage/Womack Pasture, where the 2007 Jim Sage Fire removed sagebrush cover.

Table 17. Sage-grouse Habitat Suitability

West *23,054 acres*	**Total SUA Acres**	**Suitable**	**Marginal**	**Unsuitable**
Nesting and early brood-rearing	4,950 acres (~21%)	4,921 acres (~99%)	29 acres (~1%)	0 acres
Upland summer and late brood- rearing	3,733 acres (~16%)	3,338 acres (~89%)	27 acres (~1%)	368 acres (~10%)
Winter	3,615 acres (~16%)	3,605 acres (~99%)	0 acres	10 acres (~1%)

Grassland Species

Grassland habitat within the West Use Area is limited to south and far north portions of the Use Area. The majority of the Use Area is comprised of Utah Juniper and Mountain big sagebrush communities. Intermixed seedings and native low/big sagebrush steppe is found in the lower elevations of the Use Area which provides some potential habitat for grasslands species.

4.0 Environmental Effects

This chapter qualifies and quantifies the types, duration, and magnitude of impacts of the alternatives to allow for a comparison of the alternatives. For a discussion of the existing environment conditions refer to Section 3: Affected Environment. The analysis of environmental effects discloses direct and indirect effects of the actions proposed under each alternative, as well as cumulative effects that would result from the addition of other past, present, and reasonably foreseeable future actions.

For resources with associated Idaho Standard for Rangeland Health the analysis discusses whether alternatives would result in continuing to meet Standards or, if Standards are not met, whether alternatives would result in making significant progress towards meeting applicable Standards.

Definitions of Impact Analysis Terminology

The impact analyses presented in this chapter qualify impacts to resources on the basis of their intensity and duration. The following terminology applies:

Impact Intensity

- Negligible – the effect is slight and not detectible.
- Minor – the effect is slight but detectable; there would be a small change.
- Moderate – the effect is readily apparent; there would be a noticeable change.
- Major – The effect is large and highly noticeable.

Impact Duration

- Short-term – the effect occurs for a short time after implementation of a management action. The effective time period is five years or less.
- Long-term – the effect occurs for an extended period after implementation of a management action. The effective time period is greater than five years.

4.0.1 Effects from Grazing Applicable to All but the No Grazing Alternative

Vegetation and Soils- General Impacts of Livestock Grazing and Range Infrastructure

Impacts to vegetation can result in herbage removal from foraging animals and trampling by trailing animals or animal congregation areas. The amount and timing of forage removal affects the plants' ability to maintain productivity and vigor (Holechek et al., 2004). Vegetative composition can change when the amount, timing, and frequency of forage removal causes vegetation to become less productive. For these reasons utilization guidelines are established, and grazing systems are implemented to maintain plant health and vigor. The livestock grazing utilization level is an important factor in determining the degree of impact, with heavy, continuous grazing having the greatest impact on soil hydrologic functions (McCalla et al., 1984)

Grazing has the potential to reduce the accumulation and distribution of fine fuels, thereby influencing wildfire rate of spread and severity in the event of ignition. The relationship between grazing and vegetation as related to wildfire risk varies based on the intensity and season of grazing, vegetation community type, other site conditions, and weather. As a result, grazing at moderate use levels (40 to 50%) can decrease the probability of wildfire spread (Davies et al., 2017). In addition, Davies et al. (2010) indicates that moderate livestock grazing (35 to 50%) on sagebrush rangelands influences fuel accumulations, continuity, and height, which in turn influences burn characteristics and wildfire risk. They also demonstrated that moderate levels of livestock grazing decrease fine fuel loading and continuity; these alterations have the potential to decrease the probability, continuity, size, and severity of wildfires in sagebrush rangelands. Thus, livestock grazing impacts several fuel characteristics simultaneously. This greatly increases its potential influence on wildfires.

Studies also suggest that moderate grazing can reduce the establishment of invasive grasses. Davies et al. (2009) suggested that light to moderate livestock grazing, also acting as disturbance to reduce litter accumulation, may indirectly prevent cheatgrass invasion. The level of grazing pressure is critical because heavy grazing would facilitate cheatgrass invasion by decreasing native plant species. Additionally, Davies et al.'s (2009) long-term study showed that exclusion of livestock grazing lowered the ability of the native herbaceous community to tolerate fire, thereby creating safe sites and giving cheatgrass an opportunity to invade.

In addition to general grazing intensity, there are areas where livestock concentrate such as at gates, water troughs, riparian areas, mineral sites, and along commonly used trails. These concentration areas have reduced vegetation and increased rates of trampling; however, the amount of disturbance is limited to the localized areas such as narrow trails, and within approximately less than one acre around water trough sites. In areas of high concentration, livestock can compact soils, which reduces water infiltration and increases soil erosion potential. Compaction is caused by the downward force of animal hooves on soil, with the greatest impacts occurring when soil is saturated (Warren et al., 1986). This compaction can inhibit plant growth by restricting root penetration into the soil, reducing nutrient and moisture availability.

In relation to riparian areas, livestock effects can include streambank disturbance, grazing and browsing of woody and herbaceous vegetation, vegetation trampling and pugging resulting in bare ground in some places along the stream channel.

Maintenance and use of range infrastructure under any of the alternatives could result in some minor, temporary, and localized disturbance to vegetation including crushing by vehicles or foot traffic.

Wildlife - General Impacts of Livestock Grazing and Range Infrastructure
Impacts from livestock presence to special status wildlife in all group habitats include the number, density, location of animals, season of use, and management activities (i.e., trailing and herding). These impacts could result in disturbance, social displacement of individuals, and habitat modification.

Livestock grazing impacts to birds include changes in vegetation cover and community structure, (Taylor, 1986) which could affect available nest sites and food supplies. In addition, livestock presence may also result in nest trampling (Renfrew & Ribic, 2003; Renfrew et al., 2005), nest abandonment (Bleho et al., 2014), and flushing adults from nests (Coates, 2007), which could increase avian predation or cowbird parasitism. Livestock also attract brown-headed cowbirds (Goguen & Mathews, 2001), which may influence avian predation and nest parasitism. Female brown-head cowbirds lay their eggs in the nests of other bird species, primarily songbirds (Lowther, 1993). Currently, the local rate of nest parasitism by brown-headed cowbirds is unknown.

Livestock utilization would remove a percentage of the available cover needed for nest concealment and foraging habitat. Indirect impacts to other nesting birds include changes in nest concealment, habitat structure (e.g., visual obstruction, grass height), changes in arthropod prey availability, changes in risk of predation, and changes in cowbird distribution (Bleho et al., 2014). A reduction in cover could increase the exposure of nests to predators and could alter foraging by changing microhabitat characteristics. This impact is expected to be minimal because livestock would only remove a portion of available herbaceous matter and livestock are expected to primarily forage on grasses. Livestock utilization of shrubs in the fall would not directly impact nesting birds because it is outside the nesting season. The alteration of vegetative communities could adversely impact migratory land birds by limiting suitable breeding and foraging habitat. However, the alteration of the upland vegetation is not expected because there is no indication that current grazing practices have resulted in a downward trend for upland habitat.

Coates et. al (2008) found that although infrequent (six of 87 nests), livestock investigate sage-grouse nests. Flushed incubating hens can displace eggs from the nest, or livestock can damage eggs in nests and contribute to nest abandonment (Coates et al., 2008). Ravens were the most frequent (10 of 37 nests) predators of sage-grouse nests (Coates et al., 2008). Female sage-grouse abandoned all nests that were partially predated (Coates et al., 2008). Additionally, ravens (Coates et al., 2016) and cowbirds (Goguen & Mathews, 2001) are attracted to areas being grazed by livestock, which can influence the hatching success and young survival locally. Sage-grouse frequently nest under shrubs and their nests are generally protected from livestock trampling.

Ravens occur throughout the year within the Jim Sage Allotment, whether or not livestock are present. The presence of avian predators may have an impact on the spatial distribution of sage-grouse, particularly for

nesting. For example, researchers studying the influence of avian predators on sage-grouse in southwest Wyoming identified a correlation between nest site selection and abundance of avian predators; where sage-grouse selected for nest sites in segments of the landscape that had a reduced presence of avian predators (Dinkins et al., 2012). Increased raven abundance may reduce available sage-grouse nesting habitat (Dinkins et al., 2012) and increase nest depredations (Coates & Delehanty, 2010; Lockyer et al., 2013). Raven densities are expected to increase the long-term effects of predation to wildlife (especially to nesting sage-grouse) described in each of the alternatives including the No Grazing Alternative. Increased raven densities are likely due to the widespread presence of anthropogenic disturbances such as powerlines, which provide perching/nesting substrate and local dairies, private residences, and highways which provide carrion for ravens throughout the year within, and adjacent to, the Jim Sage Allotment.

Brewer's sparrow and loggerhead shrike place their nests in the shrub canopy which reduces trampling impacts. Sagebrush sparrow, grasshopper sparrow, and sage thrashers place their nests either in the shrub canopy or on the ground at the base of the shrub, which protects the nest site. Shrubs reduce the chance of nest trampling and help maintain herbaceous cover under the shrub canopy. Nests at the base of a tussock, whether a native species or crested wheatgrass, may also have more concealment due to leaves extending from the base of the plant. Balph and Malecheck (1985) reported cattle avoided stepping on crested wheatgrass tussocks, particularly if the tussocks elevated greater than 2.4 inches more than shorter tussocks.

Long-billed curlew generally nest in open areas lacking shrub overstory. A study in northern Nevada found three of 30 curlew nests (10%) were trampled by livestock in grassland habitats (Hartman & Oring, 2009). Rates of trampling of curlew nests on the Jim Sage Allotment are unknown. The majority of burrowing owl nest burrows are also in open areas or sites with short vegetation. In north central Oregon, Holmes et al. (2003) reported livestock trampling was the primary cause of burrow collapse, averaging nearly 60% in two years in areas with sandy soils followed by natural erosion (17%). Holmes et al. (2003) speculated burrows in silt loam soils to be more structurally stable. Soils throughout the lower elevations on the east side of the Jim Sage Allotment are typically loamy so are more likely to be more resilient in the presence of livestock grazing.

Grazing season of use and management systems vary across the Jim Sage Allotment to respond to permittees needs, to maintain and improve resource conditions, and to manage different types of vegetation (i.e., seedings, native sites, riparian areas) (Table 3). In most of the Use Areas, either a deferred-grazing system or a rest-rotation system is used, allowing for habitat availability for nesting birds. These rotations have been developed in coordination within the livestock grazing season of use for each Use Area. These systems allow for seed development before grazing in at least a portion of the Use Area each season and are designed so that the same pasture is not consistently grazed during the same season, reducing the potential impacts to vegetation vigor and recruitment. The exception occurs in portions of the West Use Area where use occurs annually in the spring. However, the overall stocking level in these areas is low, approximately 34 acres/AUM distributed across the four pastures. This seasonal system has maintained healthy native plant communities and wildlife habitat across the West Use Area.

Construction, maintenance, and use of range infrastructure can cause direct disturbance of special status wildlife and modify habitat. Wildlife may avoid areas when humans and equipment are present during construction and maintenance activities. Wildlife that cannot quickly move such as small burrowing mammals could be harmed or killed by construction or maintenance activities using heavy equipment. Diurnal and seasonal constraints on construction and maintenance activities would reduce or eliminate impacts to special status wildlife during sensitive periods.

Collisions with fences is an ongoing source of mortality for sage-grouse (Stevens, 2011; Stevens et al., 2012), ferruginous hawk (Stevens, 2011), Brewer's sparrow (Stevens, 2011), burrowing owl, short-eared owl, golden eagle, and a variety of waterfowl and other birds (Allen & Ramirez, 1990). Marking existing

fences within 1.2-miles (2 km) of sage-grouse leks is expected to reduce collision mortality with fences by approximately 80% (Stevens et al., 2012). However, collisions with unmarked fences by all avian species not within this proximity of sage-grouse leks would likely continue, and collisions would likely become more frequent as the amount of fence increases. In sagebrush habitat, Stevens (2011) found that of the 186 avian collision mortalities recorded, over 80% were sage-grouse and 5% were songbirds. Stevens (2011) calculated 2.18 bird mortalities per mile per year of unmarked fence. The mortality rate is likely conservative, because Stevens (2011) determined searchers had a 53% chance of locating pheasant carcasses placed the previous evening and less than 3% chance of finding feather piles. Scavengers and predators frequently move carcasses and the wind scatters feather piles removing evidence of collisions. Currently, there are approximately 76 miles of interior permanent management fences existing within the allotment. Overall, 28 miles (37%) of interior permanent management fences have been marked with flight diverters with 11.5 miles marked within the 1.2-mile lek buffer. The effects to wildlife habitat, from the initial fence installation have already occurred. There have been no documented issues and the future long-term effects to wildlife are expected to remain minor.

Water troughs and open water storage tanks are sources of mortality for a variety of birds and other wildlife. Cross braces and wires over water troughs pose a collision hazard to bats and increase the time and energy bats spend attempting to drink from troughs (Tuttle et al., 2006). However, when properly installed and maintained escape ramps can reduce avian mortality at troughs and open water storage tanks.

4.1 Current Management Alternative

Under the Current Management Alternative, AUMs would be reduced from the permitted use levels (5,131 AUMs) to the actual use level (4,545 AUMs). Livestock grazing would continue under the current terms and conditions, season of use, and grazing management that has occurred over the past 10 years.

4.1.1 Effects to Vegetation and Soils from Current Management

The Current Management Alternative would ensure that the allotment continues to meet ISRH (Standards 1, 4 and 5) and maintain the current ecological condition of the allotment (Table 2). Watersheds and soils are meeting the Standards across all use areas under current management and are expected to be maintained. Seeded rangeland, and mid to upper elevation native sites were found to be healthy and meeting Standards 4 and 5 in all Use Areas. Exceptions to native Standard 4 vegetative conditions occur in the lower elevation portions of the South and East Use Areas. As described above in the Affected Environment (Section 3.3), these lower elevation areas are not meeting Standard 4 primarily due to high cheatgrass cover and reduced perennial grass cover. Current livestock grazing is not a causal factor contributing to the condition of these sites. A portion of the East Use Area is making some progress due to increased perennial grass cover. The current condition of these lower elevation native sites is expected to remain the same under current management. These areas have crossed an ecological threshold and would require mechanical or chemical restoration actions to improve the condition of these sites to a point where rangeland health standards could be met in the future.

Average utilization levels are expected to remain light (13-year average, 23%). This, in conjunction with existing grazing systems and kind of livestock would continue to support plant health and vigor. Plant litter accumulation and standing dead matter remaining after grazing on any given year is sufficient to allow decomposition and leave onsite nutrients for cycling.

The Jim Sage Allotment contains high amounts of vegetative foliar cover across the landscape (2022 Jim Sage RHA and Evaluation Report, Table 10, pp. 94-97). Current grazing management and grazing levels are expected to reduce some fine fuel accumulation and fuel continuity, but light utilization levels are expected to have limited effects on fire spread. Recent wildfires have reduced sagebrush cover in portions of the South, East, Cassia Creek and North Use Areas. In the absence of fire, sagebrush cover is expected to slightly increase in these areas over the next 10 years under Current Management Alternative.

4.1.2 Effects to Riparian Resources from Current Management

The general effects of livestock grazing on riparian areas (Section 4.0.1) on the Jim Sage Allotment are short-term, varying in intensity and location from year to year and have not affected the ability for these riparian systems to improve and achieve PFC. As described in the Affected Environment section, the current management grazing system has resulted in 98% of the riparian areas within the Jim Sage Allotment meeting Standards 2 & 3 (2022 Jim Sage RHA and Evaluation Report). The remaining 2% not meeting PFC is a 0.25-mile section of the Raft River where livestock do not have access. In addition, upward trend has been observed consistently over the last 10 years leading to these streams progressing towards an advanced condition (USDI BLM, 2015b, p. 103). The riparian plant community composition, distribution, and production would remain appropriate relative to site potential, maintaining site stability, and providing habitat for native wildlife species. Under current management, riparian areas would remain at PFC and continue to meet Rangeland Health Standards.

4.1.3 Effects to Wildlife from Current Management

Sagebrush Steppe

Currently, most livestock grazing activities are permitted to begin May 1st each year, which coincides with sage-grouse nesting and early brood-rearing season. Livestock grazing directly impacts sage-grouse habitat by altering habitat structure (cover/concealment) and food availability (biomass production and diversity/composition), which in turn can affect the health and viability of the species. Multiple sources have indicated that light to moderate livestock forage utilization can maintain and improve herbaceous vegetation vigor and abundance (Holechek et al., 2006; Holechek et al., 1999). Improving juvenile sage-grouse survival rates by increasing the quantity and quality of nesting and early brood-rearing habitat, as suggested by Connelly and Braun (1997), appear to have more influence on sage-grouse populations than other factors related to overall reproductive success (i.e., nest success and breeding success) (Aldridge & Brigham, 2001; Aldridge & Brigham, 2002).

Current grazing allows for light utilization (up to 40%) on native vegetation, and moderate utilization (up to 50%) in pastures with a mix of native-like and non-native cultivars and (up to 60%) on non-native seeded pastures. The continuation of current utilization is generally expected to maintain vegetation consumption rates of up to 'light' use during average or better moisture years on native rangelands leaving residual vegetation available for wildlife. It is expected that maintenance of deep-rooted, perennial grass vigor, and herbaceous composition/diversity would result in largely suitable habitat conditions for sage-grouse within the native vegetation communities. Seeded rangelands are providing marginal to suitable sage-grouse habitat depending on the amount of sagebrush cover. Habitat conditions within the native and seeded habitats within the Jim Sage Allotment that are currently providing suitable to marginal habitat are expected to continue under the Current Management Alternative.

Native pastures within the Kane Springs, Sheep Mountain, N&S Cottonwood Pastures have been subject to a ten-year grazing/sage-grouse nesting study conducted by the University of Idaho (U of I). Grazing management within the study design is similar to the grazing management occurring under the current management and follows the normal pasture rotation system. Preliminary results for vegetation conditions in grazed vs. un-grazed pastures showed no difference in either nest success or brood success between grazed years and rest years in spring grazed pastures or between spring grazed pastures and control pastures (Conway et al., 2020). The preliminary results from the U of I study appear to be consistent with Smith et al. (2018) that found there was little indication of short-term negative effects to nesting habitat quality from livestock grazing.

Although preliminary data shows no difference in nest success in grazed vs. rested/control pastures, there is some speculation that hens may be avoiding the presence of livestock during nest initiation (Conway, 2021, personal comm.). However, Smith et al. (2018) found that anthropogenic features and structural components of the shrub community were the primary drivers in nest selection. According to the 2021

Grouse & Grazing Project report (Conway et. al, 2021), the mean hatch date within the study area on the Jim Sage Allotment is May 18th. The incubation timeframe for nesting sage-grouse is roughly 25-29 days which would result in nest selection occurring within the last two weeks of April. Under current management, the Sheep Mountain Pasture is the only pasture within the Jim Sage Allotment that is permitted to graze prior to May 1st leaving roughly 80% of the Spring SUA available for sage-grouse during nest initiation.

Habitat conditions within the Jim Sage Allotment in recently burned areas and historic crested wheatgrass seedings are unsuitable for sage-grouse nesting and early brood-rearing and the lack of sagebrush is the limiting factor in determining acceptable habitat suitability. Although sage-grouse may occupy these areas at different times of the year, the current habitat conditions are not conducive for sustainable sage-grouse populations. Sagebrush height is a primary component of suitable nesting and early brood-rearing and winter habitat, and cover is important for the concealment of sage-grouse nests to avoid predators (Gregg et al., 1994; Connelly et al., 2000; Coates & Delehanty, 2010). The current grazing utilization levels may facilitate some recruitment of sagebrush; however, the current use levels are not expected to expedite sagebrush recovery. In the absence of sagebrush, unsuitable sage-grouse nesting and early brood-rearing and winter habitat within previously burned habitat would continue to not meet Standard 8 for the long-term.

Under the Current Management Alternative, areas within the allotment that lack perennial grass cover and preferred forb availability, primarily within the East and South Use Areas, would continue to provide marginal to unsuitable habitat within sage-grouse nesting and early brood-rearing habitat. Sagebrush cover and height are marginal to suitable throughout most of these areas providing suitable winter habitat. When cheatgrass is one of the dominant species on a site, it can form a dense layer of litter, called a thatch. These thatch layers decrease the ability for perennial grasses to establish in many of these areas, thereby providing a continuation of degraded sage-grouse nesting and early brood-rearing habitat. The current livestock utilization levels in these pastures does not remove enough residual cheatgrass cover to be effective in establishing perennial grass cover or natural expansion so these areas would continue to not meet Standard 8 for the long-term.

The indirect benefit of removing cheatgrass thatch and fine fuel accumulations to reduce fire spread would benefit sage-grouse in the future. In these cheatgrass dense habitat systems, fire poses the greatest threat of impact to sage-grouse because the loss of sagebrush overstory and subsequent increase in invasive annual grasses reduces the potential for these sites to make progress towards meeting Standard 8.

Native sagebrush steppe habitat currently meeting Standard 8 would continue meeting Standard 8 under the Current Management Alternative. Pastures where sagebrush cover is reduced may trend towards meeting standards however, significant progress to meet Standard 8 may not occur due to slow change in areas where seed sources for shrubs were depleted due to wildfire. These habitat conditions are unlikely to change significantly over the 10-year permit because it would take longer for sagebrush recruitment to reach the 15% suitable sagebrush cover threshold for sage-grouse nesting and early brood-rearing habitat. Sagebrush steppe habitats not meeting Standard 8 within the cheatgrass dominated areas are unlikely to appreciably improve over the 10-year permit and would be expected to continue to not meet Standard 8. The current distribution of range infrastructure is expected to continue to result in a minor short-long term effect to sagebrush species.

Grasslands

Current grazing management would maintain the mosaic of short and tall grass heights, but the expected low livestock utilization levels would favor special status wildlife that prefer tall grass habitats which tend to leave more residual vegetation cover. Areas near water sources, gates, or other livestock concentration areas, as well as habitat containing short-statured, bunchgrasses (Squirrel-tail or Sandberg bluegrass), would continue to provide habitat for species that prefer shorter vegetative heights. Additionally, as

discussed under general effects to wildlife, grassland birds are at risk of injury or mortality due to fence collisions. This potential may be greater for grassland birds, since fences in these habitats would have lower potential to be marked unless they are within 1.2 miles of a sage-grouse lek.

Nest trampling by livestock is a direct effect of livestock presence, but uncommon. Occurring more often in high use areas such as watering locations (Koerth et al., 1983; Fondell & Ball, 2004). Birds nesting in grasslands are potentially more vulnerable to trampling than birds nesting in or under shrubs. Harrison et al. (2011) reported only one of 75 vesper sparrow nests were trampled in a bluebunch wheatgrass grassland. In northeastern Oregon, Johnson et al. (2012) reported that trampled nests occurred at higher stocking rates; however, trampling was minimal. Johnson et al. (2012) suggested nest trampling may have been minimal due to a low density of ground nesting birds or the stocking rate needed to be higher than 1.1 animal unit/hectare in their study. They found no relationship between vegetation structure and the probability of nest predation. Highest stocking rates on the Jim Sage Allotment is approximately 1 animal unit/10 hectare which further reduces the potential for nest trampling.

Seeded grassland habitat pastures are currently meeting Standard 8 for grassland species. Under the Current Management Alternative these pastures are expected to continue meeting Standard 8 primarily due to slow change in areas where seed sources for shrubs, deep-rooted perennial grasses, and native forbs were depleted due to wildfire. These habitat conditions are unlikely to change significantly over the 10-year permit. Grassland habitats not meeting Standard 8 within the cheatgrass dominated areas are unlikely to appreciably improve over the 10-year permit and would be expected to continue to not meet Standard 8 for the long term.

4.1.4 Effects to Socioeconomics from Current Management Alternative

The Current Management Alternative would affect ranching operations, but the intensity of the effect would vary by operator. If selected, this alternative would reduce the current permits to Actual Use levels (4,545 AUMs), a reduction of 586 AUMs across the Jim Sage Allotment. The reduction of 586 AUMs is expected to affect the permittee's current income resulting in a negative minor long-term effect since the AUMs would no longer occur on the permits. As a result, the AUMs would not be able to be utilized when conditions allow.

To replace the loss of AUMs permittees would have to search for other opportunities to graze their livestock. This could include but is not limited to grazing in other areas, paying transportation, and possibly much higher grazing fees; or determining the economic viability of continuing their livestock operations. The following are potential costs to supplemental feeding or leasing of grazing lands based on current market value.

> **Hay Costs** - Feeding hay on private land instead of grazing on pastures: The operators would need approximately 800 lbs. dry forage/month for each cow/calf pair if the livestock were moved back to their prospective base properties. The current market value of hay ranges from $285.00 to $350.00 per ton (USDA Idaho Direct Hay Report- Feb 2022). This equates to $66,975, spread across the individual permittees, to purchase enough hay to cover the loss of permitted AUMs.
>
> (586 AUMs X 800 lbs.) / 2,000 lbs. = 235 tons * $285/ton (current market hay value) = $66,975
>
> **Leasing Private lands -** According to the Idaho Department of Lands website, 2020, private land lease rates for grazing average $18.50/AUM (https://www.idl.idaho.gov/leasing/grazing-farming-conservation-program/grazing-rate-review) which equates to $10,841for permitted AUMs, spread across the individual permittees on this allotment. The margin of profit would likely be reduced causing possible economic hardship.

If operators were to purchase hay or lease private lands from others, within Cassia County, those individuals would benefit from the increased revenue. If alternative forage was not available, operators

could be forced to reduce or eliminate their livestock operations causing economic hardship to individual operators and the local economy. Additionally, due to the recent increase in population growth in Idaho, there are fewer private lands available to livestock grazing.

4.2 Permittee Proposed Action

Similar to the Current Management Alternative, the Permittee Proposed Action would continue under the current terms and conditions, season of use, and grazing management with the following exceptions: the allotment would retain 5,131 permitted AUMs, three grazing permits would have negligible resource effects because there are no changes in AUMs or seasons of use. Under the Permittee Proposed Action the proposed range improvements described in Section 2.2.4 are analyzed below.

4.2.1 Effects to Vegetation and Soils from the Permittee Proposed Action

Effects of livestock grazing to vegetation and soils would be consistent with the effects described under the Current Management Alternative since the current grazing management system would not change i.e., seasons of use, grazing rotations and management flexibility. The proposed changes to the three grazing permits would have negligible effects to vegetation and soils because there are no changes in AUMs or seasons of use (Section 2.2.4). These modifications are already occurring through existing Management Flexibility (Section 2.1.2); therefore, these effects have already been described in the Current Management Alternative. The Permittee Proposed Action would ensure that the allotment continues to meet ISRH (Standards 1, 4 and 5) and maintain the current ecological condition of the allotment (Table 2). The proposed implementation of range improvements (fences, pipelines, and troughs) would result in minor short-term effects to vegetation and soils in portions of the South, East, North and Cassia Creek Use Areas from that of Current Management. These effects are described below.

Under this alternative, the current permitted AUMs (5,131) would remain unchanged. Utilization levels would be expected to slightly increase relative to the Current Management Alternative (4,545 AUMs) but would remain in the light utilization category (21-40%). Utilization levels would continue to be managed by vegetation type, same as Current Management (Section 2.1.2). Under the Current Management Alternative, utilization on seeded areas averaged 31% while native sites averaged 21% utilization. For a complete list of utilization levels for each pasture over the last 13 years refer to the 2022 Jim Sage RHA and Evaluation Report, Appendix 1: Table 1, p.153. The average utilization for all sites was 25%. When calculating use levels at full permitted use (Permittee Proposed Action), overall average utilization levels for all sites would be expected to increase to 28% (2022 Jim Sage RHA and Evaluation Report, pp. 42-44). This slight increase in utilization is expected to result in minor short and long-term effects to vegetation and soils from those described in the Current Management Alternative.

Fences: Under the Permittee Proposed Action, electric fence segments would be installed in the N&S Cottonwood, Upper Cottonwood (South Use Area), Kane Springs, and Parks Creek (North Use Area). Initial electric fence construction (installation of posts, gates, etc.) results in short-term soil and vegetation disturbance consisting primarily of small-scale minor, short-term vegetation removal, and crushing of plants by vehicles and foot traffic. Slightly larger areas of vegetation removal could occur due to gate installations adjacent to cattleguards and around brace posts. Annual fence maintenance (putting up and taking down the electric tape) may result in minor crushing of plants by vehicles and foot traffic with most of the vegetation standing back upright with limited loss. Repairs to existing infrastructure under any of the alternatives could result in some minor, short-term, and localized disturbance to vegetation including crushing by vehicles or foot traffic.

The fences in the N&S Cottonwood, Upper Cottonwood, and Kane Springs Pastures would not appreciably affect livestock distribution. These fences are not intended to confine livestock into smaller areas but instead are intended to reduce drift of livestock into adjacent pastures. As such, any changes to livestock distribution may result in some minor, short-term, and localized disturbance to vegetation.

The Parks Creek Pasture electric fence in the North Use Area would allow the permittees greater control of livestock. In addition, this electric fence would help keep livestock in the lower portion of the pasture, protecting livestock from known locations of poisonous larkspur in the upper portion of the pasture. The North Use Area grazing rotation would not change with the implementation of the fence. This fence would be utilized when this pasture is scheduled to be first in the grazing rotation when larkspur is most poisonous; approximately 1 out of every 3 years. On these years, livestock would be concentrated in a smaller portion of the pasture, and likely lead to increased utilization levels in this area. The current 13-year average utilization level in the pasture is slight (16%). With the installation of the fence, utilization levels in this portion of pasture are expected to increase to an average of light use 21-40%, remaining within the current utilization guideline for this pasture. The continuation of the current grazing management for this Use Area is expected to maintain the current healthy vegetation conditions and Standard 4 in this pasture.

The proposed Sheep Mountain Pasture conventional fence would separate healthy native vegetation communities that are meeting Standard 4 from lower elevation areas in the pasture currently not meeting Standard 4. The new pasture would be called Northeast Sheep Mountain. Permanently separating these vegetation communities would allow for increased flexibility in grazing management and allow BLM to better manage livestock within these pastures. This segment was previously an electric fence, first constructed in 2016, to facilitate the University of Idaho sage-grouse and grazing study. No adverse effects to vegetation were expected (DOI-BLM-ID-T020-2016-0004-CX) and since construction, none have been observed. The installation of a permanent fence is expected to result in similar effects to vegetation and soil as the electric fence. Livestock trailing along the fence would be expected to increase because the fence would be in effect for a longer term. Congregation effects would be expected to be minor, long-term and limited to a linear disturbance to vegetation and soils along the fence.

The existing temporary fire rehabilitation fence in the Lower Red Rock Pasture was constructed in the fall of 2018 to protect a recently burned and drill seeded area from livestock grazing. The seeding is fully established and is composed primarily of crested wheatgrass. This fence currently separates this recently established seeding from native rangeland. Conversion of this temporary fence to permanent would allow the continued benefit of increased flexibility of managing livestock grazing in these different vegetation communities. The short-term effects of the initial construction of this fence have already occurred; no additional effects should occur.

Pipelines and troughs: The installation of six proposed water troughs would result in minor short-term effects to vegetation and soils during construction. However, with the included design features described in Section 2.2.4, the initial impact to vegetation is expected minimize these impacts. Livestock congregation around troughs would remove vegetation. Based on the current size of the piosphere around existing trough locations (less than 0.2 acres) the direct impacts of new troughs to vegetation at each location is expected to be minor and would be long-term because it would persist the life of the feature (Table 18). Vegetation effects (trampling and utilization) would increase directly adjacent to new water troughs.

Soil disturbance from the installation of new pipelines would be limited to a narrow strip for approximately 5.25 miles where the pipe is installed with a ripper into the ground. A total of three acres of temporary soil disturbance is expected. Following installation, disturbed areas would be seeded with a BLM-approved seed mix, typically with a broadcast seeder and harrow or small drill. Local experience with pipeline revegetation on the Jim Sage Allotment indicates that the site would be revegetated within two growing seasons. The effects to soil would be short-term only and would not be expected to persist once the site is recovered. Although the addition of six new troughs and three pipeline extensions would have some local minor soil compaction, it is not expected to affect the overall watershed health of the allotment.

Table 18. Estimated disturbance areas for each Jim Sage Allotment pasture if Proposed Action/Alternatives are accepted (i.e., new pipelines and troughs are installed).

Pasture Name	Pasture Acres	Existing Troughs	Disturbance around existing troughs (total acres)	Disturbance from new troughs (total acres)	Percent New Area Trough Disturbance
Chokecherry	2,565	2	0.03	0.015	0.000006%
Bridge Seeding	1,972	2	0.14	0.07	0.00004%
Upper Red Rock Flat	2,331	1	0.09	0.09	0.00004%
Cottonwood Seeding	5,374	3	0.07	0.02	0.000004%
* Acreage for soil disturbance around troughs from livestock congregation was determined by measuring the piosphere visible on the 2015 Google Earth images. The "Disturbance from New Trough" was determined by averaging the exposed soil around all existing troughs within the pasture.					

In general, these additional troughs would improve livestock distribution allowing more uniformed use of vegetation across the pastures as compared to the Current Management Alternative. More uniform distribution of livestock grazing would allow for more even utilization of the rangelands (Holechek & Galt, 2000). By improving livestock distribution within these pastures' less utilized areas would have increased utilization compared to the Current Management Alternative. For example, in the Bridge Seeding Pasture, most of the livestock use occurs in the northern portion of the pasture since that is where the current troughs are located, the installation of two new troughs in the central and southern parts of the pasture would increase utilization in these areas (Appendix A: Figure 2). Therefore, resulting in less utilization in the northern part of the pasture and increasing utilization in the southern portion. Utilization is expected to be appropriate across the Bridge Seeding Pasture.

Indirect effects of grazing on fire spread and severity is similar to the Current Management Alternative. However, under this alternative, the continuity of herbaceous fuel would be further disrupted in pastures where proposed troughs would be installed due to increased livestock distribution. This may result in minor long-term effects on future rates of fire spread and intensity in these pastures as compared to the Current Management Alternative. Increased livestock distribution in recently burned areas due to the installation of additional troughs may also increase the recovery of sagebrush. It has been shown that increased herbivory of grasses and reduced litter cover may help improve sagebrush recruitment over Current Management (Jones et al., 2015).

4.2.2 Effects to Riparian Resources from the Permittee Proposed Action

Effects to riparian vegetation from livestock grazing would be similar to the Current Management Alternative. The proposed range improvements are not expected to affect riparian vegetation because riparian grazing management would not change. Under the Permittee Proposed Action, riparian areas would remain at PFC and continue to meet Rangeland Health Standards.

4.2.3 Effects to Wildlife from the Permittee Proposed Action

Sagebrush Steppe

General effects of livestock grazing to sagebrush steppe wildlife species under the Permittee Proposed Action are similar to the effects described in the Current Management Alternative with the exception of the effects from new range improvements.

Under the Permittee Proposed Action the installation of new range improvements would occur within the Upper Red Rock Flat, Lower Red Rock Flat Seeding, Chokecherry, Bridge Seeding, and Cottonwood

Seeding Pastures. Water developments can benefit wildlife by providing additional watering areas in arid habitats. Water developments provide the opportunity, if needed, to defer or rest certain habitats from livestock grazing to improve vegetative values. Water developments can also alter grazing distribution to increase vegetative cover in areas that previously received higher utilization levels, which could lead to minor long-term benefit to sage-grouse and their habitats. Increased grazing use in the immediate vicinity of new water developments can result in minor long-term effects by removing vegetation, altering plant community structure and composition, trampling of nests, and displacing wildlife.

Noise and vegetation disturbance around the proposed troughs is expected to occur during installation which may have a short-term impact on sage-grouse and other sagebrush species if they are present. However, the soil disturbance calculations described above (Table 18) show that permanent ground disturbance around future troughs would be minimal. Once installed, the new troughs are expected to have a negligible long-term effect on sage-grouse habitat. It is expected that the installation of new troughs would provide wildlife species with increased watering sources in the summer when the adjacent springs are dry. Effects of the installation of future range improvements are expected to be minimized with the adherence to Required Design Features and timing restrictions defined in ARMPA.

Under the Permittee Proposed Action roughly 5.5 miles of electrical fence would be installed on a seasonal basis. Of the proposed 5.5 miles, two miles of electrical fence has been used during the last six years as part of the U of I sage-grouse and grazing study. Due to their high visibility and temporary presence, electric fences do not impose a high collision risk and are not expected to adversely affect sage-grouse travel or cause injury or death from entanglement. The addition of high visibility fences may be beneficial by controlling use levels and durations of livestock grazing, which improves health, vigor, cover, and production of vegetation important to sage-grouse nesting and early brood-rearing habitat. The proposed annual removal of the electric fence tape would aid unrestricted sage-grouse movements within these pastures. Therefore, the installation of electric fences is expected to have limited affects to sage-grouse because the fence design is not expected to be a collision risk and the fence installation is not expected to affect habitat. In addition, any disturbance from installation would be subject to applicable Required Design Features within the ARMPA Conformance Review.

The Sheep Mountain Pasture conventional fence would facilitate livestock distribution and aid the success of the 2020 vegetation treatments within the northwest side of the pasture. This fence would also separate native vegetation communities currently meeting Standards 4 and 8 which provide suitable sage-grouse nesting and early brood-rearing and winter habitat from other areas not currently meeting Standards 4 and 8. Separating these vegetation communities would allow for the implementation of different adaptive management strategies currently being utilized within the allotment. The installation of 1.5 miles of conventional fence would have the same effects to sage-grouse as described above in Section 4.0.1. Design features ensure the fence would be built to wildlife specifications and because it is within 1.2 miles of a lek, flight diverters would be installed to reduce potential collisions by sage-grouse. The conventional fence is expected to result in minor short-term effects to vegetation during installation and minor, long-term effects to sagebrush species due to the presence of the fence.

Under this alternative the Lower Red Rock Flat temporary conventional fence would be made permanent. This fence was installed after the 2018 Connor Fire to restrict livestock from grazing drill seeding treatments. This fence was built using wildlife standards and sage-grouse use within the pasture is unknown. Currently, the fence is not within the 1.2-mile lek buffer fence marking requirement, however if future observations show an increase in sage-grouse presence, or a new lek is discovered within the lek buffer of the proposed fence, the fence would be marked with flight diverters. This fence is expected to continue to have a minor long-term effect to wildlife within this portion of the allotment.

Sagebrush steppe habitat is expected to continue to meet Standard 8 where it is currently meeting for sagebrush species as described above under the Current Management Alternative. In addition, sagebrush

species habitat not meeting Standard 8 are similar to the outcomes described above under the Current Management Alternative. The implementation of design features for future range improvements is expected to minimize the overall effects to wildlife habitat. However, the proposed range improvements are expected to result in a slight increase in minor short-long term effects to sagebrush species.

Grasslands

General effects of livestock grazing within grassland habitats under the Permittee Proposed Action are similar to the effects described above in the Current Management Alternative.

Under the Permittee Proposed Action grazing management would maintain the mosaic of short and tall grass communities, but the expected low livestock utilization levels would favor special status wildlife that prefer tall grass habitats which tend to leave more residual vegetation cover. Areas near new water sources, gates, or other livestock concentration areas, as well as areas dominated by short-statured, bunchgrasses (Sandberg bluegrass), would provide habitat for species that prefer shorter vegetative heights. This may result in a minor long-term benefit to long-billed curlew and burrowing owl which prefer limited visual obstruction near nests. Grasshopper sparrow and short-eared owl may have reduced undisturbed nesting habitat compared to the Current Management Alternative because livestock would be dispersed throughout more of the pasture which may reduce cover from taller perennial grasses. Direct effects of trough and pipeline installation to grassland species are not expected since troughs would be installed outside the nesting season and active burrows would be avoided. Additionally, as discussed under general effects to wildlife, grassland birds are at risk of injury or mortality due to fence collisions. This potential may be greater for grassland birds, since fences in these habitats would have lower potential to be marked unless they are within 1.2 miles of a sage-grouse lek.

The initial effects of electric fence installation and future maintenance is not expected to effect grassland species because these fences are not within grassland species habitat. The proposed Sheep Mountain Pasture conventional fence installation and maintenance is expected to result in similar minor short-term and minor long-term effects as described above for sagebrush steppe species. The current temporary fire fence is not expected to have an effect above what may be occurring.

Grassland habitat is expected to continue to meet Standard 8, where it is currently meeting for grassland species as described above under the Current Management Alternative. In addition, grassland species habitat not meeting Standard 8 are similar to the outcomes described above under the Current Management Alternative. The implementation of design features for future range improvements is expected to minimize the overall effects to wildlife habitat. However, the proposed range improvements are expected to result in a slight increase in minor short-long term effects to grassland species.

4.2.4 Effects to Socioeconomics from the Permittee Proposed Action

Under the Permittee Proposed Action the permittees would continue contributing to employment and the purchase and sale of goods and services in Cassia County. Current permitted AUMs would remain the same and economic losses from supplemental feeding and leasing of private lands described under the Current Management, No Grazing, and Spring AUM Reduction Alternatives would not occur. However, the installation of new range improvements from this alternative would add workload and some financial burden to the permittees. Short-term effects to permittee finances would be cost sharing of installation of troughs, pipeline extensions, and fences. In the long-term, permittees would need to cover the additional cost of maintenance on the proposed troughs, pipelines, fences, and annual hours setting up and taking down electric fences.

4.3 BLM-Developed Threshold and Response Alternative

This is the BLM-developed alternative to addresses resource issues identified during the 2021 ISRH process. This alternative is designed to use livestock as a management tool to facilitate changes in the vegetative community to make progress towards meeting Standards 4 and 8. This would be accomplished

by increasing permitted AUMs to be used during the fall season treatments in these pastures to:

1) Facilitate sagebrush recruitment by increasing livestock use in recently burned areas that are dominated by perennial seeded bunchgrasses (See Thresholds below). *Pastures: Lower Red Rock Flat Seeding, Upper Red Rock Flat, Chokecherry, Bridge Seeding, Cottonwood Seeding, Kane Springs, and Parks Creek*

2) Reduce cheatgrass cover and thatch, which interferes with herbicide uptake, in portions of the East and South Use Areas to help facilitate success of future vegetation treatments. *Pastures: Lower Red Rock Flat, Sheep Mountain, Cottonwood Seeding*

The following describes the Objectives, Responses and Thresholds that would apply to this alternative:

Resource Objectives:

- Objectives for the Management Actions Common to All Alternatives apply to this alternative (Section 2.0.1).
- Improve nesting and early brood-rearing, and winter habitat suitability for sage-grouse in recently burned areas by increasing sagebrush cover and increase perennial grass cover in invasive annual dominated areas to make progress towards meeting Standard 8.
- In native annual-dominated plant communities, reduce fine fuels and herbaceous competition to facilitate restoration goals and increase perennial grass to make progress towards meeting Standard 4.

Thresholds (T)

- **T1:** Pastures containing a combination of seeded non-native grass species and seeded native cultivars would be managed for an average of up to 50% utilization at the end of the growing season on key species which include crested wheatgrass, Russian wildrye and Snake River bluebunch wheatgrass. Pastures: *Cottonwood Seeding, Upper Red Rock Flat, Chokecherry.*
- **T2:** Pastures containing predominately seeded non-native grass species would be managed for an average of up to 60% utilization on key species which include crested wheatgrass and Russian Wildrye. Pastures: *Lower Red Rock Flat Seeding and Bridge Seeding.*
- **T3:** Pastures containing predominately native grass species would be managed for an average of up to 40% utilization on key species which include squirrel-tail, sand dropseed and bluebunch wheatgrass. Pasture: *Lower Red Rock Flat, Parks Creek, Kane Springs.*
- **T4:** Pastures containing primarily annual grasses would be managed to reduce cheatgrass cover. Use levels for these pastures would be tied to T1 (50%) and T3 (40%) on the perennial grass species. Pastures: *Lower Red Rock Flat, Cottonwood Seeding (north of the Cottonwood Road) and Northeast Sheep Mountain.*
- **T5:** Sagebrush canopy cover reaches an average of 10% across the sagebrush recruitment pastures. As measured at existing AIM, M-AIM, S&G, and Key Area locations. Pastures: *Lower Red Rock Flat Seeding, Cottonwood Seeding, Bridge Seeding, Upper Red Rock Flat, and South Chokecherry.*
    - The 10% sagebrush canopy cover threshold was utilized based on the 2015 ARMPA Key Habitat descriptions (MDSS 8,13,16,17,18). Key Habitat includes areas of generally intact sagebrush cover that provide sage-grouse habitat during some portion of the year and perennial grass areas can be reclassified as Key Habitat once sagebrush cover is at least 10%.
- **T6:** Perennial grass cover increases to 30% and annual grass cover decreases to roughly 20% across 80% of the pasture. Pastures: *Cottonwood Seeding, Lower Red Rock Flat and Northeast Sheep Mountain.*

Responses (R)
The responses listed below are intended to modify grazing management when thresholds have been met with respect to T5 and T6 or exceeded with respect to T1, T2 and T3. Application of one or more responses is expected to result in pastures/allotment continuing to meet, or make significant progress towards meeting, the Idaho Standards for Rangeland Health. If a response is determined to be appropriate but is not included in this Response Toolbox and the effects of the response are within the scope of the current NEPA analysis, additional NEPA and a new Decision would not be required. However, if the effects of the response are outside the scope of the current NEPA analysis, additional NEPA and a new decision may be required.

- **R1:** Livestock distribution would be shifted to another area of the pasture (e.g., turning troughs off/on, water hauling, placement of supplements, temporary electric fence, and or herding).
- **R2:** Livestock would be removed from the pasture for the remainder of the grazing season.
- **R3:** Livestock grazing management would be modified within the pasture the following year(s) to allow for deferment of the pasture.
- **R4:** Livestock grazing management would be modified the following year(s) to allow for rest of the pasture.
- **R5:** When sagebrush canopy cover reaches 10% (across the pasture/averaged across monitoring sites), additional AUMs will no longer be authorized in the pasture. Grazing management would revert to the permitted use. Pastures include *Lower Red Rock Flat Seeding, Cottonwood Seeding, Bridge Seeding, Upper Red Rock Flat, and South Chokecherry*
- **R6:** When perennial grass cover increases to 30% across 80% of the pasture additional AUMs would no longer be authorized in the pasture. Grazing management would revert to the permittee's permitted use. Pastures: *Cottonwood Seeding, Lower Red Rock Flat and Sheep Mountain.*

4.3.1 Effects to Vegetation and Soils from Threshold and Response Alternative

Under this alternative, AUMs would increase during September-February (fall/winter) in the pastures described above. Current grazing rotations and management flexibility including adaptive management are consistent with the Current Management Alternative. Differences in effects to vegetation and soils from current management would be higher utilization levels in these pastures. The increase in permitted AUMs would allow treatments to increase utilization to prescribed thresholds. However, responses would result in utilization remaining within the appropriate levels per vegetative community, thereby maintaining or improving conditions.

Use levels have been light across sagebrush recruitment pastures primarily due to wildfire and wildfire rehabilitation projects which have increased perennial grass production. Pre-fire vegetation conditions were a combination of dense juniper with reduced understory or sagebrush communities. Removal of dense juniper canopy and post-fire seeding treatments have increased forage availability. Another factor contributing to light utilization levels, particularly in the Bridge Seeding, Cottonwood Seeding and Chokecherry Pastures, includes a lack of available water sources decreasing livestock distribution across the pastures.

Average utilization over the last 13 years in sagebrush recruitment pastures is as follows; Lower Red Rock Flat Seeding (17%), Cottonwood Seeding (23%), Bridge Seeding (22%), Upper Red Rock Flat (22%), Parks Creek (17%), Kane Springs (32%), and Chokecherry (19%). Average utilization levels in pastures where cheatgrass is being targeted are Sheep Mountain (12%), Lower Red Rock Flat (18%), Cottonwood Seeding (23%) (2022 Jim Sage RHA and Evaluation Report, Appendix 1: Table 1, p.153). The increase in permitted AUMs would allow treatments to increase utilization to prescribed thresholds. However, Responses would result in utilization remaining within the appropriate levels per vegetative community.

Rangeland Health Standards for vegetation and soils are expected to be maintained under this alternative as described in the Current Management Alternative. Increasing livestock grazing in the fall to achieve prescribed utilization levels is anticipated to negligibly affect overall plant health across the pastures (Holechek et al., 2004). These utilization levels were developed with the current grazing management systems with the goal of maintaining plant health and vigor. Additionally, stocking levels are not expected to increase more than what is already occurring across the allotment where current livestock management is meeting ISRH Standard 1. However, the increased length of grazing within these pastures is expected to increase the amount of bare ground facilitating sagebrush recruitment. As a result, a minor long-term effect to soils due to the longer duration of use (hoof action and trailing) from those described in the Current Management Alternative would occur.

Sagebrush recruitment pastures currently contain native, seeded non-native species dominated by crested wheatgrass, Russian wildrye, and seeded native-like cultivars such as Snake River wheatgrass. Native pastures will be grazed up to 40% utilization. This utilization level combined with the grazing management system is expected maintain plant health. The Natural Resource Conservation Service (NRCS) Fact Sheets states that Snake River wheatgrass and bluebunch wheatgrass can withstand utilization rates of up to 60% in the fall after seed ripe (Ogle et al., 2012b; Ogle et al., 2010) and established stands of crested wheatgrass and Russian wildrye are very tolerant of grazing (Ogle et al., 2012a; Ogle et al., 2012c).

As described above, increases in grazing use in these areas would occur in the fall/winter seasons when these plants are dormant and utilization at this time of year would have the least impacts to plant health since the plants are photo-synthetically inactive (Holechek et al., 2004, p. 126) Depending on fall precipitation, the majority of fall livestock grazing consists of removing growth from the past growing season. Removal of dead leaf material and stems during dormancy has little direct effect on the plant (Trlica, 1992). Management Thresholds (utilization levels) would ensure adequate residual stubble would remain to protect the plants during the winter months.

This alternative would reduce perennial grass cover and litter and increase bare ground due to increased utilization levels. The reduction in perennial grass cover and litter at light (21-40%) to moderate use level (41-60%) is expected to maintain plant health and current resource conditions.

The increase in perennial grass utilization is expected to help improve sagebrush recruitment and canopy cover faster than under any of the other alternatives. The density of crested wheatgrass, Russian wildrye and Snake River bluebunch wheatgrass in sagebrush recruitment pastures likely inhibits sagebrush reestablishment (Gunnell et al., 2010), requiring a reduction in perennial grass cover and competition for sagebrush recruitment to occur. Natural reestablishment of big sagebrush into crested wheatgrass-dominated areas may occur (Jones et al., 2015) and be facilitated by grazing if a seed source is present. In these pastures, BLM is actively planting sagebrush to supplement extant stands of sagebrush. The increased grazing utilization prescribed in this alternative would likely lead to greater recruitment of sagebrush in crested wheatgrass-dominated areas, particularly where seed sources are naturally available or are augmented through seeding or planting. Davies et al. (2020), found that grazing can accelerate the recovery of sagebrush cover and increase sagebrush growth by reducing competing herbaceous vegetation. Utilization levels in the study on herbaceous vegetation ranged from 35-50%, which align with treatments prescribed in this alternative. Sagebrush reestablishment would be further bolstered in these pastures by the expected longer fire-return interval that would likely result from greater utilization (Baker, 2006).

Pastures where AUMs are proposed to be increased to address cheatgrass density are the Lower Red Rock Flat, portions of Sheep Mountain and portions of the Cottonwood Seeding. These pastures contain some native perennial bunchgrasses, primarily squirrel tail and Sandberg's bluegrass but overall, plant community composition in these pastures is currently not meeting Standard 4 primarily due to a lack of perennial bunchgrass and high levels of cheatgrass cover. These areas have crossed an ecological threshold and require some sort of mechanical or chemical treatment to improve the vegetative health of these sites.

Prescribed utilization in these pastures is up to 40% on native perennial grasses. This level of use is designed to maintain plant health and is consistent with utilization guidelines as described by Holechek et al. (2004). This utilization level combined with dormant season grazing is expected to retain the current populations of native perennial grasses.

This alternative is expected to reduce annual grass cover and excess litter accumulation in these pastures more so than under any of the other alternatives. When fall moisture occurs, this late fall grazing can target the fall germinating crop of annual grasses, prior to winter dormancy, thus reducing the vigor of annual grasses the following spring (Mosley & Roselle, 2006). The reduction of cheatgrass cover may help reduce competition with existing perennial grasses but not to a point where the site is expected to naturally recover to a healthy vegetative state. Perryman et al. (2020) indicated that after several years of fall-grazing treatments, the removal of fall cattle grazing for only 1 year resulted in significant increases in cheatgrass seed bank size and the re-application of fall cattle grazing can quickly decrease cheatgrass seed bank potential. The reduction of cheatgrass accumulation would help facilitate future vegetation treatments that are planned to address the current condition of these sites (USDI BLM, 2012). The effects of future treatments will be discussed in more detail in the Cumulative Effects, Section 4.6.

In general, fire severity and spread under this alternative is expected to be the same as the Current Management Alternative for pastures outside of the treatment pastures. Some differences in effects would occur in the pastures identified for increased AUMs relative to all other alternatives. Increasing utilization levels in the fall would result in less residual herbaceous vegetation the following spring which reduces fuel loading. Indirectly, it is expected that a reduction of cheatgrass in this alternative would help reduce the rate of wildfire spread and intensity. Moderate pre-fire herbivory by cattle increased the resistance of the plant community to postfire invasion and dominance by cheatgrass (Davies et al., 2016) and removing cheatgrass through increased grazing can temporarily reduce fine fuel abundance and continuity (Diamond et al., 2009), which can reduce fire spread and severity (Scott & Burgan, 2005). More specifically, fall and winter grazing of annual grass-dominated areas can reduce fine fuel and seedbank loads between years (Schmelzer et al., 2014); additionally, livestock preferred cheatgrass over remaining perennial bunchgrasses during this period (Strand et al., 2014; Foster et al., 2015).

4.3.2 Effects to Riparian Resources from Threshold and Response Alternative

The Threshold and Response Alternative would affect two pastures with riparian areas in the North Use Area of the Jim Sage Allotment: Parks Creek and Kane Springs. To achieve the proposed upland vegetation utilization levels, grazing would occur for a longer period of time within the pastures. The two upper reaches of Kane Creek would have approximately seven more days of livestock use. Under the deferred rotation grazing management system, the additional days of livestock grazing would occur once every three years. The alternative would also affect all the reaches within the Parks Creek riparian system, once every three years with approximately 40 more days of livestock use in the entire pasture. This alternative would not affect any of the other riparian areas in the allotment; these areas would remain managed as described under the Current Management Alternative and continue to meet Standards 2 and 3.

An additional seven days of use, once every three years, in the Kane Springs Pasture is expected to have negligible effects on the riparian health; Standards 2 and 3 would continue to be met. However, an additional 40 days of grazing in the Parks Creek Pasture would result in increased trampling and browsing within the riparian areas, once every three years. This could result in an eventual downward trend and riparian condition with the reduction of vegetative cover and disturbance to the stream channel. Over time, this may lead to not meeting Rangeland Health Standards 2 and 3 in the Parks Creek Pasture, but the Jim Sage Allotment is expected to continue to meet Standards 2 and 3.

4.3.3 Effects to Wildlife from Threshold and Response Alternative

Sagebrush steppe

General effects of grazing management on sage-grouse habitat under the Threshold and Response Alternative are similar to the effects described above in the Current Management, except for an increase of fall/winter AUMs. This would result in increased utilization over the 13-year average use described above in the Current Management but would remain within the authorized utilization levels (Threshold and Response Objectives, Section 4.3).

Pastures with treatments prescribed to facilitate sagebrush recruitment are currently not meeting Standard 8 due to wildfire. Sage-grouse may occupy these pastures occasionally throughout the season, but current conditions do not support the necessary seasonal habitat requirements for sage-grouse. Generally, extended utilization into the fall/winter is not expected to affect forage for wintering sage-grouse because sage-grouse become dependent on sagebrush for their dietary needs during these months. In addition, fall/winter season grazing would have no effect on other sagebrush obligate birds because grazing would occur outside of the nesting season. Grazing later into the fall is expected to reduce litter accumulation and potentially increase the amount of bare ground available for sagebrush recruitment. Moderate livestock grazing in the fall has shown to be compatible with maintenance in perennial grasses and forbs (Bork et al., 1998). This is due to these plants being dormant during the fall months and the majority of fall grazing consists of removing growth from the past growing season. The described utilization levels would ensure residual vegetation cover in the fall and winter for concealment cover from predators. Fall grazing may also enhance nesting and early brood-rearing habitat because fall grazing can remove standing vegetation and make forbs more accessible (Fulgham et al., 1982). The residual perennial grass cover available in the spring in these pastures would be less compared to the other alternatives, but the increase in perennial grass utilization is expected to help improve sagebrush recruitment and canopy cover faster than under any of the other alternatives. However, a negligible short-term impact to nesting sage-grouse in these pastures is expected because these pastures are currently unsuitable for sage-grouse nesting and early brood-rearing due to the lack of sagebrush. Furthermore, implementing thresholds and responses to meet habitat objectives is expected to maintain and improve habitat conditions in sagebrush communities, along with facilitating restoration until the 10% sagebrush cover threshold is reached.

This alternative was also developed to target dominant annual invasive understory conditions in the Lower Red Rock Flat Pasture and the Sheep Mountain Pastures in the East Use Area and portions of the Cottonwood Seeding Pasture in the South Use Area. Currently, the percentages of cheatgrass foliar cover in these pastures (43%-52%) is limiting the ability for these sites to meet Standard 8 because of the lack of native perennial grasses and forbs within these sites. A study by Lockyer et al. (2015) found that female sage-grouse avoided nesting in areas with increased cheatgrass abundance and that cheatgrass was the single greatest micro habitat feature distinguishing nests from random sites. As described in the Affected Environment, these sites are providing marginal to suitable sagebrush cover for wintering sage-grouse. By utilizing the Threshold and Responses parameters these effects are not likely to measurably affect sage-grouse during the fall/winter timeframe and long-term negative effects to perennial vegetation is anticipated to be mitigated.

Protection and maintenance of current intact sagebrush overstory should be considered a priority because of the long process of native shrub habitats returning to pre-wildfire conditions (Arkle et al., 2014). Also, managing for the decreased spread of cheatgrass is expected to protect adjacent areas of sage-grouse nesting habitat with higher suitability.

The continued ecological conditions within these pastures could perpetuate or increase the chances of a high-intensity wildfire. Indirectly, fall/winter grazing of cheatgrass litter and fine fuel is expected to decrease potential fire spread the following year. A study in Oregon demonstrated that fall grazing treatments reduced the probability of fire ignition and initial spread through a reduction in fine fuel

biomass, cover, and height, and increased fuel moisture (Davies et al., 2017). The loss of sagebrush within these pastures would substantially decrease the potential for these sites to reach nesting and early brood-rearing and winter habitat suitability well into the future.

It is expected that the implementation of Thresholds and Responses would ensure that long-term negative effects of the utilization of herbaceous native species and seeded species would not occur. Sage-grouse habitat currently meeting Standard 8 is expected to continue to meet the standard. Recently burned and cheatgrass-dominated areas not meeting Standard 8 are expected to make some progress towards meeting the standard.

Grassland Species

The effects of dormant season livestock grazing on perennial grass species is described above. In general, decreases in fall grass cover may affect habitat use or nest site selection for some songbirds the following spring. However, the level at which cover reductions affect songbirds is not completely understood and while some species are negatively affected, others may be positively affected (Saab et al., 1995). Effects of increases in utilization is expected to vary between pastures depending on the difference between use levels, as well as between years due to variable grazing systems in these pastures. However, the continuation of deferred rotation is expected to ensure portions of the populations remain undisturbed at any given time. Whether fall AUMs increase, or permittees use more of their available AUMs under their current permit, it is expected that use levels would not exceed utilization guidelines (40% to 60%, depending upon vegetation community) so the resulting habitat conditions are expected to retain biodiversity, retain adequate cover, and retain adequate forage. Thus, grassland habitat is expected to remain suitable for grassland species and continue to meet Standard 8. In pastures where sagebrush recruitment is occurring, there may be a minor long-term effect for grassland species' habitat as sagebrush cover increases. The increase in sagebrush cover would be expected to make habitat less suitable for these species.

Riparian Habitat

The different effects of livestock grazing to riparian habitats compared to current management under the Threshold and Response Alternative would be limited to reaches within the Kane Creek and Parks Creek riparian areas.

As described within the Riparian section (4.3.2), the seven additional days of use once every three years within Kane Springs riparian system is expected to have little to no long-term effect to riparian vegetation species. The current vegetation conditions combined with the grazing management system ensures that potential nesting substrate for riparian nesting songbirds remains available. Stream conditions are expected to continue to meet PFC. This results in minor short-term and negligible long-term effects to the Kane Creek riparian nesting habitat.

The livestock grazing effects to riparian nesting songbirds within the Park Creek reaches differs from the effects described for Kane Creek. The additional 40 days in the fall within the Parks Creek riparian system is expected to measurably reduce herbaceous and woody vegetation along the streambanks. The removal of woody vegetation may affect riparian nesting songbirds during the following spring months through a reduction of nesting substrate. The effects to Parks Creek riparian system are expected to occur mostly within the 0.35-mile section of the lower main fork (2022 Jim Sage RHA and Evaluation Report, p. 79). This is due the steep topography adjacent to the polygon which allows for livestock loafing within the riparian area. These effects are expected to occur once every three years under the current grazing management system.

Minor impacts of livestock grazing are expected to occur within other reaches of the Parks Creek system; however, these effects are lesser than the lower main fork because the surrounding upland habitat around these systems allows for the dispersion of livestock. The effects of the increased fall AUMs within the

Threshold and Response Alternative are expected to result in moderate short-long term effects to riparian nesting songbird habitat within the lower main fork and minor short-long term effects to other reaches within the rest of the system. Although there might be moderate short-term adverse effects to reaches within portions of the Parks Creek system from increased fall AUMs under this alternative, the long-term duration of the adverse effects are minor and Standard 8 will continue to be met.

4.3.4 Effects to Socioeconomics from Threshold and Response Alternative

The Threshold and Response Alternative is similar to the effects of the Permittee Proposed Action and the Current Management Alternative except for a potential economic benefit of additional AUMs. This is because permittees would be allowed to utilize the allotment later into the season which would reduce the need to purchase hay.

4.4 No Grazing Alternative

The No Grazing Alternative would preclude livestock grazing under the Jim Sage Allotment grazing permits for 10 years, outside of existing trailing corridors, until the next permit renewal. Current range infrastructure would continue to exist within the Jim Sage allotment, however current pipelines would not be maintained, and troughs would be shut off.

4.4.1 Effects to Vegetation from the No Grazing Alternative

Under the No Grazing Alternative vegetation and soil conditions would be maintained and continue to meet rangeland health Standards 1, 4, and 5. The areas meeting standards include all the seeded vegetation in the allotment as well as the majority (over 80%) of the native vegetation and soils. Native vegetation in the lower elevation areas in portions of the East and South Use Areas would continue to not meet Standard 4 in the absence of grazing because these areas have crossed an ecological threshold.

Residual foliar and litter cover under the No Grazing Alternative would be expected to be the highest among all alternatives across the allotment, but the overall health of the current vegetation is expected to remain stable. No studies have compared a variety of different grazing management scenarios to long-term rest; it can be assumed that the outcome of long-term rest would have vastly different effects based upon what grazing scenario is being replaced. Effects of modern grazing systems and long-term rest would be much more similar than either strategy compared to repeated heavy use during the critical growing period as occurred historically (Davies et al., 2014, p. 22). The sage-grouse and grazing study that has been conducted on this allotment since 2016 has allowed for some comparison in vegetative cover between grazed and ungrazed plots. Table 19 displays cover data and forb abundance from three grazed plots and three plots that had not been grazed by livestock for six years. The data does not depict significant differences in cover or forb availability between plots.

Table 19. Six-year averages of grazed and ungrazed M-AIM plots on Jim Sage Allotment.

	Annual foliar grass cover	Perennial foliar grass cover	Number of Preferred forbs
Grazed by Livestock	13%	25%	13
Not Grazed by Livestock (six years)	15%	20%	11
Averages of three grazed and three ungrazed Modified AIM plots within the same ecological site description.			

The Jim Sage Allotment contains high amounts of vegetative foliar cover across the landscape. In the absence of grazing, fine fuel accumulation and fuel continuity would increase because no vegetation would be removed by livestock. These effects could increase the chance that a wildfire, if it occurs, would be larger and higher in severity due to the increased amount and continuity of ungrazed fuel (Figure 17). Wildfire usually results in a loss of sagebrush, an increase in rabbitbrush and, to some degree, an increase in cheatgrass depending on ecological conditions. Comparing areas that had long-term grazing excluded to

adjacent areas which were moderately grazed, Davies et al. (2010) concluded that livestock grazing in the sagebrush steppe reduces fine fuels, resulting in both reduced wildfire risk and potential severity.

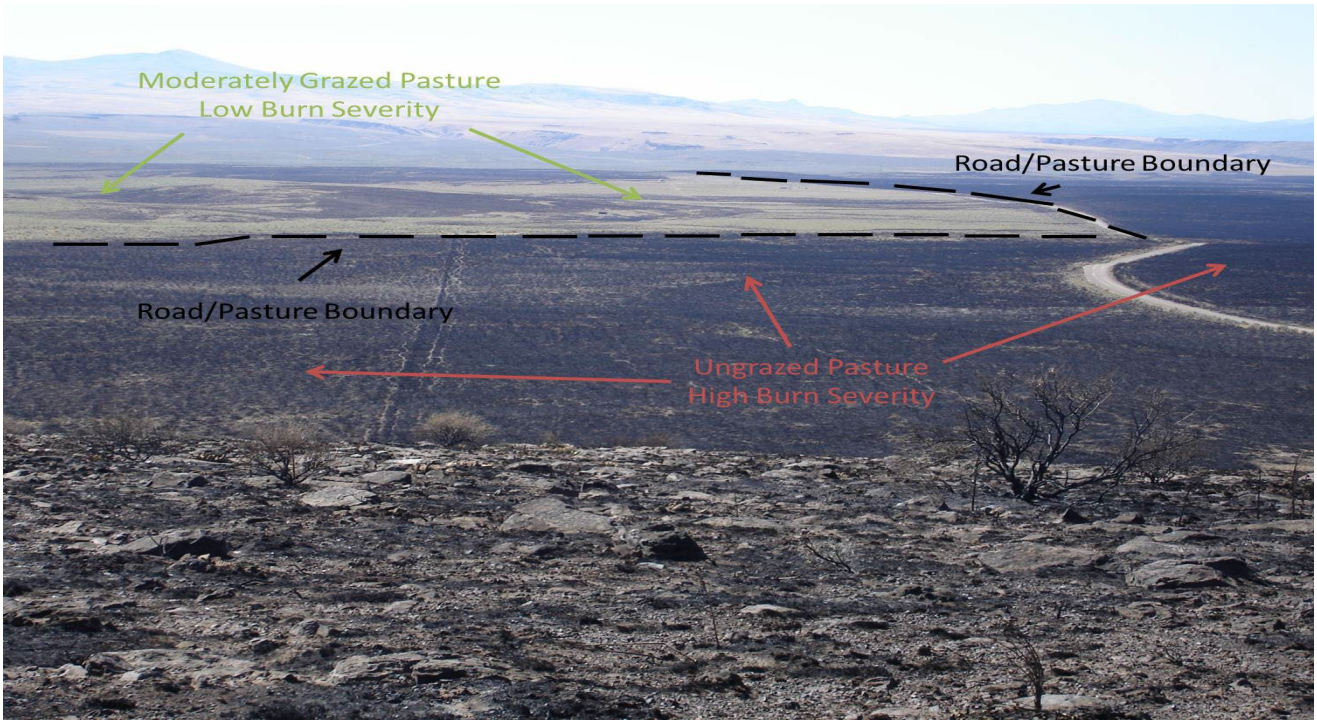

Figure 17. Mule Creek Fire (2010). Effects of livestock grazing on fire spread.

The lack of grazing would likely suppress recruitment of sagebrush seedlings more so than any of the other alternatives, further slowing sagebrush recovery and establishment. Nafus et al. (2016) concluded that greater natural recovery of sagebrush occurred in long-term grazed crested wheatgrass stands as compared to crested wheatgrass stands that were not grazed, probably because grazing reduced the competitiveness of crested wheatgrass (Nafus et al., 2016). Crested wheatgrass is highly competitive with emergent sagebrush seedlings (Gunnell et al., 2010). Since seeded grasses would not be grazed, they would have a competitive advantage over emerging sagebrush seedlings. Additionally, since livestock grazing also reduces litter accumulation and creates areas of bare ground, seedling emergence would also be limited. As such, sagebrush recruitment would likely be the slowest under this alternative than any other alternative being analyzed in this assessment.

Current range infrastructure would continue to exist within the allotment; however, fences and pipelines would not be maintained, and troughs would not have any available water. Without livestock using the water troughs, vegetation cover near the trough piosphere would increase in during the ten-year span of the canceled grazing permits. Vegetation in other high concentration areas such as livestock trails, around gates, and salting locations would likely also show an increase in vegetative cover in the absence of grazing.

4.4.2 Effects to Riparian Resources from the No Grazing Alternative

Under the No Grazing Alternative, riparian conditions on all the reaches of creeks in the Jim Sage Allotment would remain in PFC. There would be no periodic removal of herbaceous vegetation and browsing by livestock on woody species would not occur.

4.4.3 Effects to Wildlife from the No Grazing Alternative

Sagebrush Steppe

Under the No Grazing alternative, livestock would not have any direct effects on sagebrush steppe species such as trampling or the removal of herbaceous cover. Over the next 10-year period, the vegetative communities currently meeting Standard 8 would remain in a similar condition with similar diversity to the current condition. Changes which may occur would be slight and uncertain since natural disturbances such as wildfire would continue to occur.

Vegetation conditions within recently burned habitat would be expected to continue natural post-fire recovery trend. Perennial grass cover within the recently burned pastures is currently meeting the greater than 10% suitability perennial grass cover threshold for sage-grouse. Sagebrush recruitment may occur naturally, but there are limitations to how far sagebrush seed can travel and revegetate a site. Due to this, sagebrush cover is unlikely to naturally recover and meet the 10% threshold for Key Habitat within the next ten years. Therefore, sage-grouse habitat within the recently burned pastures is expected to remain unsuitable for the long-term and continue to not meet Standard 8.

Under the No Grazing Alternative cheatgrass would continue to dominate the understory within the Cottonwood Seeding, east portion of Sheep Mountain, and Lower Red Rock Flat Pastures providing unsuitable sage-grouse habitat. Indirectly, litter accumulation and cover would increase fuel loading. Cheatgrass dominated areas are at an increased risk for intense wildfires and the subsequent increased potential for fragmentation and future spread of invasive annual grasses (Balch et al., 2013). Sagebrush availability within these pastures would continue to provide sage-grouse long-term marginal to suitable winter habitat.

Existing range infrastructure would not be maintained, but maintenance of sage-grouse fence diverters would likely continue. Impacts of current fences (predator perch sites, injury, and mortality from collision) would remain the same as the Current Management Alternative because the amount of fence would not change.

Grasslands

This alternative would provide the least available short grass and the tallest grass habitat availability due to lack of livestock use. Areas with reduced sagebrush cover would continue to provide suitable nesting habitat for long-billed curlews. Burrowing owls would nest in habitat containing perennial grasses, cheatgrass areas, and sagebrush habitat where badger holes are present. Areas previously seeded to taller grasses such as crested wheatgrass would provide extensive areas of tall grass nesting habitat for short-eared owls and grasshopper sparrows. Accumulated residual cheatgrass or other herbaceous vegetation that forms a litter layer (mat) on the soil surface would reduce bare ground for foraging grasshopper sparrows. The absence of grazing grassland habitat would have minor long-term benefit to species preferring taller grasses and a minor long-term effect species preferring shorter grasses.

Under the No Grazing Alternative, the current temporary fence would be removed since there would be no need to separate the recently seeded habitat from the native habitat. The removal of 1.5 miles of temporary fence is not expected to measurably affect sage-grouse movements withing the Lower Red Rock Flat Pasture because sage-grouse use within the pasture is limited and there are no known leks within 1.2 miles. The effects of existing range infrastructure and proposed fencing on grassland species are the same as described above. Existing range infrastructure would not be maintained, but maintenance of fence diverters would continue. Impacts of current permanent fences (predator perch sites, injury, and mortality from collision) would remain the same as the Current Management Alternative because the amount of permanent fence would not change under this alternative. Due to the absence of natural water sources within grassland habitat, grassland species would have reduced access to the available water from current trough locations causing a minor long-term effect. Furthermore, the discontinued use of the current trough system is not

expected to expand natural water sources in grassland habitat.

Riparian Species

Because livestock grazing would not be authorized, the No Grazing Alternative would provide the most vegetative cover for special status and other wildlife species that utilize riparian and wetland habitats. Increased vegetation and lack of livestock trampling would continue to stabilize wetlands and streambanks and provide more hiding cover, as well has habitat that supports insect prey for special status species. Special status species colliding with exclosure fences would be the same as the Current Management Alternative because these fences would still persist on the landscape.

Under the No Grazing Alternative, Use Areas containing riparian and wetland habitats would continue to meet Standard 8. Overall, the No Grazing Alternative would result in minor beneficial short-and long-term effects to special status species and other wildlife species that rely on riparian and wetland habitats.

4.4.4 Effects to Socioeconomics from No Grazing Alternative

Under the No Grazing Alternative, the grazing permits for the Jim Sage Allotment would not be issued for 10 years. Livestock grazing could continue on State and/or private lands within the allotment boundary if the lessee or private landowner determines that it would be economically and logistically feasible.

Elimination of livestock grazing on the Jim Sage Allotment would reduce operator revenue and regional economic activity. This would likely have a substantial socioeconomic impact on the permittees, the people they employ, the businesses where the operators purchase supplies, and the communities that are supported by all of these livestock operation activities. To replace their use on the Jim Sage Allotment, permittees would have to search for opportunities to graze their livestock in other areas, paying additional transportation fees and possibly much higher grazing fees; or determine the economic viability of continuing their livestock operations. The calculations for the costs of hay and leasing private lands have been completed using the same formula used in the Current Management Alternative (Section 4.1.4).

Hay Costs - This equates to $584,820 to purchase enough hay to cover the loss of permitted AUMs, spread amongst individual permittees for each grazing season.

(Actual Use – 4,545 AUMs X 800 lbs.) / 2,000 lbs. = 2,052 tons * $285/ton (current market hay value) = $518,000

(Permitted Use - 5,131 AUMs X 800 lbs.) / 2,000 lbs. = 2,052 tons * $285/ton (current market hay value) = $584,820

Leasing Private lands - This equates to $84,000 for actual use AUMs and $95,000 for permitted AUMs on this allotment. The margin of profit would likely be reduced causing possible economic hardship. If alternative forage was not available, operators would be forced to reduce or eliminate their livestock operations causing economic hardship to individual operators and the local economy.

Elimination of grazing on BLM-managed lands would result in many livestock operations no longer being economically viable, which could lead to closures and layoffs of operation employees. Reduced grazing would result in reduced demand for employing workers from minority populations, which could impact these individuals either through reduced employment opportunities or direct layoffs. Livestock-related employment in the analysis area would be expected to decrease. Overall, this alternative would have moderate long-term negative impact to these small family ranching operations.

4.5 Spring AUM Reduction Alternative

This alternative reduces permitted spring AUMs from 5,131 to 2,807, resulting in a 45% overall AUMs reduction from the current permit and from 4,545 to 2,807 a 38% reduction from actual use. Grazing management (flexibility, and adaptive management) would still apply as described in the Current Management Alternative. Grazing would no longer be permitted from May 1 to June 30 on the Jim Sage

Allotment within the sage-grouse Spring SUA (Appendix A: Figure 5). Three permits occurring in the Keg/Cliff and Jim Sage/Womack pastures of the West Use Area and the entire Chokecherry Use Area have AUMs permitted only during May 1 to June 30 in this area, therefore these permits would not be used for 10 years under this alternative.

4.5.1 Effects to Vegetation and Soils from Spring AUM Reduction Alternative

Overall, it is anticipated that soils and watershed conditions across the allotment would continue to meet Standard 1 of ISRH. It is also expected that vegetative Standards 4 and 5 would remain consistent with the Current Management Alternative.

The Jones Hollow, Quaking Asp and Black Sands Pastures within the West Use Area are outside of the sage-grouse Spring SUA; therefore, the impacts would be consistent with the Current Management and Permittee Proposed Action Alternatives.

The absence of livestock grazing within the sage-grouse Spring SUA to vegetation and soils in the Keg/Cliff and Jim Sage/Womack pastures of the West Use Area and the entire Chokecherry Use Area would be the same as the No Grazing alternative. The areas have the potential to be used under the adaptive management strategy after June 30 and the effects of livestock grazing would be consistent with the Current Management and Permittee Proposed Actions.

The remaining areas of the allotment would not be grazed from May 1 to June 30, but grazing would still occur after June 30. Currently, all the May use, and the majority of the June use occurs in the lower elevation areas of the allotment. Season of use for livestock currently are May 1 except for one permittee who grazes in the Sheep Mountain Pasture (East Use Area) beginning April 1.

This alternative would result in an overall reduction of livestock grazing from the Current Management Alternative. Spring growing season use would no longer occur except for the East Use Area where livestock would be able to graze from April 1 to April 30. The reduction of use would lead to increased rest of pastures across the Use Areas. For example, the South Use Area is currently managed under a four-pasture deferred grazing system with grazing beginning May 1 each year. A two-month reduction of use May 1 to June 30, would result in two pastures receiving complete rest. Additional rest and no growing season use would lead to increased cover and reduced bare ground across the area. Plant vigor would improve in and around high livestock concentration areas closer to troughs and in some of the smaller, higher stocked seeded pastures of the Womack and Cassia Creek Use Areas.

Indirectly, effects of increased fuel loading and risk of fire spread would be more similar to the No Grazing Alternative than to the Current Management Alternative due to an increase in fuel loading, particularly in the drier lower elevation areas of the allotment where all the large wildfires have started. Currently, most of the May 1 to June 30 use occurs in these lower elevation areas.

Sagebrush recovery in recently burned areas would be more similar to the No Grazing alternative than any of the other alternatives. Since grazing would occur after June 30 in recently burned areas, a slight increase in sagebrush recovery is expected as compared to the No Grazing Alternative.

4.5.2 Effects to Riparian Resources from Spring AUM Reduction Alternative

Under this alternative, grazing permits that have spring AUMs (within the time of May 1 to June 30) would be eliminated in all Use Areas where sage-grouse Spring SUAs occur. Four permits in the West Use Area that do not have sage-grouse Spring SUAs would not be changed. The effects to riparian areas associated with the four permits in the West Use Area, would remain the same as described in the Current Management Alternative and Standards would continue to be met. Riparian areas currently excluded from livestock use (Chokecherry, Lower Kane, and Red Rock) would also be as described in the Current Management Alternative.

The Jim Sage/Womack Pasture is currently only utilized in the spring but may be utilized, under Adaptive

Management, at other times of the year. Adaptive management provides for additional indicators and triggers to ensure riparian condition is maintained. However, this pasture would receive less use overall and riparian areas would continue to improve and maintain Standards.

The remainder of riparian areas within the Jim Sage Allotment that also occur in the Spring SUA would have shorter time periods in which grazing is occurring. Reduced grazing could create more opportunity for mesic shrubs, grasses, and forbs to expand and prevent some disturbance to streambanks from cattle hoof traffic. Trend at these locations is expected to continue upward and remain at PFC. Effects of livestock grazing within the riparian systems after June 30 is expected to be similar to the effects described within the Current Management Alternative.

4.5.3 Effects to Wildlife from Spring AUM Reduction Alternative

Sagebrush Steppe

Under the Spring AUM Reduction Alternative grazing would be delayed until July 1, within sage-grouse Spring SUA. Spring grazing would still occur outside of sage-grouse Spring SUA (West Use Area) and would be managed under the Current Management. Under this Alternative reduced spring grazing would have the same effect to nesting sagebrush steppe species (i.e., more herbaceous cover and reduced disturbance potential) as described under the No Grazing Alternative because livestock would not be present until July 1. Effects of grazing after July 1 on sagebrush steppe species is similar to the effects described in the Current Management and Permittee Proposed Action.

One permit would still be issued prior to the sage-grouse Spring SUA nesting and early brood-rearing season. This permit runs from April 1 to April 30 which is before the May 1 nesting and early brood-rearing timeframe. This alternative is not expected to offer sage-grouse more protection during nest selection than the Current Management Alternative because 80% of the Spring SUA is still available for nest selection.

As described in the current management alternative, deferred grazing occurs each year to allow for roughly half of the Spring SUA to be rested during the nesting season. Under this alternative the remaining 50% would not be grazed. Although vegetation conditions within the Current Management Alternative have shown that perennial grass cover is meeting ARMPA Habitat Objectives, available perennial grass cover for nesting cover would be higher in some areas under this alternative compared to the Current Management Alternative. Although increased cover may be beneficial, preliminary findings from the U of I grazing study showed nesting success to be similar in grazed and un-grazed pastures and Smith et al. (2018) found that management interventions to delay spring turnout until after the nesting season appeared unlikely to increase nest success.

Effects of this Alternative would also be similar to Current Management in regard to range infrastructure, as fences and water sources would remain the same. Native sagebrush steppe habitat currently meeting Standard 8 would continue meeting Standard 8, similar to the Current Management Alternative. Pastures where sagebrush cover is reduced may trend towards meeting standards however, significant progress to meet Standard 8 may not occur due to slow change in areas where seed sources for shrubs were depleted due to wildfire. Sagebrush steppe habitats not meeting Standard 8 within the cheatgrass dominated areas are unlikely to appreciably improve over the 10-year permit and would be expected to continue to not meet Standard 8. The current distribution of range infrastructure is expected to continue to result in a minor short-long term effect to sagebrush species.

Grasslands

Impacts of the Spring AUM Reduction Alternative would be similar to the No Grazing Alternative because grazing would not occur during the nesting season. Once July on-dates occur livestock grazing effects on vegetation would be similar to the effects described under the Current Management Alternative. The reduction of spring AUMs would leave grasses ungrazed thereby increasing grass

heights resulting in less areas of shorter grasses, favoring nesting short-eared owls and grasshopper sparrows. Shorter grass heights are favored by long-billed curlew and burrowing owl and would decrease due to the absence of livestock grazing in the spring and around trough locations. The effects of range infrastructure would be the same as Current Management Alternative because the number and types of infrastructure would not change resulting in continued minor long-term effects.

Seeded grassland habitats are currently meeting Standard 8 and would continue to meet Standard 8 for grassland species under this alternative. This is due to maintenance of the mosaic of short and tall grass habitats. The overall impacts of the Spring AUM Reduction Alternative would be negligible in the short- and long-term.

Riparian Species

General livestock grazing effects to nesting riparian species would be similar to the effects described under the No Grazing Alternative because grazing would not occur during the bulk of the riparian songbird nesting season. Livestock grazing after July 1 would continue to have access to riparian and wetland habitats and are expected to be managed as described under the Current Management Alternative, which would continue to meet PFC. Special status species potentially colliding with exclosure fences would be the same as for Current Management as there would be no change in the location of these fences. The overall impacts of the Spring AUM Reduction Alternative to riparian species would be minor in the short- and long-term.

4.5.4 Effects to Socioeconomics from Spring AUM Reduction Alternative

The effects to socioeconomics from the Spring AUM Reduction Alternative vary by operator; three permits authorizing spring grazing would be eliminated (421 AUMs), eleven permits would be reduced (1,903 AUMs), and four permits within the West Use Area would be the same as the Current Management Alternative. The calculations for the costs of hay and leasing private lands use the same formula used in the Current Management Alternative (Section 4.1.4).

Three permits eliminated within the No Spring Grazing Alternative

- **Hay Costs:** (421 AUMs X 800 lbs.) / 2,000 lbs. = 169 tons * $285/ton (current market hay value) = $48,165 annually, spread across three permittees
- **Leasing Private lands: $**7,789 annually, spread across three permittees

11 other permits incur increase costs but at a reduced level to the No Grazing Alternative.

- **Hay Costs:** (1,903 AUMs X 800 lbs.) / 2,000 lbs. = 761 tons * $285/ton (current market hay value) = $216,942 annually, spread across 11 permittees
- **Leasing Private lands: $**35,205 annually, spread across 11 permittees

The reduction of 2,324 AUMs on BLM-managed lands would negatively affect the permittees operations. Permittees would need to determine the economically viability of continuing operations with additional costs associated with purchasing additional hay or leasing private lands to account for the loss of public land AUMs. This alternative would have detrimental, long-term impacts to three livestock permittees, and moderate negative, long-term impacts to 11 livestock permittees and four livestock permittees would not be affected.

4.6 Cumulative Effects

Present and reasonably foreseeable effects within the Effects Analysis Area (EAA) to vegetation, soils, riparian, and wildlife (sagebrush obligates/grassland species & riparian species) are summarized in Tables 20, 21 and 23. Actions outside the EAA boundaries would have little effect on vegetation resources and sage-grouse. Therefore, the effects of this EA would describe the effects for present and future actions.

4.6.1 Vegetation (Upland and Riparian) and Soils

The EAA for vegetation, including riparian areas is limited to the boundary of the Jim Sage Allotment, roughly 81,800 acres consisting of public, private, and state lands. This analysis area was chosen because plants, rooted in soil, are not transient over long distances, except for wind-distributed seeds and there are no outside activities affecting vegetation or riparian areas on Jim Sage Allotment. The scope of time is present day and ten years into the future. This timeframe was chosen because the Affected Environment accounts for past and present activities within the Jim Sage Allotment and the next ten years would be the term of the new grazing permits. Reasonably foreseeable actions that could affect vegetation and riparian areas include noxious weed control; gravel pits; geothermal; livestock grazing on private lands, wildfire, and fire suppression/rehabilitation activities; herbicide and drill seedings; and juniper treatments (Table 20).

Table 20. Reasonably Foreseeable Actions Affecting Vegetation, Soils and Riparian Areas

Actions	Affects Vegetation/ Soils	Affects riparian areas	Reasonably Foreseeable Actions
Livestock grazing on private lands	Yes	Yes	Grazing is expected to continue on private lands.
Noxious Weed Control	Yes	Yes	Noxious weeds would continue to be treated when identified within the allotment
Gravel Pits	Yes	No	A 10-acre expansion of an existing gravel pit on the east side of the allotment has been authorized.
Geothermal	Yes	No	There are no plans to develop in the future. Reclamation and closing of the drill pads are foreseeable actions.
Wildfires and wildfire suppression/rehabilitation	Yes	Yes	Wildfires are expected to continue to occur, although size and intensity is unknown.
Herbicide and Drill Seeding	Yes	No	Future herbicide and drill seeding treatments are expected to occur within the Lower Red Rock Flat, Northeast portion of Sheep Mountain, and Cottonwood Seeding Pastures. Future, herbicide and drill seeding treatments may occur on State and Private lands.
Juniper Treatments	Yes	Yes	**Vegetation/soils:** Maintenance of existing projects on BLM, State, and Private lands is expected to continue. New projects include approximately 3,000 acres of lop and scatter, chaining, and mastication on BLM. **Riparian areas:** Maintenance of previous projects is expected to continue.

Livestock grazing on private lands with the allotment -Portions of the riparian areas on Kane, Parks, and North and South Cottonwood Creeks and adjacent uplands occur on private lands. Private lands are managed similar to BLM livestock management and effects to riparian areas and upland vegetation from livestock are similar to those described on BLM. These effects do not add to the direct or indirect effects on public lands.

Noxious weed control - Noxious weeds are being treated annually by BLM and Cassia County. Therefore, noxious weeds would not measurably contribute to the overall effects to vegetation in the EEA. Monitoring has shown weed treatments to be successful and noxious weeds are not increasing on the allotment.

Gravel Pits –It is reasonably foreseeable that a 10-acre expansion to the existing pit would occur since BLM has received a proposal from the operator. The vegetation in the 30-acre pit was removed and since it

is still an active pit vegetation has not been reclaimed. The expansion of the pit would remove an additional 10 acres of vegetation however, the effect of these acres contributes to less than 0.0005% to the overall allotment and therefore a minor long-term affect to vegetation would occur.

Existing utility ROWs- Effects of maintenance is the continued removal of vegetation around utility poles/lines. This disturbance would be limited to specific acreage within the utility ROWs. These activities are generally small and widely dispersed across the project area and are not expected to have any measurable cumulative effect on vegetation. Maintenance to existing ROWs may result in short-term localized impacts, but in the long term would be negligible additional effect.

Roads - Improved roads with the allotment are maintained and receive use by the public and livestock permittees on a regular basis. Maintenance may include periodic grading, application of gravel, and cleaning vegetation from the road profile, including ditches and backslopes. Maintenance to existing roads may result in short-term localized impacts, but in the long term would be a negligible additional effect.

For riparian areas, continued maintenance to existing roads could result in a short-term increase in sedimentation into stream systems. The rate as such is expected to continue the same such that no additional impacts are anticipated. There is likely a small increment of sediment entering the stream systems from road runoff and crossings however, no significant sources are currently known.

Livestock trailing – Ongoing livestock trailing, on five trailing corridors occurs in the analysis area. The effects to vegetation are minimized because most of these trailing events occur on transportation routes where there is minimal vegetation and because they are less than one day in duration. The ongoing trailing activities have occurred for decades and have not resulted in any known long-lasting effects to vegetation. Therefore, this effect is not expected to have any measurable additive effect to the effects of the alternatives.

Wildfires and wildfire suppression/rehabilitation - Wildfires are expected to continue to occur which would increase the potential for the establishment of invasive annuals and remove existing vegetation. Suppression activities may result in short-term impacts to vegetation from fire line activities. Emergency Stabilization and Burned Area Restoration activities are expected to reduce the effects of wildfire on vegetation by creating a plant community more resistant to invasion by noxious weeds and invasive annuals and more resilient to the effects of future wildfires. Most of the rehabilitation efforts consisted of drill or aerial seeding native/native-like vegetation.

Depending on where wildfires occur and how successful vegetation restoration efforts are would determine the overall effects to vegetation.

For riparian areas, wildfires are expected to cause moderate and short-term reduction in cover and increased sedimentation. However, in the long term, the effect would be negligible because riparian areas recover quickly as evidenced by recent fires on the Jim Sage Allotment.

Herbicide and Drill Seeding - Additional effects to vegetation would occur from chemical and mechanical vegetation treatments implemented through the BLM Twin Falls District Fuels program (USDI BLM, 2012). The goals for these vegetation treatments are to suppress cheatgrass and establish resilient perennial vegetation. Vegetation treatments by the Fuels program would improve current vegetation conditions were implemented.

Chemical herbicides would target annual grasses. Some perennial vegetation could be killed or have reduced vigor temporarily. Depending on the application type (e.g., aerial or ground) chemical treatments would be restricted by required application buffers from water and private lands. Chemical treatments may be very effective but are expensive. Since treatments target areas dominated by invasive annuals the effects to perennial vegetation are expected to be negligible. Overall, these treatments would have a positive effect by increasing desirable perennial vegetation.

Reseeding methods used to restore treatment areas could lead to short-term impacts to the general vegetation such as a change in plant community composition, and disturbance or mortality of the existing vegetation. There would also be short-term impacts to soils from the seeding. In the long-term, reseeding would have a positive overall effect on the health of the vegetation and soil with the establishment of perennial grasses and shrubs. These areas may be excluded from livestock grazing for two growing seasons and may require temporary fencing (electric or conventional) until seedling establishment. The effects of installing fences are described in the Permittee Proposed Action. The resumption of grazing would occur after the resource objectives are met.

Juniper treatments - These treatments have been designed to increase sagebrush steppe habitat and have primarily been extensions of juniper treatments conducted on public land to facilitate a multiple lands approach to maintain sagebrush steppe. The treatments focus on previous burn scars with standing dead juniper and juniper encroachment areas. These treatments would utilize mechanical methods, such as chainsaws, dozers or masticator. There would be a short-term moderate effect to vegetation and a short-term minor effect to soils from these treatments since treatments are conducted when the soil is frozen. In the long-term, there would be a moderate positive effect to vegetation and soils.

4.6.1.1 Combined Effects Summary

The effects of other present, and reasonably foreseeable actions combined with the effects the Proposed Action and Alternatives would not contribute substantially to the overall effects on vegetation or soil within the EAA. There may be a positive synergetic effect to vegetation on the EAA with the combination of the Permittee Proposed Action or Threshold and Response Alternative through the treatment of annual grasses and promoting sagebrush recruitment. When the Current Management Alternative and the past, present and reasonably foreseeable actions are combined there would be no additional effects to vegetation or soils. The overall vegetation effects from the No Grazing Alternative when combined with past, present, and reasonably foreseeable actions would be as follows, future vegetation treatments may not be as successful due to the accumulation of cheatgrass, sagebrush recruitment may be slower due to increased competition from herbaceous vegetation and future wildfires if they occur, may be larger due to increased fuel loads.

4.6.2 Wildlife Sagebrush Obligates/Grassland Species/Riparian Species

The EAA for wildlife utilizes the sage-grouse Upper Raft River Fine-Scale polygon (Fine-Scale) which is approximately 795,130 acres (Figure 18). The EAA boundary encompass local populations of sage-grouse and utilizes natural barriers between populations.

Specifically, regarding sage-grouse, the Fine-Scale was rated for its overall habitat suitability. The overall habitat suitability rating for the Fine-Scale area was marginal (HAF Summary Report: (Section 3.2.1)).

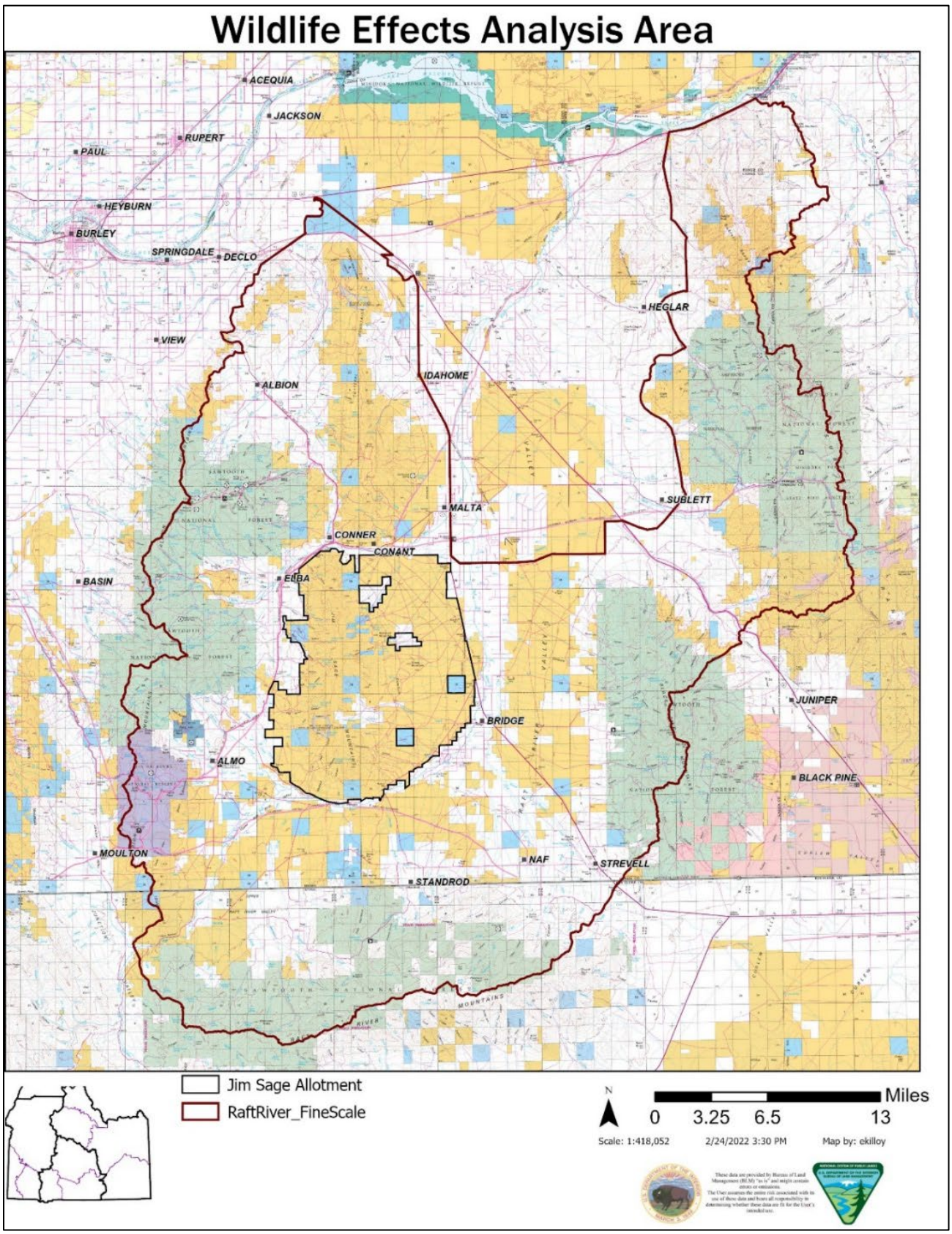

Figure 18. Wildlife Effects Analysis Area.

Current Conditions

The past, present and reasonably foreseeable future actions within the EAA relevant to wildlife habitat are presented in Table 21. These activities occur within EAA but are outside of the Jim Sage Allotment. The past activities within the Jim Sage Allotment have been captured within the Wildlife section of the Affected Environment (Section 3.7). The spatial extent of these actions was calculated using the best available BLM GIS data.

Table 21. Other present and Reasonably Foreseeable Actions within the Effects Analysis Area.

Type of Activity	Past/Present	Reasonably Foreseeable Actions
Noxious Weeds	Continued monitoring and treatment.	Continued monitoring and treatment.
*Anthropogenic Disturbance	Current distribution of disturbance = 1,393 km	Communication Towers, ROW authorizations, Power distribution lines, Gravel Pits and other infrastructure
Agriculture	75,600+ acres of agriculture land	Unknown expansion of agriculture.
Recreation	OHV use, Camping, Horseback riding, Hunting, and rock climbing	Continued use of public lands for recreation.
Livestock Grazing	65 BLM Allotments	Grazing permits would be renewed/modified as they expire. Livestock crossing permits would continue to be authorized in the future, but no new crossing permits are expected
Range Improvements (Construction and Maintenance)	Current range infrastructure distribution and maintenance	Proposals for new fences, pipelines, troughs/tanks, wells are expected
Wildfires and wildfire suppression/rehabilitation	Approximately 50,000 acres have burned	Fire suppression activities and ES&R Restoration post fire.
Herbicide and Drill Seeding	BLM - 6,540+ acres State and Private - 670+ acres	BLM - No new projects currently proposed, but future treatments are expected. State/Private - No new projects currently proposed, but future treatments are expected
Juniper Treatments	BLM - 29,200+ acres State/Private -10,270+ acres	BLM - 20,770 acres proposed State/Private acres
Avian Predators	Nest predation and direct mortality	Same as Present. Also, a potential upward trend of raven populations.
* Anthropogenic disturbance: The features calculated into the Upper Raft River Fine Scale Suitability Analysis are included in the HAF Summary Report (Appendix F).		

<u>*Noxious Weeds*</u> - The Twin Falls District has a weeds management monitoring program and works in cooperation with the Cassia County Weeds Department. Despite these efforts, weedy species continue to persist throughout the evaluation area in varying amounts. It is expected that the partnership between the BLM and the Cassia County Weeds Department would continue, and populations of weeds would continue to be treated with the objective of containing outbreaks and eradicating minor populations. Despite active management, it is expected that weeds would continue to occur within the EAA. These weed treatments, combined with the activities analyzed in each of the alternatives is expected to improve and maintain wildlife habitat.

<u>*Anthropogenic Disturbance*</u> - Three metrics were used to assess anthropogenic disturbance within the Fine-Scale: density of linear disturbance features (roads, transmission lines, etc.), density of point disturbance features (cell towers, etc.), and area of non-habitat inclusions (area-based disturbance features). The Fine-

Scale boundary was intersected with the BLM Disturbance Compilation dataset to calculate the density and area of disturbance features within the home range (Appendix F). BLM describes the disturbance feature types and data sources included in the disturbance data set. Anthropogenic features can affect sage-grouse in two significant ways at the Fine-Scale: anthropogenic features directly and indirectly increase mortality or decrease recruitment, and sage-grouse may eventually avoid SUAs with a high density of anthropogenic features even if Site-Scale conditions are suitable (Appendix F).

The Fine-Scale anthropogenic disturbance metric was rated suitable due to the density of both points and areas being very low and the density of lines being moderate (Table 21 & Figure 18). Additionally, the linear feature density was primarily based on the presence of surface streets. Two-track roads were not included in the disturbance calculations since they have been found to not restrict sage-grouse movements.

Table 22. Upper Raft River Fine-Scale Anthropogenic Disturbance

Anthropogenic Disturbance in the Fine-Scale Boundary		
	Units in Fine-scale	**Density**
Disturbance - Linear Features (km)	1,393	0.47
Disturbance - Points Features (count)	13	0.004
Disturbance - Area Features (km^2)	0	0.0000
Fine-scale Boundary	4,223 km^2	

- *Gravel pits* - Current gravel pit disturbances were also calculated into the anthropogenic disturbance as point features (Table 22). Current operations at gravel pits could disturb wildlife species; however, this effect is expected to be most prominent when operations begin and are expected to be minimal once the vegetation is removed. In most cases stipulations are included in the permit to minimize effects during the sage-grouse lekking and nesting and early brood-rearing seasons and the migratory bird nesting season.
- *Existing ROWs* - Other existing ROW such as roads and transmission lines were also included in the anthropogenic disturbance calculation. The 2015 ARMPA, MD TTM 1 limits off-highway vehicle travel within Idaho BLM Field Offices to existing roads, primitive roads, and trails in areas where travel management planning has not been completed. Periodic maintenance of roads is expected to occur. Roads could increase traffic collision risk to wildlife within EAA boundary and transmission lines provide additional nests and perches for raptor species.
- *Gateway West 500 KV* - Wildlife would be disturbed by the construction of the proposed transmission line installation. The transmission line could also increase the predation risk specifically to sage-grouse living in the vicinity of the line because transmission line structures provide perching and nesting platforms for raptors. Effects of this project on wildlife species are unclear because construction has yet to occur, the effects of Gateway West could range from temporary disturbance to avoidance of the area.

Agriculture - Over 75,600 acres of agriculture occur with the EAA. Sage-grouse Seasonal Use Area Habitat Availability is one of the metrics used to determine Fine-Scale Habitat Suitability and is summarized within the HAF Summary Report (Appendix F). The habitat connectivity, as well as the availability of sagebrush within SUAs of sage-grouse home ranges, can affect overall suitability. For example, following nesting, hens often move chicks to summer ranges for food. Thus, connectivity between nesting and early brood-rearing and Upland summer and late brood-rearing habitats is particularly important due to the restricted flight capability of chicks at this time. In general, the more contiguous the sagebrush cover between SUAs, the more suitable the habitat (Appendix F).

In summary, the Seasonal Use Area Habitat Availability was rated as marginal, and the availability of

sagebrush steppe has been compromised. Over time, sagebrush steppe has been converted to agriculture and habitat patches have been disconnected from one another. The effects of upland sagebrush steppe habitat being converted to agriculture have been manifested and the ability for wildlife to move between available habitat areas is limited within this EAA. Thus, although there remain smaller, isolated sage-grouse home ranges that contain all of the seasonal use areas needed for a population's life cycle, the entire EAA is no longer providing a contiguous home range to sage-grouse.

Recreation - Recreation activities within the EAA mostly include OHV use, horseback riding, camping, rock climbing and hunting. Recreation activities can cause temporary social displacement to wildlife in surrounding areas. Other than hunting, the effects of other types of recreation are not expected to measurably impact sage-grouse populations within the EAA. Hunting within the EAA is currently ongoing and is specific to sage-grouse. The Idaho Department of Fish and Game has set new tag limits for sage-grouse within the EAA. Currently, within Zone 3B, the hunting season is from Sept 18 - Oct 31 and allows for hunters to purchase two tags with a two-bird bag limit per tag (IDFG.idaho.gov). The sage-grouse tag system is designed to limit harvest to less than 10% of the estimated fall population in each of the 12 reporting zones and fall populations are determined by spring lek counts. Idaho Fish and Game website also states that sage-grouse populations increased 13% in 2021 compared to 2020 but are still down 48% from 2016.

Livestock grazing/Range Improvements - Livestock grazing is expected to continue to occur on private, State, United States Department of Agriculture Forest Service (USFS) and 65 BLM allotments within the EAA. Future BLM grazing permit renewals with the EAA would be aimed at either maintaining wildlife habitat where those conditions are found to be meeting the Standards for Rangeland Health and or improving resource conditions where Rangeland Health Standards are found to be deficient, and deficiencies are a result of current livestock management.

Future developments such as fences, pipelines, and troughs can cause small, temporary, localized disturbances which reduce the available forage and cover for the sage-grouse. This effect is expected to be minimal in comparison to what is available for forage and cover in surrounding areas. However, troughs sometimes provide a water source in an otherwise dry area as a benefit. Fences could be potential collision hazards for wildlife, but new fences are being constructed with a wildlife friendly design and may be marked depending on their proximity to sage-grouse leks. Existing fences with high collision potential are also being marked with flight diverters.

Wildfire - Previous wildfires within the EAA have burned roughly 50,000 acres. These areas are currently affecting habitat quality for sagebrush obligates due to reduced sagebrush cover. Future wildfires within the EAA are expected to occur and further reduce habitat availability for sagebrush steppe species and riparian songbirds but would increase available habitat for grassland species. The EAA is designated for full wildfire suppression of any fire starts on BLM managed lands. Actions would be taken to maintain existing sagebrush communities but would be determined based on firefighter and public safety. Firefighting suppression techniques, such as the use of bulldozers, would disturb sagebrush steppe habitat but the positive effects of reducing fire spread and protecting adjacent habitat outweigh these effects. Most wildfires within the EAA would be analyzed through an ES&R rehabilitation plan. Postfire rehabilitation could include drill or aerial seeding of perennial grasses and forbs, aerial seeding/hand planting sagebrush, and/or other mechanical methods.

Vegetation Treatments (Herbicide and Drill Seeding) – Additional short-term effects to wildlife would occur from chemical and mechanical vegetation treatments implemented through the BLM Twin Falls District Fuels program or through the State of Idaho Cheatgrass Challenge initiative. The goals for these vegetation treatments are to suppress cheatgrass and establish a resilient perennial vegetation community on BLM, State, and private lands.

Herbicide projects are expected to occur over the life of the permit. Chemical herbicides would target annual grasses. Effects to wildlife from chemical herbicide treatments are analyzed in the Twin Falls District Noxious Weed and Invasive Plant Treatment EA (DOI-BLM_ID_T000-2012-001-EA). Depending on the treatment type (e.g., aerial or ground herbicide, drill seeding) treatments may disperse wildlife into adjacent habitat. Since treatments target areas dominated by invasive annuals the reduction of understory cover during the fall and winter season could lead to short-term impacts specifically to the sage-grouse through the temporary loss of cover. However, the potential improvement of wildlife habitat outweighs the short-term disturbance to sage-grouse. The potential change in plant community composition would have a positive overall effect on the health of the vegetation and improve wildlife habitat.

The potential success of future vegetation treatments are likely dependent on the amount of residual cheatgrass cover, thatch, and seedbank within treatment sites, as described in the Threshold and Response Alternative.

Vegetation Treatments (Juniper) - Since 2008, approximately 29,200 acres of juniper on public land have been treated within the EAA through coordination with the BLM, NRCS, Pheasants Forever, and allotment permittees. These treatments were completed through the BL1 and BL2 projects described above under Section 3.2.1. Treatments occur throughout the EAA and were designed to improve existing sagebrush steppe habitat. Due to the amount of habitat lost through agriculture and disturbance (anthropogenic and wildfire) these projects are expected to increase the habitat potential within the EAA. Juniper treatments within the EAA are expected to continue with 20,000+ acres identified for treatments. These treatments mostly focus on previous burn scars with standing dead juniper. These treatments would utilize a dozer or masticator to remove the standing dead overstory decreasing perching potential for raptors while also increasing the amount of potential habitat available for wildlife.

In addition to the acres treated on public land, approximately 10,270 acres have been treated through the NRCS Sage-Grouse Initiative on state and private land within the EAA. These treatments have also been designed to increase sagebrush steppe habitat and have primarily been extensions of juniper treatments conducted on public land to facilitate a multiple lands approach to increase habitat for sage-grouse.

The West Desert District Box Elder Programmatic Vegetation Treatments has treated roughly 3,200 acres using mastication, broadcast burning, and lop/scatter techniques. Future juniper treatment planning in the West Desert District includes approximately 18,000 additional acres to be treated using the same techniques. With the combination of these treatments sagebrush habitat and connectivity would be improved. Increased cover is expected to improve nest concealment, forage availability, and brood survival. Additionally, nutritional quality of sagebrush may improve with leader and leaf growth from reduced competition.

Avian Predators – Multiple avian predator species (hawks, owls, ravens, eagles, etc.) occur throughout the EAA. Anthropogenic disturbance, such as powerlines, provide perching/nesting substrate and local dairies, private residences, and highways are providing carrion for ravens throughout the year. The combined effect of these features is potentially facilitating the growth of avian predators (primarily ravens) within the EAA. Ravens are expected to increase the long-term effects of predation to wildlife (especially to nesting birds) within the EAA.

4.6.2.1 Combined Effects Summary

The effects of all alternatives combined with additional effects from the present, and reasonably foreseeable actions are expected to result in negligible contribution to the cumulative effects to wildlife habitat within the EAA. Improvements to wildlife habitat resulting from juniper, herbicide, and drill seeding treatments are unlikely to offset existing and proposed wildlife habitat disturbances such as developments on private lands or wildfire throughout the EAA. As explained above, changes in livestock grazing within the allotment will have at best a marginal impact on sage-grouse and other wildlife, as vegetative communities

have already been altered by historic grazing, wildfires and anthropogenic disturbances such as conversion to agricultural use, road construction, distribution lines, and water diversions for irrigation and domestic use.

4.6.3 Socioeconomics

The EAA for socioeconomics is defined as Cassia County. The county boundary was selected under the assumption that the majority of the operator's business takes place in the county. The scope of time is 2021 and ten years into the future. This timeframe was chosen since projects that have occurred prior to this date are no longer causing an effect and the next ten years would be the term of the new permits. Present, and reasonably foreseeable actions that could affect socioeconomics include wildfire and fire suppression/rehabilitation activities; Herbicide and Drill Seeding; Livestock Grazing Permit Renewal; and juniper treatments and maintenance (Table 24).

Table 23. Present and Reasonably Foreseeable Actions Affecting Socioeconomics.

Name of Project	Present	Reasonably Foreseeable Actions
Wildfires and wildfire suppression/rehabilitation	Three ongoing wildfire rehabilitation that requires rest from livestock grazing within the EAA.	Wildfires are expected to continue to occur.
Herbicide and Drill Seeding	Three ongoing herbicide and drill seeding treatments within Cassia County.	Future treatment size unknown. Future herbicide and drill seeding may occur within the EAA.
Livestock Grazing Permit Renewal	Two BLM grazing permit renewals are in progress within the EAA.	Future grazing permit renewals are expected to occur.

Wildfire and Emergency Stabilization and Rehabilitation affects socioeconomics depending on the size of the wildfire and amount of restoration needed. After a wildfire, the livestock permittees have to rest the burned area from livestock grazing for a period of time to allow for recovery of the burned vegetation. The permittees may have to reduce their herd size and/or find alternative pastures during the rest period. Reducing herd size initially would result in additional income. However, rebuilding the herd would add additional costs over the long term. Finding alternative forage would result in increased costs in the short term.

Fuels Treatments- Potential Twin Falls District fuels treatments utilize a variety of methods including mowing, disking, and chemical treatments within the Jim Sage Allotment. Livestock permittees might be affected for short periods of time during treatment implementation which may temporarily reduce forage availability. The results of these projects may also alter their grazing rotations and livestock use patterns because treatment areas would need to be rested from livestock grazing until seeded perennial vegetation develops extensive shoot and root systems to provide soil stability and are producing seed. Improving the condition of the rangelands would improve livestock health and increase weight gain, thus impacting the socioeconomics of the livestock operators.

Grazing Permit Renewals- As the BLM and the USFS processes grazing permits in other allotments where these operators graze livestock, decisions will be made to continue with current management, alter grazing management, or have no grazing for a period of ten years. These decisions would affect these operators economically depending on the outcome of the permit renewal analysis and resulting grazing decisions. A no grazing decision and or significant reduction in use would likely have the greatest negative economic effect on the operators in the Jim Sage Allotment. An increase in AUMs would have a positive economic impact. If chosen, these decisions would cumulatively affect the operator if their other allotments are reduced or closed to grazing and the periods of reduction/closures overlapped.

4.6.3.1 Combined Effects Summary

When the effects of the Current Management, Permittee Proposed Action, and the Threshold and Response Alternative are combined with effects from the present and reasonably foreseeable actions, they would not contribute substantially to the overall effects of socioeconomics within the EAA. However, when the No Grazing and Spring AUM Reduction Alternatives are combined with future wildfire and restoration, there could be a moderate short-term negative effect to individual ranching operations, because permittees would lose the ability to operate there as well.

5.0 Consultation and Coordination

5.1 Summary of Consultation and Coordination

The BLM conducted this environmental analysis in accordance with the requirements of NEPA, the CEQ regulations, and the Department of the Interior and BLM regulations and policies. NEPA and associated regulatory and policy frameworks require Federal agencies to involve interested publics in their decision-making, consider a range of reasonable alternatives to proposed actions, and prepare environmental documents that disclose the potential impacts of proposed actions and alternatives. The public scoping process is documented in Section 1.4.

Federal regulations require the BLM to consult, cooperate, and coordinate with affected lessees or permittees and the state before modifying terms and conditions of a permit or lease (43 CFR 4130.3-3). Burley Field Office rangeland management specialists met with affected permittees at the beginning of the process to develop applications for permit renewal. In addition, the BLM is required to provide affected permittees or lessees, the State, and interested publics, including local governments, the opportunity to review and offer input in the preparation of reports that evaluate monitoring and other data that the authorized officer uses as a basis for making decisions to increase or decrease grazing use, or otherwise to change the terms and conditions of a permit or lease. The Draft RHA and Evaluation Report was sent to the permittees, interested publics, cooperating agencies and the tribes for comment. The Draft RHA was also posted to the BLM's ePlanning site on March 11, 2021, for public review prior to and concurrent with public scoping, respectively.

5.2 Tribal Consultation

Consultation with the Shoshone-Paiute and Shoshone-Bannock Tribes occurred consistent with Tribal preferences, applicable laws, and policies. Consultation with the Shoshone-Paiute Tribes of the Duck Valley Indian Reservation occurred on December 11, 2019, December 8, 2021, and February 3rd, 2022The Shoshone-Bannock Tribes were mailed a draft RHA and Evaluation Report in March 2021 and a scoping report for the project on June 7, 2021. No issues or concerns were raised during the consultation process.

5.3 Cooperating Agencies

Idaho Department of Agriculture

5.4 List of Preparers and Reviewers

Name	Title
Scott Sayer	Supervisory Rangeland Management Specialist
Jim Tharp	Assistant Field Office Manager
Molly Gardner	Rangeland Management Specialist
Eric Killoy	Wildlife Biologist/Fuels

Name	Title
Lindsey Rush	Wildlife Biologist/Riparian Specialist
Jason Theodozio	Botany
Wyatt Ward	Archaeologist
Andrew Griffin	Geologist
Joanna Tjaden	District Planning and Environmental Coordinator
Charles Sandford	Wildlife Biologist USFWS

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6.0 List of Appendices

Appendix A: Maps

Figure 1: Early 2000s Range Improvement Projects

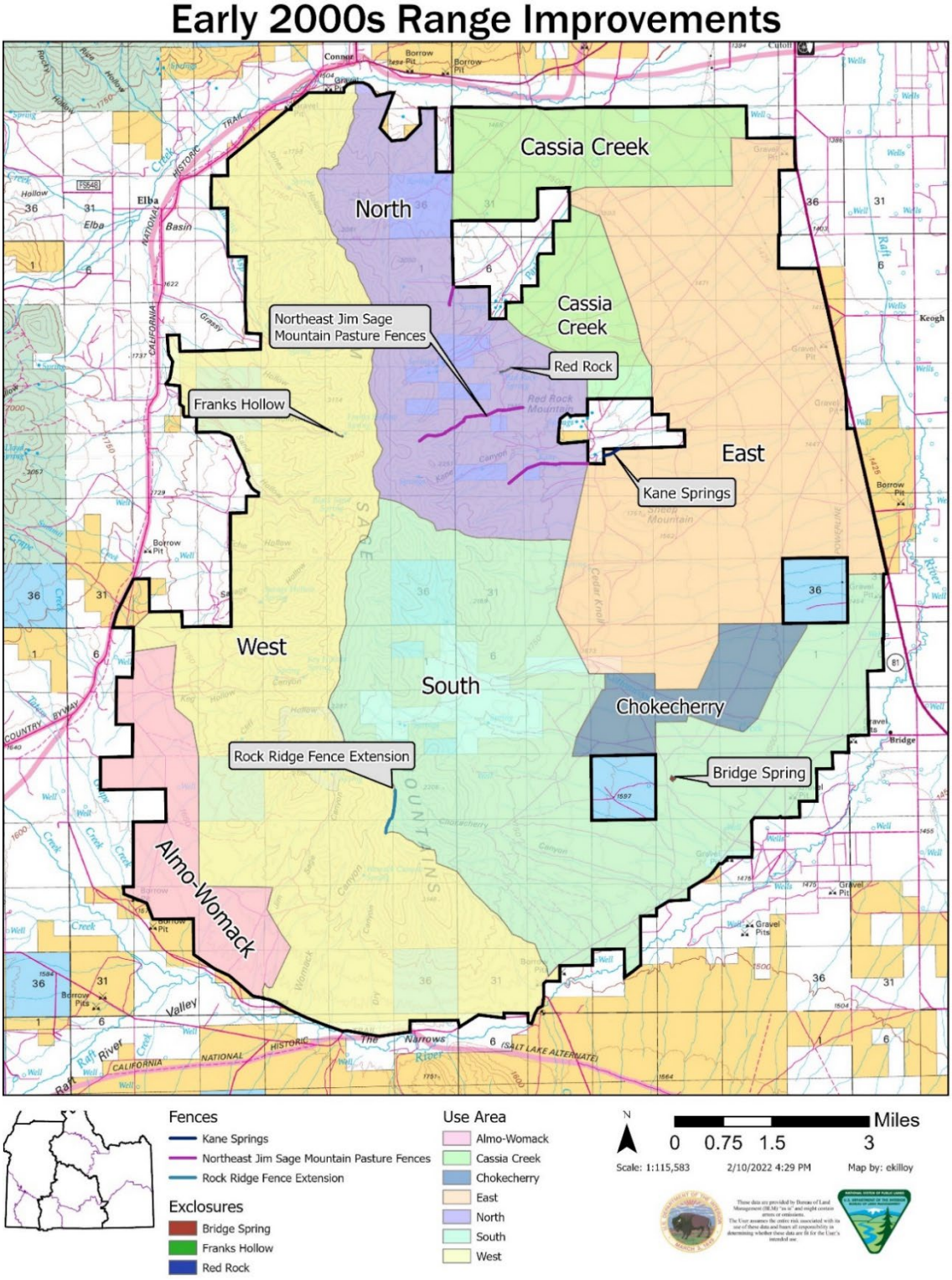


Figure 2: Permittee Proposed Alternative proposed pipelines and troughs

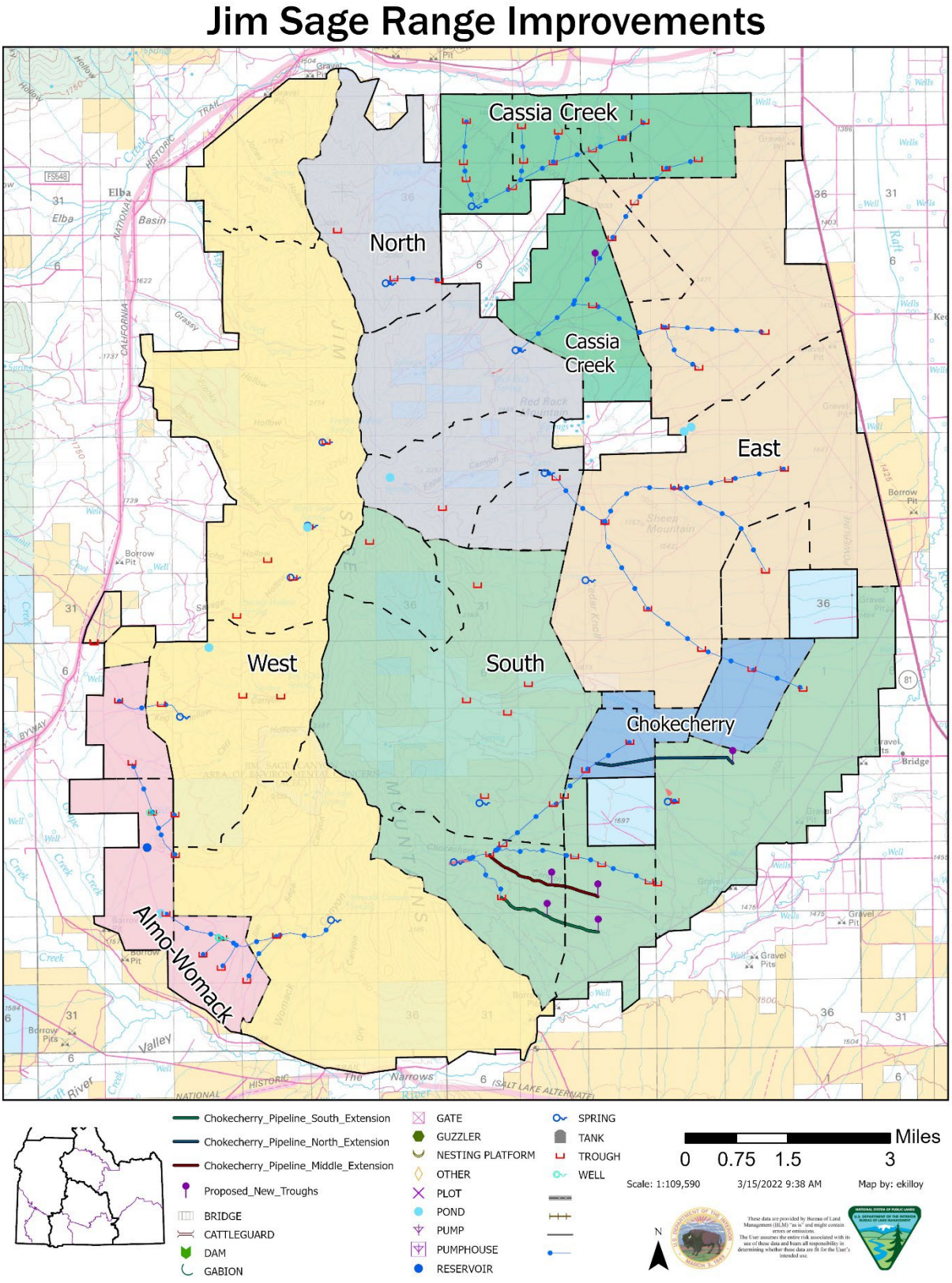


Figure 3: Permittee Proposed Alternative proposed fences

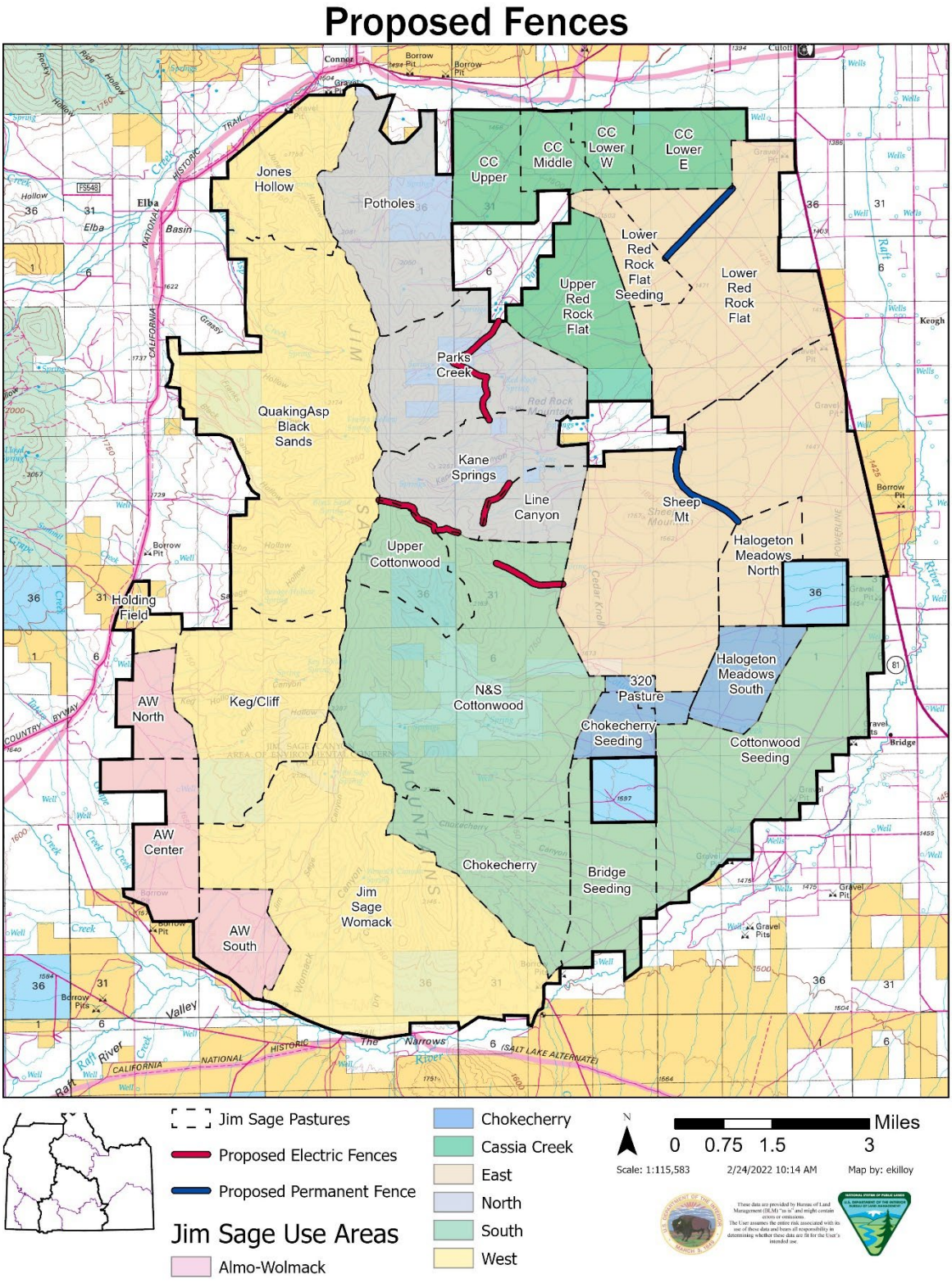


Figure 4: Proposed sagebrush recruitment and cheatgrass reduction pastures

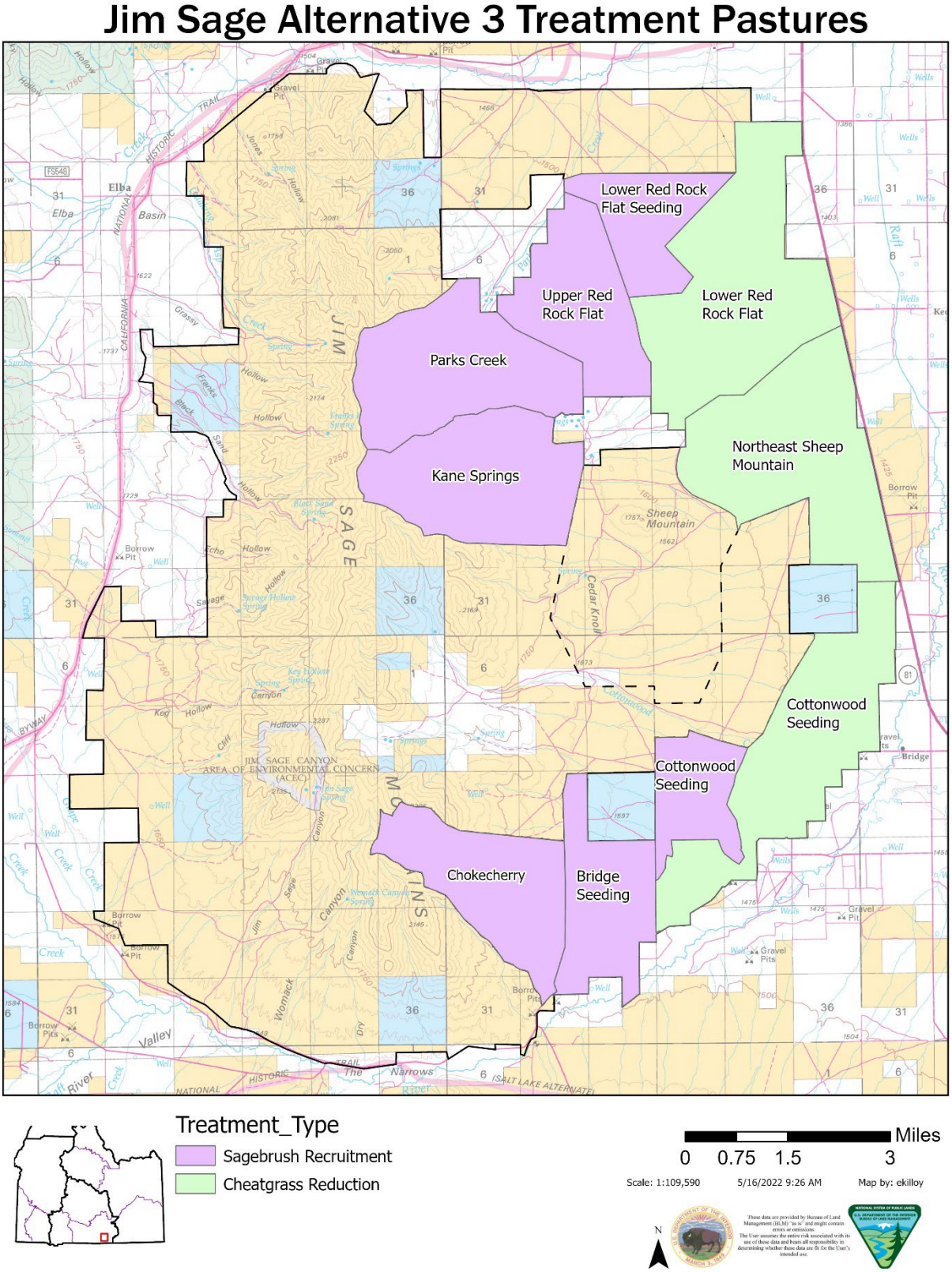


Figure 5: Overall sage-grouse nesting/early brood-rearing habitat suitability

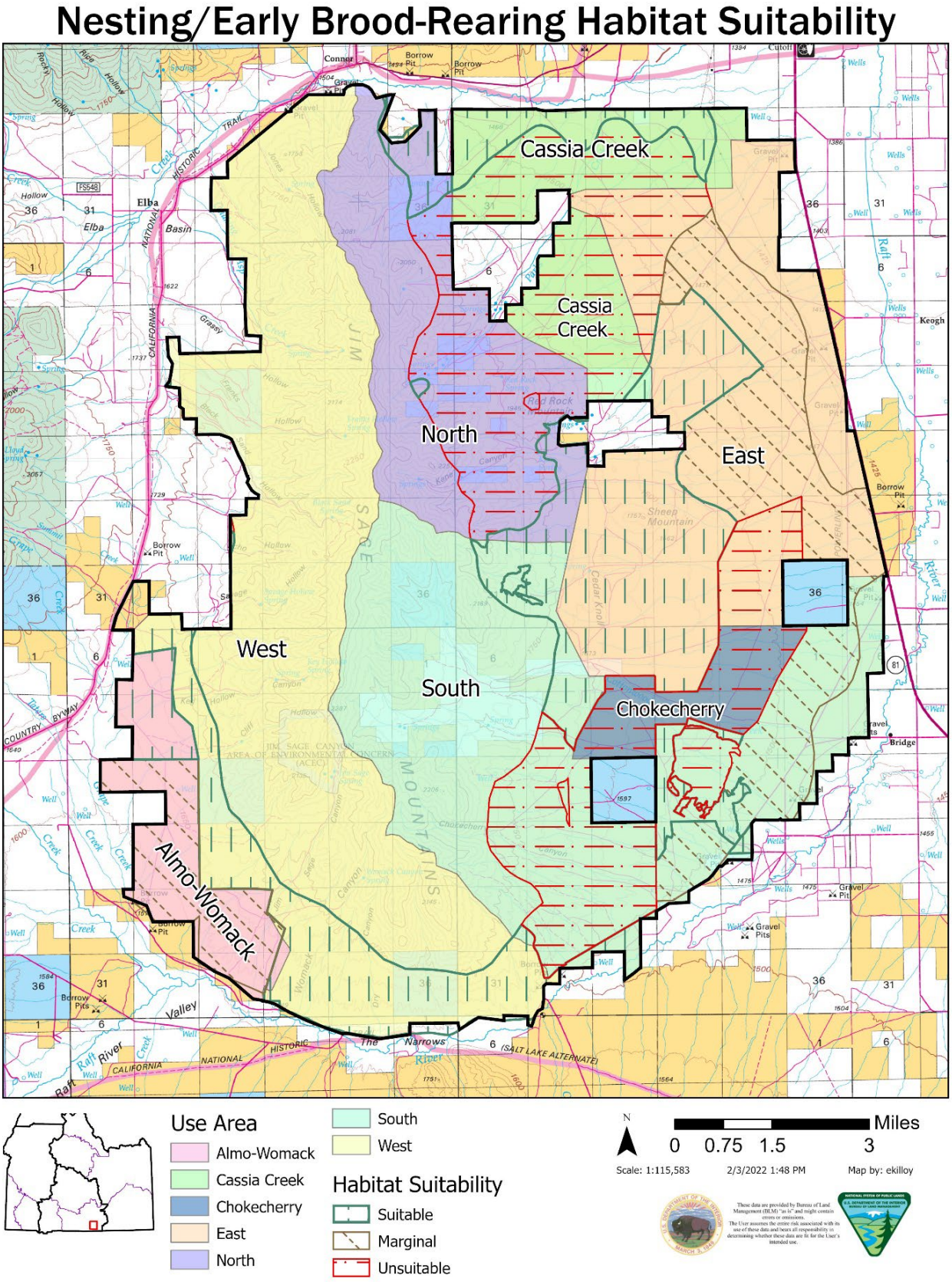


Figure 6: Overall sage-grouse upland summer/late brood-rearing habitat suitability

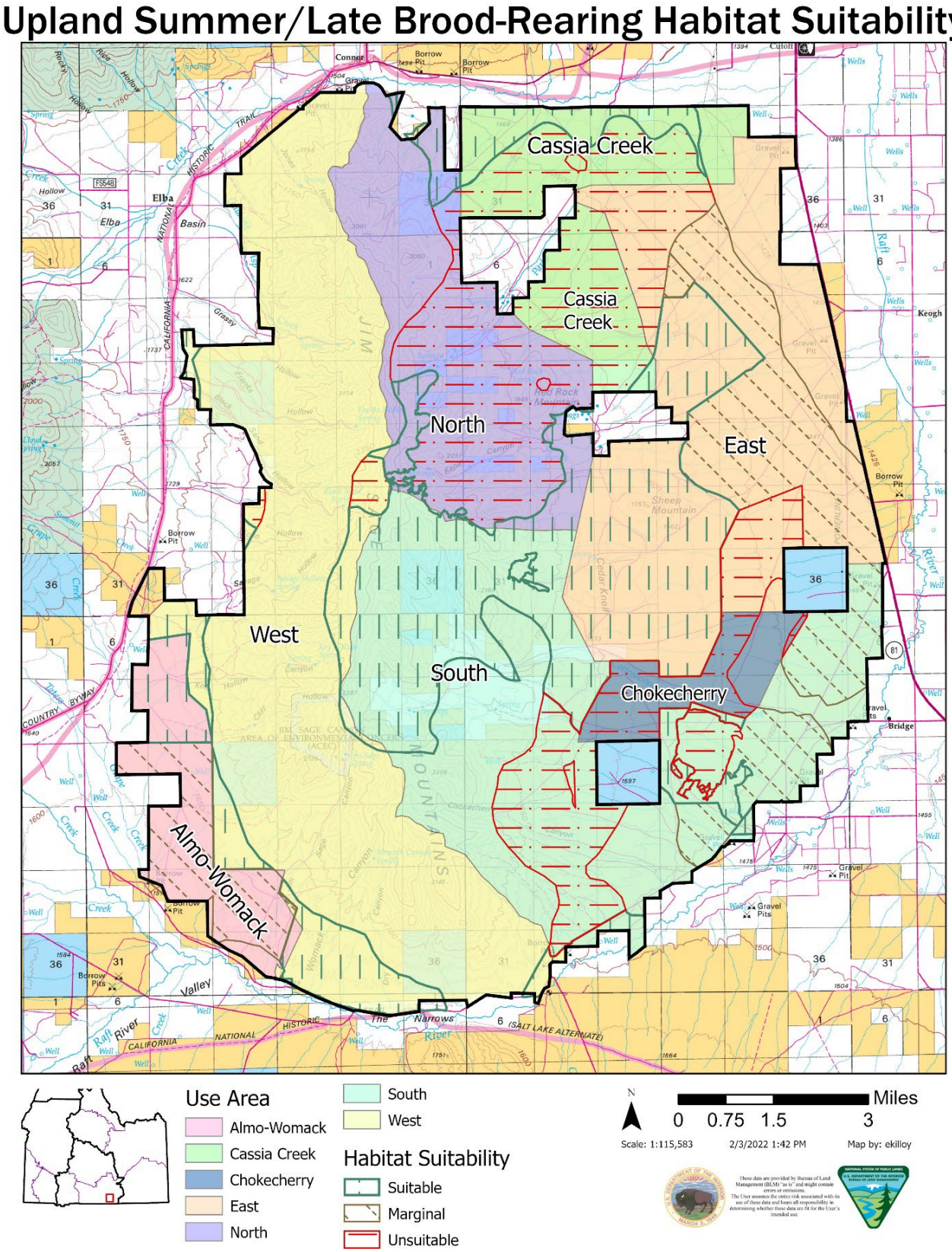
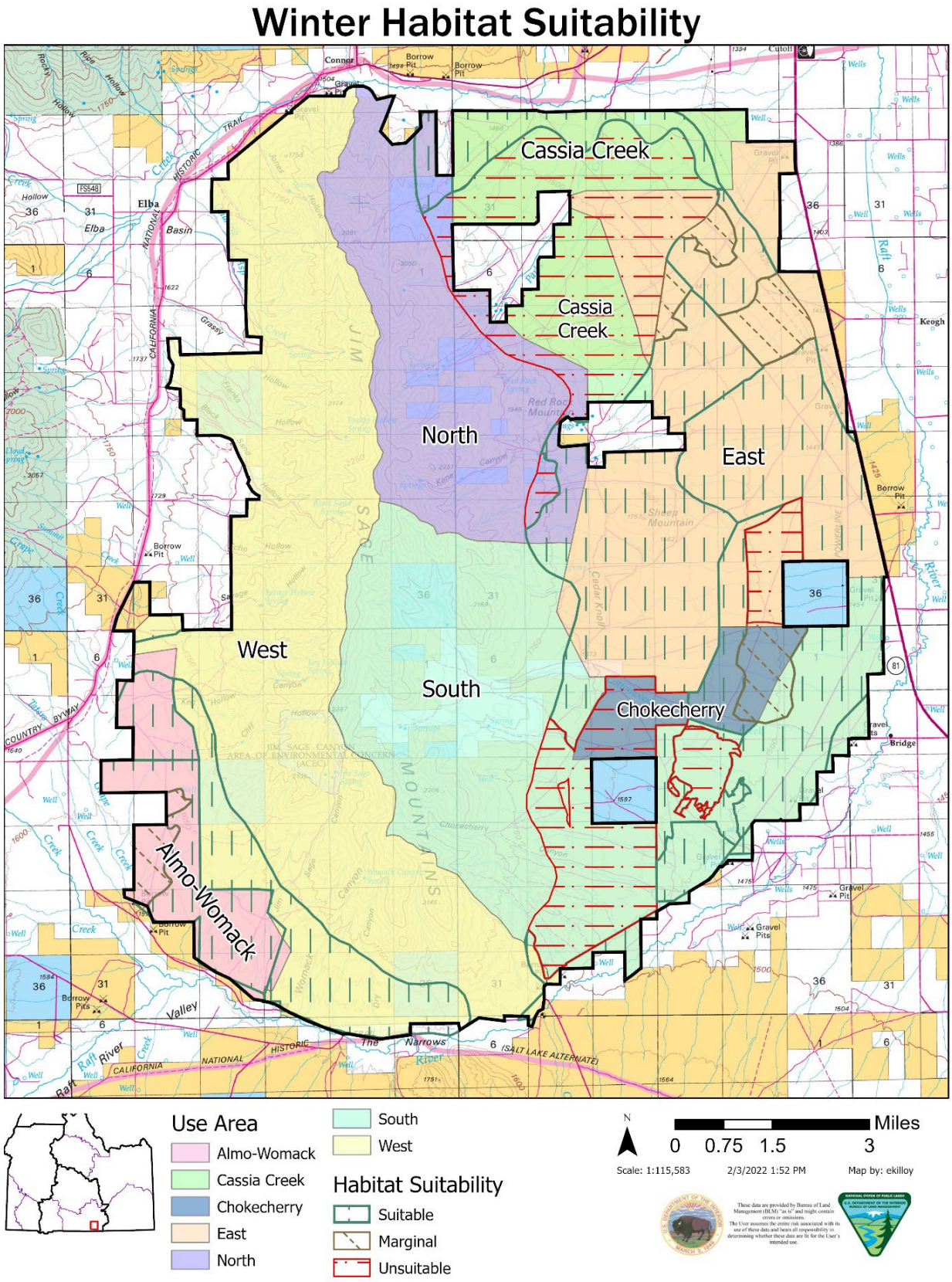


Figure 7: Overall sage-grouse winter habitat suitability on the Jim Sage Allotment.



Appendix B: Cassia Resource Management Plan Conformance Review And ARMPA Conformance Review

Cassia Resource Management Plan Conformance Review: Jim Sage Allotment

The Cassia Resource Management Plan (CRMP) was approved on January 24, 1985 and guides public land management, including the livestock grazing management program, in Cassia County. The Jim Sage Allotment is located within the CRMP Management Area.

The proposed action and alternatives described in the Jim Sage Allotment Grazing Permit Renewal are in conformance with the CRMP, as required by 43 CFR 1610.5-3(a). Specifically, the proposed action and alternatives are designed to achieve the Forage Allocations stated under the Rangeland Management Section of the *Resource Management Guidelines*, which states "Within each grazing allotment or group of allotments the available forage is allocated among domestic livestock, wildlife, and wild horses and burros. Sufficient vegetation is reserved for purposes of maintaining plant vigor, stabilizing soil, providing cover for wildlife and other non-consumptive uses" (pg. 7, CRMP). In addition, the *Range Improvements, Grazing Systems, and Other Range Management Practices* section within the CRMP states "A variety of range improvements, grazing systems and other range management practices will be considered in conjunction with livestock management on individual allotments" (pg. 7 CRMP).

It is also in conformance with guidelines within the *Fish and Wildlife* section and the *Watershed* section, which are found on pages 5 and 9, respectively. *Fish and Wildlife* (pg. 5) states "A variety of methods may be employed, including management actions designed to maintain or improve wildlife habitat, …" "Priority will be given to threatened or endangered species habitat. All BLM management actions will comply with federal and state laws". *Watershed* (pg. 9), under Water Improvements says "Facilities and structures designed to maintain or improve existing water resources, provide new water sources, control water level or flow characteristics, or maintain or improve water quality may be developed subject to…. an EA".

The CRMP also created Management Areas for the purpose of organizing and presenting the planning decisions. A management area generally contains lands having similar resource features and characteristics that can be effectively managed as a unit.

The Jim Sage Allotment is in Management Area 10 of the CRMP. Management Area 10 includes the Jim Sage Mountains and surrounding foothills encompassing 76,667 acres (pg. 36, CRMP). Management Area 10 contains resource management objectives and required actions. The resource management objectives set priorities for managing the various resources in the area and the required actions identify the management actions, limitations and other provisions which are needed to accomplish the objectives (pg. 2, CRMP). The following is a description of the objectives and required actions for Management Area 10.

Resource Management Objectives (Management Area 10 – Jim Sage)

Provide 9,877 AUMs of livestock forage on the Jim Sage Allotment.

Response: Current permitted active use on the Jim Sage Allotment for livestock grazing is 5,131 AUMs. The long-term goal of 9,877 AUMs, as defined in the CRMP, was based upon the completion of land treatments. Several land treatments have been conducted such as juniper encroachment treatments, herbicide treatments and fire rehabilitation projects. However, these completed treatments were not done to increase forage for livestock but rather to improve

ecological conditions, thereby benefiting a variety of uses. Land treatments to increase forage production solely for livestock at the scale proposed in the CRMP (18,300 acres) will likely not occur due to habitat concerns regarding sensitive animal species (e.g., sage grouse).

Improve 51,978 acres of poor and fair condition rangeland to good.
Response: Since the mid-1990s, several range improvements projects have been conducted within the Jim Sage Allotment, including juniper encroachment treatments, seeding treatments and fire rehabilitation treatments. Treatments were initiated with the primary objective to improve the health, vigor, and acreage of the native sagebrush-steppe vegetation and to aid in the recovery of the soil and vegetative resource post wildfire. Many of these treatments were in areas rated as fair to poor condition in the land use plan. In addition, other range improvement projects (e.g., pasture division fences, riparian exclosures, water developments) have been completed to improve riparian, as well as upland health conditions within the allotment.

Based on the Jim Sage Rangeland Health Assessment and Evaluation Report (RHA), seeded rangeland (approx. 13,500 acres) in the allotment is meeting the Idaho Standard for Rangeland Health and approximately 49,000 of 60,000 acres of native vegetation are meeting the standard. Of the 11,000 acres not meeting the native vegetation standard, progress is being made on approximately 3,000 of those acres i.e., perennial grass cover is increasing over time. Additionally, the BFO is currently working on the remaining 8,000 acres through fuels vegetation treatments and Thresholds and Responses Alternative in this permit renewal has been proposed to help improve these acres in conjunction with ongoing fuels treatments.

Trend on both the seeded and native vegetation was found to be overall stable to upward across the allotment which means that key species cover, and distribution is stable to increasing. Much of the acreage rated as poor to fair in the CRMP is currently meeting the Idaho Standards for Rangeland Health which is an indication of healthy rangeland and improved rangeland conditions. Therefore, progress towards meeting this objective is occurring and is expected to continue under the proposed action and alternatives.

Maintain or improve 22,780 acres of crucial deer winter range, 5,730 acres of sage grouse winter habitat and 1,201 acres of sage grouse brood rearing habitat.
Response: The sage-grouse habitat portion of this objective has been amended by the 2015 Idaho Greater Sage-Grouse Approved Resource Management Plan Amendment (ARMPA). ARMPA designated seasonal use areas for sage-grouse in the Burley Field Office, and more specifically the Jim Sage Allotment. The Jim Sage Allotment lies within Southern Important Conservation Area (SICA) and consists of 55,884 acres of Important Habitat (4.7% of SICA) and 24,163 acres of General Habitat (1.9% of SICA). No Priority Habitat Management Area (PHMA) has been delineated on Jim Sage. The ARMPA conformance review indicates that the proposed action and alternatives are in conformance with this amendment. With regards to the objective for mule deer, the proposed action and alternatives are not anticipated to negatively affect mule deer winter range. An Idaho Department of Fish and Game email from January 8, 2021, indicates that the mule deer population on Jim Sage is stable.

Provide forage for the following mule deer by season of use: 436 deer Spring; 436 deer Summer; 436 deer Fall; 2,179 deer winter.
Response: General observations and data collected during the upland land health assessments indicate that the allotment currently provides the AUMs needed to support a healthy deer population at the level described above. Juniper encroachment treatments have been conducted within sagebrush/grass and mountain brush types, increasing the amount of available forage for big game species. An Idaho Department of Fish and Game email from January 8, 2021 indicates that the mule deer population on Jim Sage is stable.

Provide yearlong forage for 100 antelope.
Response: The 2003 Jim Sage RHA noted that documented sightings of antelope were very few. However, antelope sightings have increased within the allotment over the past several years and sightings are now common and yearlong forage is being provided. In addition, the Idaho Department of Fish and Game did not provide any information to suggest that antelope forage is limited on the allotment in their response to the proposal.

Protect natural qualities on the 11,227 acres of Jim Sage Mountain above 6,600 feet elevation (See Map 13).
Response: The Special Recreation Management Area (SRMA) include all 11,227 acres and associated Required Actions for livestock grazing management states "Range forage improvement above 6,600 foot level will give first consideration to native species. Range improvements will be small dispersed and designed to fit with the surrounding landscape". The CRMP also states that emphasis for the SRMA is for primitive recreation. No new actions are proposed above the 6,600-feet elevation level within the Jim Sage Allotment.

Protect nesting ferruginous hawks from human disturbance.
Response: To avoid disturbing active nests the installation of proposed range improvements would occur outside of the ferruginous hawk nesting season (Feb 1 – July 31).

Control surface disturbing activities on 1,360 acres having soils with high erosion potential (See Map 13).
Response: Based on the Jim Sage RHA, watershed conditions in the allotment are adequate for proper watershed function in relation to biotic integrity. This is demonstrated by the lack of water flow patterns, pedestals, or bare ground, which indicates water is being dissipated evenly across the landscape. The proposed action and alternatives are not expected to result in accelerated erosion in the 1,360 acres identified in the CRMP. Permittee Proposed Action proposes a pipeline extension and trough in a portion of the acres mapped in the CRMP as having high soil erosion potential. However, the proposed pipeline would follow an existing road and disturbance would be temporary since design features, i.e., reseeding, would occur.

Transfer 280 acres out of federal ownership via sale or other disposal method (See Map 19).
Response: This objective is not applicable to this project.

Required Actions (Management Area 10 – Jim Sage

Energy Resources –

Open to leasing subject to the following stipulations: No exploration/development in crucial deer winter range December 1st through March 31st and in sage grouse nesting/brood-rearing areas April 1st to June 15th. Protect ferruginous hawks between March 1st and July 15th by prohibiting activity within the shorter of the following two distances: 2,000 feet or the visible range of active nest sites.

Response: This required action is not applicable to this project.

Fire Management –

Limited suppression. Prescribed burning is allowed. Only hand tools will be used for fire suppression above 6,600-feet elevation.

Response: This required action is not applicable to this project.

Grazing Management –

Initial livestock use level is 5,456 AUMs (See CRMP Appendix C). Treat 19,825 acres (See CRMP Map 13) of rangeland to increase livestock forage production by 4,421 AUMs. Range forage improvement above the 6,600-feet level will give first consideration to native species. Range improvements will be small, dispersed and designed to fit with the surrounding landscape.

Response: Current permitted active use is 5,131 AUMs. The long-term goal of 9,877 AUMs was based upon the completion of land treatments. Land treatments have been conducted, including juniper encroachment treatment, fire rehabilitation and herbicide treatments. Although these treatments have led to an increase in grass cover and therefore grass production, these treatments were not intended to increase forage for livestock but rather to improve ecological conditions, thereby benefiting a variety of uses. Land treatments to increase forage production solely for livestock at the scale proposed in the Land Use Plan (18,300 acres) will likely not occur due to habitat concerns regarding sensitive animal species (e.g., sage grouse). Components of Permittee Proposed Action and Thresholds and Responses Alternatives propose increasing AUMs on a temporary basis to address issues regarding sage-grouse habitat (lack of sagebrush) and annual grass cover in portions of the allotment.

Amendments to the Grazing Management Required Action section of the RMP:

Big Horn Sheep

In 1999, an EA (EA No# ID-024-99-023), amended the "Grazing Management Required Action" section to reallocate 300 livestock AUMs to bighorn sheep at a conversion of 5 sheep to 1 cow. Response: The population of bighorn sheep is currently stable (roughly 100) and mainly utilizes the rocky slopes on the north and northwest side of the Jim Sage Mountain (Jim Sage RHA pg. 107). As a result of the conversion of domestic sheep to cattle, there are no longer domestic sheep permitted on the allotment.

Resource Natural Areas (RNA)/Areas of Critical Environmental Concern (ACEC)

In 1988, the CRMP was amended to include a 640-acre RNA/ACEC within the boundaries of the Jim Sage Allotment to protect pinyon juniper woodland. Per the amendment, Required Action C for Grazing Management (CRMP, p. 37) was revised to add the following sentence: "Livestock grazing will not be permitted within RNA/ACEC boundary."

Response: BLM has not interpreted this statement to categorically exclude livestock grazing from the RNA/ACEC. Rather, BLM has interpreted the closure to apply only to a 30-acre area within the RNA/ACEC where the Jim Sage springhead is located. This area is protected by a fence. This understanding of the amendment is supported by the analysis in EA ID-020-87-32. Based on this additional context, BLM concludes that the proposed action and alternatives are in conformance with the RMP.

Lands –
Maintain legal access to accommodate public use and agency management when disposing of transfer lands.

Response: This required action is not applicable to this project.

Minerals –
Open to mining. and mineral leasing and sale. Minerals development will be managed in a manner that protects the scenic and natural characteristics above 6,600-feet elevation.

Response: This required action is not applicable to this project.

Motorized Vehicle Management –
Wheeled vehicles limited to existing roads and trails. Open to snowmobiles. Short-term deviations will be allowed when activity plans specify the duration and rotation of off-road vehicles use.

Response: This required action is not applicable to this project.

Recreation –
The area above 6,600 feet is a Special Recreation Management Area. Emphasize primitive recreation above 6,600 feet by providing trails and trailheads to accommodate non-motorized forms of recreation such as hiking and horseback riding. on approximately 11,227 acres.

Response: The Special Recreation Management Area (SRMA) include all 11,227 acres and associated Required Actions for livestock grazing management states "Range forage improvement above 6,600 foot level will give first consideration to native species. Range improvements will be small dispersed and designed to fit with the surrounding landscape". The CRMP also states that emphasis for the SRMA is for primitive recreation. No new actions are proposed above the 6,600-feet elevation level within the Jim Sage Allotment.

Woodland Products –
Harvest of woodland products above 6,600 feet (11,227) acres will be allowed if it enhances the recreational values.

Response: This required action is not applicable to this project.

Wildlife –
Provide 2,288 AUMs of forage for mule deer (See Appendix D). Provide 127 AUMs of forage for antelope (See Appendix D). Wildlife improvements above 6,600 feet will be small in size, dispersed, and designed to fit with the surrounding landscape. The following wildlife guidelines as identified in **Appendix B, page 82 are applicable to this management area: 2a; 4a-d; 5a-e; 6a-e; 8a-k; 9b-g; lla-c.e.f (see below)**.

Response: General observations and data collected during the upland land health assessments indicate that the allotment currently provides the AUMs needed to support a healthy deer population at the level described above. Juniper encroachment treatments have been conducted within sagebrush/grass and mountain brush types, increasing the amount of available forage for big game species. An Idaho Department of Fish and Game email from January 8, 2021 indicates that the mule deer population on Jim Sage is stable.

The 2003 Jim Sage RHA noted that documented sightings of antelope were very few. However, antelope sightings have increased within the allotment over the past several years and sightings are now common and yearlong forage is being provided. In addition, the Idaho Department of Fish and Game did not provide any information to suggest that antelope forage is limited on the allotment in their response to the proposal.

The proposed action and alternatives are not expected to negatively affect forage for antelope and mule deer.

APPENDIX B Species Specific Wildlife Resource Guidelines

2. Bobcat

A. Continue present predator control policies with IDF&G and F&WS to hold down predation on wildlife species as well as livestock.
Response: This species-specific wildlife resource guideline is not applicable to this project.

4. Long-billed Curlew

A. Restrict ORV use in known curlew habitat areas.
Response: This species-specific wildlife resource guideline is not applicable to this project.
B. Do not dispose of public land in known curlew habitat areas.
Response: This species-specific wildlife resource guideline is not applicable to this project.
C. Allow for spring and summer grazing in known curlew habitat area.
Response: This species-specific wildlife resource guideline is consistent with the proposed action and alternatives, except the No Grazing Alternative.

D. A wildlife clearance is recommended in curlew habitat prior to project construction or maintenance. If project construction is to take place between April 1 and June 30 construction will be delayed if nesting curlews are located.
Response: A wildlife clearance will be completed for proposed range improvements, to adhere to this species-specific wildlife resource guideline.

5. Burrowing Owl

A. On any vegetation projects leave areas of brush will be left in known burrowing owl habitat areas to provide for perches and food supply (rodents, insects, etc.) at the time the land treatment project is initiated.
Response: This species-specific wildlife resource guideline is not applicable to this project.
B. Do not dispose of public land within known burrowing owl habitat area.
Response: This species-specific wildlife resource guideline is not applicable to this project.
C. Allow for summer, winter and fall grazing in known burrowing owl habitat area.
Response: This species-specific wildlife resource guideline is consistent with the proposed action and alternatives, except the No Grazing Alternative.
D. Allow no poisoning programs to be undertaken to control rodent populations in the known burrowing owl habitat areas.
Response: This species-specific wildlife resource guideline is not applicable to this project.
E. A wildlife clearance is recommended in known burrowing owl habitat areas if project construction is to take place between April 1st and June 30th. Construction will be delayed if active burrowing owl borrows are located.
Response: A wildlife clearance will be completed for proposed range improvements, to adhere to this species-specific wildlife resource guideline.

6. Ferruginous Hawk

A. Protect any known and potential nesting sites. These are isolated juniper trees.
Response: This species-specific wildlife resource guideline is not applicable to this project.
B. All brush control projects in the ferruginous hawk habitat areas will provide for patches, leave strips and irregular patterns of brush for habitat for prey species such as rabbits and ground squirrels.
Response: This species-specific wildlife resource guideline is not applicable to this project.
C. Restrict activity within 2,000 to 3,000 feet of known nest sites from March 1st to July 15th.
Response: A wildlife clearance will be completed for proposed range improvements, to adhere to this species-specific wildlife resource guideline.
D. No surface occupancy within 1/2 mile of active nest sites.
Response: This species-specific wildlife resource guideline is not applicable to this project.
E. Do not dispose of public land within known ferruginous hawk areas.
Response: This species-specific wildlife resource guideline is not applicable to this project.

8. Mule Deer and Pronghorn Antelope

A. Allocate forage for mule deer and pronghorn antelope to meet current demands by allotment and season of use for 1982 and to meet 1995 populations projections. (Refer to CRMP WL Table 16 and 17.)
Response: See response to wildlife required action.
B. Allow for oil and gas exploration and development and other mineral activities with stipulations to protect mule deer and antelope habitat in crucial winter ranges and fawning areas. Restrict vehicle use to existing roads and trails in big game winter use area.

Response: This species-specific wildlife resource guideline is not applicable to this project.

C. Improve mule deer and antelope habitat areas by making water available to these species on existing and planned livestock water systems. Allow for wildlife water projects when areas are identified that indicate water to be a limiting factor.

Response: This species-specific wildlife resource guideline is consistent with the proposed action and alternatives, except the No Grazing Alternative.

D. Implement grazing systems in deer crucial winter ranges to provide adequate browse production for winter use.

Response: The rangelands within the crucial wintering area are healthy and productive (Standards 4 and 5 are being met in these areas as per the RHA). Cattle generally do not utilize browse species on the Jim Sage Allotment. Wildlife use on browse species has not been observed to be in excess, indicating that adequate browse is present. Idaho Fish and Game has not indicated that there are any issues related to this issue.

E. Maintain and/or enhance through grazing systems, the existing habitat in the following allotments to provide for spring forb production for current antelope number (198) and to meet 1995 population projections. (Refer to WL Overlay 3 and 5 and WL Table 19.)

Response: This species-specific wildlife resource guideline (forage for mule deer and antelope) is currently being met (Standard 4 and 5 are being met for general wildlife habitat as per the Jim Sage RHA). Based upon recent observations, antelope numbers are increasing. Proposed action and alternatives are not proposing actions that will negatively affect mule deer and antelope forage.

F. Improve existing and future big game habitat by interseeding crested wheatgrass seedings with shrubs and forbs to accommodate antelope.

Response: This species-specific wildlife resource guideline is not applicable to this project.

G. Include a mixture of grasses, forbs and shrubs in all vegetation rehabilitation projects as well as allowing for leave areas and edge effect in big game ranges.

Response: This species-specific wildlife resource guideline is not applicable to this project.

H. Limit the size of plowing and seeding, spraying and burning in antelope ranges. These practices tend to destroy too much of the native brush species that antelope depend on for their subsistence.

Response: This species-specific wildlife resource guideline is not applicable to this project.

I. In existing and potential antelope ranges, existing fences will meet standard fencing specifications as outlined in BLM Manual 1772.21. Construction of all new fences in antelope ranges will meet current antelope fence specifications.

Response: The proposed action and alternatives are not proposing any smooth/barb wire fences in this permit renewal. Electric fences are proposed in the permit renewal but are to be constructed with appropriate heights so antelope may pass unobstructed to adhere to this species-specific wildlife resource guideline.

J. Acquire through exchange, if possible, those tracts of land identified on WL Overlay 6 "Capability Analysis" that are within the mule deer migration routes.

Response: This species-specific wildlife resource guideline is not applicable to this project.

K. Maintain cover in deer migration routes as identified on WL Overlay 3 "Big Game Habitat Areas".

Response: This species-specific wildlife resource guideline is not applicable to this project.

9. Sage Grouse, Pheasant, Chukar, Hungarian Quail and Rabbits

B. Improve upland game habitat areas by making water available to these species on existing and planned water systems.

Response: This species-specific wildlife resource guideline is consistent with the proposed action and alternatives, except the No Grazing Alternative.

C. Allow for wildlife water projects where areas are identified that indicate water to be a limiting factor. Provide for upland game manipulation projects, seed mixture to provide game, habitat development in all vegetation. Allow for leave areas, edge effect and a grasses, forbs and shrubs to benefit upland.

Response: This species-specific wildlife resource guideline is not applicable to this project.

D. Allow for spraying, burning, chaining and plowing in rangeland areas where a decision has been made through the EA process for the proper method to use that will benefit upland game.

Response: This species-specific wildlife resource guideline is not applicable to this project.

E. Allow for limited vegetation manipulation in areas of known sage grouse brood-rearing areas and winter areas. (Refer to WL Overlay 4 "Upland Game Habitat Areas".) Refer to Sage Grouse Management in Idaho, Wildlife Bulletin No. 9, IDFG 1981, for habitat requirements for sage grouse. (Amended ARMPA 2015)

Response: This species-specific wildlife resource guideline is not applicable to this project.

F. Protect meadow seeps and springs to provide for needed production of water, £orbs and insects within upland game ranges.

Response: This species-specific wildlife resource guideline is consistent with the proposed action and alternatives since riparian standards are being met on this allotment.

G. Implement livestock grazing systems that will provide at least a 20 to 40 percent canopy cover of brush, an average plant height of 20 inches and 50 percent average utilization of grass understory in upland game habitat areas. (Amended ARMPA 2015)

Response: According to the Jim Sage RHA, the majority of the allotment is meeting the upland health standards (Standard 4 and Standard 5) which indicates that the allotment is providing suitable habitat for native wildlife. The portions of the allotment that are not meeting are due to factors other than the current livestock grazing management system (Jim Sage RHA). The proposed action and alternatives are intended to maintain or improve the current conditions. Thresholds and Responses Alternative proposes to facilitate shrub recruitment where shrubs are currently lacking due to recent wildfires. Average utilization levels across the allotment have been consistent with the 50% utilization guideline (Jim Sage RHA).

11. Non-game Species

A. Provide habitat for the raptor prey base species. rabbits, ground squirrels, mice, etc., in vegetation projects by providing for leave areas, irregular edge effect and seed mixtures to provide grasses, forbs and shrubs to benefit wildlife.

Response: This species-specific wildlife resource guideline is not applicable to this project.

B. Protect existing trees which serve as hunting perches or nest trees for non-game species. Plant and fence trees for non-game species. Plant and fence trees. singly, in clumps, or small groves, along canals. reservoirs, waterholes and near other semi-permanent water sources.

Response: This species-specific wildlife resource guideline is not applicable to this project.

C. Improve raptor habitat by modifying selected sections of powerlines when a problem has been identified.

Response: This species-specific wildlife resource guideline is not applicable to this project.

E. Improve non-game habitat areas by making water available to those species on existing and planned water systems. Allow for wildlife water projects in areas where water is a limiting factor.
Response: The proposed action and alternatives will not limit water availability for non-game species. Permittee Proposed Action proposes additional waters sources that will be available to non-game species.

F. Implement livestock grazing systems that will provide at least a 20 to 40 percent canopy cover of brush, an average plant height of 20 inches and 50 percent average utilization of grass understory in non-game habitat areas.
Response: See response above 9., G.

Amendments to the Wildlife Required Action section of the RMP:

Big Horn Sheep

In 1999, an EA (EA No# ID-024-99-023), amended the "Grazing Management Required Action" section to reallocate 300 livestock AUMs to bighorn sheep.

Response: The population of bighorn sheep is currently stable (roughly 100) and mainly utilizes the rocky slopes on the north and northwest side of the Jim Sage Mountain (Jim Sage RHA pg. 107). As a result of the conversion of domestic sheep to cattle, there are no longer domestic sheep permitted on the allotment.

Approved Resource Management Plan Amendment Sage-Grouse Conformance Review

Project Point of Contact: Scott Sayer	**Date: 08/19/2021**
Project Name: *Jim Sage Permit Renewal/Range Improvements*	
Project Type: *Grazing Permit Renewal*	
Location: *Jim Sage Allotment*	
Which Alternative is Being Evaluated: Alternative 1	
Area of Impact:	
Conservation Area: Southern Conservation AreaSouthern Conservation Area	
Habitat Designation: IHMA and GHMAIHMA and GHMA	
Have any Adaptive Management Triggers been engaged: Yes	
Is Project Within SFA: No	
Is Project Within a BSU: No	
Does the Proposed Project contribute towards the Disturbance Cap: No *(If the Answer is yes please use the other Conformance form and submit it to the State Office)*	
Percent Disturbance within BSU: Not Applicable	**Percent Disturbance within Project Area:** Not Applicable
Allocation Choose an item.	

Please identify the Management Decisions that authorize the proposed project or otherwise appear applicable: *(This is focused on the management decisions that on a first read would generally apply to the project. However many of these on a closer read do not apply because of specific circumstances of the project. These are the MDs that would not apply and would require a brief rationale.)*

Management Decision Number	Apply?	Management Decision Text	Conformance Statement.
Objective SSS 2	Yes	Incorporate GRSG Seasonal Habitat Objectives (Table 2-2), into the design of projects or activities, as appropriate, based on site conditions and ecological potential, unless achievement of fuels management objectives require additional reduction in sagebrush cover to meet strategic protection of GRSG habitat and conserve habitat quality for the species or at least one of the following conditions can be demonstrated and documented in the NEPA analysis associated with the specific project: • These habitat objectives in Table 2-2 summarize the characteristics that research has found represent the seasonal habitat needs for GRSG. The specific seasonal components identified in the table were adjusted based on local science and monitoring	Modified HAF, AIM and LMF monitoring was stratified to ecological sites within sage-grouse Seasonal Use Areas. All monitoring, including Standards and Guidelines, were consistent with the Greater Sage-Grouse Monitoring Framework (2015 ARMPA Appendix D). Vegetation conditions within each of the monitored sites were then compared against the habitat objectives thresholds in Table 2-2. Each plot was then determined to be suitable, marginal, or unsuitable when compared to these objectives. The aggregation of these sites were then used to within the Seasonal Habitat Summary (Appendix F) and the Management Unit Supplement (Appendix G).

			data to define the range of characteristics used in this subregion. Thus, the habitat objectives provide the broad vegetative conditions we strive to obtain across the landscape that indicate the seasonal habitats used by GRSG. These habitat indicators are consistent with the rangeland health indicators used by the BLM. • The habitat objectives will be part of the GRSG habitat assessment to be used during land health evaluations (see Appendix D, Monitoring Framework). These habitat objectives are not obtainable on every acre within the designated GRSG habitat management areas. Therefore, the determination on whether the objectives have been met will be based on the specific site's ecological ability to meet the desired condition identified in the table.	
	MD SSS 7	Yes	GRSG habitat within the project area will be assessed during project-level NEPA analysis within the management area designations (PHMA, IHMA, GHMA). Project proposals and their effects will be evaluated based on the habitat and values affected.	GRSG will be assessed in the NEPA.
	MD SSS 22	Yes	When any of the Criteria for Hard Triggers have been met then all PHMA management actions will be applied to the IHMA within that Conservation Area and the Implementation Team will evaluate causal factors and recommend additional potential implementation level activities.	Population triggers have been met and all IHMA is managed as PHMA.
	MD SSS 23	No	If an adaptive regulatory trigger is tripped and livestock grazing is identified as a probable limiting factor	The Jim Sage Allotment originally did not have any designation of Priority Habitat

			then adjustments will follow the Adaptive Grazing Management Response described in **Appendix E**.	Management Area (PHMA) however, in 2019, the 2015 Idaho ARMPA hard adaptive management population triggers for sage-grouse were tripped within the Southern Idaho Conservation Area IHMA. Per the ARMPA, once a population trigger is tripped, all IHMA in Southern Idaho Conservation Areas will be managed as PHMA until the population recovers to pre-2011 thresholds. Causal factor analysis is not yet complete. However, preliminary analysis for three of the four other Conservation Areas in Idaho identified habitat change due to wildfire (primarily loss of sagebrush) as a potential primary factor. Predation by ravens and anthropogenic disturbance, including agriculture, contributed to the tripped trigger (Ellsworth et al., 2019; Moser, 2019) and are included within Cumulative Effects discussion Section 4.6. For livestock grazing, management actions associated with PHMA are no different than the management actions described for IHMA. Therefore, the management under the alternatives and effects analysis in this EA remains the same.
	MD SSS 27	No	For Idaho and Montana, if the 3 percent anthropogenic disturbance cap is exceeded on lands (regardless of land ownership) within GRSG PHMA (or IHMA in Idaho) Habitat Management Areas in any given BSU, then no further discrete anthropogenic disturbances (subject to applicable laws and regulations, such as the General Mining Law of 1872, as amended, valid existing rights, etc.) will be permitted by BLM within GRSG PHMA and IHMA in any given BSU until the disturbance has been reduced to less than the cap, as measured according to the	The 3 percent anthropogenic disturbance cap has not been exceeded. When and if it has been exceeded MD SSS 27 will apply.

			Disturbance and Adaptive Management Appendix (**Appendix E**) for the intermediate scale. For Idaho, if the 3 percent disturbance cap is exceeded on all lands (regardless of land ownership) within a proposed project analysis area (**Appendix E**) in a PHMA (or IHMA in Idaho), then no further anthropogenic disturbance will be permitted by BLM until disturbance in the proposed project analysis area has been reduced to maintain the area under the cap (subject to applicable laws and regulations, such as the General Mining Law of 1872, as amended, valid existing rights, etc.). In both Idaho and Montana, within existing designated utility corridors, the 3% disturbance cap may be exceeded at the project scale if the site specific NEPA analysis indicates that a net conservation gain to the species will be achieved. This exception is limited to projects which fulfill the use for which the corridors were designated (ex., transmission lines, pipelines) and the designated width of a corridor will not be exceeded as a result of any project co-location. For Idaho the BSU (**Figure 2-2**) is defined as the currently mapped nesting and wintering habitat within PHMA and IHMA within a Conservation Area, inclusive of all ownerships. For Montana the BSU is defined as the PHMA in Montana. Anthropogenic disturbance excludes habitat disturbance from wildfire and fuels management activities and includes the following developments (see **Appendix E** for further details): • Oil and Gas Wells and Development Facilities • Coal Mines • Wind Towers • Solar Fields • Geothermal Development Facilities	

			• Mining (Active Locatable, Non-Energy Leasable and Saleable Developments) • Roads • Railroads • Power lines • Communication Towers • Other Vertical Structures • Coal bed Methane Ponds • Meteorological Towers (e.g., wind energy testing) • Nuclear Energy Facilities • Airport Facilities and Infrastructure • Military Range Facilities and Infrastructure • Hydroelectric Plants • Recreation Areas Facilities and infrastructure For Idaho this disturbance is measured by direct footprint or by ROW width for linear features (power lines, pipelines and roads). For Montana disturbance is measured similar to the Wyoming Disturbance Density Calculation Tool process described in **Appendix E**. Subject to applicable laws and regulations and valid existing rights, if the average density of one energy and mining facility per 640 acres (the density cap) is exceeded on all lands (regardless of land ownership) in the Priority Habitat Management Area within a proposed project analysis area, then no further disturbance from energy or mining facilities will be permitted by BLM: (1) until disturbance in the proposed project analysis area has been reduced to maintain the limit under the cap; or (2) unless the energy or mining facility is co-located into an existing disturbed area.	
	MD SSS 28	No	New anthropogenic disturbances within PHMA or IHMA within a	The disturbance cap is not exceeded.

			Conservation Area where the disturbance cap is already exceeded from any source or where the proposed development will result in the cap being exceeded will not be allowed in within that Conservation Area until enough habitat has been restored within that Conservation Area to maintain the area under this cap (subject to valid existing rights).	
	MD SSS 29	No	New anthropogenic disturbances within PHMA (Idaho only): Anthropogenic Disturbance Screening Criteria. In order to avoid surface-disturbing activities in PHMA, priority will be given to development (including ROWs, fluid minerals and other mineral resources subject to applicable stipulations) outside of PHMA. When authorizing development in PHMA, priority will be given to development in non-habitat areas first and then in the least suitable habitat for GRSG. In addition to the PHMA and IHMA Anthropogenic Disturbance Development Criteria (MD SSS 30), the following criteria must all be met in the project screening and assessment process: **a.** The population trend for the GRSG within the associated Conservation Area is stable or increasing over a three-year period and the population levels are not currently engaging the adaptive management triggers (this applies strictly to new authorizations; renewals and amendments of existing authorizations will not be subject to this criteria when it can be shown that long-term impacts from those renewals or amendments will be substantially the same as the existing development); **b.** The development with associated mitigation will not result in a net loss of GRSG Key habitat and mitigation will provide a net conservation benefit to the respective PHMA; **c.** The project and associated impacts will not result in a net loss of GRSG	According to Appendices E range improvements are not an anthropogenic disturbance and does not go towards the disturbance cap.

			Key habitat or habitat fragmentation or other impacts causing a decline in the population of the species within the relevant Conservation Area (the project will be outside Key habitat in areas not meeting desired habitat conditions or the project will provide a benefit to habitat areas that are functioning in a limited way as habitat); **d.** The development cannot be reasonably accomplished outside of the PHMA; or can be either: 1) developed pursuant to a valid existing authorization; or 2) is co-located within the footprint of existing infrastructure (proposed actions will not increase the 2011 authorized footprint and associated impacts more than 50 percent, depending on industry practice). **e.** Development will be implemented adhering to the required design features (RDF) described in **Appendix C**; **f.** The project will not exceed the disturbance cap (MD SSS 27) **g.** The project has been reviewed by the State Implementation Team and recommended for consideration by the Idaho Governor.	
	MD SSS 30	No	The following Anthropogenic Disturbance Development Criteria must be met in the screening and assessment process for proposals in PHMA and IHMA to discourage additional disturbance in PHMA and IHMA (as described in MD LR 2 and MD RE 1; applies to Idaho only): **a.** Through coordination with the USFWS and State of Idaho (as described in MD CC 1), it is determined that the project cannot be achieved, technically or economically, outside of this management area; and **b.** The project siting and/or design should best reduce cumulative impacts and/or impacts on GRSG and other high value natural, cultural, or societal resources; this may include colocation	According to Appendices E range improvements are not an anthropogenic disturbance and does not go towards the disturbance cap.

			within the footprint for existing infrastructure, to the extent practicable; and **c.** The project results in a net conservation gain to GRSG Key habitat or with beneficial mitigation actions reduces habitat fragmentation or other threats within the Conservation Area; and **d.** The project design mitigates unavoidable impacts through appropriate compensatory mitigation; and **e.** Development will be implemented adhering to the RDFs described in **Appendix C**. **f.** The project will not exceed the disturbance cap (MD SSS 27).	
	MD SSS 32	Yes	Incorporate RDFs as described in Appendix C in the development of project or proposal implementation, reauthorizations or new authorizations and suppression activities, as conditions of approval (COAs) into any post-lease activities and as best management practices for locatable minerals activities, to the extent allowable by law, unless at least one of the following conditions can be demonstrated and documented in the NEPA analysis associated with the specific project: **a.** A specific RDF is not applicable to the site-specific conditions of the project or activity; **b.** A proposed design feature or BMP is determined to provide equal or better protection for GRSG or its habitat; or **c.** Analysis concludes that following a specific RDF will provide no more protection to GRSG or its habitat than not following it, for the project being proposed.	The projects will follow all necessary RDFs listed in this document.
	MD SSS 33	Yes	Conduct implementation and project activities, including construction and short-term anthropogenic disturbances consistent with seasonal habitat restrictions described in **Appendix C**.	Timing restrictions will be enforced per Appendix C.
	MD SSS 34	Yes	RDFs and seasonal habitat restrictions will not be required for emergency or	RDFs and habitat restrictions will not be required for

			short-term activities necessary to protect and preserve human life or property.	emergency actions to protect human life or property.
	MD SSS 40	Yes	Monitor project construction areas for noxious weed and invasive species for at least 3 years, unless control is achieved earlier.	Twin Falls District weed crews and BFO staff will monitor and treat any establishment of noxious weeds.
	MD VEG 4	Yes	Implement management changes in restoration and rehabilitation areas, as necessary, to maintain suitable GRSG habitat, improve unsuitable GRSG habitat and to ensure long-term persistence of improved GRSG habitat (Eiswerth and Shonkwiler 2006). Management changes can be considered during livestock grazing permit renewals, travel management planning, and renewal or reauthorization of ROWs.	Management changes are proposed in restoration areas in the Threshold and Response Alternative with the goal to improve unsuitable GRSG habitat.
	MD VEG 7	Yes	During land health assessments, evaluate the relative value of existing nonnative seeding within GRSG habitat as: 1) a component of a grazing system allowing improvement of adjacent native vegetation, 2) development of a forage reserve, 3) incorporation into a fuel break system (Davies et al. 2011) or 4) restoration/diversification for GRSG habitat improvement. Where appropriate and feasible, diversify seedings, or restore to native vegetation when potential benefits to GRSG habitat outweigh the other potential uses of the non-native seeding, with emphasis on PHMA and IHMA. Allow recolonization of seedings by sagebrush and other native vegetation.	During the land health assessment, we evaluated GRSG habitat throughout the allotment including the seeded areas. Alternative 2 proposes two fences that would allow native vegetation to be managed separately from seeded vegetation. Alternative 3 was developed to address lack of sagebrush cover in some historic seedings and other areas.
	MD VEG 12	No	Require project proponent (projects described in MD SSS 27 and which are included in the anthropogenic disturbance cap evaluation) to ensure that noxious weeds and invasive species caused as a result of the project are treated to eliminate establishment on the disturbed project construction areas for at least 3 years and monitored and treated during the life of the project.	This MD doesn't apply since range improvements aren't considered an anthropogenic disturbance. However, monitoring of weeds during and after construction of range improvements will be conducted.

	MD FIRE 27	No	Targeted grazing as a fuels treatment to adjust the vegetation conditions to reduce the potential start and spread of wildfires may be implemented within existing grazing authorizations if feasible such as through temporary non-renewable authorizations, or through contracts, agreements or other appropriate means separate from existing grazing authorizations and permits.	Targeted grazing, specifically as a fuel's treatment, is not considered within the alternatives. However, the effects of grazing as a vegetation management tool to assist with future vegetation treatments is analyzed.
	MD FIRE 28	Yes	Targeted grazing to achieve fuels management objectives should conform to the following criteria: **a.** Targeted grazing should be implemented strategically on the landscape, and directly involve the minimum footprint and grazing intensity required to meet fuels management objectives. **b.** Conform to the applicable Standards for Rangeland Health and Guidelines for Livestock Grazing Management (Idaho or Montana) at the assessment scale (pasture/watershed). **c.** Where feasible and applicable coordinate with the grazing permittee to strategically reduce fuels through livestock management within the Mandatory Terms and Conditions of the applicable grazing authorizations	The Threshold and Response Alternative conforms to these criteria and was developed to aid in achieving fuels management objectives and sage-grouse habitat objectives.
	MD LG 1	Yes	Maintain existing areas designated as available or unavailable for livestock grazing. Existing active AUMs for livestock grazing within the planning area will not be changed at the broad scale, though the number of AUMs available on an allotment may be adjusted based on site-specific conditions to meet management objectives during term permit renewals, AMP development, or other appropriate implementation planning. Additionally, temporary adjustments can be made annually to livestock numbers, the number of AUMs, and season of use in accordance with applicable regulations.	The Jim Sage Permit renewal addresses site specific conditions and management objectives specifically for the allotment.
	MD LG 4	Yes	PHMA & IHMA: During the land health assessment process, identify the	Seasonal Habitat was mapped and assessed for areas that are

			type(s) of seasonal habitat the assessed areas are capable of supporting. Utilize the habitat assessment framework, (Stiver et al. 2015) or other BLM approved methodology, in accordance with current policy and guidance to determine whether vegetation structure, condition and composition are meeting GRSG habitat objectives including riparian and lentic areas (Objective SSS 2; Table 2-2). Use appropriate Ecological Site Descriptions, reference sheets and state and transition models to inform desired habitat conditions and expected responses to management changes for the land unit being assessed.	capable of supporting sage-grouse. The HAF thresholds were included within the site-scale suitability analysis ratings. Seasonal habitat was assessed utilizing the AIM core methods which are derived from Land Health Assessment metrics to determine desired habitat conditions. HAF thresholds were also applied to the Standard and Guides data to determine the habitat suitability for each of those locations. The expected responses to management changes were analyzed in the alternatives.
	MD LG 5	Yes	When modifying grazing management, analyze indirect impacts on habitat, including changes in fuel loading and wildfire behavior.	The Jim Sage Permit renewal addresses site specific conditions and management objectives specifically for the allotment. The alternatives analyzed the effects on habitat including changes in fuel loading and fire behavior.
	MD LG 6	Yes	When livestock management practices are determined to not be compatible with meeting or making progress towards achievable habitat objectives following appropriate consultation, cooperation and coordination, implement changes in grazing management through grazing authorization modifications, or allotment management plan implementation. Potential modifications include, but are not limited to, changes in: • Season or timing of use; • Numbers of livestock; • Distribution of livestock use; • Duration and/or level of use; • Kind of livestock (e.g., cattle, sheep, horses, or goats) (Briske et al. 2011); and • Grazing schedules (including rest or deferment). *Not in Priority Order	Although livestock management has been determined to not be the issue associated with the habitat not meeting or making progress towards meeting, the Jim Sage Permit renewal addresses site specific conditions, livestock management practices, and management objectives specifically for the allotment.
	MD LG 8	Yes	PHMA & IHMA - Where practical, design pasture rotations to utilize non-	The alternatives analyzed in the EA incorporate pasture rotations

		native perennial grass seedings and/or annual grasslands, during GRSG nesting season annually or periodically.	to meet GRSG seasonal needs and Idaho Standards of Rangeland Health.
MD LG 9	Yes	Evaluate the locations where salt/supplements are placed, coordinate salt/supplements placement to reduce impacts on GRSG habitat (e.g., existing disturbed areas).	The salt/supplement locations were evaluated during the land health evaluation and no issues were identified.
MD LG 10	No	Incorporate RDFs into Terms and Conditions for crossing permits to limit disturbance of occupied leks when trailing livestock across BLM administered lands in the spring. Work with permittees in locating over-nighting, watering and bedding locations to minimize impacts on seasonal habitats.	The proposed action does not address trailing permits.
MD LG 11	Yes	Design any new structural range improvements, following appropriate cooperation, consultation and coordination, to minimize and/or mitigate impacts on GRSG habitat. Any new structural range improvements should be placed along existing disturbance corridors or in unsuitable habitat, to the extent practical, and are subject to RDFs (**Appendix C**). Structural range improvement in this context, include, but are not limited to: fences, exclosures, corrals or other livestock handling structures; pipelines, troughs, storage tanks (including moveable tanks used in livestock water hauling), windmills, ponds/reservoirs, solar panels and spring developments.	Range improvements are designed with RDFs and BMPs.
MD LG 12	Yes	During the land health assessment and grazing permit renewal process, evaluate existing livestock management range improvements with respect to their effect on GRSG habitat. Consider removal of projects that are not needed for effective livestock management, are no longer in working condition, and/or negatively affect GRSG habitat, with the exception of functional projects needed for management of habitat for other threatened, endangered or proposed species or other sensitive	All range improvements (current and proposed) were evaluated to assess the effects to GRSG habitat, and special status species.

		resources.	
MD LG 13	Yes	Prioritize removal, modification or marking of fences or other structures in areas of high collision risk following appropriate cooperation, consultation and coordination to reduce the incidence of GRSG mortality due to fence strikes (Stevens et al. 2012).	Existing fences within high and medium collision risk areas have been marked. Proposed fences would be a highly visible white electric fence tape or marked as appropriate.
MD LG 14	Yes	In response to weather conditions (i.e. drought) adjust grazing management (i.e., delay turnout, adjust pasture rotations, adjust the amount and/or duration of grazing) as appropriate to provide for adequate food and cover for GRSG.	The adjustment to grazing management and response to weather conditions is currently occurring and will continue.
MD LG 16	Yes	The NEPA analysis for renewals and modifications of livestock grazing permits/leases that include lands within SFA and PHMA will include specific management thresholds, based on GRSG Habitat Objectives Table, Land Health Standards (43 CFR 4180.2) and ecological site potential, and one or more defined responses that will allow the authorizing officer to make adjustments to livestock grazing that have already been subjected to NEPA analysis.	The Threshold and Response Alternative was developed to address this MD as it pertains to plant communities and GRSG habitat objectives.
MD LG 17	Yes	Allotments within SFA, followed by those within PHMA, and focusing on those containing riparian areas, including wet meadows, will be prioritized for field checks to help ensure compliance with the terms and conditions of the grazing permits. Field checks can include monitoring for actual use, utilization, and use supervision. Management and conservation action prioritization will occur at the Conservation Area (CA) scale and be based on GRSG population and habitat trends: Focusing management and conservation actions first in SFA followed by areas of PHMA outside SFA.	Monitoring of resources is a component of alternatives.
MD CC 1	Yes	Collaborate, coordinate and utilize cooperative planning efforts to implement and monitor activities to achieve desired conditions and to	Private, tribes, federal, and state entities all have been part of data collection, planning, and advising during the Jim Sage Permit renewal process.

		maximize the utilization of available funding opportunities. Coordination efforts can include: adjacent landowners, federal and state agencies, local governments, tribes, communities, other agencies, resource advisory groups, public lands permit holders and nongovernmental organizations.	

Required Design Features that Seem Applicable:

RDF Number	Apply?	RDF Text	Conformance Statement.
1	Yes	Solicit and consider expertise and ideas from local landowners, working groups, and other federal, state, county, and private organizations during development of projects.	Scoping of the RHA and the EA was conducted. Comments were received and addressed and utilized to develop alternatives.
2	Yes	No repeated or sustained behavioral disturbance (e.g., visual, noise over 10 dbA at lek, etc.) to lekking birds from 6:00 pm to 9:00 am within 2 miles (3.2 km) of leks during the lekking season.	Installation of the new range improvements will be conducted outside of the lekking season (March 1- May 15)
3	Yes	Avoid mechanized anthropogenic disturbance, in nesting habitat during the nesting season when implementing: 1) fuels/vegetation/habitat restoration management projects, 2) infrastructure construction or maintenance, 3) geophysical exploration activities; 4) organized motorized recreational events.	The use of mechanized equipment for range improvement projects will be conducted outside of the nesting season (May 1-June 30)
4	Yes	Avoid mechanized anthropogenic disturbance during the winter, in wintering areas when implementing: 1) fuels/vegetation/habitat restoration management projects, 2) infrastructure construction or maintenance, 3) geophysical exploration activities; 4)organized motorized recreational events.	The use of mechanized equipment for range improvement projects will be conducted outside of wintering areas. (November-March)
42	Yes	Reduce annual grass densities and competition through herbicide, targeted	Herbicide treatments are an ongoing action on Jim Sage. Grazing is analyzed within the

		grazing, tillage, prescribed fire, etc. (Pyke 2011).	Threshold and Response Alternative in relation to other treatments.
43	Yes	Reduce density and competition of introduced perennial grasses using appropriate techniques to accomplish this reduction (Pellant and Lysne 2005).	Under the current permit the highest stocking rates are applied to historical crested wheatgrass seedings as opposed to having higher stocking rates in native sites. Sagebrush recruitment is also an emphasis in some historic crested wheatgrass and newer introduced seedings to improve sagebrush cover for nesting/early brood - rearing.
45	Yes	Assess existing on-site vegetation to ascertain if enough desirable perennial vegetation exists to consider techniques to increase on-site seed production to facilitate an increase in density of desired species.	Areas in the allotment targeted for cheatgrass treatment are lacking adequate quantities of desirable vegetation and have crossed an ecological threshold. These areas do not have enough on site seed production to naturally recover. The Threshold and Response Alternative.
105	Yes	Avoid building new wire fences within 2 km of occupied leks (Stevens 2011). If this is not feasible, ensure that high risk segments are marked with collision diverter devices or as latest science indicates.	Current fences are constructed to wildlife standards and high priority fences are marked with flight diverters. New fence installation was analyzed in Alternative 2.
106	Yes	Place new, taller structures, including corrals, loading facilities, water storage tanks, windmills, out of line of sight or at least one kilometer (preferably 3 km) from occupied leks, where such structures would increase the risk of avian predation.	None of these structures are proposed in the proposed action or alternatives.
107	Yes	Utilize temporary fencing (e.g., ESR, drop down fencing) where feasible and appropriate to meet management objectives.	Highly visible electric fences may be let down.
108	No	Fence wetlands (e.g., springs, seeps, wet meadows and/or riparian areas) where appropriate, to maintain or foster progress toward Proper Functioning Condition and to facilitate management of sage-grouse habitat objectives. Where constructing fences or exclosures to improve riparian and/or upland management, incorporate fence marking or other BMPs/RDFs as appropriate.	Appropriate areas throughout Jim Sage have already been fenced and all are meeting PFC. No new riparian fences are proposed.

	109	No	During lekking periods, as determined locally (approximately March 15-May 1 in lower elevations and March 25-May 15 in higher elevations), livestock trailing will be avoided to the extent possible within 1 km (0.62 mile) of occupied leks between 6:00 p.m. and 9:00 a.m. to avoid disturbance to lekking and roosting sage-grouse. Over-nighting, watering and sheep bedding locations on public lands must be at least 1 km from occupied leks during the lekking season to reduce disturbance from sheep, human activity and guard animals.	No spring trailing events occur near lekking locations.
	111	Yes	When trailing livestock during the lekking or nesting season, use roads or existing trails, to the extent possible to reduce disturbance to roosting, lekking or nesting sage-grouse.	Roads and trails are currently used for trailing livestock.
	112	No	Design new spring developments in GRSG habitat to maintain or enhance the free flowing characteristics of springs and wet meadows. Modify developed springs, seeps and associated pipelines to maintain the continuity of the predevelopment riparian area within priority GRSG habitat where necessary.	No new spring developments within sage-grouse seasonal habitat is being proposed.
	113	Yes	Install ramps in new and existing livestock troughs and open water storage tanks to facilitate the use of and escape from troughs by GRSG and other wildlife.	Ramps will be installed on all new trough locations
	114	Yes	Construct water return features and maintain functioning float valves to prohibit water from being spilled on the ground surrounding the trough and/or tank and return water to the original water source, to the extent practicable.	Float valves will be installed on all new troughs.
	116	No	Develop and maintain non-pond/reservoir watering facilities, such as troughs and bottomless tanks, to provide livestock water.	No new ponds are proposed for development.
	117	Yes	For most spring developments or wells, mosquito breeding habitat usually is not an issue. Flowing cold (less than 50° Fahrenheit) water and steep sides of the stock tanks are not conducive for egg laying or larvae production. If flows are low, the water is warm, or moss production is an issue in the tank,	Noted

		mosquito breeding habitat could exist in the tank.	
118	Yes	Maintenance of healthy wetlands at spring sources helps control mosquitoes and their larvae by providing habitat for natural predators such as birds, dragonflies and amphibians. Protecting the wetland at the spring source with a fence is an option to consider.	Exclosures have been installed on multiple spring heads within the allotment to protect the spring source and wetland vegetation to promote the health and function of these systems. Also, existing streams outside of fenced areas are in Proper Functioning Condition.
119	Yes	Clean and drain stock tanks before the season starts. If never cleaned or drained, many tanks will fill with silt or debris causing warmer water and heavy vegetation growth conducive to mosquito reproduction.	A term and condition will be included within the permit requiring the removal of vegetation of troughs when necessary.
120	Yes	Draining tanks after the period of use is completed, particularly in warmer weather, also reduces potential habitat by eliminating stagnant standing water.	A term and condition will be included within the permit requiring the removal of vegetation of troughs when necessary.
121	Yes	Maintain a properly functioning overflow to prevent water from flowing onto the pad and surrounding area, to eliminate or minimize pooling of water that is attractive to breeding mosquitoes.	Range improvement maintenance is a term and condition in the permit.
122	Yes	Clean or deepen overflow ponds to maintain colder temperatures to reduce mosquito habitat.	If mosquito larva becomes an issue periodic maintenance to ponds may occur.
123	Yes	Install and maintain float valves on stock tank fill pipes to minimize overflow	Float valves will be installed
124	No	Harden stock tank pads to reduce tracks that can potentially hold water where mosquitoes may breed.	This is not known to be a current issue. Maintenance to troughs is within the terms and conditions of the permit.
131	Yes	Where an existing reservoir has filled with silt, consider cleaning to reduce shallow water habitat conducive to mosquito reproduction.	If mosquito larva becomes an issue periodic maintenance to ponds may occur.
132	Yes	During confirmed West Nile virus outbreaks in sage-grouse habitat, consider larvicide applications.	If mosquito larva becomes an issue periodic maintenance to ponds may occur and larvicide applications will be considered.

Is Mitigation Required: *(If the Answer is yes please use the other Conformance form and submit it to the State Office)*

Rationale or Brief Description of Mitigation: Not Applicable

Is the Project in Conformance with the Sage-grouse ARMPA: As long as MD and RDFs are followed this will be in conformance.

Rationale:

Reviewer(s): Eric Killoy	**Date: 08/19/2021**
Additional Needs:	
Conclusion:	

Appendix C: Scoping Comments and Responses

Table 1. Responses to Scoping Letters- Permit Renewal/Scoping Report for the Jim Sage Allotment

Interested Public/Permittee	Date of Letter	Issue /Comment Identified	ID (Interdisciplinary) Team Response
Idaho State Department of Agriculture	Email 06/15/21	What is the anticipated season of use for the increased grazing on the cheatgrass?	The anticipated season of use will be identified in the analysis.
		Is the increased use going to be an annual allowance or until a specific goal is reached?	Increased use will be discussed in the analysis.
		What are the anticipated effects of the increased grazing in these areas on the perennial grasses?	The anticipated effects to vegetation will be discussed in the analysis.
Western Watersheds Project	July 5, 2021	Current proposed alternatives are inadequate and do not address the ongoing failure to meet ISRH standards (especially standards 4 and 8). BLM must offer an alternative that meaningfully addresses and restores rangeland health (especially regarding sage grouse)	The cause of not meeting Standards 4 and 8 is not attributed to current grazing management. We will address the shortcomings of Standard 8 and 4 in all alternatives.,
		Given that BLM and the permittees have had nearly 17 years since the 2003 RHA to bring Jim Sage into compliance with IRHS standards (esp. #4 and #8), it is concerning that this alternative offers little to no substantive change over the status quo, which has proven ineffective at moving these rangeland health metrics toward improvement. Even more concerning, under this management framework sage grouse numbers have dropped	The reasons for not meeting in the 2003 RHA were different causes than our current issues in the 2021 RHA. The RHA describes accomplishments in the last 17 years (pgs. 3-5, 134). Standards 2 and 3 are now meeting and 7 is improving. Standard 8 is not meeting for new reasons different than those stated in 2003; the main cause is wildfire. The total acreage not meeting Standard 4 has been reduced due to the juniper work that has been completed since the early 2000's

Table 1. Responses to Scoping Letters- Permit Renewal/Scoping Report for the Jim Sage Allotment

Interested Public/Permittee	Date of Letter	Issue /Comment Identified	ID (Interdisciplinary) Team Response
		considerably, with a hard population trigger now tripped under the Idaho/Western Montana ARMPA. Leaving things as they are is no longer an acceptable or reasonable way to proceed. Alternatives that seriously consider reduced AUM's, shortened seasons of use (especially in the spring), and other measures meant to move these lands into compliance with IRHS standards must be developed.	Sage grouse numbers increased dramatically within the Jim Sage allotment after implementing the management changes in 2003, before declining statewide under the same management actions that were in place when the increase occurred. The comment for the 20% decline refers to the Southern Conservation Management area, a large portion of Southern Idaho, to which the Jim Sage allotment encompasses 1.9% of GHMA and 4.7% IHMA within the Southern Conservation Area. Within the RHA, analysis for sage-grouse seasonal habitat showed the Jim Sage was positively contributing to the overall availability of suitable habitat within the Upper Raft River fine-scale area. We are going to consider an alternative that involves delaying grazing within the core nesting habitat of the east side of Jim Sage in the spring until nesting has concluded.

		The following additional issues and questions arise regarding the proposals in Alternative 1: -Will new use areas be created with the 5.5 miles of additional fencing proposed? -Are the 3.5 miles of temporary fencing (slated to become permanent) constructed along existing roads and/or pipelines (as recommended in the ARMPA)? -Will there be any additional infrastructure associated with the new pipelines and spring development (i.e. pumps, generators, etc.)? -Given that the Jones Hollow spring has recovered from previous degradation caused by grazing, has the agency analyzed the impacts of proposed development on waterflows or the potential impacts of increased cattle presence? What is the current output of this restored spring? -What are the potential impacts of the spring exclosure fencing on sage grouse, given their reliance on riparian areas? -Will impacts to the habitat (or potential habitat) of special status species like the Northern Leopard frog be analyzed and considered in the Jones Hollow spring development? (BLM states in the 2021 RHA that springs provide habitat for this amphibian, which has been observed on Jim Sage)(see pg. 109) -Will the permittee requesting additional AUM's to address cheatgrass infestation provide range riders (or other close monitoring)	No new use areas will be created from the construction of fences. It will only partition one current pasture into two pastures limit movement of cattle out of existing pastures/use areas. The proposed electric, high visibility tape fence will be permanently used, but the tape is expected to be removed after each use period. Since it is not planned to become a permanent fence, structural range improvements along existing disturbances is not a concern and does adhere to current ARMPA guidelines (MD LG 11; RDF 107). Troughs will be gravity-fed from existing resources. No new mechanized infrastructure will be added to spring developments. The Jones Hollow spring being referenced in this EA is not the source being proposed for development in the Permittee Proposed Action. The one being proposed inside the Jones Hollow pasture is not perennial and BLM decided not to proceed with the development for water. The exclosure is not within a seasonal use area and we are not aware of any sage-grouse presence in the area. If this project is selected, the fence exclosure will be constructed using sage-grouse/wildlife-friendly buck-and-rail design. The Jones Hollow spring being referenced is not the source being proposed for development. No effects to Northern Leopard frog will be expected. Range riders will be unnecessary because the proposed area has little to no potential for remnant native plant populations to naturally recolonize the site since the area has crossed an ecological threshold where

Table 1. Responses to Scoping Letters- Permit Renewal/Scoping Report for the Jim Sage Allotment

Interested Public/Permittee	Date of Letter	Issue /Comment Identified	ID (Interdisciplinary) Team Response
		to protect the small remaining native plant populations in the Lower Red Rock Flats and Sheep Mtn. pastures? These remnant populations are crucial for recolonizing and restoring these degraded areas (areas that are a major factor in the Jim Sage allotment failing ISRH standards).	cheatgrass is the dominant species (See RHA pg. 91). Alternative 1 will address the issue or remnant perennial vegetation in these pastures.
		While WWP is happy to see BLM propose an alternative to the status quo seen in Alternative 1, the one put forth here is severely lacking in two major areas: 1) Alternative 3, as described in the scoping package, offers little to no details that would allow for a robust and substantive opportunity for public comment. There is simply not enough information provided for this to occur. What are the "thresholds and responses" and what grazing management elements would they apply to? Without more information, this alternative cannot be properly assessed. This must be further fleshed out before the comment process can proceed in earnest. 2) While the goals of sagebrush recruitment and cheatgrass control stated in Alternative 3 are laudable (presumably meant for the benefit	Details of an outlined plan were provided in the scoping report that described Alternative 3. Issues were also identified in the alternative. However, thresholds and responses had not been fully developed at the time of the completion of the scoping report, but are being developed now. The comment period was the opportunity for input on the development of the thresholds and responses. The effects to remnant native vegetation will be discussed under this alternative as per comment above. Cheatgrass control utilizing targeted grazing, planned in Alternative 3, should have been discussed better as a supplemental tool rather than the sole plan for benefiting sage-grouse. Intensified grazing is not the sole tool for managing cheatgrass populations. There are other methods planned for improving conditions for Standards 4 and 8 that BLM currently uses to combat cheatgrass, and livestock are being proposed as a tool in conjunction with theses other methods to reduce cheatgrass cover. Effects to vegetation will also be discussed in all alternatives (RHA, pg. 92 discusses current treatments that BLM has used to treat cheatgrass in this allotment).

Table 1. Responses to Scoping Letters- Permit Renewal/Scoping Report for the Jim Sage Allotment

Interested Public/Permittee	Date of Letter	Issue /Comment Identified	ID (Interdisciplinary) Team Response
		of sage grouse), BLM offers intensified grazing as the sole method of achieving this goal. Utilizing grazing to reduce cheatgrass not only seems counterintuitive, it defies reason, given that grazing and livestock can create the ideal conditions for further infestation. Has this method been thoroughly vetted and successfully applied? Are there other, more scientifically and ecologically defensible methods? If so, why aren't these considered? (see sage grouse discussion below for more on problems with targeted grazing)	
		As stated above, BLM must now consider significant reductions in permitted AUM's and shortened seasons of use (especially in spring). None of the alternatives offered seriously consider taking these actions.	We are going to consider an alternative that involves delaying grazing within the core nesting habitat of the east side of Jim Sage in the spring until nesting has concluded.
		The use of targeted grazing (proposed in both Alternatives 1 & 3), will very likely not be enough to address cheatgrass and other invasives. "Targeted" grazing is also likely to increase, rather than reduce, invasive weeds. Preliminary indications are that the grazing intensities required to reduce annual grasses, for example, are quite heavy (Young et al. 1983). Young et al. (1983), moreover, caution	We agree with the commenter's statement; we are not proposing that targeted grazing will be enough in itself to address cheatgrass.

Table 1. Responses to Scoping Letters- Permit Renewal/Scoping Report for the Jim Sage Allotment

Interested Public/Permittee	Date of Letter	Issue /Comment Identified	ID (Interdisciplinary) Team Response
		that "using livestock grazing to suppress invasive annual grasses and enhance desirable perennials assumes that desirable perennials will fill the temporary void left by the annual grasses. In many areas, however, desirable perennials may be outcompeted by species considered even more undesirable than annual grasses" (see also Williamson et al. 2019). Livestock preferentially graze native perennial grasses in sagebrush-bunchgrass plant communities, so any use of targeted grazing in these plant communities will lead to degradation of native perennial grasses and trampling of biological soil crusts, reducing resistance to non native species invasion (Reisner et al. 2013, Condon & Pyke 2018).	The effects to native plants from increased use will be an issue that will be analyzed in the EA.
		Finally, under the 2015 ARMPA, 55,880 acres of the Jim Sage Allotment are now considered a PHMA. Under this designation, management priority is to exclude or avoid disturbing sage grouse habitat. Any rangeland improvement projects (like those in alternative 1) and invasive removal projects (like those proposed in alternatives 1 & 3) must adhere to this management priority and avoid disturbance from construction or intensive grazing in sage grouse habitat. BLM needs to explain and	The review will be completed to ensure conformance with any type of anthropogenic disturbance/new infrastructure to any important or priority sage grouse habitat. Any alternative chosen will adhere to ARMPA conformance guidelines designated for sage-grouse habitat management areas. The comment about avoidance of disturbance in sage-grouse habitat is related to infrastructure as defined in ARMPA; their description does not reference grazing or grazing infrastructure.

Table 1. Responses to Scoping Letters- Permit Renewal/Scoping Report for the Jim Sage Allotment

Interested Public/Permittee	Date of Letter	Issue /Comment Identified	ID (Interdisciplinary) Team Response
		justify how this permit renewal will accomplish this task.	
Idaho Department of Fish and Game	07/08/2021	The scoping packet outlines three proposed alternatives: "Permittee Proposal Alternative", "No Grazing Alternative", and "Threshold And Response Alternative". It is our judgment that Alternative 3 (Threshold and Response) would provide the greatest benefit to wildlife and their associated habitat, particularly the sagebrush steppe ecosystem that is critical for greater sage-grouse.	Thank you for your response regarding Alternative 3. The effects to sage-grouse and sage-grouse habitat will be analyzed in all Alternatives.
		In areas of the allotment dominated by cheatgrass, there may be a lack of viable native grass seeds in the soil seed bank, and seed production from existing native grass species may be insufficient to increase native grasses following an intensive grazing treatment. Where this situation exists, additional actions such as seeding with native grasses could help promote the establishment of native grasses.	BLM agrees with this comment. Any areas that lack the native component would be reseeded with an appropriate seed mix that would compete against cheatgrass.
		Use of herbicides to treat cheatgrass is another management option used successfully in BLM's Twin Falls District to reduce competition of undesirable plants and increase desirable native habitats. In cheatgrass-dominated plant communities it may be necessary to follow herbicide treatments with a seeding of desirable native grass species.	Herbicide treatments are currently on going in cheatgrass dominated plant communities within the Jim Sage Allotment. Herbicide treatments would be expected to be reseeded with an appropriate seed mix. (RHA, pg. 92 discusses current treatments that BLM has used to treat cheatgrass in this allotment).
		Lack of precipitation in early spring can negatively influence the productivity of short-rooted annual grasses such as cheatgrass.	BLM will analyze the timing of grazing on cheatgrass and its effect on native perennial grasses to ensure that

Table 1. Responses to Scoping Letters- Permit Renewal/Scoping Report for the Jim Sage Allotment

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		Deep-rooted perennial grasses provide an alternate source of actively growing forage as annual grasses move towards dormancy. This can result in increased use of perennial plants and subsequently can reduce their productivity. Adjusting the season of use can offset this negative effect to perennial plants.	targeted grazing is not affecting long-term native perennial grass composition.
		The Jim Sage allotment contained 7 known occupied leks in 2020, all of which were found in designated Important Habitat Management Area. The perpetuation of habitat in this area will be crucial for preserving local sage-grouse populations. Alternative 3 ("Threshold and Response") will provide the best opportunity to successfully retain quality habitat.	Thank you for your response. The effects to sage-grouse and sage-grouse habitat will be analyzed in all Alternatives.

Appendix D: NEPA Checklist

INTERDISCIPLINARY TEAM ANALYSIS RECORD CHECKLIST

NUMBER: DOI-BLM-ID-T020-2022-0011- EA

PROJECT NAME: Jim Sage Permit Renewal

DETERMINATION OF STAFF:

Not Present = not present in the area impacted by the proposed or alternative actions

Not Analyzed = present, but not affected to a degree that detailed analysis is required

Analyzed = present and requires further analysis because 1) analysis of the issue is necessary to make a reasoned choice between alternatives, or 2) analysis of the issue is necessary to determine the significance of impacts. Provide a brief statement of the specific resource issue to be analyzed in place of the Rationale for Determination.

PHYSICAL RESOURCES			
Air Quality (Clean Air Act)	Determination	Reviewer	Date
	Not Analyzed	Scott Sayer	1/6/22
Rational for Determination/Preliminary Issue: *Renewal of livestock grazing permits is not expected to contribute to poor air quality. This is a continuation of ongoing activities (grazing, range improvement maintenance, etc.), which has not previously raised concerns over air quality. The Idaho Department of Environmental Quality does not require permits for these types of actions.*			
Caves (Cave Protection Act)	Determination	Reviewer	Date
	Not Present	Andrew Griffin	6/17/21
Rationale for Determination/Preliminary Issue: *There are no known caves within the Jim Sage Allotment.*			
Climate	Determination	Reviewer	Date
	Not Analyzed	Scott Sayer	1/6/22
Rationale for Determination/Preliminary Issue: *The Jim Sage Allotment authorizes 5,131 active AUMs each year on public lands. Assuming an average production of 8 kilograms of methane gas per cattle AUM (EPA 2021) and assuming methane has a global warming potential 25 times that of carbon dioxide (EPA 2021), each AUM equals 0.2 metric tons of CO^2.* *The current level of grazing would result in 1,026 metric tons of CO^2 equivalent in greenhouse gas (GHG) emitted each year from livestock within the Jim Sage Allotment.*			

These livestock emissions make up only 0.04% of the U.S. Environmental Protection Agency (EPA) mandatory reporting threshold of 25,000 metric tons of CO^2 equivalent annually. Based on the above analysis, greenhouse gas emissions from the level of grazing in the Jim Sage Allotment under all alternatives would be negligible or even undetectable.

Under the Current Management and Permittee Proposed Action Alternatives, the permitted AUMs would remain at 5,131 AUMs which would produce 1,026 metric tons of CO^2 equivalent GHG. Under Threshold and Response Alternative, the permitted AUMs would increase to 7,977 AUMs resulting in up to 1,596 metric tons of CO^2 equivalent GHG, if all AUMs were used each year. The added 570 metric tons would be a negligible contribution to the total annual national emissions. The No Grazing Alternative, in theory, would produce zero global greenhouse gases. However, the livestock not grazing on public lands may reside on private lands at increased stocking rates, so the anticipated 1,026 metric tons foregone from public lands may still occur.

Geology/Minerals/Energy	Determination	Reviewer	Date
	Not Analyzed	Andrew Griffin	6/17/21

Rationale for Determination/Preliminary Issue:

There will be no effect from livestock grazing or associated activities on the use of gravel pits and extraction of minerals.

Paleontology	Determination	Reviewer	Date
	Not Present	Wyatt Ward	1/6/22

Rationale for Determination/Preliminary Issue:

There are no know paleontology sites within the Jim Sage Allotment.

Soils	Determination	Reviewer	Date
	Analyzed	Scott Sayer	6/16/21

Rationale for Determination/Preliminary Issue:

The rangeland health determination for Jim Sage Allotment concluded that soils are stable, and that the watershed standard is being met (i.e. the amount and distribution of ground cover, including litter is adequate, resulting in stable soil conditions across the allotments). However, soils will be analyzed in the EA as appropriate.

Floodplains (EO 11988)	Determination	Reviewer	Date
	Not Analyzed	Scott Sayer	6/16/21

Rationale for Determination/Preliminary Issue:

The Proposed Action and Alternatives will not affect Raft River floodplain's ability to properly function. The portion of the Raft River floodplain within the Jim Sage Allotment is

in Proper Functioning Condition and neither the Proposed Action nor Alternatives would change the current condition of the floodplain.

Water Quality (Clean Water Act)	Determination	Reviewer	Date
	Not Analyzed	Lindsey Rush/Kate Crane	7/8/21

Rationale for Determination/Preliminary Issue:

The Idaho Final Integrated Water Quality Report was released by IDEQ in spring 2019. Within that report, the Raft River Sub-Basin Assessment reviewed all waterbodies contributing to the Raft River watershed. The Raft River Sub-Basin includes two waterbodies, Raft River and Grape Creek, monitored by IDEQ for water quality. Portions of both Raft River and Grape Creek are adjacent to the Jim Sage allotment. Only Raft River has two sections of its channel located on BLM within the West Use Area of the Jim Sage allotment. Whereas the main fork of Grape Creek is fed by several ephemeral creeks from the West Use Area of Jim Sage allotment on occasion.

The Raft River is assessed for water quality by IDEQ and monitored for PFC by the BLM. Sections of Raft River on BLM have been excluded from livestock since the 1990's. The 2003 Jim Sage Rangeland Health Assessment and Determination identified Raft River as an impaired waterbody on the State of Idaho's 303(d) list. In 2004, IDEQ assessed the amount of pollutant for the Raft River through a TMDL (total maximum daily load), and a Pollutant Reduction Target plan was developed to address these pollutants (IDEQ, 2021). For this reason, Raft River is no longer considered a 303(d) impaired waterbody. Raft River is identified as a Category 4c due to its flow alteration which is considered pollution and not a pollutant according to EPA, so IDEQ does not develop TMDLs for flow alteration or habitat alteration. According to IDEQ's 2016 Final Integrated Water Quality Report and IDEQ Water Quality analyst Tyana Weaver, Raft River's status is still "not supporting cold water aquatic life and salmonid spawning, due to a combination of flow regime modification, temperature, and sedimentation/siltation."

Only one waterbody, Raft River, is assessed by IDEQ, all other waterbodies on the Jim Sage allotment are not assessed because IDEQ considers them to be ephemeral/intermittent, or an inaccessible reach (IDEQ, 2019). Most creeks in the Jim Sage Allotment are small, spring-fed, and often dry up at the lower elevations in the late summer. IDEQ does not have a protocol to assess such kinds of streams, so they do not monitor or assess them for water quality.

The 2019 PFC surveys and ratings of riparian areas within the allotment all speak to the system being in proper functioning condition, and it is the ID team's opinion that improving riparian areas to meet PFC contributes to improved water quality. If any streams on an exceptionally high precipitation year flow to the Raft River or Grape Creek waterbodies, they should contribute positively.

The Raft River is not meeting water quality standards along the 19-mile assessment unit, however only 0.75 miles of the assessment unit occur in the Jim Sage allotment. With the exception of the Raft River, none of the streams on Jim Sage Mountain are included in the State of Idaho's 303(d) list of impaired waterbodies. Approximately 0.75 river miles on BLM, with the exception of a 100-foot water gap, has been excluded from livestock grazing since 1980 (EPA, 2013). This section is now meeting the Primary Contact Recreation

Beneficial Use Class, while it was not meeting during the 2008 Jim Sage Permit Renewal EA.

Grape Creek, in relation to this, has no perennial water flow coming from the Jim Sage allotment and none of the creeks connected to Grape Creek are monitored by IDEQ. In addition, none of the identified creeks connected to Grape Creek are monitored by the BLM since they are ephemeral. Nonetheless, according to the 2016 IDEQ Final Report, Grape Creek is fully supporting water quality.

The riparian health throughout the Jim Sage allotment have shown improvement in streambank cover and stabilizing riparian plants. Management actions from the mid to late 1990's through the early 2000's have allowed riparian areas to expand and maintain larger seasonal flows. All areas within the Jim Sage allotment are rated as PFC in 2019. Furthermore, IDEQ in communication stated that "there have been significant improvements [to Jim Sage riparian areas] … the riparian areas were limited but in good condition… observed improvements to the riparian areas and stream channel function, the current condition should no doubt reflect positively on water quality." (Tyana Weaver, personal communication, November 17, 2021) The BLM-monitored reach of the Raft River has been rated as PFC, so the characteristics concerning and precluding adequate water quality for the system are unknown.

BIOLOGICAL RESOURCES

	Determination	Reviewer	Date
Fire and Fuels Management	Analyzed	Scott Sayer	6/16/21

Rationale for Determination/Preliminary Issue:

Fire and fuels will be addressed within the EA. Wildfire was not considered an issue in the early 2000s, and no livestock grazing management changes were made to address fuels at that time. Today, the effects of recent wildfires are considered an issue, but reoccurring wildfire has not been identified as an issue on the allotment. Potential issues occur when areas burn too frequently since major components of the vegetation community and wildlife habitat are not able to fully recover. Wildfire and fuels management will be analyzed in the Threshold and Response, No Grazing, and Spring AUM Reduction Alternatives of the EA.

	Determination	Reviewer	Date
Invasive, Non-native Plant Species (Federal Noxious Weed Act, EO 13112)	Not Analyzed/Analyzed	Scott Sayer	1/11/22

Rationale for Determination/Preliminary Issue:

Cheatgrass will be addressed within the EA.

The primary noxious weeds present in the allotment are scotch thistle and black henbane. Noxious weeds are being treated annually by BLM and Cassia County. Recent wildfires and some juniper treatments temporarily increased the presence of scotch thistle. However, these areas are actively monitored and treated to control the presence and spread. Weed treatments have been successful and noxious weeds are not increasing on the allotment in the long-term. Under the current livestock management, the RHA did not link the presence

of noxious weeds to livestock grazing management and the Proposed Action and Alternatives are not expected to change that.			
Vegetation	Determination	Reviewer	Date
	Analyzed	Scott Sayer	6/16/21
Rationale for Determination/Preliminary Issue: *Vegetation will be addressed within the EA.*			
Threatened, Endangered, Candidate (ESA), and/or Sensitive Plant Species	Determination	Reviewer	Date
	Not Analyzed	Jason Theodozio	1/11/22
Rationale for Determination/Preliminary Issue: *There are no known Threatened, Endangered, Candidate plant species within the Jim Sage Allotment. Two BLM Idaho sensitive plant species occur within the Jim Sage allotment boundaries. Cusick's horsemint occurs on rocky, steep cliffs at two locations near the southern end of the allotment. Simpson's hedgehog cactus occurs on shallow soil on windswept ridges and sporadically elsewhere within the allotment. The only known threat is the collection of these plants. Livestock use is not known to be a threat to these species. Habitat for these plants is normally found where there is limited forage and livestock do not tend to concentrate.*			
Riparian Zones and Wetlands (EO 11990)	Determination	Reviewer	Date
	Analyzed	Lindsey Rush	2/1/22
Riparian will be addressed within the EA.			
Wildlife	Determination	Reviewer	Date
	Not Analyzed	Eric Killoy	2/1/22
Rationale for Determination/Preliminary Issue: *General Wildlife will not be addressed within the EA. The Jim Sage Allotment is expected to provide continued habitat for general wildlife since grazing utilization levels and management systems retain adequate foliar cover. Current grazing management guidelines and grazing systems are expected to maintain or improve nesting and foraging availability through multiple types of habitat across the Jim Sage Allotment. The treatment of roughly 22,000 acres of juniper within the sagebrush steppe has increased the amount of available habitat to sagebrush steppe species. In addition, recent wildfires and historic crested wheatgrass seedings are also providing roughly 22,000 acres of habitat to grassland species. Although there are short-term effects to wildlife habitat (removal of cover and forage) livestock grazing was not identified as the reason for the Idaho Standards for Rangeland Health to not meet Standard 8 and the current grazing management has led to the healthy condition of suitable wildlife habitat throughout the allotment. Therefore, Standard 8 is expected to continue being met for all wildlife habitat and all alternatives are not expected to have any measurable effect to general wildlife habitat on the Jim Sage Allotment.*			

Migratory Birds (EO 13186 and Migratory Bird Treaty Act)	Determination	Reviewer	Date
	Analyzed	Eric Killoy	2/1/22
Rationale for Determination/Preliminary Issue: *Migratory birds will be addressed within the EA.*			
Threatened, Endangered, Candidate (ESA), and/or Sensitive Animal Species	Determination	Reviewer	Date
	Not Analyzed/ Analyzed	Eric Killoy	2/1/22
Rationale for Determination/Preliminary Issue: *There are no known Threatened or Endangered animal species or critical habitat within the Jim Sage Allotment. BLM Sensitive Species and will be analyzed in the EA.*			
Threatened, Endangered, Candidate (ESA), and/or Sensitive Aquatic Species	Determination	Reviewer	Date
	Not Analyzed	Kate Crane	7/8/21
Rationale for Determination/Preliminary Issue: *There are no Threatened, Endangered, Proposed, and/or Candidate aquatic species within the Jim Sage Allotment. However, the Yellowstone cutthroat trout (Oncorhynchus Clarki Bouvieri) is a BLM sensitive and has been found in the Raft River. Although livestock can access the Raft River riparian area in one location (cattle have access to the Raft River at a 100 ft wide water gap), the remainder of the river is excluded from livestock grazing. This portion of the Raft River is in Proper Functioning Condition.*			
HERITAGE RESOURCES AND HUMAN ENVIRONMENT			
Cultural Resources (NHPA)	Determination	Reviewer	Date
	Not Analyzed	Wyatt Ward	1/6/22
Rationale for Determination/Preliminary Issue: *There are no cultural sites that are eligible for the National Register of Historic Places are within the APE (Area of Potential Effects) for existing and proposed livestock grazing and range improvements. Design features for all proposed range improvements would eliminate any potential effects to cultural resources.* *The BFO Archaeologist performed intensive pedestrian survey on existing cattle troughs, due to the nature of cattle congregation areas to adversely affect archaeological sites. The inventory focused on existing cattle troughs that did not have previous Class III inventory, with 58 troughs identified for supplemental survey. Additional cultural resource inventory was conducted along roadways and aspen groves. During inventory, four archaeological sites were encountered, one of these sites (JS-004) being within the impact APE of a cattle trough. JS-004 is not considered to be Eligible to the National Register of Historic Places. It is the conclusion that none of the 78 cattle troughs within the Jim Sage Allotment are adversely affecting any eligible or unevaluated archaeological site.*			

Additional cultural resource inventory was completed for the proposed range improvements. The inventory concluded that the projects would have "No Effect" on historic properties. Therefore, the BFO concludes that this project will have "No Effect" on historic properties and the undertaking is recommended to proceed.

National Historic Trails (National Trails System Act)	Determination	Reviewer	Date
	Not Analyzed	Wyatt Ward	1/6/22

Rationale for Determination/Preliminary Issue:

Approximately ¾ mile of the California trail occurs on the western portion for the Jim Sage Allotment. Current livestock management has no effects to the historic trail since no historic trails are located within the APE (Area of Potential Effects). There are no proposed range improvements near this trail.

Native American Religious Concerns (AIRFA)	Determination	Reviewer	Date
	Not Analyzed	Scott Sayer	2/1/22

Rationale for Determination/Preliminary Issue:

Through tribal consultation process no issues arose regarding Native American Religious Concerns on the Jim Sage Allotment.

Environmental Justice (EO 12898)	Determination	Reviewer	Date
	Not Analyzed	Scott Sayer	1/11/22

Rationale for Determination/Preliminary Issue:

There is nothing to indicate that the proposed action or alternative would result in adverse human or environmental effects on minority and low-income populations.

	Determination	Reviewer	Date
Socioeconomics	Analyzed	Scott Sayer	1/11/22

Rationale for Determination/Preliminary Issue:

Socioeconomics will be analyzed within the EA.

Visual Resources	Determination	Reviewer	Date
	Not Analyzed	Dennis Thompson	1/11/22

Rationale for Determination/Preliminary Issue:

Currently there are no known impacts to Visual Resources Management (VRM), and any proposed projects will be compatible with the VRM classes III and IV. Livestock grazing was not considered an activity in the Cassia RMP that would have a potential to negatively affect visual resources.

Wastes (hazardous or solid) (RCRA, CERCLA)	Determination	Reviewer	Date
	Not Present	Scott Sayer	6/16/21

Rationale for Determination/Preliminary Issue: *There are no know hazardous or regulated wastes sites associated with the Proposed Action or Alternatives.*			
LAND USES AND SPECIAL DESIGNATIONS			
Areas of Critical Environmental Concern (FLPMA)	Determination	Reviewer	Date
	Not Analyzed	Jim Tharp	1/11/22
Rationale for Determination/Preliminary Issue: *There are no known impacts associated with the Proposed Action or Alternatives to the designated 620-acre Jim Sage RNA/ACEC. A rangeland health assessment site is located within the RNA/ACEC and was assessed in the early 2000s and 2019. Both visits documented healthy vegetative conditions i.e., indicators of rangeland health were found to be as expected for the site.*			
Farmlands (Prime or Unique) (SMCRA and Farmland Protection Policy Act)	Determination	Reviewer	Date
	Not Present	Scott Sayer	1/11/22
Rationale for Determination/Preliminary Issue: *There are no affects to farmlands associated with the Proposed Action or Alternatives.*			
Lands/Realty Authorizations	Determination	Reviewer	Date
	Not Analyzed	Camas Beames	6/21/21
Rationale for Determination/Preliminary Issue: *There are no affects to lands and realty authorizations associated with the Proposed Action or Alternatives.*			
Recreation	Determination	Reviewer	Date
	Not Analyzed	Dennis Thompson	1/11/22
Rationale for Determination/Preliminary Issue: *Public comment for the proposal was requested and no comments were received regarding recreational opportunities on Jim Sage Allotment. The predominant recreational use on Jim Sage includes hunting, horseback riding, and hiking. There are no known issues regarding recreation and livestock grazing on this allotment.*			
LAND USES AND SPECIAL DESIGNATIONS CONTINUED			
Wild and Scenic Rivers (Wild and Scenic Rivers Act)	Determination	Reviewer	Date
	Not Present	Scott Sayer	1/11/22
Rationale for Determination/Preliminary Issue: *There are no designated Wild and Scenic Rivers on the Jim Sage Allotment.*			
	Determination	Reviewer	Date

Wilderness (FLPMA and Wilderness Act)	Not Present	Dennis Thompson	1/11/22
Rationale for Determination/Preliminary Issue: *There are no designated Wilderness Areas on the Jim Sage Allotment.*			
Wilderness Study Areas	Determination	Reviewer	Date
	Not Present	Dennis Thompson	1/11/22
Rationale for Determination/Preliminary Issue: *There are no designated Wilderness Study Areas on the Jim Sage Allotment.*			
Lands with Wilderness Characteristics (WO-IM-2011-154)	Determination	Reviewer	Date
	Not Analyzed	Dennis Thompson	1/11/22
Rationale for Determination/Preliminary Issue: *Current inventory indicates that a portion of the Jim Sage Allotment meets the Wilderness Characteristics criteria. The eligibility of these lands is not affected by the current livestock grazing management. Any proposed changes in the alternatives would not affect these characteristics.*			

Appendix E: Riparian Photos

Figure 1. Jim Sage Canyon Polygon 1, Upper End (June 2001).

Figure 2. Jim Sage Canyon Polygon 1, Upper End (October 2017).

Figure 3. Quaking Asp Creek unnamed seep area adjacent to Polygon 3 (July 2019).

Figure 4. Kane Creek- Polygon 2 (June 2012).

Figure 5. Kane Creek- Polygon 2 (August 2019).

Figure 6. Parks Creek Polygon 1 (July 1994).

Figure 7. Parks Creek Polygon 1 burned 2018 (July 2019).

Figures 8 & 9. Lower Main Fork of Parks Creek. Left: October 2007 and Right: August 2019 after the 2018 Connor Fire.

Figure 10. North Fork Parks Creek (September 1994).

Figure 11. North Fork Parks Creek (June 2012).

Figure 12. North Fork Parks Creek (July 2019). The site burned in the 2018 Conner Fire.

Figures 13 & 14. Jim Sage Canyon Polygon 2, July 1994 (left) and September 2019 (right).

Figure 15. Chokecherry Canyon (inside exclosure) (October 1994). The exclosure was built earlier the same year.

Figure 16. Chokecherry Creek exclosure (July 2019).

Figure 17. North Cottonwood Creek (June 2019).

Figure 18. Womack Canyon riparian area (lower end) post-grazing. (2001) (Photo courtesy of Western Watersheds Project).

Figure 19. Womack Canyon (lower end) (August 2019).

Greater Sage-Grouse (*Centrocercus urophasianus*)

Habitat Assessment Summary Report

Snake River Valley Mid-Scale Area (2nd Order)

Upper Raft River Valley Fine-Scale Area (3rd Order)

Burley Field Office/ Idaho State Office

Salt Lake Field Office/ Utah State Office

February 2020

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Executive Summary

Habitat for the Greater Sage-Grouse (GRSG) Northern Great Basin and the East Central Idaho populations, as defined by the US Fish and Wildlife Service (USFWS 2015), were assessed using the mid-scale indicators from the Sage-Grouse Habitat Assessment Framework (HAF, Stiver et al. 2015. Tech Ref 6710-1). These two populations intersect with the Snake River Valley mid-scale area that occurs within Nevada, Idaho, and Utah. The Snake River Valley mid-scale assessment area encompasses 72.770 square kilometers across Idaho, Nevada, and Utah. This assessment was coordinated among the three States in early 2018 and the suitability rating was finalized in June, 2018.

The report develops an understanding of the condition of the greater sage-grouse habitat in this area, and can be used to inform land health assessments relative to the wildlife/special status species habitat quality standards(s) (BLM Handbook 4180-1, Land Health Standards) as well as applicable National Environmental Policy Act (NEPA) analyses. The habitat assessment for this area may be periodically updated as new data, analyses, and other information become available (e.g. as sub-populations across the range are better defined or regional Landfire spatial data is updated).

The mid-scale assessment resulted in a habitat suitability rating of marginal (Appendix A). The mid-scale final rating was primarily due to habitat conditions in the eastern half (particularly in Idaho). Additionally, the midscale area has approximately 60% ratio of existing sagebrush to potential- meaning almost half of the sagebrush that could exist on the ground has been lost. In eastern Idaho sage-grouse populations are isolated, and distances between occupied patches are high due to fragmentation resulting from wooded mountain ranges, in addition to higher levels of anthropogenic disturbances in the valleys. Sage-grouse populations in Nevada along the southern margin of the midscale area appear to be somewhat isolated from larger occupied areas, and would have to move considerable distances through a mixture of marginal and unsuitable habitat in order to disperse. Overall, movement distances between patches for the entire midscale are suitable; however, the isolation of sage-grouse in eastern Idaho and low levels of occupied habitat reduced the rating for this midscale area.

The Upper Raft River fine-scale area was rated as marginal. Although connectivity among the seasonal use areas is relatively high and disturbance is low, the availability of habitat has been compromised. Over time, areas have been converted to agriculture, juniper has encroached, and habitat patches have been disconnected from one another. The ability for birds to move between available habitat areas is limited within this fine-scale area. Thus, although there remain smaller, isolated home ranges that contain all of the seasonal use areas needed for a populations life cycle, the entire fine-scale is no longer providing a contiguous home range.

Site-scale suitability ratings for plots within each seasonal habitat are summarized in Table 1.

Table 1: Site Scale Proportional Suitability Summary

Site-scale Habitat Type	# of Sample Locations	Percent of Plots or Proportional Area %		
		Suitable	Marginal	Unsuitable
Breeding Habitat (Leks) (Form S-2; Percent of Plots)	31	77.4	22.6	0.0
Breeding Habitat (Nesting/Early Brood Rearing) (Form S-3; Proportional Est)	48	16.4	13.2	70.4
Upland Summer/Late Brood-Rearing Habitat (Form S-4; Proportional Est)	22	15.3	35.1	49.6
Riparian Summer/Late Brood-Rearing Habitat (Form S-5; Percent of Plots)	8	50.0	50.0	0.0
Winter Habitat (Form S-6; Proportional Est)	68	36.4	8.4	55.1

Greater Sage-Grouse Habitat Assessment Area Overview

1.1 Snake River Valley Mid-Scale Area: (Northern Great Basin & East-Central Idaho populations)

Sage-grouse habitat suitability is assessed at different spatial scales to address the ecological processes and population dynamics that occur at each scale. The boundary used for the mid-scale suitability rating primarily encompasses the Northern Great Basin and the East-Central Idaho populations (Figure 1), and was delineated in partnership with the Nevada and Utah BLM State Offices, the Idaho Department of Fish and Game, the Nevada Department of Wildlife, and the Utah Division of Wildlife Resources. BLM guidance was used to direct the boundary delineations (Guidelines for HAF Boundary Delineation, 2018). Both the Northern Great Basin and the East-Central Idaho populations occur within Management Zone #4 as delineated by the Western Association of Fish and Wildlife Agencies (WAFWA), and detailed in the USFWS Conservation Objectives Report (COT Report, 2013).

Limited data by Garton *et al.* (2011) in the 2013 COT Report suggest the conditions for the East-Central Idaho population as having a low probability of persistence. Although causal observation and some historic data suggest the study area provides adequate breeding and nesting habitat, sage-grouse numbers appear to be very low. Initial summer surveys in 2011 suggested sage-grouse were reasonably widespread throughout the area. However, given the apparent overall quality of the habitat, sage-grouse numbers seem surprisingly low. Factors that could act to reduce sage-grouse populations in this area include sagebrush treatments in breeding habitat, West Nile virus, and loss or fragmentation of winter range. Overall this population is considered high risk. The Idaho and Nevada portion of the Northern Great Basin population contains a large amount of publicly managed land (largely BLM). The area also includes among the least fragmented and largest sagebrush dominated landscapes within the extant range of sage-grouse (Knick and Hanser 2011). Despite efforts to manage wildfire risks, wildfires and invasive species have continued to reduce the quality of habitat in portions of this area. A recent rate of change analysis indicated that at least part of this large population has been stable to increasing from 2007-2010. Garton *et al*. (2011) indicated that this population had virtually no chance of declining below 50 in 30 or 100 years. Population analysis indicated that sage-grouse will fluctuate around a carrying capacity (Garton *et al.* 2011). Fire and invasive annual grasses are the major threats to the Nevada and Idaho portions of this population, and mining and infrastructure have potential to pose additional threats to sage-grouse habitat.

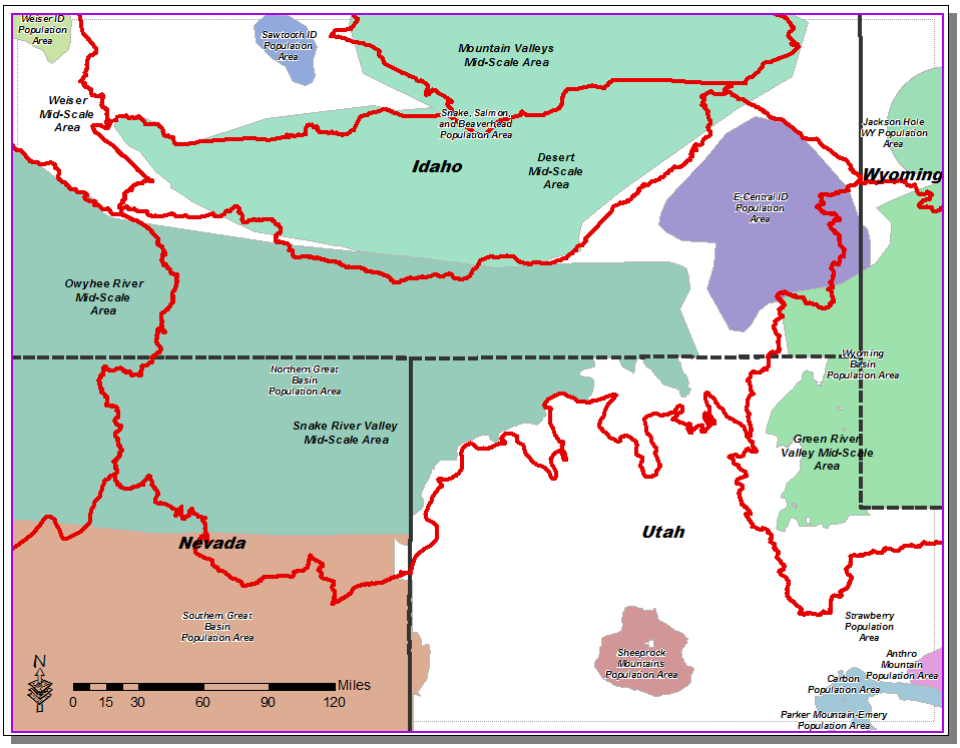


Figure 1: Snake River Valley Mid-scale Area Overview

1.2 Upper Raft River Fine-Scale Area

Within the fine-scale area (third-order), sage-grouse select seasonal habitats within their home ranges, including breeding, summer, and winter habitats (Johnson 1980; Connelly et al. 2004). Third-order habitat descriptions address factors that affect sage-grouse use of, and movements between, seasonal use areas. At this scale, sage-grouse select seasonal ranges to meet their life requisite needs (Johnson 1980; Connelly et al. 2003). Sage-grouse generally inhabit large interconnected areas of sagebrush habitat, thus, there are three fine-scale habitat indicators that influence sage-grouse use of and movements between seasonal use areas: 1. Seasonal habitat availability. 2. Seasonal use area connectivity. 3. Anthropogenic disturbances and habitat loss and fragmentation.

1.3 Site-Scale Plots Within the Fine-Scale Seasonal Use Areas

Greater sage-grouse are typically traditional in their seasonal movement patterns (Schroeder et al. 1999; Connelly et al. 2004; Holloran 2005). Some sage-grouse may move long distances (>30 km) from breeding to summer and from summer to winter seasonal use areas (SUAs). Fedy et al. (2012) reported high variability of movement distances within and among seasonal habitats. Sage-grouse diets shift from insects and forbs during breeding and summer seasons to sagebrush during winter (Berry and Eng 1985; Schroeder et al. 1999; Connelly et al. 2004).

Within the context of the HAF, the intent is to evaluate all site-scale (plot) data that occurs within GRSG SUAs within the larger fine-scale area. The site-scale information quantifies status, condition, and trend indicators that can be used to make necessary management adjustments to meet resource objectives. For the HAF report, those data are then summarized by SUA and proportional estimates and/or plot counts for areas of inference/interest are made.

1.4 Data Sources

Assessing large landscapes and maintaining consistency in analyses across the sage-grouse range requires the use of both regional and local geospatial data. Table 1 provides the name, source, and scale for which the geospatial data was used in the current assessment.

Table 1: Data sources used in the mid-, fine-, and site-scale assessments. Organizations that provided data include: *Bureau of Land Management (BLM), Idaho Department of Fish and Game (IDF&G), Nevada Division of Wildlife (NDOW), US Fish and Wildlife Service (USFWS), US Geological Survey (USGS)*.

Data Name	Source	Mid-Scale	Fine-Scale	Site-Scale
Existing Vegetation Types (EVT)	LANDFIRE 1.4.0	X	X	
Biophysical Settings (BpS)	LANDFIRE 1.4.0	X	X	
Management Zones & Populations	WAFWA COT Report 2013	X		
HAF Mid- and Fine-Scale Boundaries	BLM NOC	X	X	X
Sage-grouse Lek Locations	IDF&G	X	X	X
Sage-grouse Telemetry	IDF&G	X	X	
Anthropogenic Features	BLM NOC Disturbance Compilation [2017]	X	X	X
Idaho Seasonal Habitat	Idaho State Office IDF&G		X	X
NLCD Shrubland Sagebrush Cover	USGS	X	X	X
Tall Structures (Meteorological and Communication Towers)	BLM			X

Data Name	Source	Mid-Scale	Fine-Scale	Site-Scale
Tree Canopy Cover	Sage-Grouse Initiative (Falkowski et al. 2017)			X
National Elevation Data	U.S. Geological Survey. DOI, BLM, NOC, Geospatial Section OC-534			X
AIM Plots	BLM NOC TerrADat database			X
LMF Plots (NRI)	NRCS/ BLM NOC TerrADat			X
Proper Functioning Condition	BLM PFC database			X
Modified HAF Plots	Burley FO			X
OTHER				
OTHER				
OTHER				

2.0 Methods and Sample Design

2.1 Mid-scale

A mid-scale assessment describes habitat characteristics linked to bird dispersal capabilities (Stiver et al. 2015). The BLM delineated the mid-scale boundary using topographic features, telemetry and occupied lek locations, conservation areas, and local knowledge from state wildlife agencies and BLM personnel. Mid-scale indicators include habitat availability, patch size and number, patch connectivity, linkage area characteristics, landscape matrix and edge effects, and anthropogenic disturbances. Each habitat indicator and the analysis methods are described below.

*2.1.1 **Habitat** Availability*

Sage-grouse occupancy and dispersal capabilities are dependent on the extent and pattern of sagebrush within a landscape of non-habitat and unsuitable habitat. Habitat availability essentially refers to the amount of sagebrush habitat in an area and the more existing suitable sagebrush relative to potential habitat, the greater the suitability. Three inputs were used to aid in assessing habitat suitability within the mid-scale habitat assessment area: an occupancy layer, an

unoccupied layer, the existing and potential sagebrush habitat, and the occupied and unoccupied non-habitat.

Occupied habitat includes sagebrush and associated plant communities known to be used by sage-grouse within the last 10 years (Stiver et al. 2015). The occupied area for the Snake River Valley midscale area was delineated using a 6.4 km occupied lek buffer combined with a 99% kernel density estimate on telemetry points where they were available. Both existing and potential sagebrush habitat were delineated using Landfire EVT and BPS vegetation classes as defined in Stiver et al. (2015). Non-habitat includes all other land cover types.

Existing and potential suitable sagebrush habitat types were identified using two land cover data sets. The LANDFIRE 1.4.0 existing vegetation (EVT) data set was reclassified into sagebrush communities, sagebrush associated communities, and non-habitat to identify areas with currently suitable habitat. The LANDFIRE 1.4.0 biophysical settings (BpS) data set was reclassified to identify areas that could potentially support sagebrush and sagebrush associated communities in the future (Appendix B). Both reclassifications were based on BLM guidance (HAF Key Decisions for the Mid-Scale Area, 2018), and are consistent with the vegetation types capable of supporting sage-brush identified in the Greater Sage-grouse Monitoring Framework (BLM, 2014).

2.1.2 Patch Size & Number

Whether the available habitat is contained in one large habitat patch or several patches could influence sage-grouse use and dispersal between subpopulations. Dispersal could be uninterrupted in large habitat patches, whereas movement between smaller patches may be more difficult, depending on the configuration of the patches and landscape conditions in which they occur Generally, the larger and more contiguous the sagebrush patches of a population or subpopulation are, the greater the suitability of that area.

Two metrics were used to assess habitat patches; mean size of occupied habitat patches, and number of occupied patches. Habitat patches were defined according to select environmental variable criteria found in Knick et al. (2013). Environmental variables were selected from the study based on two considerations; the same or an updated version of the data source for the variable was readily available, and the variable was found to be significant in the study. Habitat patches were mapped by applying land cover criteria to the EVT and ESRI street map premium data using a 5-km radius moving window analysis that identified areas that met the land cover criteria in Table 1. The 78.54 km2 area corresponds to the area within which Knick et al. (2013) found significant relationships between environmental variables and lek presence.

TABLE 1. THRESHOLDS FOR INCLUSION OF A FOCAL AREA IN SAGE-GROUSE HABITAT PATCH AVAILABILITY. EACH 78.54 KM2 MOVING WINDOW HAD TO MEET THESE LAND COVER VALUES TO BE DEFINED AS A PATCH.

Variable	Percent Land Cover
Sagebrush Land Cover	> 79
Developed Areas Land Cover (urban and suburban areas)	<3
Interstates/Highways	0

2.1.3 Patch Connectivity

Patch connectivity is a major component of suitability in the second order. The closer the suitable habitat patches are to each other, the more likely sage-grouse can move freely between them. One metric was used to assess patch connectivity mean distance to nearest occupied patch. The shortest Euclidean distance between every adjacent pair of occupied patches was mapped and measured, and summary statistics of those distances were calculated.

2.1.4 Linkage Area Characteristics

Habitat linkage areas between occupied patches on the landscape can greatly influence habitat use and dispersal within and between occupied areas. The landscape context in which patches are located has a bearing on habitat suitability for dispersal between patches. Barriers that compromise sage-grouse movements between habitat patches are not completely understood and are variable (Connelly et al. 1988; Leonard et al. 2000; Beck et al. 2006; Knick and Hanser 2011). Linkage area suitability is believed to improve as the percent of shrub cover (not necessarily sagebrush) increases relative to tree or grass cover in the areas between the habitat patches.

Three metrics were used to assess linkage area characteristics (Figure 5); percent suitable, percent marginal, and percent unsuitable land cover in the linkage areas. A linkage area is the area between habitat patches through which sage-grouse travel to reach other suitable patches. To calculate these metrics, the EVT data set was reclassified into suitable, marginal, and unsuitable classes (Appendix B) and was then clipped to represent only the areas between patches (i.e., patches were erased from the landcover). Reclassification was guided by the methods used in Jones et al. (2015). The percentage of the linkage area in each suitability class was calculated and the results were assessed.

2.1.5 Landscape Matrix & Edge Effect

The cover type or land use immediately adjacent to a habitat patch can positively or negatively affect the quality of that patch's suitability as sage-grouse habitat. As the amount of sagebrush

edge in contact with plant communities or land uses that positively influence shrubland patch habitat increases, the landscape matrix and edge suitability increase.

Two metrics were used to assess the landscape matrix and edge effect; the mean percent of positive and the mean percent of negative patch edge. Edge was defined as areas within 5 km of the habitat patch core. Positive, negative, and neutral values for this metric reflect the inference that the cover type or land use immediately adjacent to a habitat patch can positively or negatively affect the quality of that patch's suitability as sage-grouse habitat (Stiver et al. 2015). To calculate these metrics, the EVT data set was reclassified into positive, negative and neutral classes (Appendix B). Neutral values accounted for classes that could not be determined as having either a positive or negative effect on patch suitability. The percent of positive, negative and neutral classes were calculated and assessed for the midscale area.

2.1.6 Anthropogenic Disturbance

Anthropogenic disturbances influence sage-grouse habitat, numbers, and distribution at each order of habitat selection. Anthropogenic features can affect sage-grouse demographics or habitat use in two significant ways: direct mortality affecting the long-term viability of a population and avoidance. Sage-grouse will avoid areas with a high density of anthropogenic features even if site-scale conditions are suitable.

Three metrics were used to assess anthropogenic disturbance; density of linear and point disturbance features, and area-based disturbance features within occupied patched. Occupied habitat patches, as described above, were intersected with the BLM Disturbance Compilation dataset to calculate the density and area of disturbance features. BLM *(*2016b) and Appendix D describe the disturbance feature types and data sources included in the disturbance dataset.

2.2 Fine-Scale Area

The fine-scale assessment characterizes sage-grouse seasonal habitat use within a home range(s) (Stiver et al. 2015). As with the mid-scale boundary, the BLM delineated the fine-scale boundaries using topographic feature, telemetry and occupied lek locations, a modelled habitat suitability index, and local expertise. There are five fine-scale boundaries within the Desert mid-scale area and the fine-scale boundaries are located entirely within the mid-scale boundary. Three indicators were calculated for the fine-scale areas: seasonal habitat availability, seasonal habitat connectivity, and anthropogenic disturbance.

2.2.1 Seasonal Use Area Habitat Availability

Seasonal habitat availability is the initial habitat indicator at the fine-scale. Although sage-grouse are considered a landscape species, the amount of habitat required has not been determined due to the variability in quality and juxtaposition within the landscape (Connelly et al. 2011).

Generally, the more sagebrush shrubland within seasonal use areas in the home range, the more suitable the habitat.

Six metrics were used to assess seasonal habitat availability at the fine-scale, including area of both occupied and potential breeding, summer, and winter habitat. The habitat suitability index (HSI) developed by the Idaho Department of Fish and Game was modified to delineate seasonal use areas in Idaho. Spring (March 1 - June30), Summer (July1- September 22), and Winter (December 1- February 29) telemetry locations were combined with environmental variables to model habitat suitability.

The HSI models were created using a species distribution modeling technique known as maximum entropy, or Maxent (https://www.gbif.org/tool/81279/maxent). The program Maxent uses known point locations (in our case primarily VHF and GPS telemetry points) and a suite of habitat predictor variables (GIS layers) to characterize conditions of occupied habitat. We selected habitat variables related to vegetation type, percent cover, topography, and landscape context (e.g., how much of the landscape has at least 10% sagebrush cover). Maxent models the set of conditions that are typically found at the training points, then applies that model to the full landscape, creating a wall-to-wall estimate of habitat suitability based on how similar conditions are to occupied habitat.

The HSI models were then generalized to represent sage-grouse seasonal use areas across the State. The generalized areas include the moderate and high categories from the HSI models, patch area analyses were applied, and those patches meeting size and location criteria were maintained. Final maps and spatial datasets for each of the three SUAs were generated for HAF assessments.

The occupancy layer as described in the mid-scale methods section was used for the fine-scale analyses. Seasonal use areas were identified as occupied or unoccupied/unknown occupancy by intersecting each SUA with the occupancy dataset. Additionally, the amount of existing suitable habitat, potential habitat and non-habitat were calculated by intersecting the SUAs with the habitat availability datasets used in the mid-scale analysis. Specifically, seasonal habitat availability was calculated for the following seven discreet areas: occupied spring, summer, and winter; unoccupied spring, summer, and winter; and occupied and unoccupied non-habitat.

2.2.2 Seasonal Use Area Connectivity

The connectivity, as well as the availability of sagebrush within seasonal use areas of sage-grouse home ranges, can affect overall suitability. For example, following nesting, hens often move chicks to summer ranges for food. Thus, connectivity between breeding and summer brood-rearing habitats is particularly important due to the restricted flight capability of chicks at this time. In general, the more contiguous the sagebrush cover between seasonal use areas, the more suitable the habitat.

Three metrics were used to assess seasonal use connectivity: breeding to summer overlap, summer to winter overlap, and winter to breeding overlap. The metrics were calculated by overlaying the two seasons and calculating the ratio of the amount of edge between both seasons

to the total area of the seasons combined. This method allowed for the calculation of the percent of overlap between the SUAs, an indication of connectivity.

2.2.3 Anthropogenic Disturbance

There is increasing evidence that anthropogenic disturbances within a home range can cause local extirpations even if other habitat conditions appear suitable (Aldridge 2005; Holloran 2005; Aldridge et al. 2008). Anthropogenic features can affect sage-grouse in two significant ways at the fine scale: anthropogenic features directly and indirectly increase mortality or decrease recruitment, and sage-grouse may eventually avoid seasonal use areas with a high density of anthropogenic features even if site-scale conditions are suitable

Three metrics were used to assess anthropogenic disturbance: density of linear disturbance features, density of point disturbance features, and area of non-habitat inclusions (area-based disturbance features) within the fine-scale boundary. The fine-scale boundary was intersected with the BLM Disturbance Compilation dataset to calculate the density and area of disturbance features within the home range. BLM *(*2015, Appendix E) describes the disturbance feature types and data sources included in the disturbance dataset.

2.3 Site-Scale

The site-scale assessments evaluate suitability of seasonal habitat using a suite of habitat indicators that apply to each SUA. Within the context of the HAF, the site-scale is GRSG SUAs within the larger fine-scale area.

Site-scale suitability of leks was determined using geospatial data calculate the availability of sagebrush, the proximity of detrimental land uses and the proximity of trees and other tall structures. The availability of sagebrush is based on *Yang, L., Jin, S., Danielson, P., Homer, C., Gass, L., Case, A., Costello, C., Dewitz, J., Fry, J., Funk, M., Grannemann, B., Rigge, M. and G. Xian. 2018. A New Generation of the United States National Land Cover Database.* The percent of sagebrush cover >10% was derived from the *Sagebrush* component of the Homer et al. dataset. The proximity of detrimental land uses calculates the amount of disturbance. The disturbance features are derived from the NOC disturbance compilation which is updated annually and is consistent with the Monitoring Framework. This is the second of 3 indicators that will be calculated to aid in the final Lek suitability rating. The tall structures are extracted from the NOC disturbance compilation. The presence of trees is calculated by looking at areas with greater than 4% conifer cover (USGS Sage-grouse Initiative: Falkowski et al. 2017. Mapping tree canopy cover in support of proactive prairie grouse conservation in western North America. Rangeland Ecology & Management 70:15-24. **http://dx.doi.org/10.1016/j.rama.2016.08.002**). Also see, Baruch-Mordo et al 2013 and Coates et al 2017.

Site-scale (plot) data used in this analysis to inform suitability of other SUAs included Assessment, Inventory, and Monitoring (AIM) and Landscape Monitoring Framework (LMF) plot data, acquired from the BLM National Operation Center (NOC) Terrestrial AIM Database

(TerrADat) and the LMF database, respectively, and summer riparian plot data, acquired from the Burley Field Office (Table 2.3-1).

Both AIM and LMF points come from a spatially balanced sample design, where monitoring information is gathered within a landscape of interest at predetermined locations randomly identified during the design stage. During the randomization process, every possible location has a chance of being selected, which enables reporting on the condition and trend of all monitored renewable resources within an area of interest with known levels of precision and accuracy. Plot data that were both spatially and temporally valid (i.e., occurred within mapped SUAs and were collected during the appropriate time period) were used in a proportional area analysis to inform suitability of Nesting/Early Brood-Rearing (form S-3), Upland Summer/Late Brood-Rearing (form S-4), and Winter (S-6) seasonal habitats.

Suitability of seasonal habitats, including leks, were assessed using the methods described in the HAF TR (BLM 2015).

Table 2.3-1: Summary of plot data used to inform SUA suitability

Source	Project	# of Plots	S-Form(s)
Lek		31	S-2
AIM	ID Burley FO 2019	16	S-3, S-4, & S-6
	UT Salt Lake FO 2019	1	
Modified HAF	ID Jim Sage HAF 2019	56	
LMF	LMF 2011 - 2019	11	
PFC, S-5 Form		8	S-5

2.3.1 Sample Designs: Upper Raft River Valley Fine-Scale

Site-scale plots analyzed for proportional analysis within SUA in the Upper Raft River Valley Fine-Scale came from AIM, Modified HAF, and LMF projects to inform suitability of Nesting/Early Brood-Rearing (form S-3), Upland Summer/Late Brood-Rearing (form S-4), and Winter (S-6) seasonal habitats, and from the Burley Field Office breeding site data to inform suitability of Riparian Summer/Late Brood-Rearing (S-5; Table 2.3-1).

2.3.1.1 AIM

The Upper Raft River Valley fine-scale area intersects with the Burley Field Office (BFO) in Idaho and the Salt Lake Field Office (SLFO) in Utah. Thus, the AIM sample design and management objectives generated for the field office areas apply to this fine-scale area.

A two-year sample design in BFO was initiated in 2019 to address general objectives from both the Idaho Standards for Rangeland Health (ISRH; USDI, BLM 1997) and the Idaho and Southwestern Greater Sage-Grouse Approved Resource Management Plan Amendment (ARMPA; USDI, BLM 2015) and amendment (ARMPA; USDI, BLM 2019). A five-year sample design in SLFO was initiated in 2016 and focused on land use plan effectiveness for the West Desert District, with additional points as part of a 5-year GRSG HAF AIM monitoring

effort. Long-term objectives of each sample design included ensuring achievement of Rangeland Health Standards and maintaining sage-grouse habitat according to the habitat objectives described in Table 2-2 in the respective ARMPAs.

2.3.1.2 Modified HAF

Within the Upper Raft River Valley fine-scale area there was one Modified HAF sample design implemented in BFO. This was the 2019 design for the Jim Sage allotment study area. Monitoring objectives from the design included establishing Modified HAF points in upland vegetation to quantify and assess the health of Greater Sage-grouse habitat within the allotment to make baseline condition assessments of the current management practices. The collected data will supplement existing HAF data, long-term trend and fuels data across the SFAs, and be used to evaluate rangeland health assessments, HAF assessments and grazing permit renewals.

2.3.1.3 LMF

The National Landscape Monitoring Framework Data collection protocol is part of the National Resources Inventory (NRI). NRI is a natural resource inventory conducted by the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS). It provides updated information on the status, condition, and trends of land, soil, water, and related resources on the Nation's non-Federal lands. Non-Federal lands include privately owned lands, tribal and trust lands, and lands controlled by State and local governments. NRI provides nationally consistent data and is comparable with AIM data (i.e., plot data are statistically valid and are part of a spatially balanced random sample design). Statistical estimation and quality assurance procedures employed for the NRI survey program help ensure that trends reported using NRI data reflect true changes in resource conditions.

The NRI was designed to establish a database that would allow natural resource issues to be analyzed by portions of Major Land Resource Areas (MLRAs) within States. The NRI sample was selected on a county-by-county basis, using a stratified, two-stage, area sampling scheme. The two-stage sampling units are (1) nominally square segments of land, and (2) points within the segments. The segments are typically half-mile-square parcels of land equivalent to 160-acre quarter-sections in the Public Land Survey System. An annual or continuous approach was initiated in 2000. This approach provides efficiencies in conducting the survey and balancing of resources, and also makes it easier for the NRI to respond to newly emerging resource issues, and a *core panel* of about 40,000 segments is observed each year along with a different supplemental or rotation panel selected for each year. These panels are selected using stratification based upon geographical factors and historical data; for example, segments containing wetlands or land enrolled in the USDA Conservation Reserve Program (CRP) have a significantly higher chance of selection than those classified historically as forest land.

Results and Rationale

3.1 Mid-scale

The Nevada, Utah, and Idaho interdisciplinary team rated the Snake River Valley mid-scale area as marginal (Appendix A). The mid-scale area is 73,605 km2 (18,188,209 acres) in total size, of which 25,215 km2 (6,230,640 acres) is occupied and 19,635 km2 (4,851,810) is within a delineated patch. The team recognized that the western half of the area is well-connected and

contains substantial areas of high-quality contiguous habitat that facilitate dispersal, but habitat conditions in the eastern half (particularly in Idaho) reduce the overall suitability of this landscape substantially. Additionally, the midscale area has approximately 60% ratio of existing sagebrush to potential- meaning almost half of the sagebrush that could exist on the ground has been lost.

In eastern Idaho, sage-grouse populations are isolated and the distances among occupied patches is high because sagebrush habitat is fragmented by wooded mountain ranges and higher levels of anthropogenic disturbances in the valleys. Sage-grouse populations in Nevada along the southern margin of the midscale area appear to be somewhat isolated from larger occupied areas, and would have to move considerable distances through a mixture of marginal and unsuitable habitat to disperse. Overall, although movement distances between patches for the entire midscale are suitable, the isolation of sage-grouse in eastern Idaho and low levels of occupied habitat reduced the rating of this midscale.

One potential caveat is that there is a poor understanding of occupancy in eastern Idaho because these areas are rarely surveyed/inventoried and few (if any) telemetry data are available. Future sage-grouse research in this area could provide a much better understanding of movements and habitat use patterns in this landscape, which would ensure a more robust understanding of dispersal capabilities.

3.1.1 Habitat Availability

The habitat availability metric for the Snake River Valley mid-scale area was rated as marginal. Approximately 30% of the midscale area contains suitable existing and potential habitat within occupied areas. Although the 'unoccupied' areas have approximately 40% of existing suitable habitat, the birds do not appear to be using these areas. The Western side of the mid-scale area contains suitable contiguous habitat; however, the eastern side is fragmented (Figure 3.1-1).

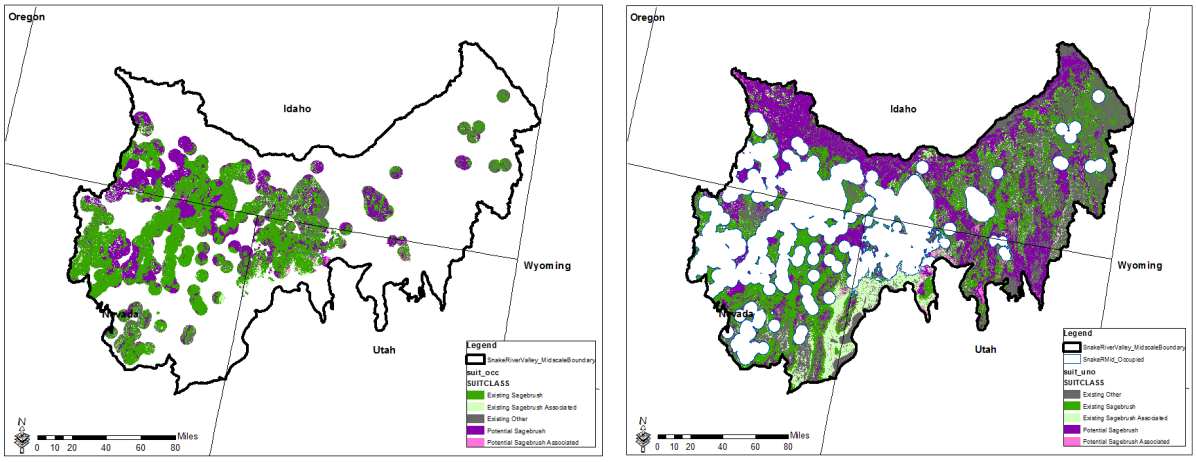


Figure 3.1-1: Snake River Mid-scale Area Occupied Suitable Habitat and Unoccupied Suitable Habitat

3.1.2 Patch Size and Number

The patches were delineated as described in the Methods and Sample Design section above. The metric was rated as marginal (Figure 3.1-2). The patches that occur on the Eastern side and southern Nevada are small, and there is a wide range of patch sizes. Some of the larger patches on the western side would be even larger but are bisected by Hwy 93 that birds do move across.

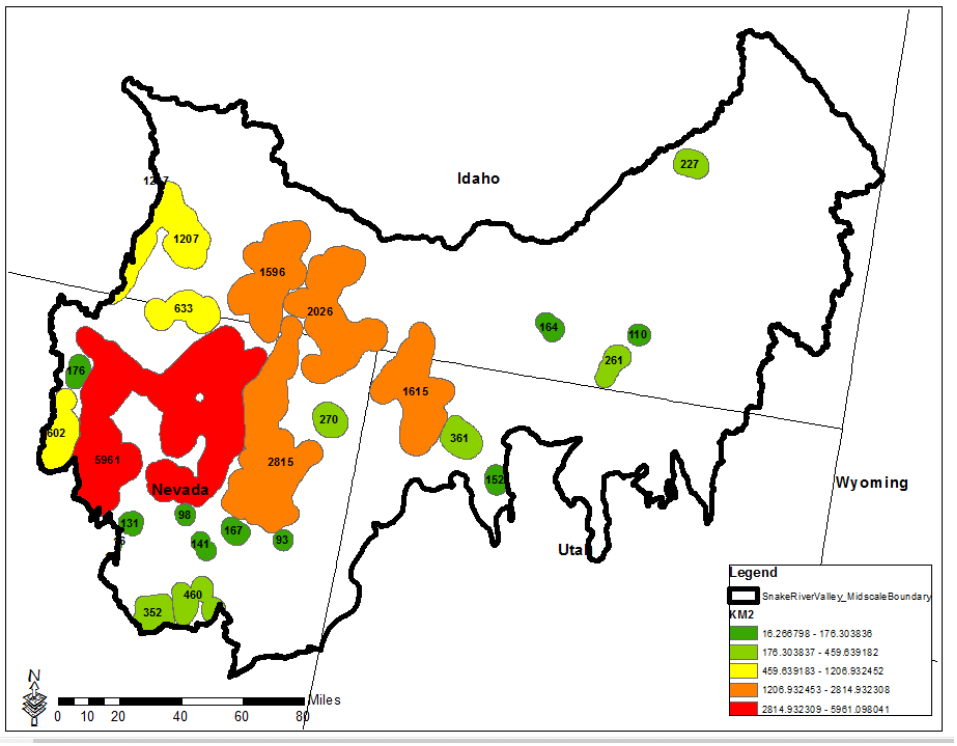


Figure 3.1-2: Snake River Valley Mid-scale Area Habitat Patches

3.1.3 Patch Connectivity

The patch connectivity metric was rated as suitable for the Snake River Valley mid-scale area. (Figure 3.1-3). The largest patches are well connected and the mean distance of 6.5 km is well within seasonal movement distances in the literature.

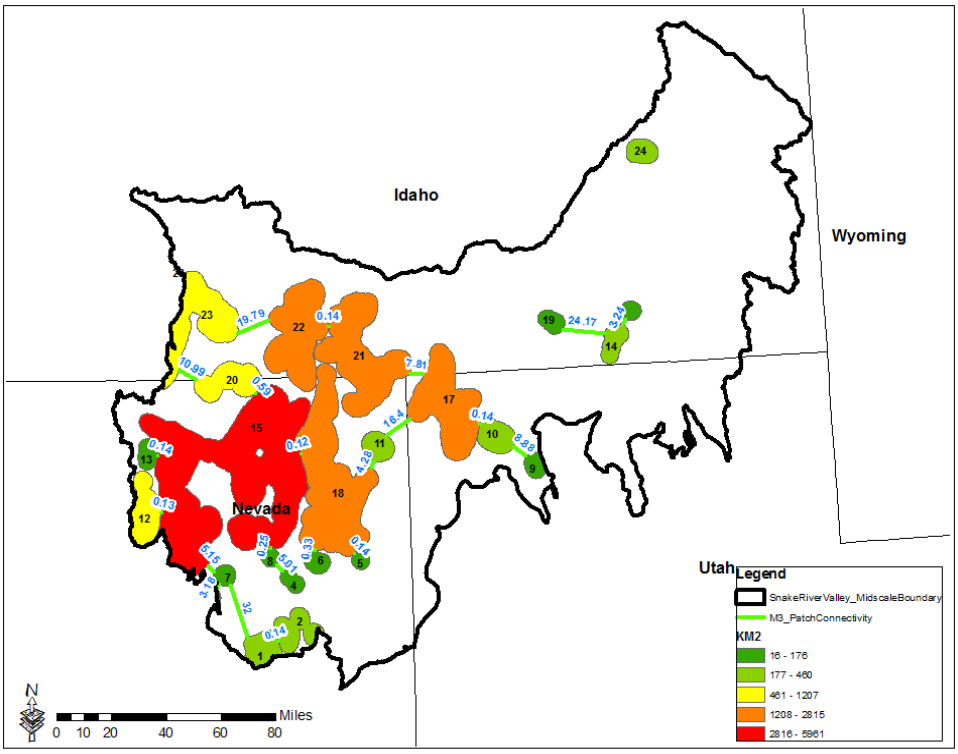


Figure 3.1-3: Snake River Valley Mid-scale Area Patch Connectivity

3.1.4 Linkage Area Characteristics

Those areas between patches that birds have to travel through from one patch to another were classified as suitable, marginal, or unsuitable (see Methods section above). For the linkage areas, the Snake River Valley mid-scale area as a whole was rated marginal (Figure 3.1-4). The area is trending towards suitable based on knowledge of restoration efforts within the Murphy Complex Fire (2007) area. If birds were to disperse to some of the small isolated patches, movement would be challenging with a mix of marginal and unsuitable linkage areas.

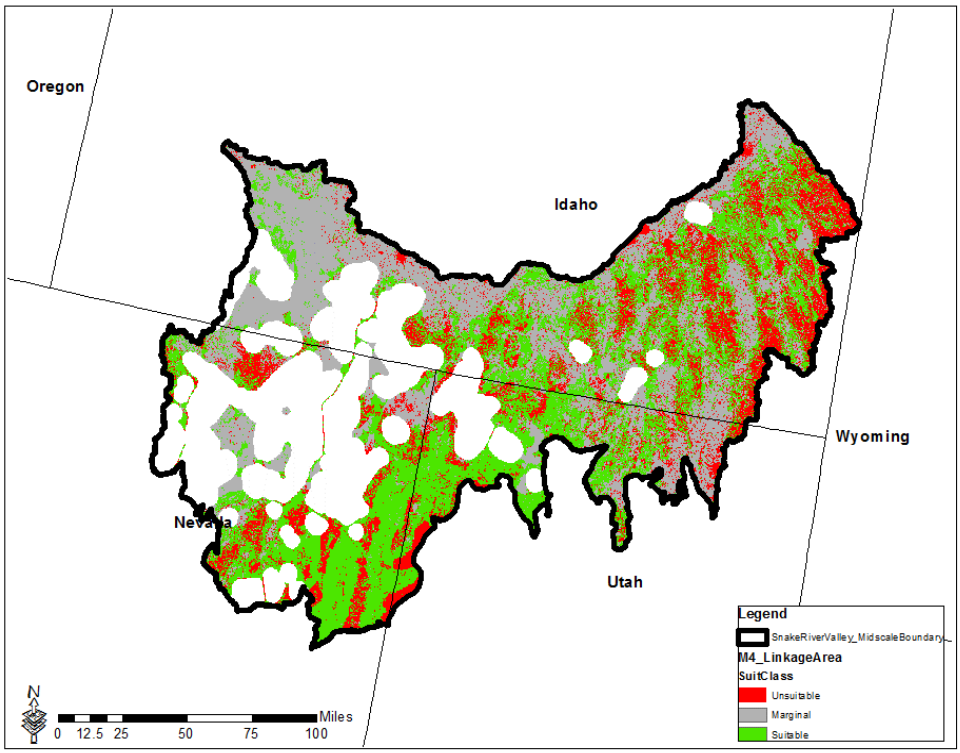


Figure 3.1-4: Snake River Valley Mid-scale Area Linkage Area Characteristics

3.1.5 Landscape Matrix & Edge Effect

The patch edge was defined as a 5km buffer around the patches, and the area was reclassified as positive, neutral, or negative (Figure 3.1-5). The *Snake River Valley* mid-scale area was rated as suitable because approximately 70% of the edge is within the positive vegetation types thus patches are not currently threatened by invasives.

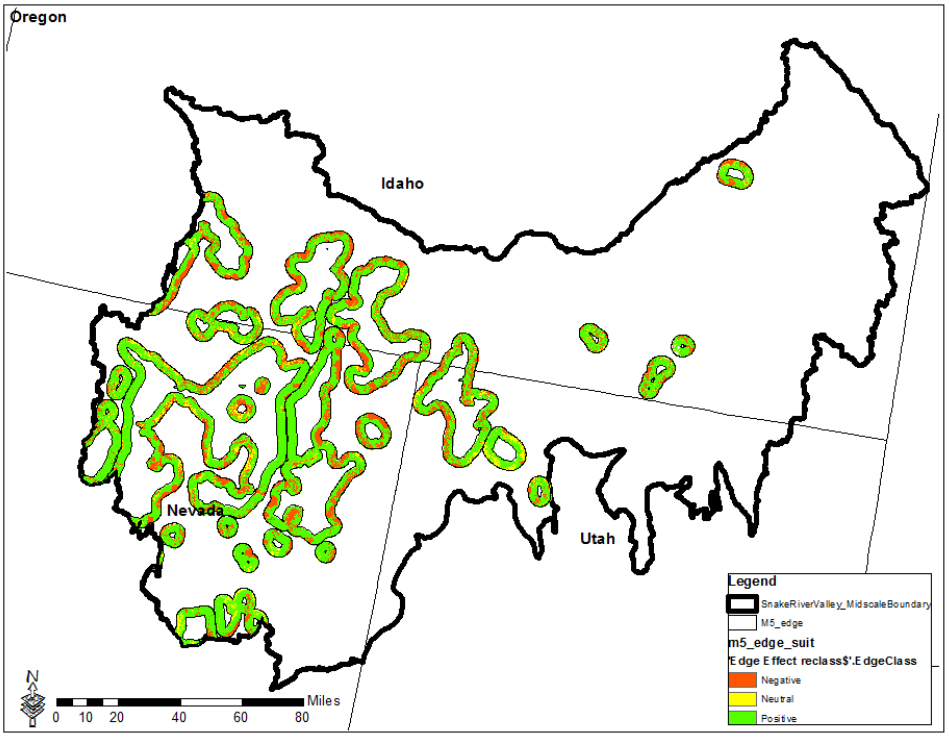


Figure 3.1-5: Snake River Valley Mid-scale Area Edge Effect Characteristics

3.1.6 Anthropogenic Disturbance

At the mid-scale, anthropogenic disturbance of linear, point, and area features are calculated within the occupied patches (Figure 3.1-6). For the Snake River Valley mid-scale, the metric was rated as suitable because within the mapped patches (indicator 2), the is a very low density of disturbance features.

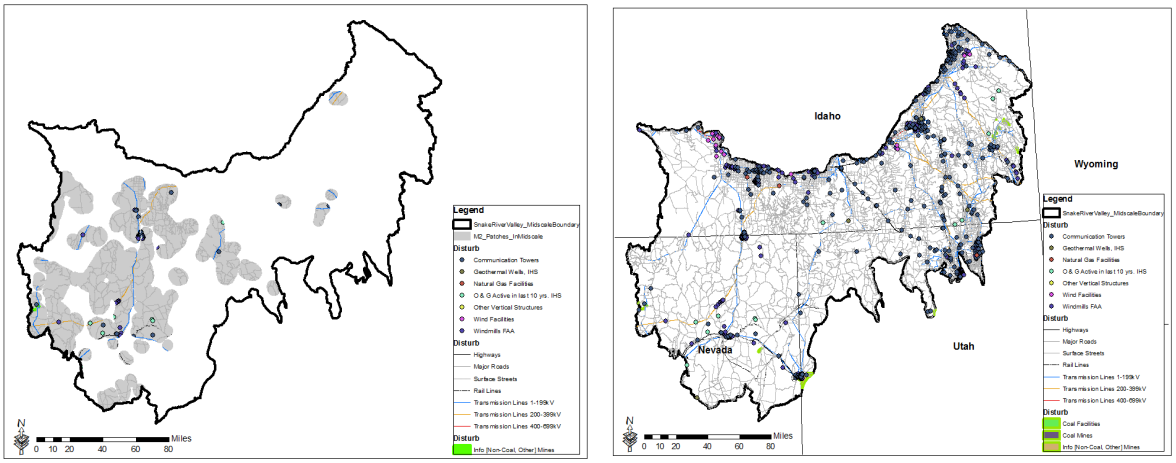


Figure 3.1-6: Snake River Valley Mid-scale Area Anthropogenic Disturbance within habitat patches and across the mid-scale area

3.2 Fine-Scale

3.2.1 Upper Raft River Fine-Scale

The overall suitability rating for the Upper Raft River fine-scale area was marginal. The fine-scale area is 3,220 km2 in total size, of which 1,844 km2 is within a seasonal use area. The habitat availability indicator was rated as marginal based on the analysis that showed that there are relatively low percentages of existing and potential sagebrush within the occupied seasonal use areas. Additionally, movement between SUAs is limited by large areas of agriculture and juniper. The connectivity indicator was rated as suitable because the areas of seasonal habitat that overlap are high (i.e. there is high connectivity among the three seasonal habitat types). Finally, the disturbance indicator was also rated as suitable. Both point and area density are very low, and surface streets are driving the linear density which as compared to other fine-scale areas in Idaho is moderate.

3.2.1.1 Seasonal Use Area Habitat Availability

The square kilometers and the percent of the fine-scale area of both occupied and unoccupied suitable habitat that occurred within each of the SUAs was calculated (Table 3.2-1). See figures 3.2-1a-3.2-1c to see the area of each SUA that is occupied and suitable sage-grouse habitat.

The seasonal habitat availability metric for the Upper Raft River fine-scale area was rated as marginal. The availability of habitat has been compromised. Over time, areas have been converted to agriculture, juniper has encroached, and habitat patches have been disconnected from one another. The ability for birds to move between available habitat areas is limited within this fine-scale area. Thus, although there remain smaller, isolated home ranges that contain all of the seasonal use areas needed for a populations life cycle, the entire fine-scale is no longer providing a contiguous home range.

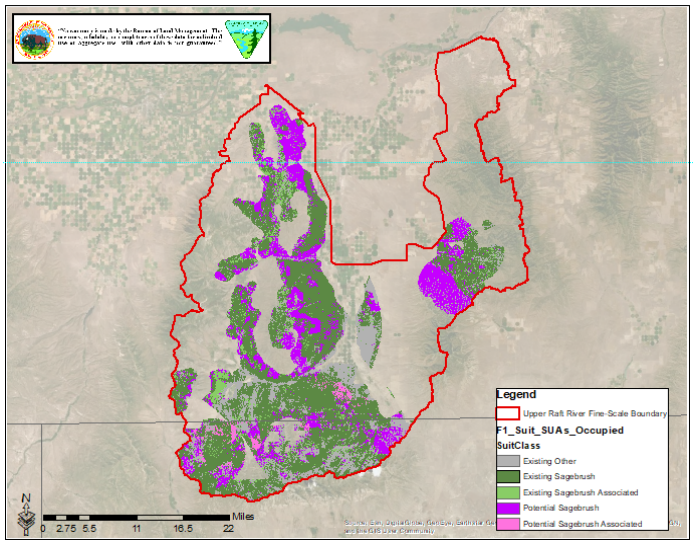
See Figures 3.2-1a - 3.2-1c to see the area of each SUA that is occupied and suitable sage-grouse habitat.

Table 3.2-1: Upper Raft River Fine-Scale Area SUAs and Habitat Suitability

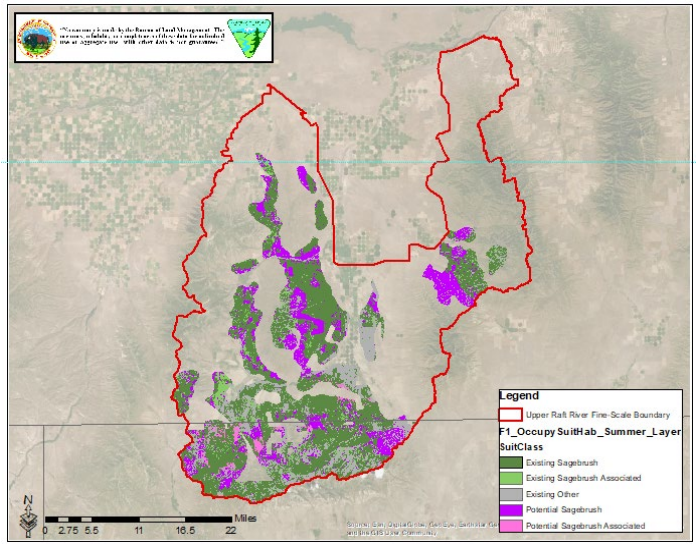
Occupancy	Habitat	km² Spring	% Spring	km² Summer	% Summer	km² Winter	% Winter	km² Fine-scale	% Fine-scale
Occupied	Suitable	953.89	67%	959.93	71%	920.23	67%	1228.02	67%
Unoccupied	Suitable	241.15	17%	126.96	9%	226.40	17%	277.07	15%
Occupied & Unoccupied	Non-habitat	238.46	17%	265.13	20%	223.68	16%	339.34	18%

Figure 3.2-1: Upper Raft River Fine-Scale SUAs and Habitat Suitability

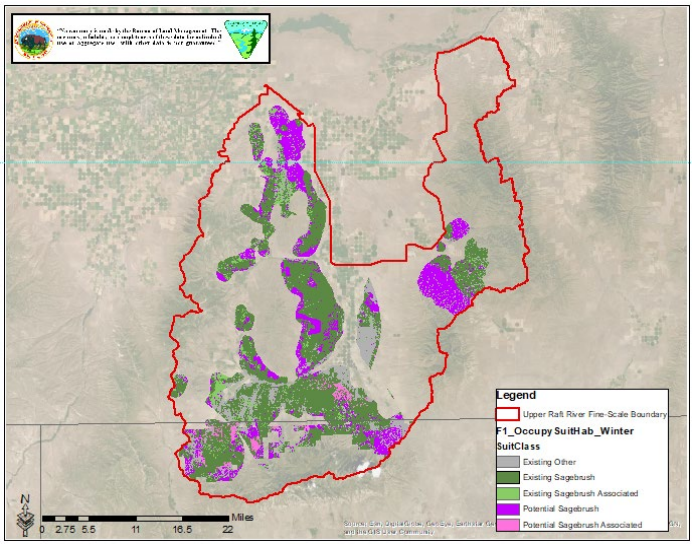
a. **Upper Raft River** fine-scale occupied spring suitable habitat



b. **Upper Raft River** fine-scale occupied summer suitable habitat



c. **Upper Raft River** fine-scale occupied winter suitable habitat



3.2.1.2 Habitat Connectivity

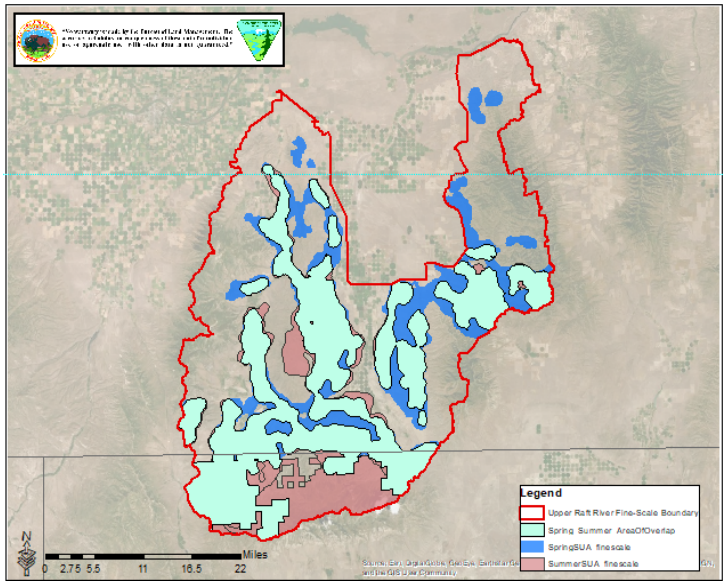
The seasonal use area connectivity metric was rated suitable in the Upper Raft River fine-scale area. The connectivity indicator was rated as suitable because the seasonal use areas that overlap are high (i.e. there is high connectivity among the three seasonal habitat types). Both a major highway and a large transmission corridor that run north/south bisect the fine-scale area and could impede movements among and between the seasonal habitats. Table 3.2.2 & Figure 3.2.2 a - c

Table 3.2-2: Upper Raft River Fine-scale Area SUA Connectivity

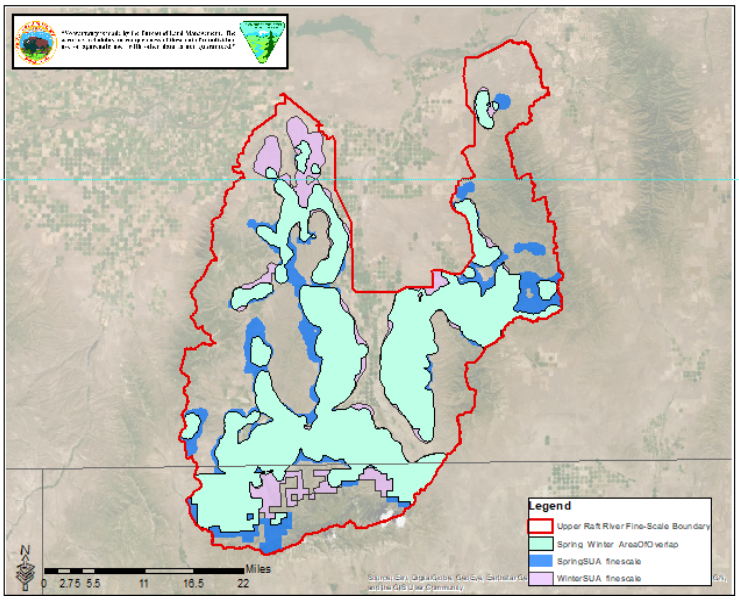
Overlap between Seasonal Use Areas			
Seasons	**Combined Area km²**	**Overlapping Area km²**	**% Overlap**
Spring x Summer	1,726	1,060	**61%**
Spring x Winter	1,628	1,176	**72%**
Summer x Winter	1,772	951	**54%**

Figure 3.2-2: Upper Raft River Fine-Scale SUA Connectivity

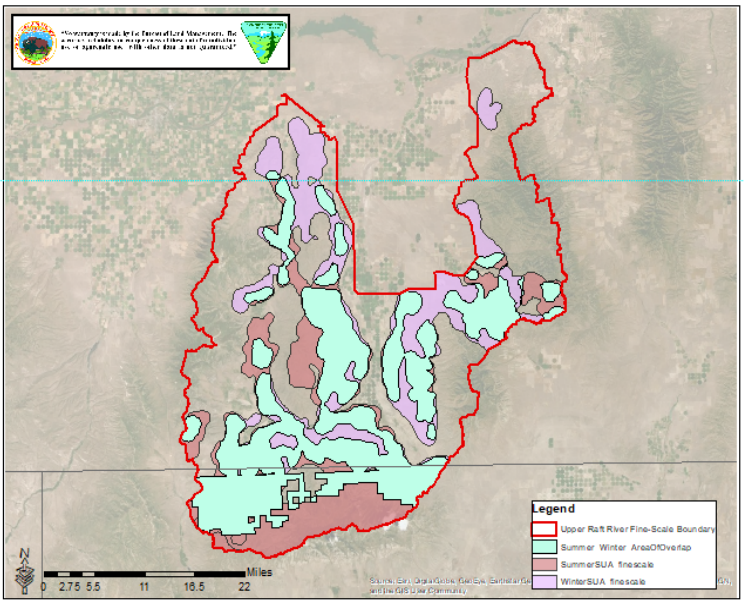
a. Spring x Summer Combined Area & Area of Overlap



b. Spring x Winter Combined Area & Area of Overlap



c. Summer x Winter Combined Area & Area of Overlap



3.2.1.3 Anthropogenic Disturbance

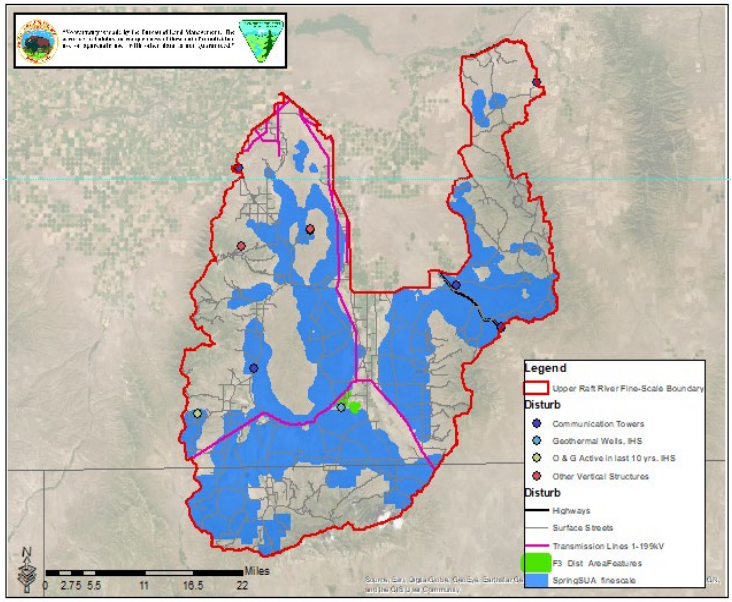
The anthropogenic disturbance metric was rated suitable due to the density of both points and areas being very low and the density of lines being moderate (Table 3.2-3 & Figure 3.2-3). Additionally, the linear feature density was primarily based on the presence of surface streets, many two-track roads that have been found to not affect sage-grouse habitat.

Figure 3.2-3: Upper Raft River Fine-Scale Anthropogenic Disturbance

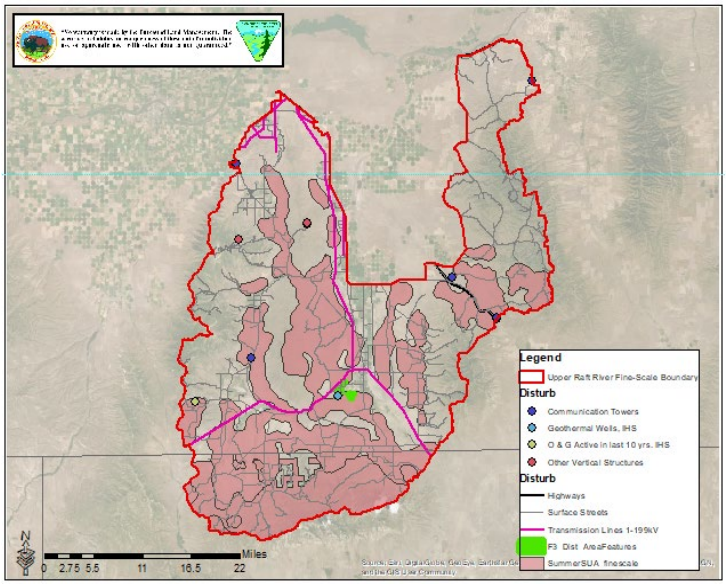
Anthropogenic Disturbance in the Fine-Scale Boundary		
	Units in Fine-scale	**Density**
Disturbance - Linear Features (km)	1, 515	0.47
Disturbance - Points Features (count)	13	0.004
Disturbance - Area Features (km^2)	0	0.0000
Fine-scale Boundary	4,223 km^2	

Figure 3.2-3: Upper Raft River Fine-Scale Disturbance Features

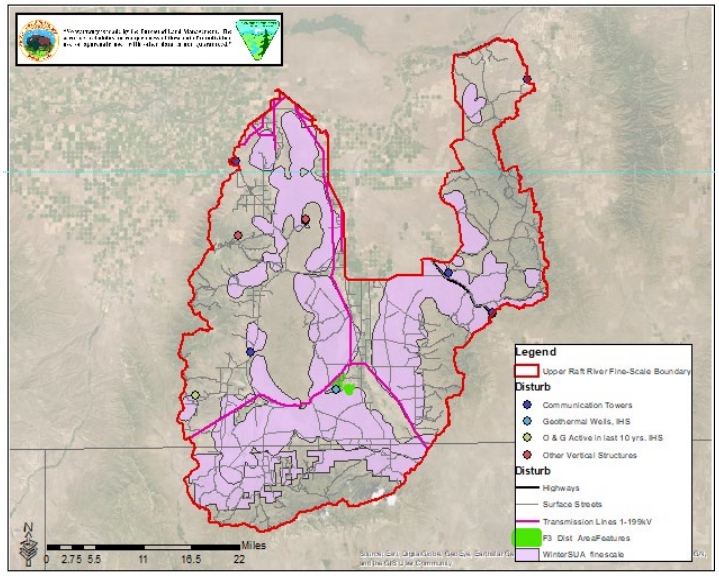
a. In Spring SUA



b. In Summer SUA



c. In Winter SUA



3.3 Site-Scale

Site-scale habitat suitability is divided into five categories based on the season and type of use. These include:

1. Breeding Habitat: Leks
2. Breeding Habitat: (Nesting/Early Brood-Rearing)
3. Upland Summer: Late Brood-Rearing
4. Riparian Summer: Late Brood-Rearing
5. Winter Habitat

Thirty-one leks that occur on BLM managed lands were assessed within the Upper Raft River Valley fine-scale area. AIM, LMF, Modified HAF and PFC plots were assessed to inform suitability for other seasonal habitats (Table 3.3-1).

Table 3.3-1: Number of plots located within each Seasonal Use Area and surveyed during the appropriate seasonal period.

Season	# of plots				
	Total	AIM	LMF	Modified HAF	PFC
Nesting/Early Brood Rearing	48	2	2	44	
Upland Late Brood Rearing	22	10	4	8	
Riparian Late Brood Rearing					8
Winter	68	14	11	43	

3.3.1.1 Breeding Habitat (Leks) Site-Scale Suitability (S2)

Thirty-one leks (S-2) are known to occur on BLM managed lands in the Upper Raft River Valley fine-scale area (Figure 3.3-1). Seventy-seven percent of the leks were rated suitable and 22% marginal. No leks were rated unsuitable (Figure 3.3-2).

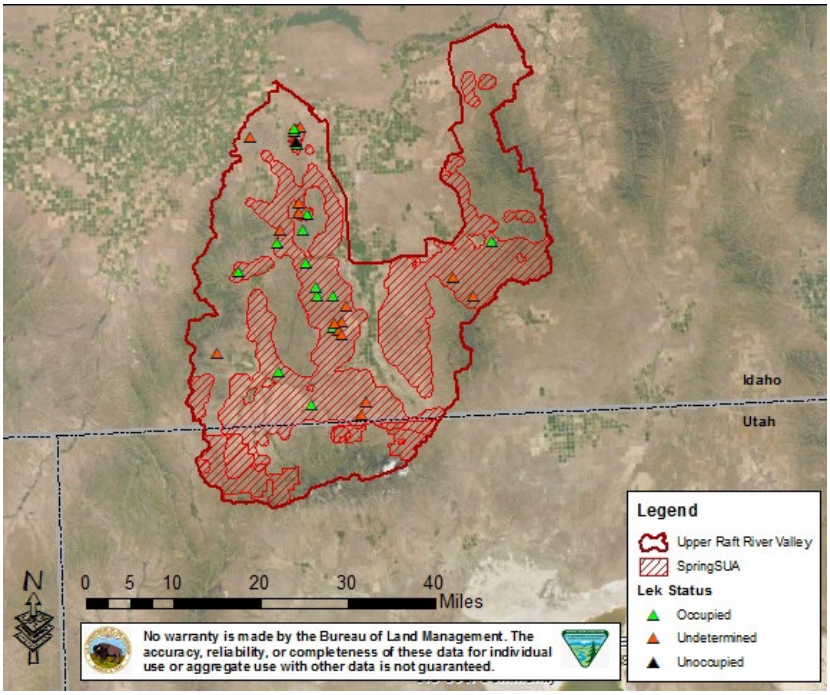


Figure 3.3-1: Upper Raft River Fine-Scale SUA Lek Locations and Management Status

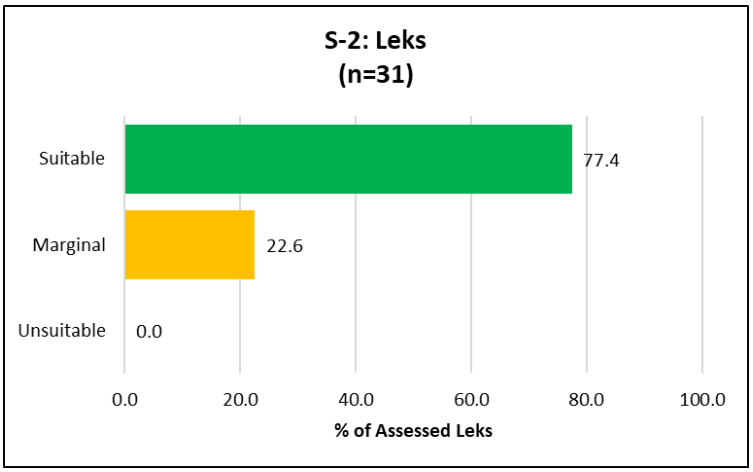


Figure 3.3-2: Overall Suitability of Leks

3.3.1.2 Breeding Habitat (Nesting/Early Brood-Rearing) Site-Scale Suitability (S3)

Forty-eight plots fell within mapped spring habitat, were visited during the appropriate seasonal period (May 1 to June 30 in Idaho, March 1 – June 30 in Utah), and were from sample designs appropriate for a weighted analysis (Figure 3.3-3). Of the spring SUA in the Upper Raft River

Valley fine scale, about 52% was in the inference area of a weighted analysis. Approximately 16% of the area of inference was suitable, 13% was marginal, and 70% was unsuitable (Figure 3.3-4). This falls far below the desired 80% suitable benchmarks set in both the Idaho and Southwestern Montana Greater Sage-Grouse Approved Resource Management Plan Amendment (IDSM ARMPA; USDI, BLM 2015) and the Utah Greater Sage-Grouse Approved Resource Management Plan Amendment (UT ARMPA; USDI, BLM 2015). Among plots that were rated, it appears that the sagebrush and perennial forb cover indicators contributed most negatively across the fine scale (Figure 3.3-5), with total shrub height also contributing negatively in Utah (Figure 3.3-5b).

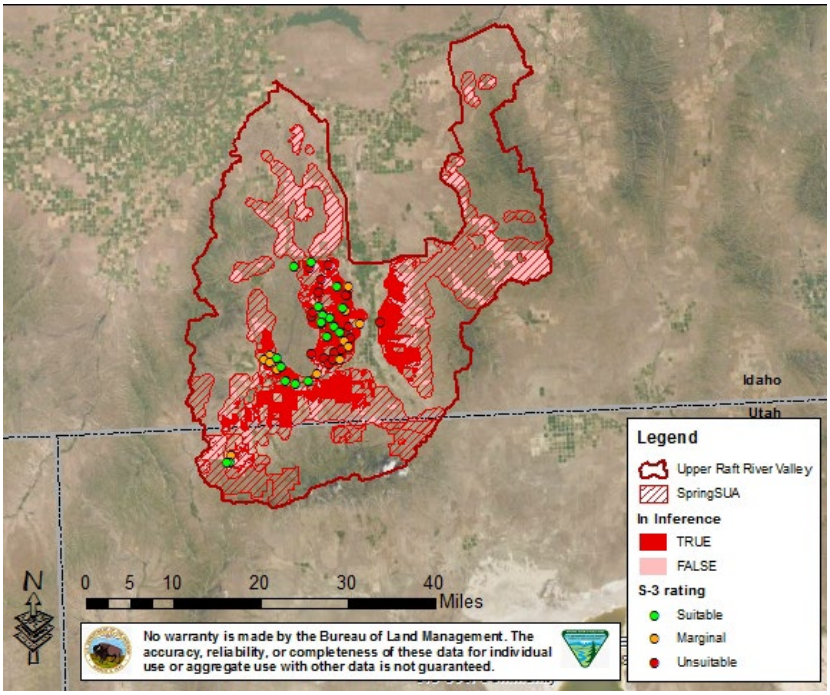


Figure 3.3-3: Nesting/Early Brood Rearing Inference Area and Plot Condition

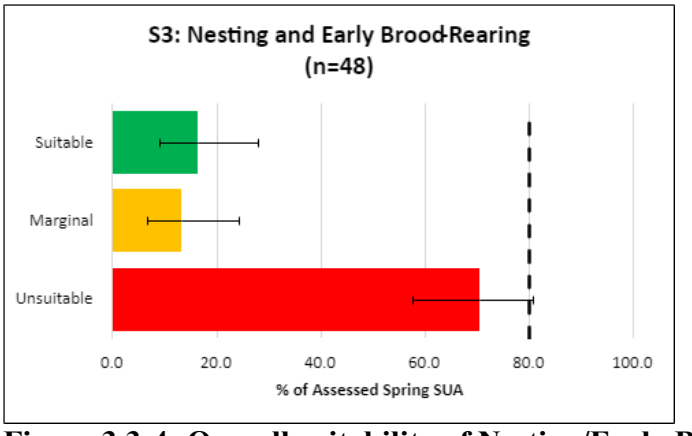


Figure 3.3-4: Overall suitability of Nesting/Early Brood-Rearing habitat

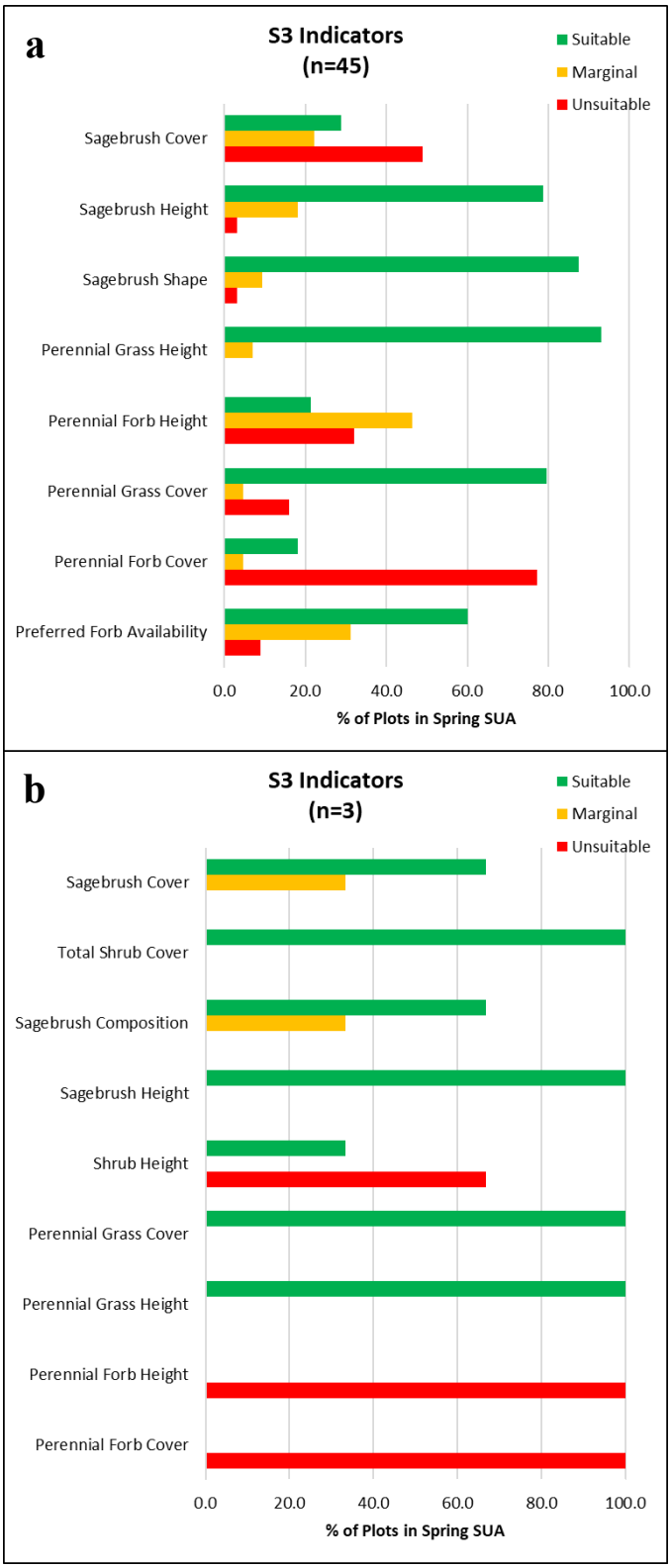


Figure 3.3-5: Suitability by indicator for Nesting/Early Brood-Rearing plots for a) Idaho and b) Utah

3.3.1.3 Upland & Riparian Summer: Late Brood-Rearing Site-Scale Suitability (S4, S5)

Twenty-two plots were rated that occur in mapped summer habitat (S-4), were visited during the correct seasonal period (July 1 – September 30 in Idaho, June 15 – August 31 in Utah), and were from sample designs appropriate for a weighted analysis (Figure 3.3-6). Eight riparian (S-5) areas were assessed (Figure 3.3-7).

Of the upland summer SUA in the Upper Raft River Valley fine-scale, about 55% was in the inference area of a weighted analysis. Approximately 15% of area of inference was suitable, 35% was marginal, and 70% was unsuitable (Figure 3.3-8). This falls far below the desired 40% suitable benchmarks set in both the IDSM ARMPA (USDI, BLM 2015) and UT ARMPA (USDI, BLM 2015). Among plots that in Idaho, it appears that the sagebrush and preferred forb availability contributed most negatively (Figure 3.3-9). Individual indicators were not compared in Utah because there was only 1 plot.

Of the riparian summer plots, 50% were suitable and 50% marginal. No summer riparian plots were rated unsuitable (Figure 3.3-10). This exceeds the desired 40% suitable benchmarks set in both the IDSM ARMPA (USDI, BLM 2015) and UT ARMPA (USDI, BLM 2015).

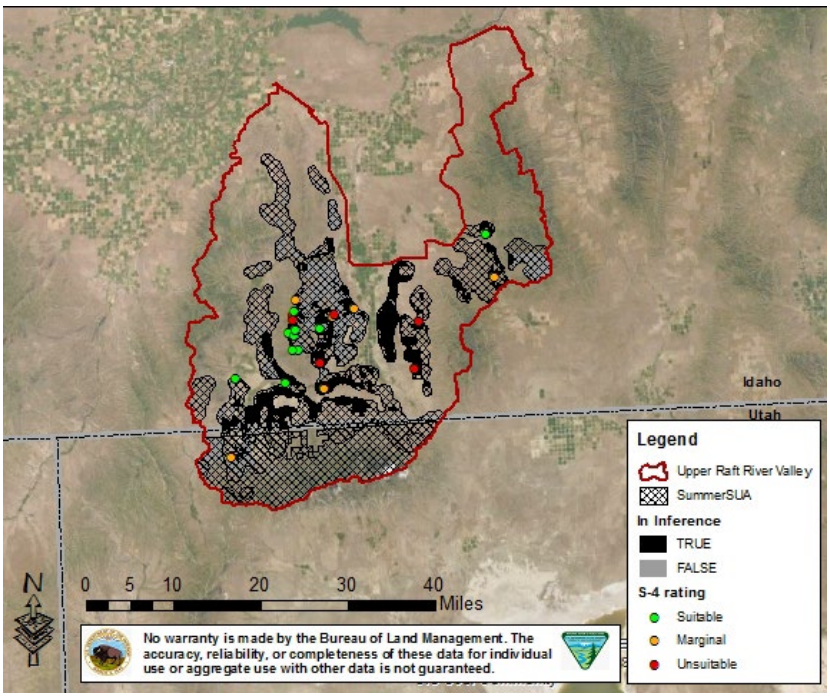


Figure 3.3-6: Late Brood-Rearing (Upland Summer) Inference Area and Plot Condition

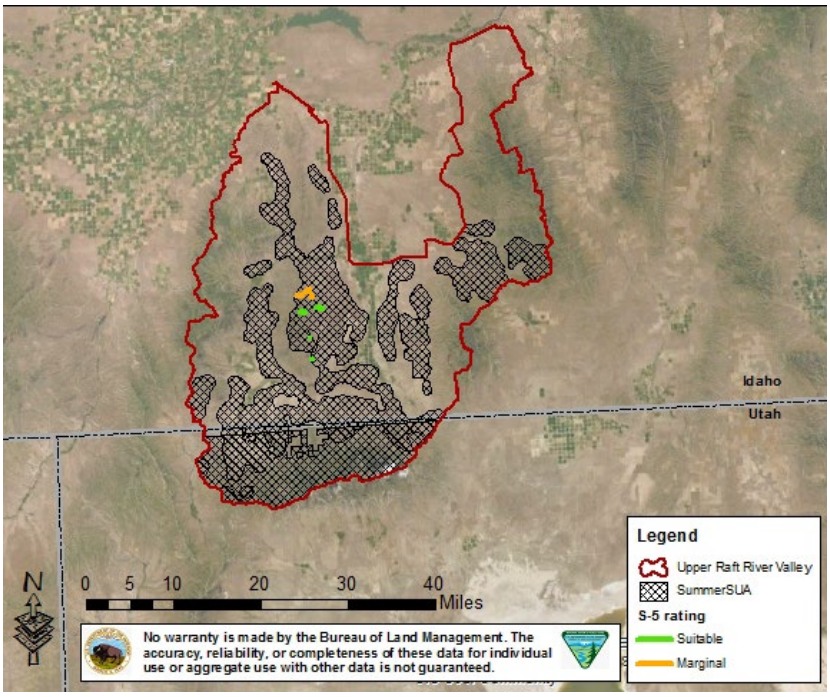


Figure 3.3-7: Late Brood-Rearing (Upland Riparian) Plot Condition

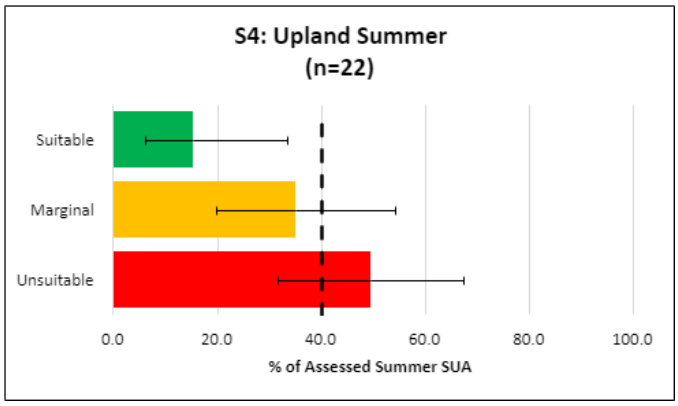


Figure 3.3-8: Overall suitability of Summer/Late Brood-Rearing upland habitat

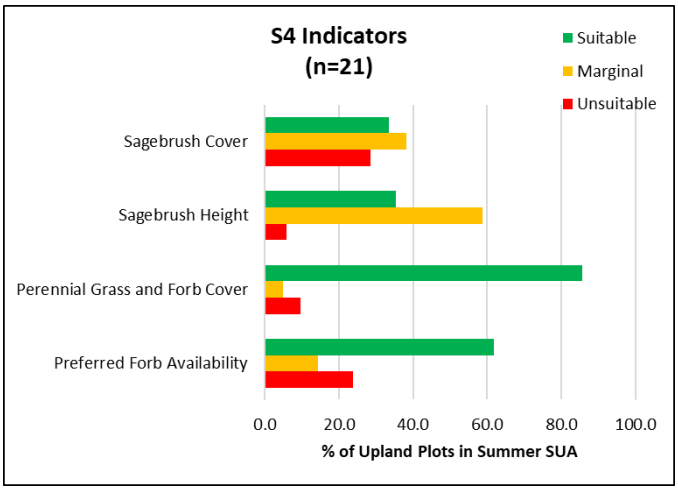


Figure 3.3-9: Suitability by indicator for Upland Nesting/Early Brood-Rearing plots in Idaho

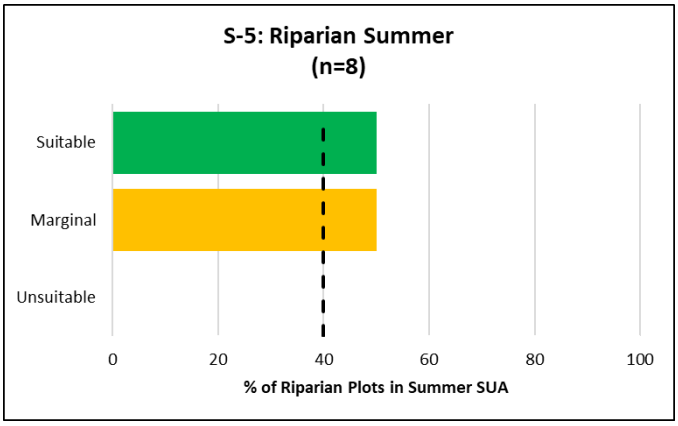


Figure 3.3 -10: Overall suitability of riparian plots in Summer SUA

3.3.1.4 Winter Site-Scale Suitability (S6)

70 plots were rated that fall in winter habitat (S-6).

Sixty-eight plots fell within mapped winter habitat and were from sample designs appropriate for a weighted analysis (Figure 3.3-11). Of the winter SUA in the Upper Raft River Valley fine scale, about 86% was in the inference area of a weighted analysis. Approximately 36% of the area of inference was suitable, 8% was marginal, and 55% was unsuitable (Figure 3.3-12). This falls far below the desired 80% suitable benchmarks set in both the IDSM ARMPA (USDI, BLM 2015) and UT ARMPA (USDI, BLM 2015).

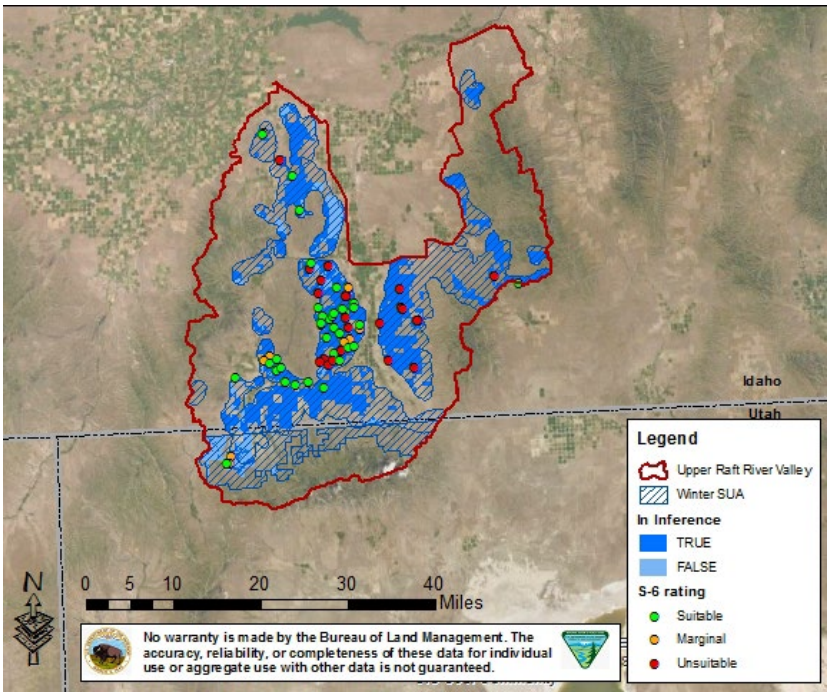


Figure 3.3-11: Winter Inference Area and Plot Condition

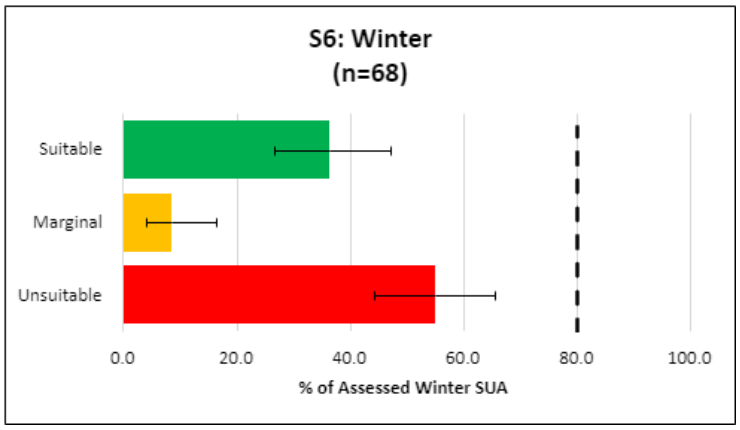


Figure 3.3.1-12: Overall suitability of Winter habitat

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Appendix G: Management Unit Supplement to Greater Sage-grouse Habitat Summary Report

Management Unit Supplement

To

Greater Sage-Grouse

(*Centrocercus urophasianus*)

Habitat Summary Report

Jim Sage Allotment

Burley Field Office/Idaho

February 2021

Executive Summary

This report provides a habitat assessment for Greater sage-grouse seasonal habitat within the Jim Sage Allotment based on the site-scale methods described in the Sage-grouse Habitat Assessment Framework (HAF) (Stiver et al. 2015, BLM Technical Reference 6710-1). The Jim Sage Allotment is located within Idaho, overlaps with the Northern Great Basin population, includes 55,880 acres of Important Habitat Management Area (IHMA) and 24,160 acres of General Habitat Management Area (GHMA). The Jim Sage Allotment has is no designation of Priority Habitat Management Area. Within IHMA and GHMA modeled sage-grouse habitat occurs within three mostly overlapping Seasonal Habitat Areas (SUAs) on Jim Sage. These SUAs include approximately 46,300 acres of nesting/early brood-rearing, 50,260 acres of late brood-rearing/summer, and 41,030 acres of winter. These SUAs are expected to support sage-grouse through their specific life cycle timeframes on Jim Sage. The assessment area occurs within the HAF Snake River Valley Mid-Scale (2nd order) and Upper Raft River Fine-Scale (3rd order).

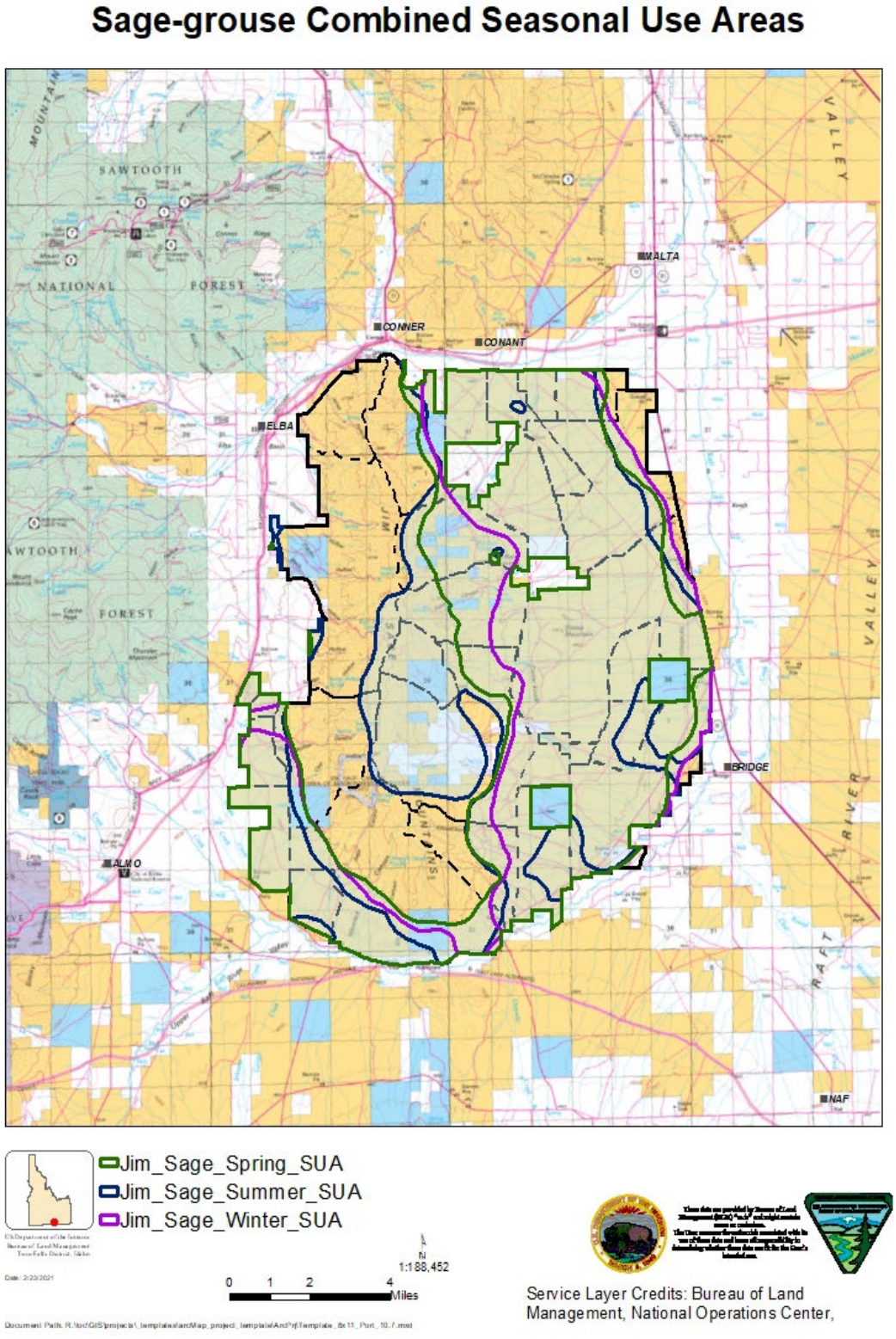


Figure 1: The location and extent of the Jim Sage Allotment and the sage-grouse seasonal use areas within it.

The following HAF Summary Reports are referenced throughout this document:

- Snake River Valley Mid-Scale HAF Summary Report ([February 2021])
- Upper Raft River Fine-Scale HAF Summary Report ([February 2021]).
- Site-scale HAF Summary Report for the Upper Raft River Fine-Scale [February 2021]).

Habitat assessments from these larger areas (i.e., HAF mid-, fine- and site-scales) provide meaningful information, such as landscape context, for the Jim Sage Allotment habitat assessment.

The purpose, methods and results of this habitat assessment are described in detail throughout this document. In brief, the assessment found the following for the Jim Sage Allotment:

- **Lekking Habitat** was rated as Suitable for Greater Sage-grouse, primarily due to the absence of detrimental land uses and tall structures throughout the allotment. Of the 11 lek sites, 9 were within suitable habitat. Two leks were rated as marginal due to the presence of tall structures at one site and the absence of suitable sagebrush cover at the other. The Jim Sage Allotment is relatively contiguous habitat through the middle of the allotment with large fires on the north and south side of the mountain. Leks within Jim Sage are mostly found in the continuous habitat in the middle of the allotment.
- **Nesting/Early Brood Rearing Habitat** was rated as Marginal for Greater Sage-grouse, primarily due to unsuitable habitat in some sites historically seeded with crested wheatgrass or Russian wildrye, sites that are recently burned areas and sites within Wyoming/greasewood ecological sites. Although most of these sites had suitable perennial grass cover, these sites lacked the potential to meet sage-grouse nesting habitat suitability primarily due to lack of shrubs and preferred forb diversity. In some of the historic seedings and the recently burned areas the continued establishment of sagebrush in the unsuitable sites will increase the probability the nesting/early brood-rearing habitat on Jim Sage reaches suitability.
- **Upland Summer/Late Brood-Rearing Habitat** was rated as Suitable for Greater Sage-grouse, primarily due to a high diversity of plant species in the upper elevations. These sites also offer sage-grouse suitable cover throughout the summer season. In contrast, most of lower elevation sites were rated as marginal or unsuitable due to the absence of forb diversity. These sites receive lower amounts of precipitation throughout the year and forbs would be expected to dry and not be available through the upland summer/late-brood rearing season.
- **Riparian Summer/Late Brood-Rearing Habitat** was rated as Suitable for Greater Sage-grouse, primarily due to all 9 sites being rated as suitable for PFC and for preferred forb availability. Although, four sites did not meet the threshold for nearby sagebrush cover due to sagebrush removal by the 2018 Connor Fire, the riparian conditions at these sites had recovered post fire.
- **Winter Habitat** was rated as Marginal for Greater Sage-grouse, primarily due to the absence of suitable sagebrush cover in some historic crested seedings, recently burned areas and Wyoming big sagebrush/greasewood ecological sites. However, winter habitat

suitability varied across Jim Sage and overall winter suitability is trending upwards. The continued establishment of sagebrush in the unsuitable sites will increase the probability the winter habitat on Jim Sage reaches suitability.

Site-scale suitability ratings for plots (sample locations) within each seasonal use area are summarized in Table 1 below.

Table 1: Site-Scale Plot Suitability Summary

Site-scale Habitat Type	# of Sample Locations	Suitability Estimate (within 10% CI)		
		Suitable	**Marginal**	**Unsuitable**
Proportional Analyses		**Proportional Area %**		
Breeding Habitat (Nesting/Early Brood Rearing) (Form S-3)	44	31.7%	25.0%	43.3%
Upland Summer/Late Brood-Rearing Habitat (Form S-4)	15	41.1%	21.5%	37.4%
Winter Habitat (Form S-6)	48	55. 5%	11.8%	32.7%
Plot-counting Analyses		**Percent of Plots**		
Breeding Habitat (Leks) (Form S-2)	11	82%	18%	0%
Riparian Summer/Late Brood-Rearing Habitat (Form S-5)	9	100%	0%	0%

The findings of this assessment, in addition to the underlying data and knowledge documented in this report, can be used to inform management decisions related to sage-grouse habitat within the respective area. For example, this assessment can be referenced in a land health standards report when evaluating the wildlife/special status species habitat quality standards(s) specific (BLM Handbook 4180-1, Land Health Standards). It can also be used in applicable National Environmental Policy Act (NEPA) analyses and reporting for project planning.

This assessment was led by the BLM Burley Field Office and Idaho State Office and was conducted in coordination with BLM partners, including Idaho Department of Fish and Game. Note that habitat assessments may be periodically updated as new data, analyses, and other information become available.

Background

Sage-grouse habitat suitability was assessed within the Jim Sage Allotment using the methods for site-scale (4th order) habitat selection as described in the Sage-Grouse Habitat Assessment Framework (HAF) (Stiver 2015). Note that this report is not a HAF Site-scale Summary Report as the assessment is limited to the boundaries of a management unit (as opposed to a HAF site-scale boundary). Instead, this report can be considered a Management Unit Supplement to a HAF Summary Report as it provides an additional scale of habitat assessment that can be used to inform management decisions. Likewise, HAF Summary Reports for mid-, fine-, and/or site-scales can be used when completing a Management Unit Supplement to provide important information on landscape context. These two types of sage-grouse habitat assessments (Management Units Supplements and HAF Summary Reports) are complementary products and should be used in conjunction whenever appropriate.

1.1 Habitat Assessment Area

The Jim Sage Allotment is located due east of Elba and Almo, Idaho (See Figure 1). The allotment is comprised of approximately 75,521 acres of public land, 4,120 acres of State of Idaho Lands and 2,172 acres of private lands.

Elevations range from 4,600 feet on the eastern edge to just over 8,000 feet on the highest mountain peak. Vegetation is dominated by sagebrush types with significant areas of juniper and native grasses. Several crested wheatgrass seedings and native cultivar seedings occur across the allotment. There are 11 miles of stream in the allotment comprising approximately 40 acres of riparian vegetation.

Unique characteristics include an 11,227-acre special recreation management area occurring at and above the 6,600-foot elevation benchmark emphasizing primitive recreation such as hiking and horseback riding. Partially included in this area is the Jim Sage Research Natural Area/Area of Critical Environmental Concern (RNA/ACEC), which was allotted to preserve the relic Pinyon-Juniper plant community. It is comprised of 620 acres and contains Jim Sage Spring. The RNA is in Jim Sage Canyon on the south end of the allotment.

Vegetation in the allotment is diverse. Lower elevation sites range from greasewood and shadscale to Wyoming big sagebrush. Understory vegetation in these areas contain varying levels of bluebunch wheatgrass, squirreltail and Sandberg's bluegrass and cheatgrass. Globemallow is the primary forb in these lower elevation sites. In the mid to upper elevation areas, Utah juniper, single leaf pinyon, low, black and mountain sage, aspen, mountain brush and mahogany communities dominate. Douglas fir occupies a small amount of acreage in the upper end of Parks Creek.

The Jim Sage Allotment provides habitat for a variety of wildlife species. There are no Threatened or Endangered (T&E) species or associated critical habitats. Several BLM-designated Sensitive bird and animal species occur or potentially occur in the allotment. The Jim Sage Allotment area also provides year-round habitat for sage-grouse.

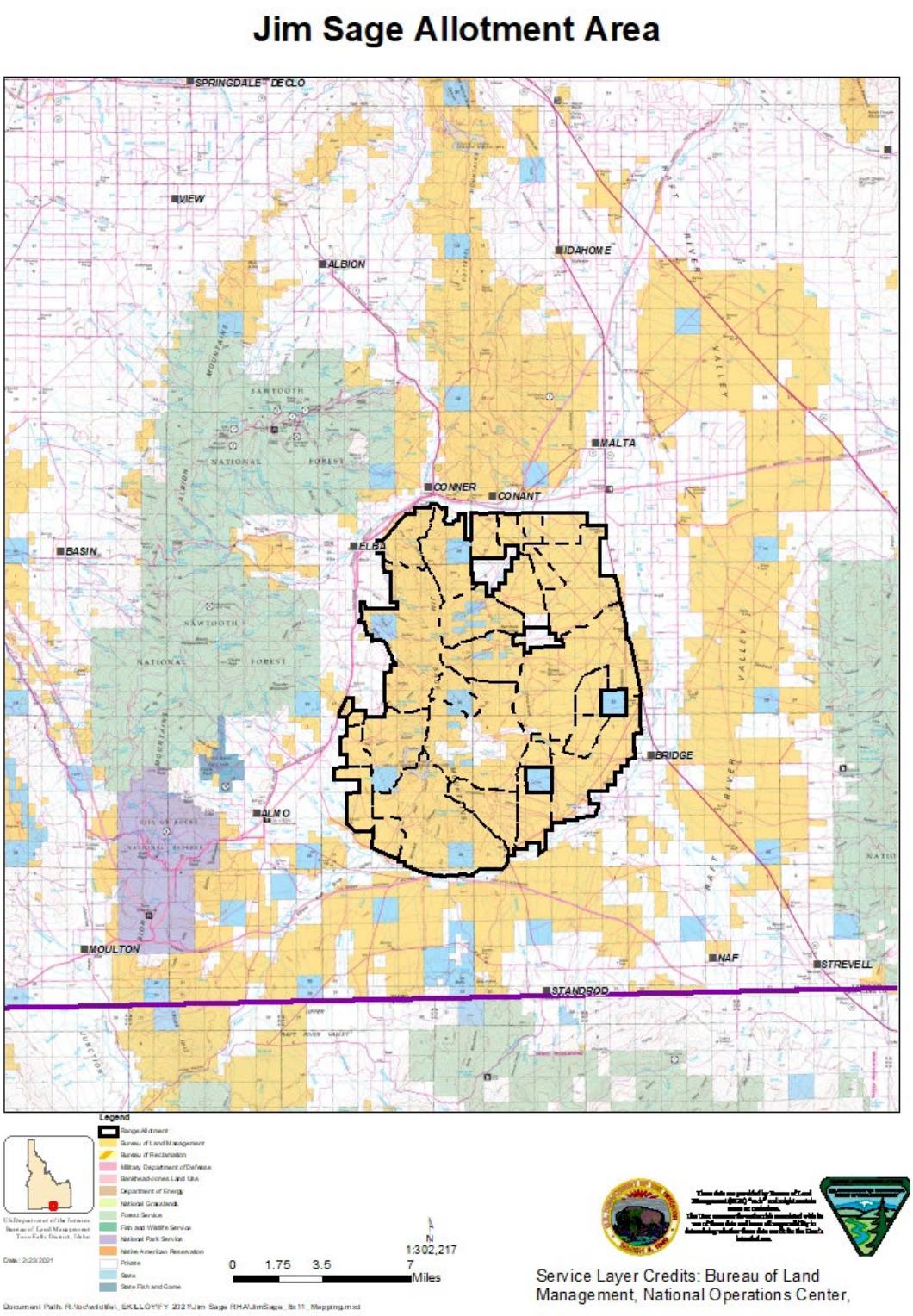


Figure 2. Map showing the location of the Jim Sage Allotment and BLM administrative units.

1.2 Purpose of the Habitat Assessment

This habitat assessment and its associated HAF summary reports will inform the Rangeland Health Assessment and Evaluation report and subsequent livestock grazing permit renewal Environmental Assessment and grazing decisions for the Jim Sage Allotment. This area occurs Upper Raft River Fine-Scale Management boundary for sage-grouse and overlaps with sage-grouse IHMA, GHMA and delineated Seasonal Use Areas (Figure 2).

Habitat Management Areas on Jim Sage Allotment

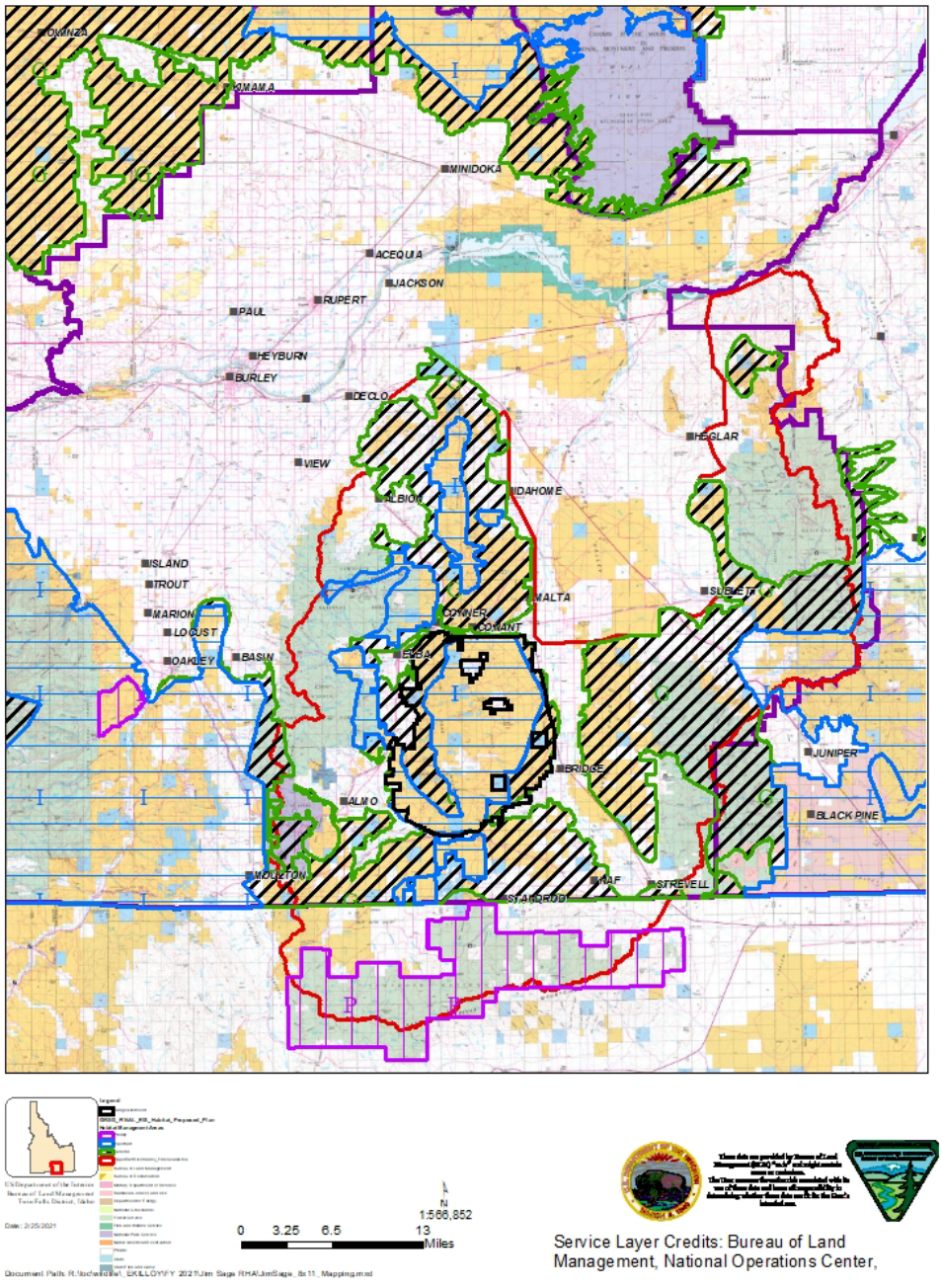


Figure 3. Map showing the Jim Sage Allotment in relation to sage-grouse Upper Raft River Fine-Scale Management Boundary.

2.0 Methods

Following the methods of the HAF, site-scale (plot) data that occur within sage-grouse seasonal use areas (SUAs) (e.g., nesting/early brood-rearing) were evaluated by comparing habitat indicators (e.g., perennial grass height) at each plot against habitat suitability thresholds (e.g., >=18cm is suitable, 10 to <18cm is marginal, or <10cm is unsuitable). These plot-based suitability ratings were then summarized and statistically analyzed to rate the overall suitability of each SUA within with management unit. Details on the specific data and analysis methods for this assessment are described below.

2.1 Data Sources

Assessing large landscapes and maintaining consistency in analyses across the sage-grouse range and scales of assessment requires the use of both regional and local geospatial data. Table 1 provides the name and source of the geospatial data used in this assessment.

Table 2: Data sources used in the habitat assessment.

Data Name	**Source**
Fine-Scale Boundaries	BLM HAF Westwide database
Sage-grouse Lek Locations	Idaho Department of Fish and Game
Sage-grouse Seasonal Habitat	BLM Idaho State Office Name/ Idaho Department of Fish and Game
NLCD Shrubland Sagebrush Cover	US Geological Survey
Anthropogenic Features	BLM NOC Disturbance Compilation 2020
Tall Structures (Meteorological and Communication Towers)	BLM NOC Disturbance Compilation 2020
Tree Canopy Cover	Sage-Grouse Initiative (Falkowski et al. 2017)
National Elevation Data	U.S. Geological Survey. DOI, BLM, NOC, Geospatial Section OC-534
Assessment, Inventory and Monitoring (AIM) Plots	BLM NOC TerrADat database
Landscape Monitoring Framework (LMF) Plots	NRCS/ BLM NOC TerraDat database
Modified Assessment, Inventory and Monitoring (AIM) Plots	BLM Burley Field Office and BLM NOC TerrADat database
Proper Functioning Condition (PFC)	BLM PFC database

Data Name	Source
Ecological Site Descriptions	NRCS
Interpreting Indicators of Rangeland Health	BLM Technical Reference 1734-6 Version 5

Sage-grouse habitat was assessed using field (plot) data collected through the BLM Assessment Inventory and Monitoring (AIM) strategy the Landscape Monitoring Framework (LMF) (Toevs 2011), and Modified Assessment Inventory and Monitoring (M-AIM). AIM, LMF, and M-AIM plots are part of a spatially balanced sample design where monitoring information is gathered within a landscape of interest at predetermined locations randomly identified during the design stage. During the randomization process, every possible location has a chance of being selected, which enables reporting on the condition and trend of all monitored renewable resources within an area of interest with known levels of precision and accuracy. Plot data that were both spatially and temporally valid (i.e., occurred within mapped SUAs and were collected during the appropriate time period) were used in this analysis to inform suitability of Nesting/Early Brood-Rearing (form S-3), Upland Summer/Late Brood-Rearing (form S-4), and Winter (S-6) seasonal habitats.

Interpreting Indicators of Rangeland Health (IIRH) indicators (i.e., ground cover, soil movement, plant vigor) were used to evaluate soil and watershed stability, assess vegetative health and the functionality for ecological processes at 16 upland sites within sage-grouse SUAs in 2019. Rangeland health indicators fall into three main attributes: soil and site stability, hydrologic function and biotic integrity. In 2019, site evaluations were completed at or near the original sites with a few new sites being assessed. Data were collected on-site based on ecological site and land history. Sites were identified to represent the conditions of the soils and vegetation within the pasture(s) or use area. Data were collected both quantitatively and qualitatively. An ID team consisting of specialists in plant identification, range management, wildlife biology, plant ecology and riparian assessments collaborated on data collection and field evaluations. At each site, the team conducted cover transects to determine plant community composition by percent cover, verified the ecological site, completed field forms and photographed the site and surrounding area. The site conditions were compared to the ecological site descriptions from the Natural Resource Conservation Service (NRCS).

2.1.1 Sample Design
I. Sample Design: Modified-AIM

The Jim Sage Allotment was stratified utilizing a computer-generated spatially balanced random point selector, the Shiny Spatially Balanced Sampling Tool, and were distributed between Recently Burned, Seedings, and Potential Native Plant Community (SSURGO) layers within each of the three SUAs for sage-grouse (i.e., nesting/early brood-rearing, summer/late-brood rearing and winter). Stratification of plots were bound to the Spring (Nesting/Early Brood-rearing) and Summer (Late Brood-rearing) areas. The two SUAs were overlapped to a merged stratification area; the sites in the Spring habitat were completed before June 30. The sites that

were only in the Summer SUA were completed in their time range (July-October). The site-scale assessments evaluated suitability of seasonal habitat using a suite of habitat indicators that apply to each SUA. Suitability of seasonal habitats, including leks, were assessed using the methods described in the Modified HAF Technical Reference (BLM 2015; [Jim Sage S-Forms]).

In 2019, 54 M-AIM plots were stratified on Jim Sage. The Modified AIM protocol measures habitat indicators which are consistent with those listed in Table 2-2, Habitat Objectives for GRSG, of the ARMPA (BLM 2015a). All sampled plots have been included in the Upper Raft River Fine-Scale Analysis.

Table 3. Ecological Site Crosswalk to Ecological Site Group

Ecological Site Name	Ecological Site Group
ALKALI FLATS 8-12 SAVE4/ELEL5	ALKALI FLATS 8-12 SAVE4/ELEL5
LOAMY 8-12 ARTRW8/PSSPS	LOAMY 8-12 ARTRW8/PSSPS
SHALLOW CALCAREOUS LOAM 10-16 ARARN/PSSPS	SHALLOW CALCAREOUS LOAM 10-16 ARARN/PSSPS
SHALLOW LOAMY 8-12 ARAR8/PSSPS	SHALLOW LOAMY 8-12 ARAR8/PSSPS
SHALLOW STONY 12-20 ARAR8/PSSPS	SHALLOW STONY 12-20 ARAR8/PSSPS
NORTH SLOPE STONY 12-16 ARTRV/FEID	Stony 12-16 ARTRV/FEID
STEEP SOUTH 16-22 ARTRV/PSSPS	
STEEP SOUTH SLOPES 12-16 ARTRV/PSSPS	
GIS Historical Fire Layer	Recently Burned
Completed Historic Vegetation Treatments	Seeding

Table 4. (terrestrial). Summary of ecological site groups (strata). The number of sites per strata was determined by management priorities in the BFO; number of plots per ecological site group was based on percentage of the total study area.

Strata – Eco-site Groups	**Approx. stratum acres**	**Proportional area**	**Sites per strata (2019)**
ALKALI FLATS 8-12 SAVE4/ELEL5	3,820	8%	Primary: 5 Oversample: 2
LOAMY 8-12 ARTRW8/PSSPS	4,960	10%	Primary: 6 Oversample: 2

Strata – Eco-site Groups	**Approx. stratum acres**	**Proportional area**	**Sites per strata (2019)**
SHALLOW CALCAREOUS LOAM 10-16 ARARN/PSSPS	5,586	11%	Primary: 7 Oversample: 2
SHALLOW LOAMY 8-12 ARAR8/PSSPS	4,998	10%	Primary: 6 Oversample: 2
SHALLOW STONY 12-20 ARAR8/PSSPS	3,409	7%	Primary: 7 Oversample: 2
STONY 12-16 ARTRV/FEID	3,153	6%	Primary: 6 Oversample: 2
Recently Burned	10,170	21%	Primary: 8 Oversample: 4
Seeding	13,126	27%	Primary: 15 Oversample: 6
Total	**49,222**	**100%**	**Primary: 60** **Oversample: 22**

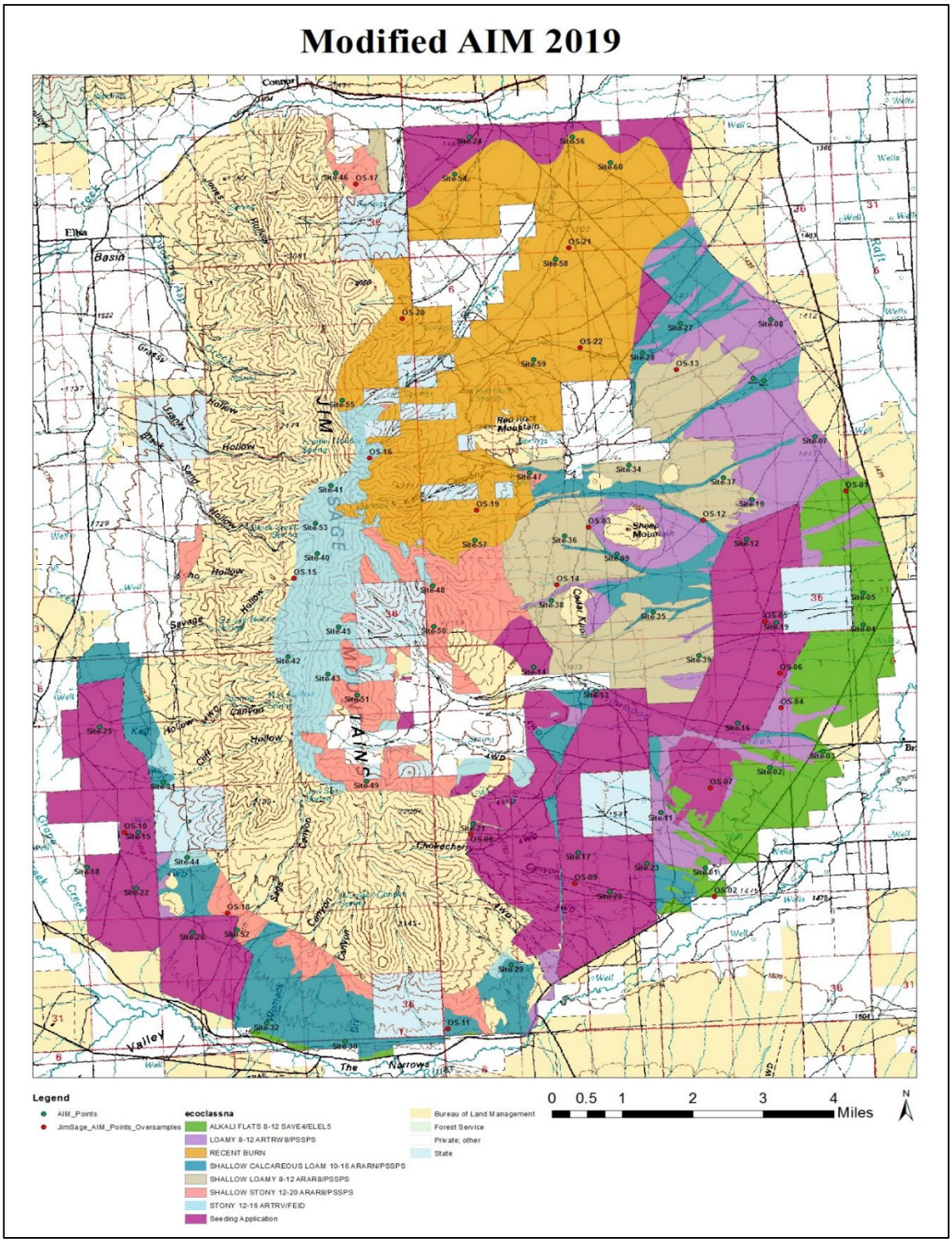


Figure 4. Map of 2019 Modified HAF random points and ecological group strata percentages.

II. Sample Design: AIM

In 2019 and 2020, the BFO focused terrestrial AIM data collection outside of the sagebrush focal area, where AIM data were collected in 2016-2017. Monitoring objectives in 2019 and 2020 were to establish AIM points in upland vegetation across the BFO and to collect data that would supplement existing HAF data, long-term trend data and fuels data across the FO, and be used for rangeland health assessments, HAF assessments and grazing permit renewals. The intent was to incorporate revisits of plots in the sagebrush focal areas starting in 2021. Balance of sample points across the field office in 2021 and beyond will depend upon the results of the habitat assessment process for the SFA, which is currently being conducted.

Jim Sage AIM points were stratified along with points within a larger study area. The study area was stratified by reviewing the SSURGO-based ecological site mapping, which reflects the dominant condition within each soil map unit. The ecological sites are grouped based on similar characteristics. Some re-categorization of ecosite polygons was done post-hoc based on knowledge of soils and plant communities by the field office staff (e.g. areas mapped as low sage that FO staff knew were actually dominated by big sage, were recategorized to the appropriate stratum). In 2019, 4 AIM plots were distributed across six, final strata: Big Sagebrush Cool Moist (BigCM), Big Sagebrush Warm Dry (BigWD), Low Sagebrush Cool Moist (LowCM), Low Sagebrush Warm Dry (LowWD), Salt Desert Mix (SD), and Other.

The geospatial data layers used to define the study area and reporting units include:

- BLM field office boundaries
- BLM land ownership
- Ecological site maps derived from NRCS SSURGO soils maps

III. Sample Design: LMF

The National Landscape Monitoring Framework Data collection protocol is part of the National Resources Inventory (NRI). NRI is a natural resource inventory conducted by the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS). It provides updated information on the status, condition, and trends of land, soil, water, and related resources on the Nation's non-federal lands. Non-Federal lands include privately owned lands, tribal and trust lands, and lands controlled by State and local governments. NRI provides nationally consistent data and is comparable with AIM data (i.e. plot data are statistically valid and are part of a spatially balanced random sample design). Statistical estimation and quality assurance procedures employed for the NRI survey program help ensure that trends reported using NRI data reflect true changes in resource conditions.

The NRI was designed to establish a database that would allow natural resource issues to be analyzed by portions of Major Land Resource Areas (MLRAs) within States. The NRI sample was selected on a county-by-county basis, using a stratified, two-stage, area sampling scheme. The two-stage sampling units are (1) nominally square segments of land, and (2) points within the segments. The segments are typically half-mile-square parcels of land equivalent to 160-acre quarter-sections in the Public Land Survey System. An annual or continuous approach was

initiated in 2000. This approach provides efficiencies in conducting the survey and balancing of resources, and also makes it easier for the NRI to respond to newly emerging resource issues, and a *core panel* of about 40,000 segments is observed each year along with a different supplemental or rotation panel selected for each year. These panels are selected using stratification based upon geographical factors and historical data; for example, segments containing wetlands or land enrolled in the USDA Conservation Reserve Program (CRP) have a significantly higher chance of selection than those classified historically as forest land. Within the Jim Sage Allotment 11 plots were completed using the LMF from 2011-2018.

2.2 Analysis

Assessments evaluate suitability of seasonal habitat using a suite of habitat indicators that apply to each SUA.

These field data include measurements of site-scale indicators of habitat suitability (such as percent sagebrush, sagebrush height, number of preferred forbs, etc.). Data were filtered before analysis by date of field collection to correspond to the season-specific indicators being assessed, including lekking, nesting/early brood-rearing/upland summer/late brood-rearing/riparian/late brood-rearing/winter.

Suitability of seasonal habitats, including leks, were assessed using the methods described in the HAF TR (BLM 2015; [link to your S forms]). Specifically, AIM plot data from 2019, LMF data from 2011-2018, M-AIM data from 2019 and targeted IIRH site data from 2019.

Each plot/data point was rated as suitable, marginal or unsuitable by comparing each indicator's measurement (e.g., 5% sagebrush) against the benchmark for suitability for the specified season (e.g., suitable = 15 to 25% sagebrush, marginal = 5% to <15% or >25% sagebrush, unsuitable = <5% sagebrush). After rating all of the data for each season, they were analyzed by plot counting and area-weighted analysis.

3.0 Results

Site-scale habitat suitability is divided into five categories based on the season and type of use. These include:

6. Breeding Habitat: Leks
7. Breeding Habitat: Nesting/Early Brood-Rearing
8. Upland Summer: Late Brood-Rearing
9. Riparian Summer: Late Brood-Rearing
10. Winter Habitat

3.1 Breeding Habitat (Leks): HAF Form S-2

The suitability of active, occupied, unoccupied, undetermined status leks contained in the IDFG database (as of November 18, 2020 within Jim Sage was assessed using GIS aerial imagery and BLM Rights of Way layers. Eleven leks were evaluated throughout the allotments on BLM land (Figure 2). The GIS/NAIP imagery assessment to determine suitability consisted of the indicators described in Table 5.

Table 5: Indicators for lek site suitability

Habitat Indicator	Suitable	Marginal	Unsuitable
Availability of Sagebrush Cover.	Lek has adjacent protective sagebrush cover within 100m.	Sagebrush cover within 100m provide very little protective cover.	Adjacent sagebrush cover is more than 100m.
Proximity of Detrimental Land Uses.	Detrimental land uses are not within line of sight and absent to uncommon within 3km of the lek.	Detrimental land uses are within line of sight and uncommon or few within 3km of lek.	Detrimental land uses are within the vicinity of the lek site.
Proximity of Trees or Other Tall Structures.	Trees or other tall structures are not within line of sight and none to uncommon within 3km of the lek.	Trees or other tall structures are within line of sight and uncommon or scattered within 3km of lek.	Trees or other tall structure are within the vicinity of the lek site.

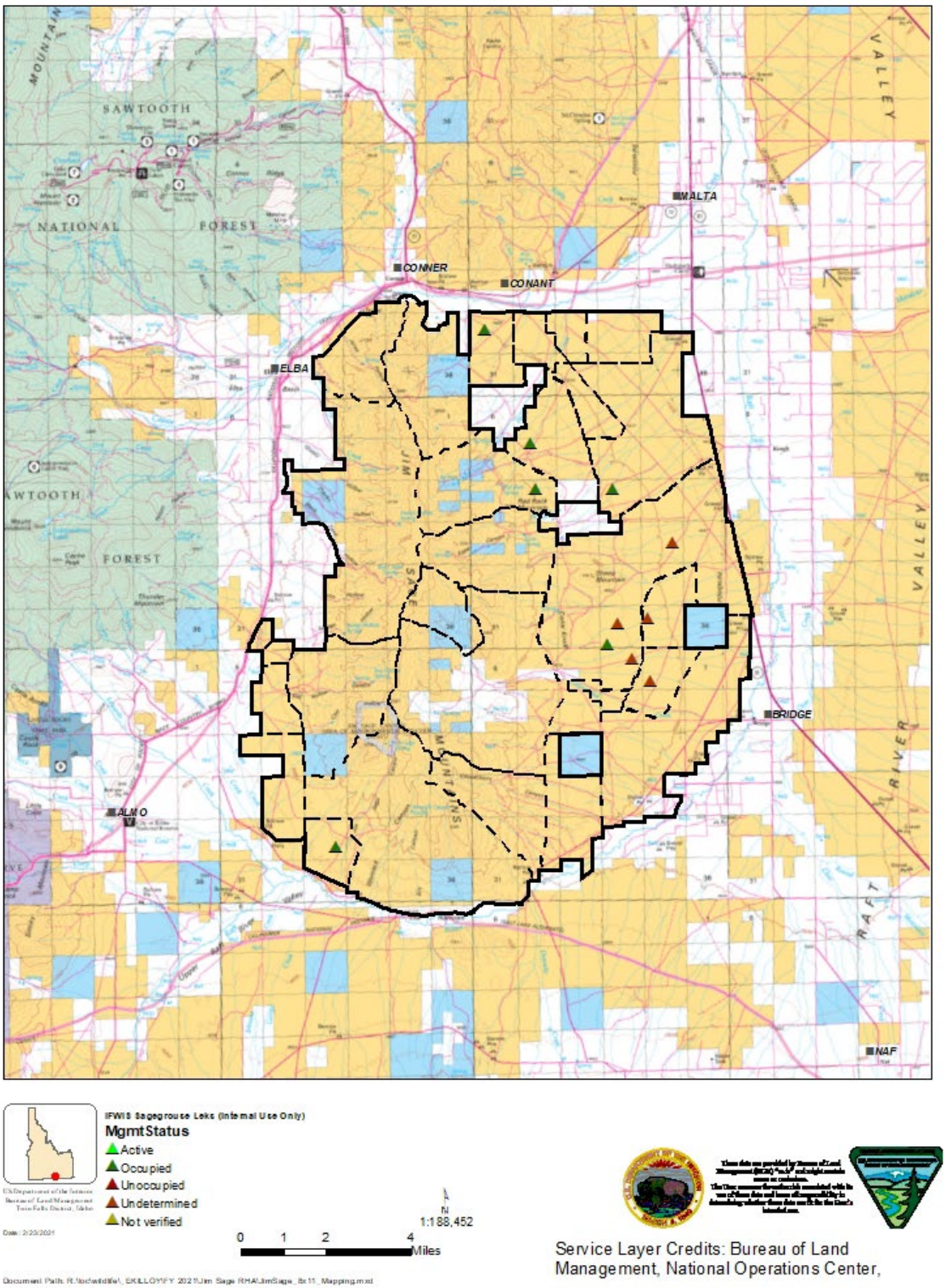


Figure 5. Jim Sage lek locations

CHART 1: LEK SUITABILITY WITHIN THE JIM SAGE ALLOTMENT

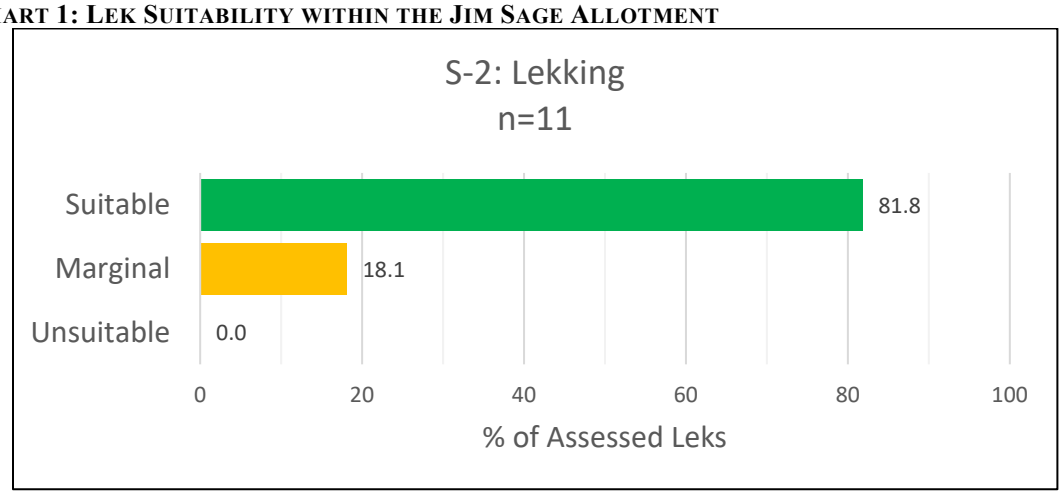
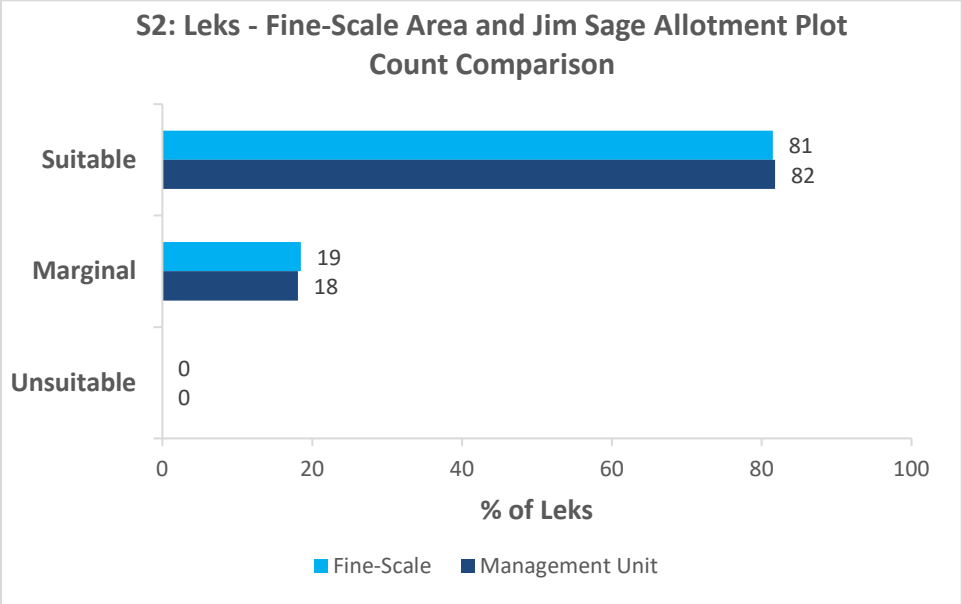


TABLE 6: LEK SUITABILITY BY INDICATOR. ANALYSIS BY PLOT COUNT ON THE LEFT SIDE OF THE GRAPH, PROPORTION OF PLOTS MEETING SUITABILITY ON THE RIGHT.

S2 Indicators (n=11)	# of Plots			% of Plots		
	Proximity of Sagebrush to Leks	Absence of Trees	Absence of Detrimental Land Uses	Proximity of Sagebrush to Leks	Absence of Trees	Absence of Detrimental Land Uses
Suitable	10	10	10	90.9	90.9	90.9
Marginal	0	1	1	0.0	9.1	9.1
Unsuitable	1	0	0	9.1	0.0	0.0

CHART 2: PLOT COUNT COMPARISON OF LEKS BETWEEN THE UPPER RAFT RIVER FINE SCALE AND THE JIM SAGE ALLOTMENT



Breeding Habitat (Leks): Summary

Plot Counting Data

Habitat suitability indicators for lekking habitat are described in Table 5 above. Of the 11 lek sites, 9 (~82%) were within suitable habitat (Table 6). One lek was rated as marginal due to the proximity of powerlines which may provide perching opportunities for raptors. The other lek site was rated as marginal due to the absence of suitable sagebrush cover adjacent to the site. Chart 2 shows the comparison of plot counting percentages for lek habitat suitability between the Jim Sage allotment and the Upper Raft River Fine-Scale Area.

3.2 Breeding Habitat (Nesting/ Early Brood-Rearing): HAF Form S-3

Nesting/early brood rearing SUA was assessed by the IDT, with data collected from AIM, and LMF and Modified AIM plots. Nesting/early brood-rearing suitability is based on sagebrush attributes of cover, height, and shape, perennial grass cover and height, perennial forb cover, height, and preferred forb availability (Table 3). The suitability rating is based on professional judgment guided by the indicators.

Table 3: Parameters for nesting/early brood rearing habitat suitability

Habitat Indicator	Suitable	Marginal	Unsuitable
Sagebrush Canopy Cover (mean)	15 to 25%	5 to <15% or >25%	<5 %
Sagebrush Height (mean)			
Mesic Site	40 to 80 cm	20 to <40 or >80 cm	<20 cm
Arid Site	30 to 80 cm	20 to <30 or >80 cm	<20 cm
Predominant Sagebrush Shape (mode)	Spreading (spread)	Mix of spreading (spread) and columnar (col)	Columnar (col)
Perennial Grass Height (mean)	≥18 cm	10 to <18 cm	<10 cm
Perennial Forb Height (mean)	≥18 cm	10 to <18 cm	<10 cm
Perennial Grass Cover			
Mesic Site	≥15%	5 to <15%	<5%
Arid Site	≥10%	5 to <10%	<5%
Perennial Forb Cover			
Mesic Site	≥10%	5 to <10%	<5%
Arid Site	≥5%	3 to <5%	<3%
Preferred Forb Availability (relative to site potential)	Preferred forbs are common with several species present	Preferred forbs are common but only a few species are present	Preferred forbs are rare
Number of Preferred Forb Species (*n*)			

*Mesic – Generally >12" precipitation zone. Generally, mountain big sagebrush is the common big sagebrush species.

**Arid – Generally 10-12" precipitation zone. Generally, the common big sagebrush is Wyoming.

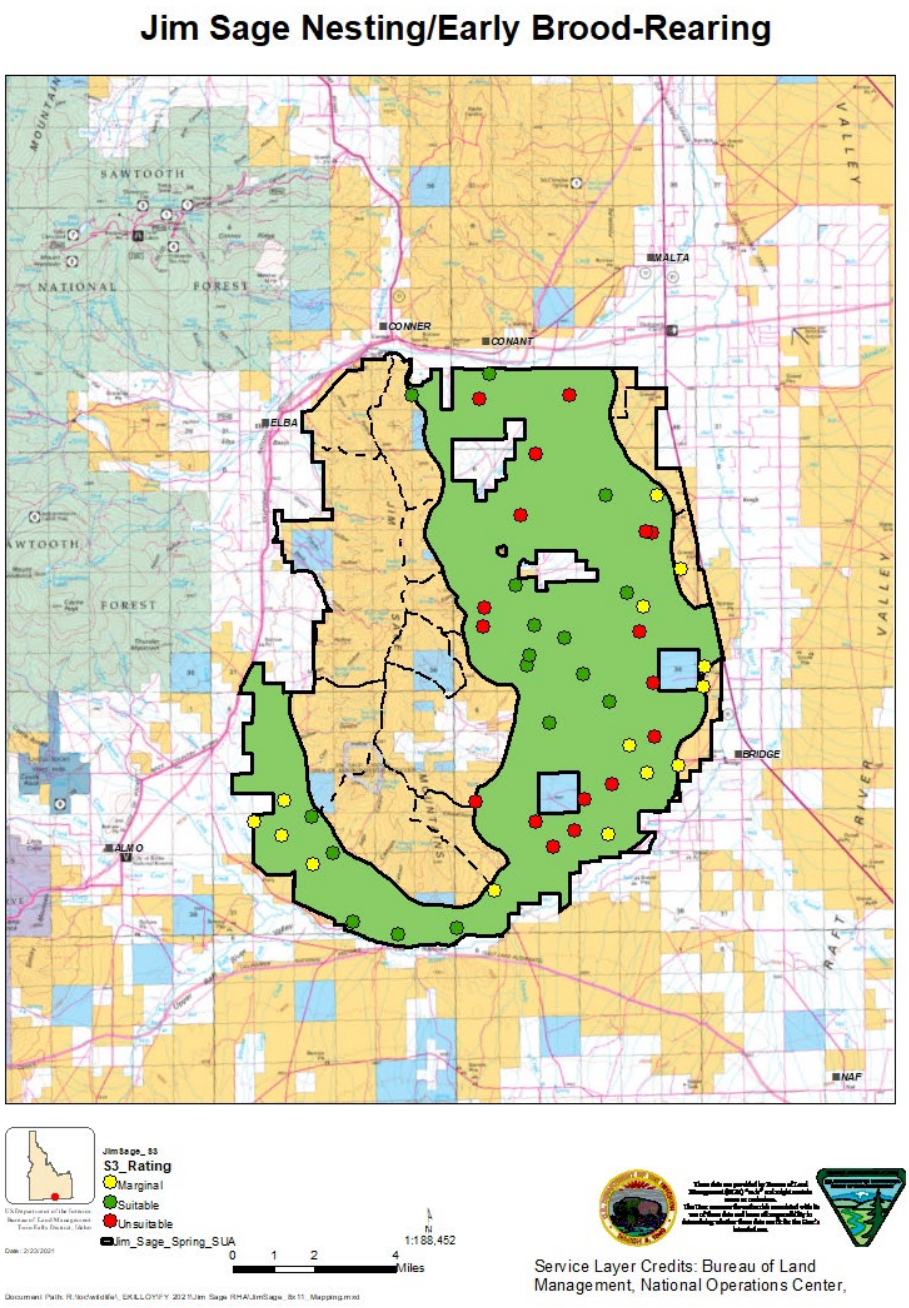


FIGURE 6: JIM SAGE ALLOTMENT NESTING/ EARLY BROOD-REARING SUITABILITY

CHART 3: NESTING/EARLY BROOD REARING SUITABILITY WITHIN THE JIM SAGE ALLOTMENT

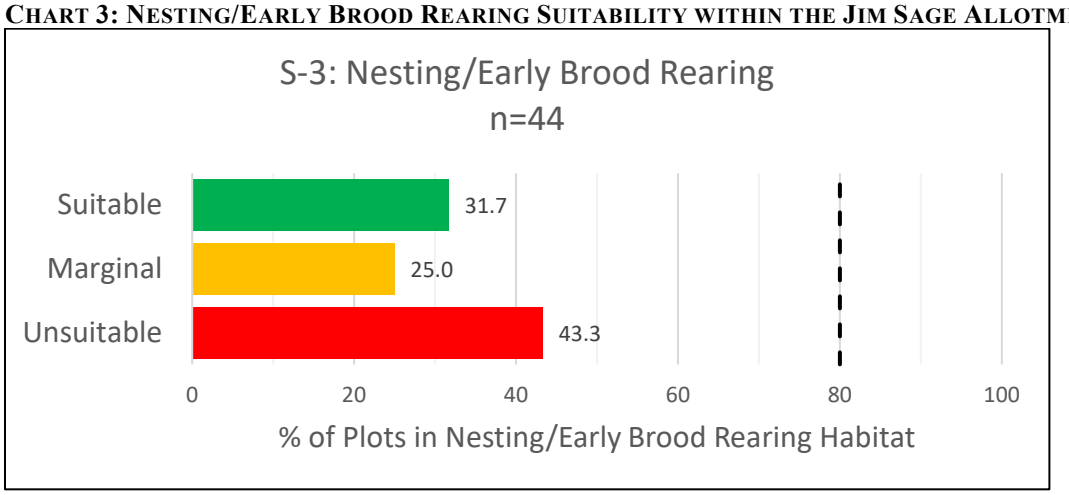


CHART 4: PROPORTIONAL ANALYSIS COMPARISON OF SPRING HABITAT BETWEEN THE UPPER RAFT RIVER FINE SCALE AND THE JIM SAGE ALLOTMENT

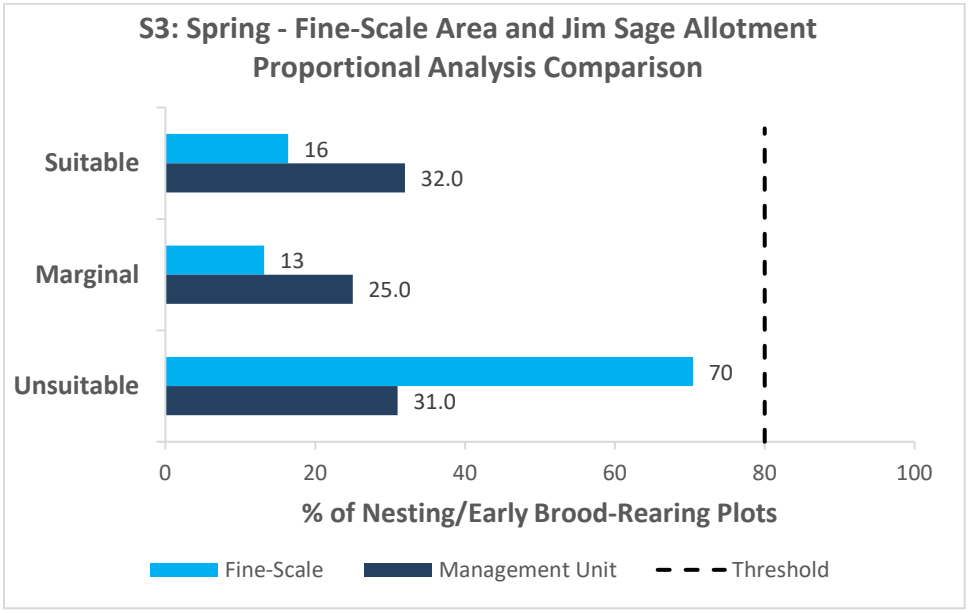
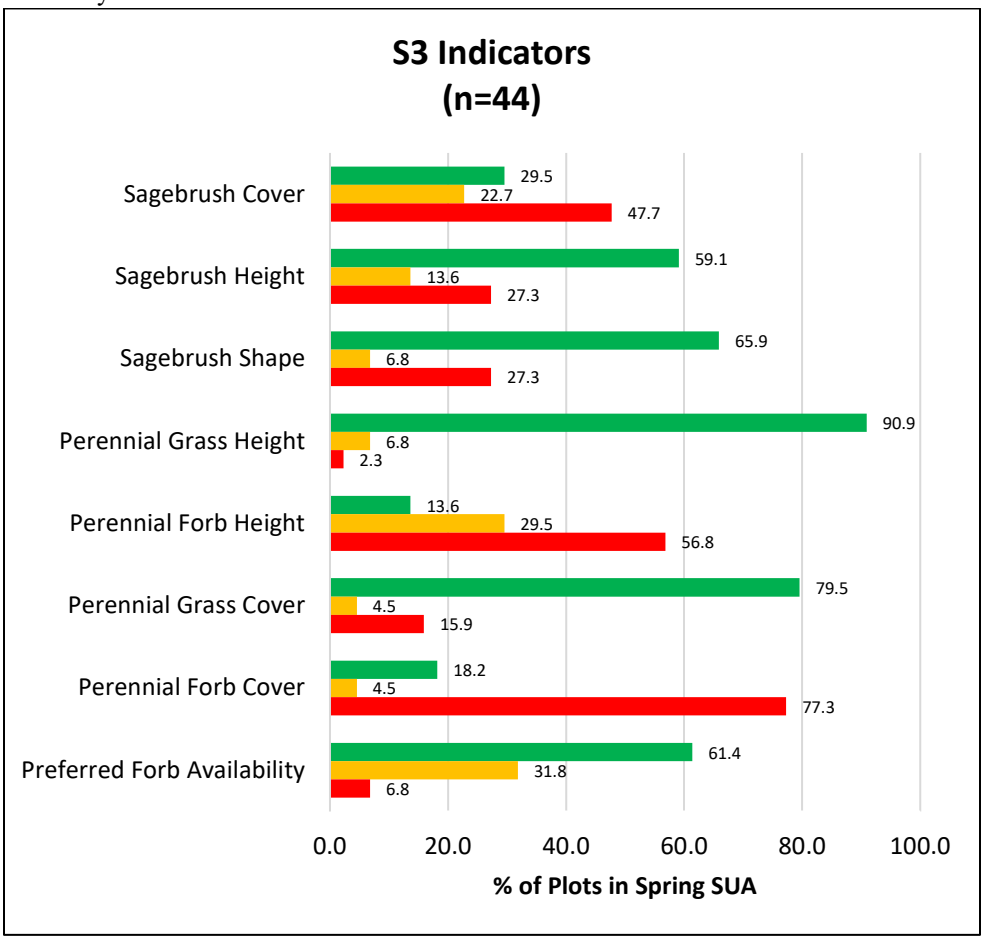


Table 7: Plot Suitability by indicator for Nesting/Early Brood-Rearing.

S-3 Indicators (n=44)	# of Plots							
	Sagebrush Cover	Sagebrush Height	Sagebrush Shape	Perennial Grass Height	Perennial Forb Height	Perennial Grass Cover	Perennial Forb Cover	Preferred Forb Availability
Suitable	13	26	29	40	6	35	8	27
Marginal	10	6	3	3	13	2	2	14
Unsuitable	21	12	12	1	25	7	34	3

Chart 2: Indicators for S-3, Nesting/Early Brood Rearing; a representation of the proportion of plots that meet suitability.



Breeding Habitat (Nesting/ Early Brood-Rearing): Summary

Proportional Analysis Data

Forty-four plots were used to measure the proportion of area in the Jim Sage allotment that met suitability benchmarks for the Upper Raft River Fine-Scale area. The above tables and charts include plot data from the Jim Sage allotment proportional analyses. The benchmark for suitability for nesting/early brood-rearing habitat is 80% of the Fine-Scale SUA. Based on the proportional analysis suitability of the SUA within Jim Sage is currently at 31.7% suitable, 25.0% marginal, and 43.3% unsuitable (Chart 3). Within Jim Sage, one of the largest ecological strata categorized was recently burned, which limited the habitat's potential for meeting habitat suitability for sage-grouse in some areas primarily due to lack of sagebrush.

Five of the eight indicators for the nesting/early brood-rearing plots had higher percentages of suitable thresholds when compared to the marginal or unsuitable thresholds (Chart 5). Sagebrush cover, perennial forb height/cover were the exceptions. The reduced average perennial forb cover and height is attributed to the number of low-growing forbs that are typically expected for these ecological sites. However, low measurements may be partially attributed to natural limitations associated with the low precipitation ecological sites and year-to-year variability within the

allotment. Low forb canopy cover ratings may also be partially attributed to the inefficacy of capturing small-growing forbs, such as those found throughout most of the allotment, through a line-point intercept data-gathering process.

Plot Counting Data

The charts below show the plot counting results for nesting/early brood-rearing season between Jim Sage and Upper Raft River Fine-Scale analysis area. Since the IIRH points are targeted and were not randomly stratified they cannot be included in the proportional analysis discussed above. Chart 6 represents the 44 AIM, LMF, M-AIM points discussed above. Chart 7 includes the additional sixteen IIRH points which were also rated for sage-grouse habitat suitability. With the inclusion of the 16 IIRH points the percentages of suitable plots increases while the marginal and unsuitable plots decrease in both the Jim Sage allotment and the Upper Raft River Fine-Scale analysis area.

Chart 6: Plot Count Comparison for S-3, nesting/early brood-rearing habitat using AIM, LMF, and M-AIM points.

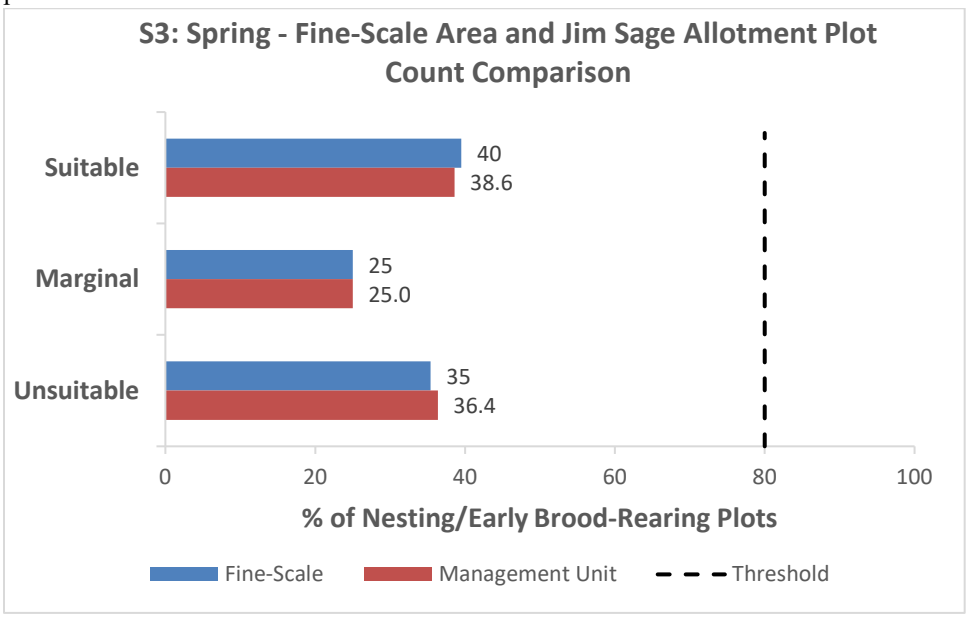
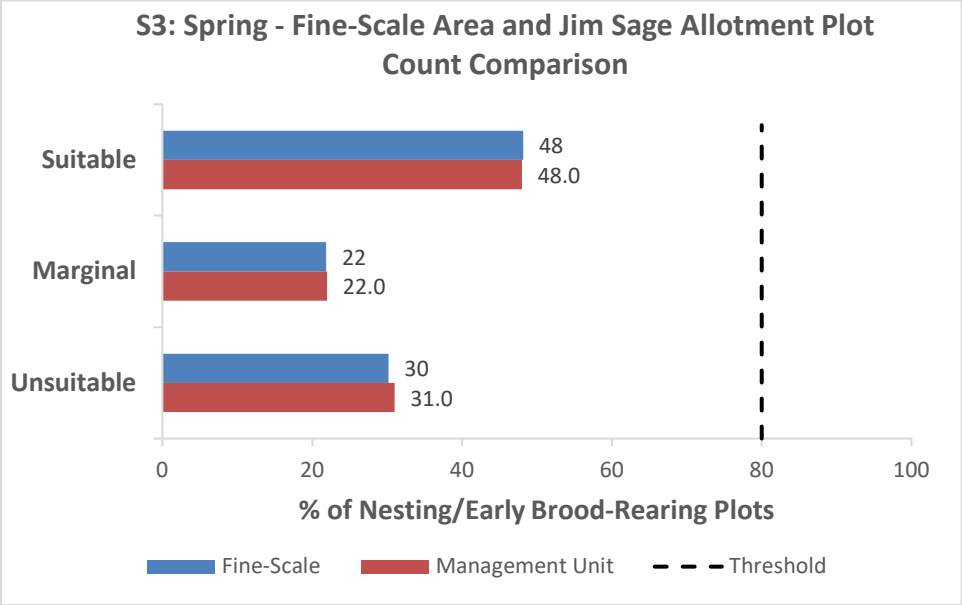


Chart 7: Plot Count Comparison for S-3, nesting/early brood-rearing habitat using AIM, LMF, and M-AIM points and IIRH points.



3.3 Upland Summer/ Late Brood-Rearing Habitat: HAF Form S-4

The delineation for this seasonal use area consisted of the modeled habitat 'Summer' layer using the 'high', 'moderate' and 'low' habitat suitability categories (Coates 2014). Monitoring sites that fell within this spatial extent and had data collected between June 15 to September 15 were used to evaluate the suitability of this SUA (Table 8). Indicators assessed for suitability are detailed in the HAF Technical Reference (Stiver et al. 2015, p. 80).

Additionally, two indicators (deep-rooted perennial bunchgrass height and perennial forb cover) from the 2015 ARMPA were considered but not explicitly used to rate the suitability of monitoring sites.

Table 8: Parameters for upland/late brood rearing habitat suitability

Habitat Indicator	Suitable	Marginal	Unsuitable
Sagebrush Cover (mean)	10 to 25%	5 to <10% or >25%	<5%
Sagebrush Height (mean)	40 to 80 cm	20 to <40 or >80 cm	<20 cm
Perennial Grass and Forb Cover (mean)	≥15%	5 to <15%	<5%
Preferred Forb Availability (relative to site potential)	Preferred forbs are common with	Forbs are common but only a few	Preferred forbs are rare

Habitat Indicator	Suitable	Marginal	Unsuitable
Number of Preferred Forb Species (n)	appropriate numbers of species present	preferred species are present	

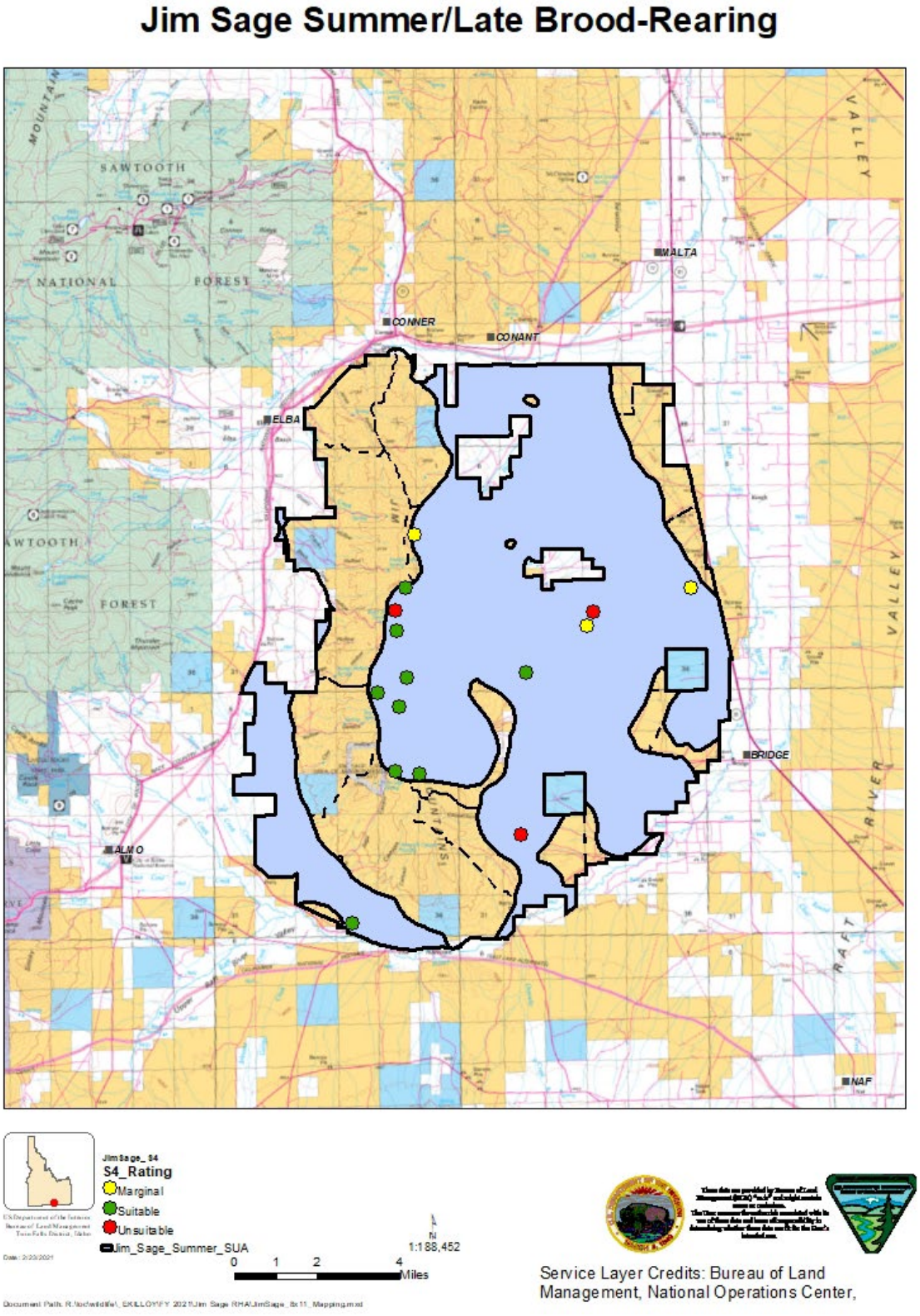


FIGURE 7: JIM SAGE ALLOTMENT UPLAND SUMMER/ LATE BROOD-REARING SUITABILITY

CHART 8: UPLAND SUMMER SUITABILITY WITHIN JIM SAGE ALLOTMENT

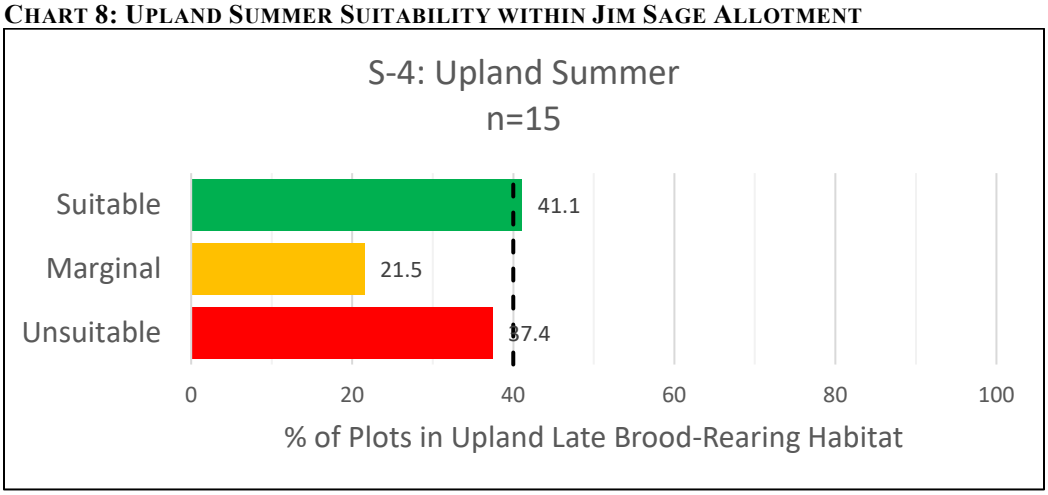


CHART 9: COMPARISON OF SUMMER UPLAND HABITAT BETWEEN THE UPPER RAFT RIVER FINE SCALE AND THE JIM SAGE ALLOTMENT

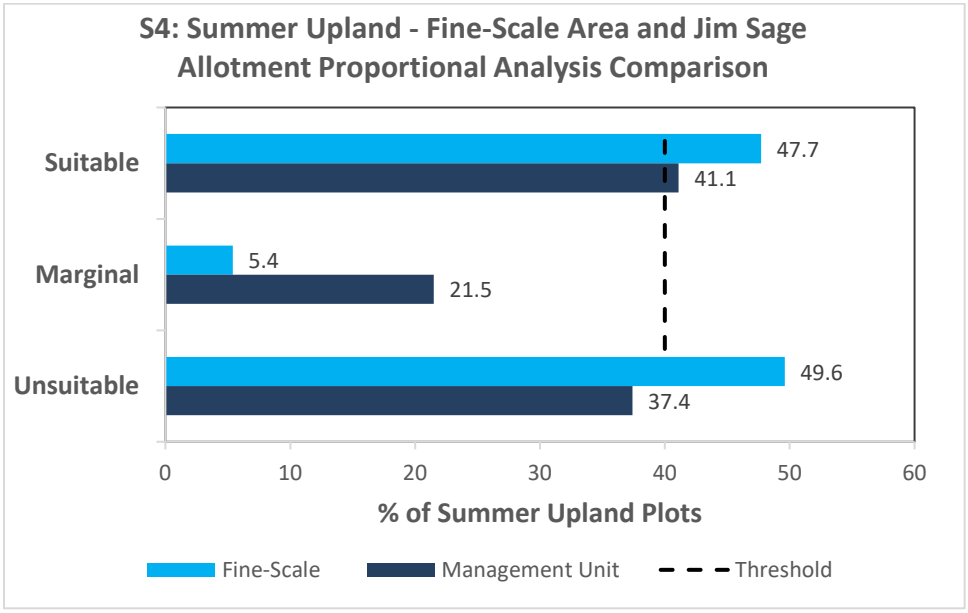
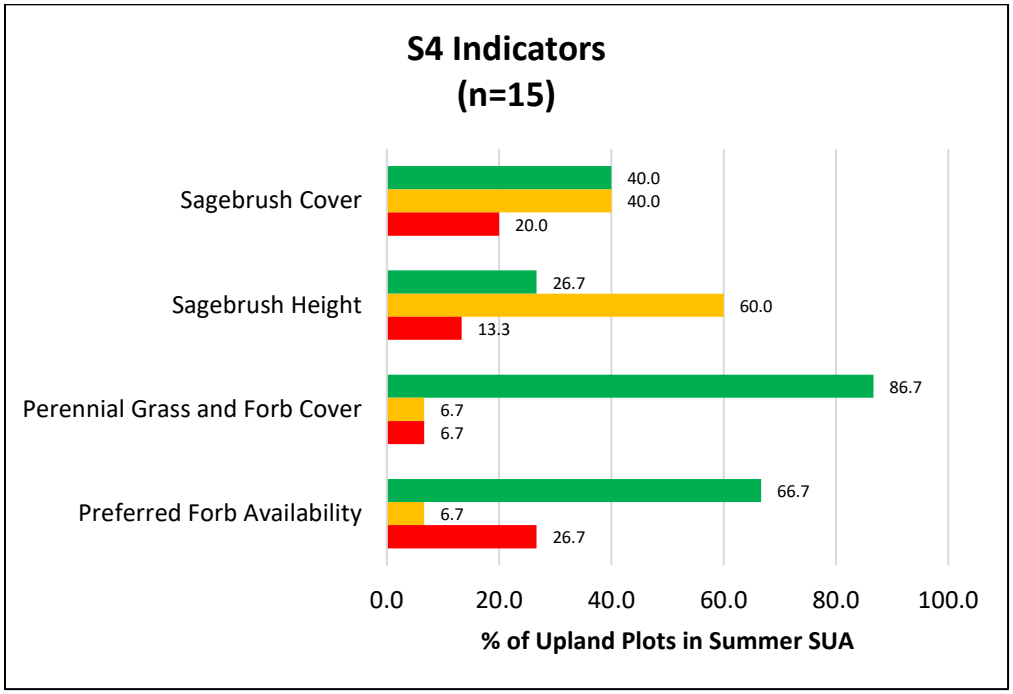


Table 9: Plot Suitability by indicator for Upland Summer/Late Brood-Rearing

S4 Indicators (n=15)	# of Plots			
	Sagebrush Cover	Sagebrush Height	Perennial Grass and Forb Cover	Preferred Forb Availability
Suitable	6	4	13	10
Marginal	6	9	1	1
Unsuitable	3	0	1	4

CHART 3: INDICATORS FOR S-4, UPLAND SUMMER/LATE BROOD REARING; A REPRESENTATION OF THE PROPORTION OF PLOTS THAT MEET SUITABILITY.



Upland Summer/ Late Brood-Rearing Habitat: Summary

Two types of habitat are considered when assessing late-brood rearing habitat for sage-grouse. As reference, upland summer/late brood-rearing habitat areas are used by hens raising broods after they have hatched. Upland summer/late brood-rearing habitat makes up the majority proportion of summer habitat, but it is observed that hens and their broods also tend to inhabit riparian/wetland areas during the summer season as upland vegetation dries up (Connelly et al. 2011). Because of this, targeted riparian area surveys were completed in 2019 to assess riparian systems within the summer SUA boundary on Jim Sage (discussed in section 3.4 below).

Chart 8 depicts suitability indicator values for upland summer/late brood-rearing habitat. Sagebrush cover, sagebrush height, and forb availability were significant influences on the rating. Upland summer/late brood-rearing habitat proportional suitability is higher than the 40% need to reach the suitable benchmark; the upland summer SUA is at 41.1% suitable (see Chart 8). The amount of unsuitable summer/late brood-rearing habitat currently at 37.4% due to a combination of sites lacking suitable sagebrush cover or preferred forb availability (Chart 9). Given that the majority proportion of summer habitat is rated either suitable or marginal (~63%), there is evidence that healthy upland summer habitat is found in mid-to higher elevations. Sites in these areas may provide suitable cover and preferred forb available hens and broods need during the summer months. Upland summer sites in the lower elevations tend to receive less precipitation and the forbs at these sites may not be available late into the season, affecting the overall suitability.

Additionally, 2 IIRH points were assessed for upland summer/late brood rearing habitat. One site was burned in the 2018 Connor fire and was rated as unsuitable, the other was in the higher elevations and was rated as suitable.

3.4 Riparian Summer/ Late Brood-Rearing Habitat: HAF Form S-5

There is no existing spatial information depicting known or designated late brood-rearing areas within Idaho; research suggests that hens generally move their broods to more mesic conditions, such as higher elevation sagebrush communities, mountain shrub communities or wet meadow complexes, among others (Stiver et al. 2015).

Existing Proper Functioning Condition (PFC) Assessments for Lotic and Lentic Areas (TR 1737-15 and 1737-16) were also used to provide insight into riparian summer/late brood-rearing habitat suitability within riparian areas. Proper Functioning Condition assessments are qualitative and not necessarily dependent upon seasonal factors such as plant phenology or breeding season chronology, which are important factors in evaluating suitability for other SUAs.

Table 10: Parameters for riparian/late brood rearing habitat suitability

Habitat Indicator	Suitable	Marginal	Unsuitable
Riparian Stability	Majority of areas are in PFC.	Majority of areas are FAR.	Majority of areas are NF.
Preferred Forb Availability (relative to site potential)	Preferred forbs are common with appropriate numbers of species present.	Preferred forbs are common but only a few species are present.	Preferred forbs are rare.
Availability of Sagebrush Cover (mean)	Sagebrush cover is adjacent to brood rearing areas (less than 100m).	Sagebrush cover is in close proximity to brood rearing areas (100 to 275m).	Sagebrush cover is unsuitable (more than 275m)

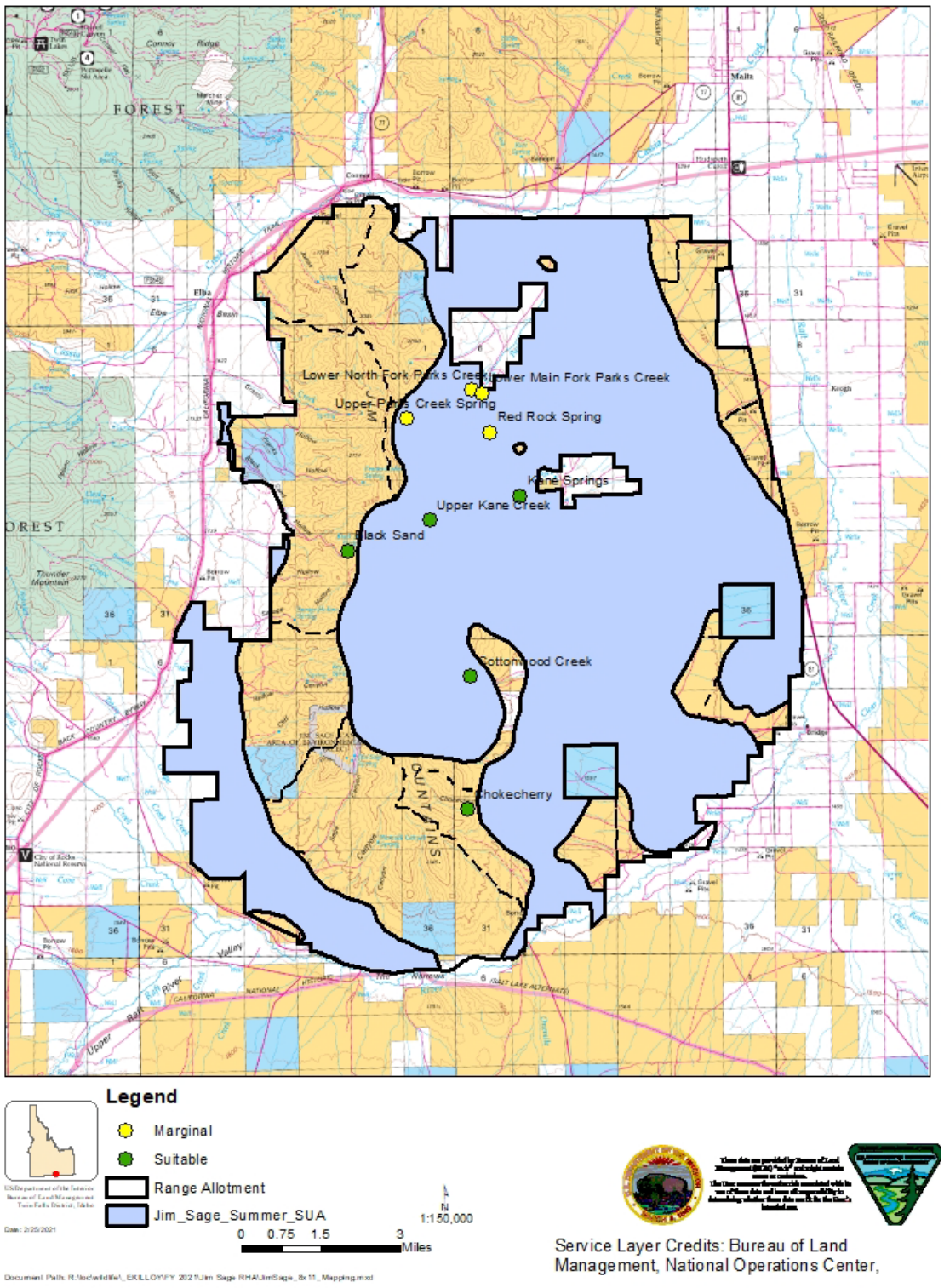


FIGURE 8: JIM SAGE ALLOTMENT RIPARIAN SUMMER/LATE BROOD-REARING

CHART 10: SUMMER RIPARIAN SUITABILITY WITHIN JIM SAGE ALLOTMENT

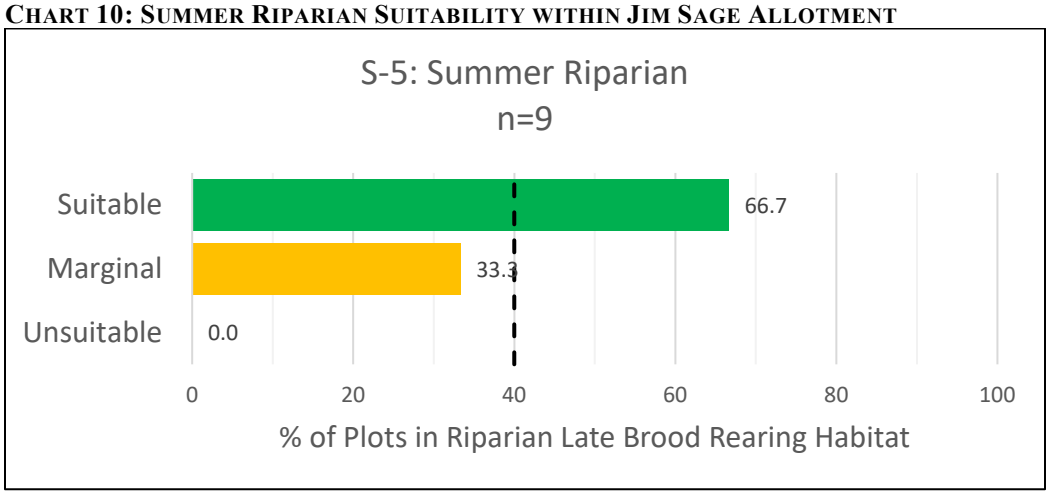


CHART 41: PLOT COUNT COMPARISON OF SUMMER RIPARIAN HABITAT BETWEEN THE UPPER RAFT RIVER FINE SCALE AND THE JIM SAGE ALLOTMENT.

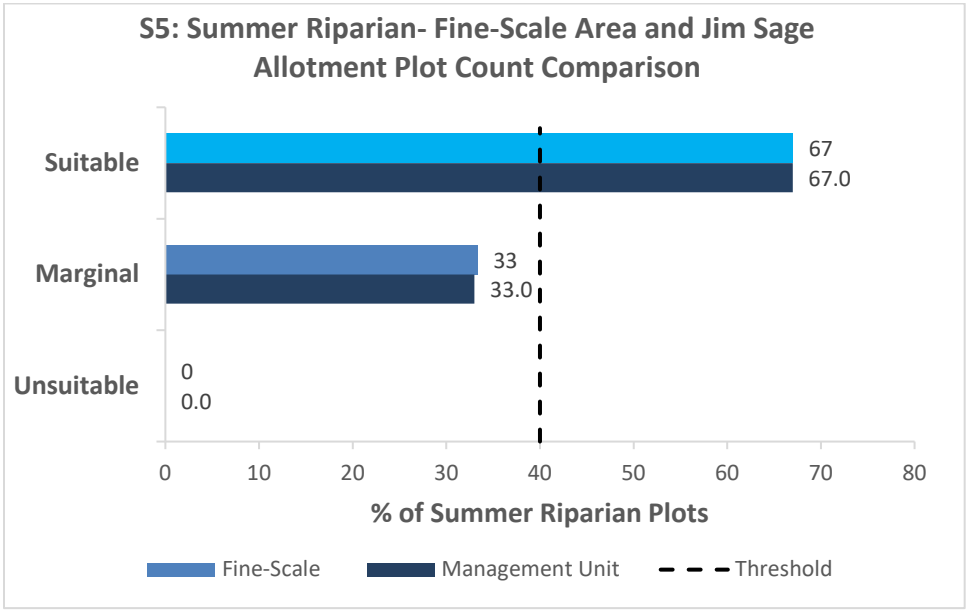
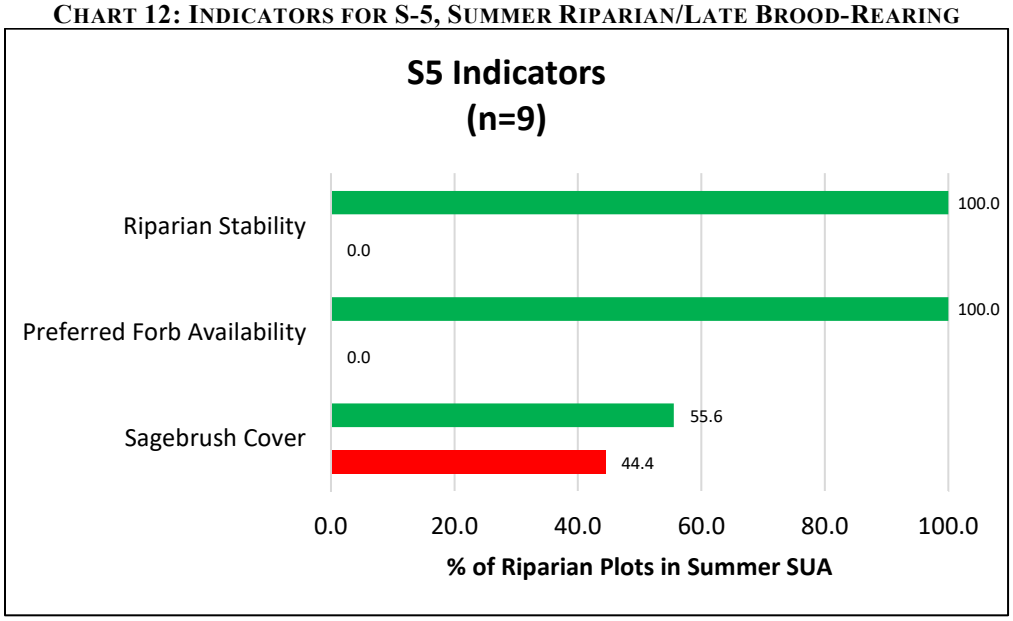


Table 11: Plot Suitability by indicator for Summer Riparian/Late Brood-Rearing

S5 Indicators (n=0)	# of Plots		
	Riparian Stability	Preferred Forb Availability	Sagebrush Cover
Suitable	9	9	5
Marginal	0	0	0
Unsuitable	0	0	4

CHART 12: INDICATORS FOR S-5, SUMMER RIPARIAN/LATE BROOD-REARING



3.5 Riparian Summer/ Late Brood-Rearing Habitat: Summary

Plot Counting Data

Nine riparian area plots were assessed for suitability with 3 indicators: proximity to sagebrush cover, PFC (Proper Functioning Condition), and preferred forb diversity (see Table 10 above). Of the plots, 67% were considered suitable, and 33% were considered marginal (Chart 10 above), which is well above the 40% Suitable benchmark. None of the plots were considered unsuitable within the Jim Sage allotment. PFC indicators were rated and 100% of the plots met the riparian stability threshold (Chart 12). Due to the 2018 Connor Fire four sites (44.4%) were rated as unsuitable for proximity to sagebrush cover. Although these sites lacked suitable sagebrush cover, marginal ratings were given at 3 of these sites due to the PFC and preferred forb availability rated as suitable. These sites continue to provide sage-grouse hens and broods with forbs late into the summer season post fire.

Since sites used in the analysis of summer riparian/late-brood sites were targeted (i.e. not randomly stratified throughout the allotment) the proportional analysis of the suitable sites across the Jim Sage allotment could not be conducted. At this time, PFC ratings on other reaches within the Upper Raft River Fine-Scale boundary have been conducted, but the plot comparison of this data was not used for this analysis. Legacy data for these locations is currently being compiled to inform the Site-Scale summer riparian/late-brood suitability.

3.6 Winter Habitat: HAF Form S-6

Winter suitability is based on sagebrush cover and height (Table 12). Height of sagebrush above snow is estimated using the Snow Data Assimilation System (SNODAS) data product from the National Snow and Ice Data Center (https://nsidc.org/data/g02158). SNODAS provides daily snow depth profiles at 1 km2 resolution from 2004 – 2018. BLM uses this data to calculate the

median snowpack December 1 to February 28 for each water year (i.e., the maximum snow depth for 50 percent of the winter season, or approximately 6.5 weeks). In order to account for inter-annual variability in snowpack, BLM aggregates years to calculate the 10th, 50th and 90th percentiles of the seasonal snowpack for each pixel across water years. These are used to represent the 15-year low, normal, and high snow depth. Average sagebrush height above snow is obtained by comparing sagebrush height as measured in the field at AIM, LMF, M-AIM and IIRH plots to the snow depth in the relevant pixel for either a low, average, or high snow year depending on the conditions during the winter prior to the sample date (i.e., if the 2017-2018 winter had low snowpack, a plot sampled in 2018 would be compared to the median snow depth in the "low snow year" raster)

Table 12: Parameters for winter habitat site suitability.

Habitat Indicator	**Suitable**	**Marginal**	**Unsuitable**
Sagebrush Cover (mean)	≥10%	5 to <10%	<5%
Sagebrush Height (above snow) (mean)	≥25 cm	>10 to <25 cm	≤10 cm

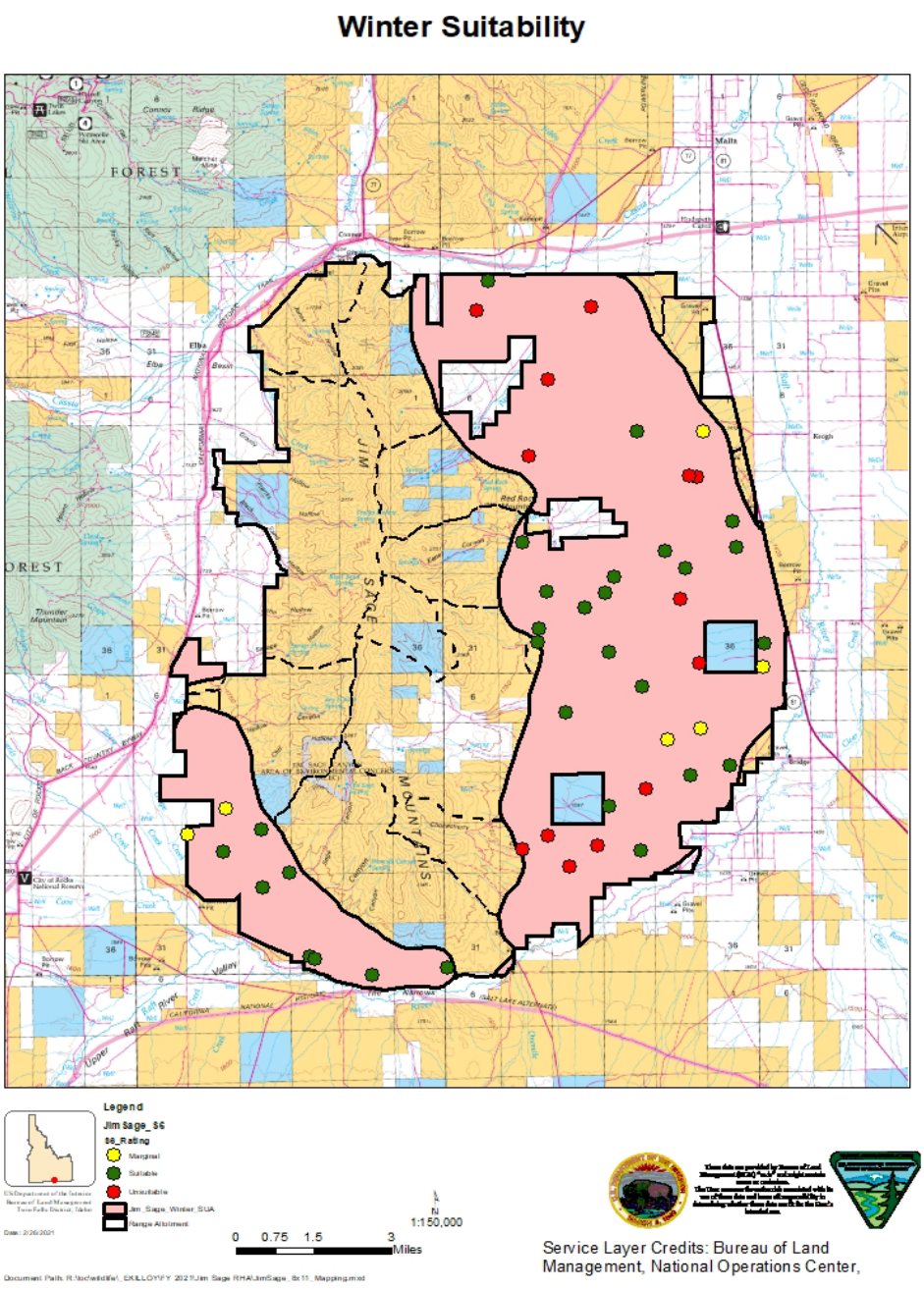


Figure 9: Jim Sage Allotment Winter Suitability

CHART 13: WINTER SUITABILITY WITHIN JIM SAGE ALLOTMENT

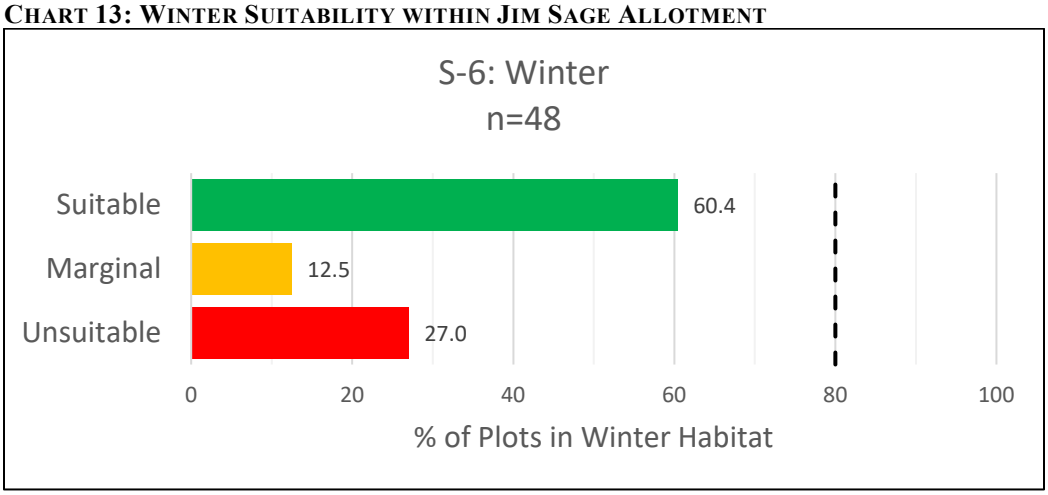


CHART 14: PROPORTIONAL ANALYSIS COMPARISON OF WINTER HABITAT BETWEEN THE UPPER RAFT RIVER FINE SCALE AND THE JIM SAGE ALLOTMENT.

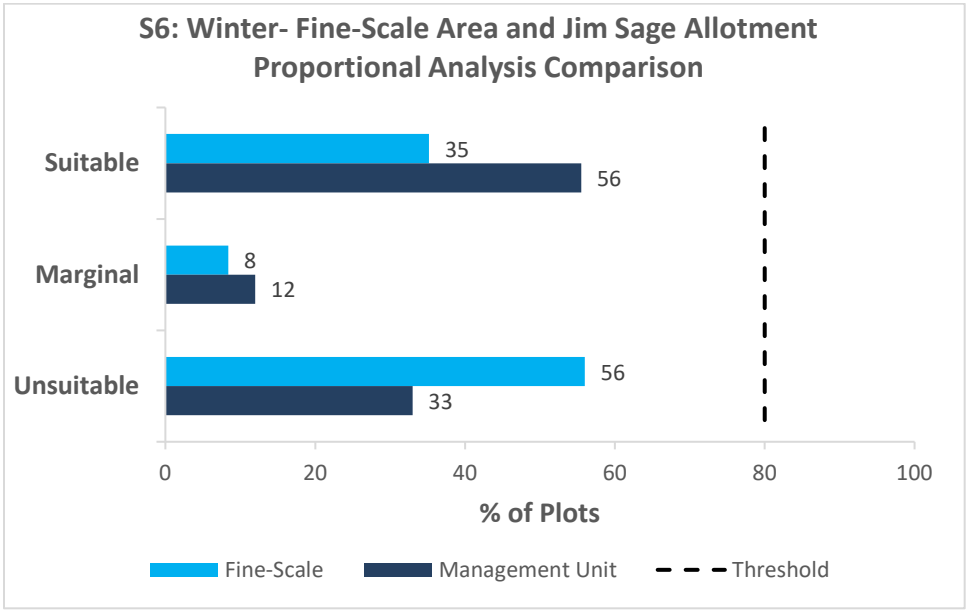
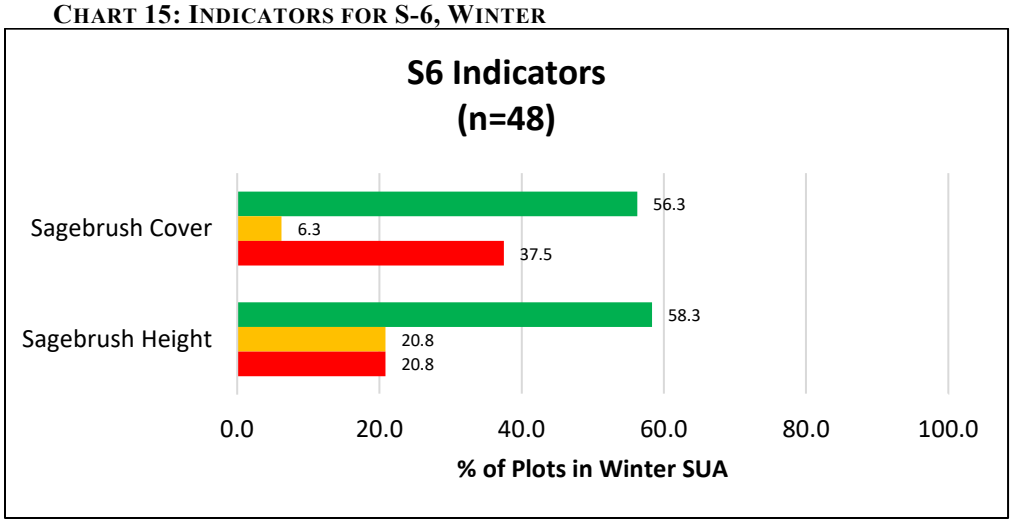


Table 13: S-6 Winter Plot

S6 Indicators (n=48)	# of Plots	
	Sagebrush Cover	Sagebrush Height
Suitable	27	28
Marginal	3	10
Unsuitable	18	10

CHART 15: INDICATORS FOR S-6, WINTER



Winter Habitat (S-6): Summary

Proportional Analysis Data

Forty-eight winter plots were selected from the existing spring and summer plots that fell within the winter SUA on Jim Sage. These sites were assessed for site suitability utilizing indicators for suitability including percent sagebrush cover, depth of sagebrush height above snow (mean values, using SNOWTEL modelled data). Within the Jim Sage winter SUA proportional analysis area, 56% were rated as suitable, 12% were marginal, and 33% were unsuitable (Chart 14). Greater than half of the assessed sites had suitable sagebrush cover and heights. The limiting factor for winter suitability is the presence of sagebrush and sites within the recently burned areas and some of the historic crested wheatgrass and Russian wildrye seedings sagebrush was absent or below the 10% threshold to meet suitability.

Plot Counting Data

The charts below show the plot counting results for winter season between Jim Sage and Upper Raft River Fine-Scale analysis area. Since the IIRH points were targeted and not randomly stratified they cannot be included in the proportional analysis discussed above. Chart 16 represents the 48 AIM, LMF, M-AIM points discussed above. Chart 17 includes the additional 14 IIRH points which were also rated for sage-grouse habitat suitability. With the inclusion of the 14 IIRH points the percentages of suitable plots increases while the marginal and unsuitable plots decrease in both the Jim Sage allotment and the Upper Raft River Fine-Scale analysis area.

Chart 16: Plot Count Comparison for S-6, winter habitat using AIM, LMF, and M-AIM points.

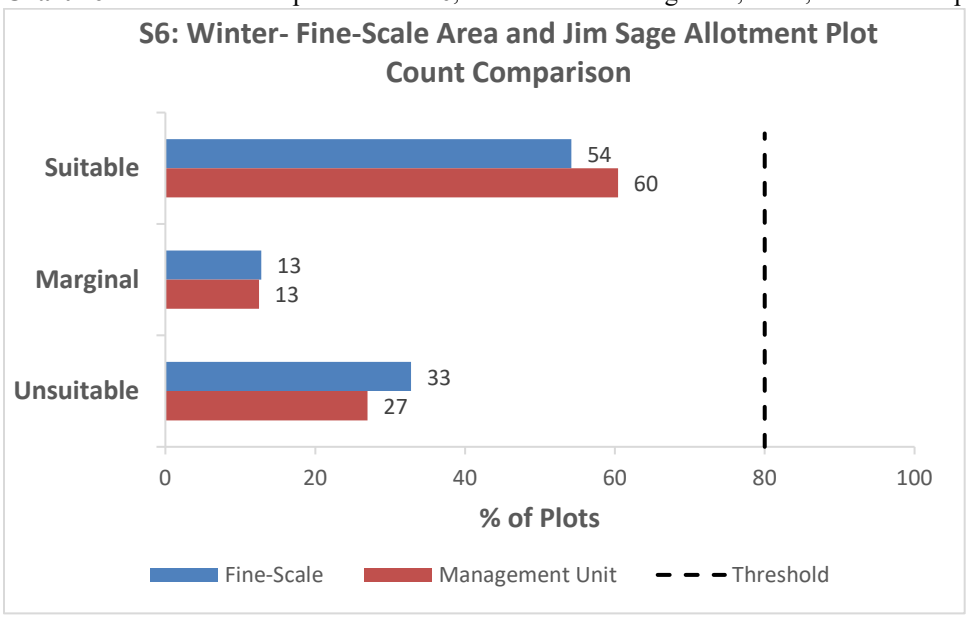
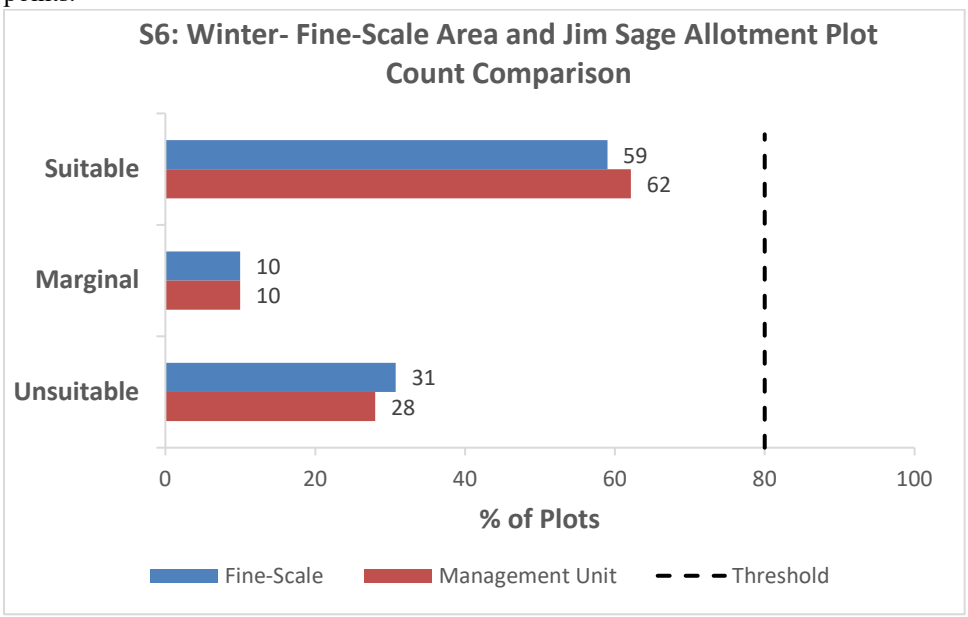


Chart 17: Plot Count Comparison for S-6, winter habitat using AIM, LMF, and M-AIM points and IIRH points.



3.7 Management Unit and Fine-Scale Comparison

Table 21. Overall ranking for the Jim Sage allotment **s**age-grouse habitat assessment.

Lekking: *Plot Counting*	Nesting/Early Brood-Rearing: *Proportional Analysis*	Upland Summer/Late-Brood Rearing: *Proportional Analysis*	Riparian Summer/Late-Brood Rearing: *Plot Counting*	Winter: *Proportional Analysis*
Suitable	Marginal	Suitable	Suitable	Marginal

Table 22. Overall rankings for the Upper Raft River Fine Scale **s**age-grouse habitat assessment.

Lekking: *Plot Counting*	Nesting/Early Brood-Rearing: *Proportional Analysis*	Upland Summer/Late-Brood Rearing: *Proportional Analysis*	Riparian Summer/Late-Brood Rearing: *Plot Counting*	Winter: *Proportional Analysis*
Suitable	Unsuitable	Suitable	NULL	Marginal

Overall ratings for sage-grouse seasonal habitat use the for Jim Sage Allotment and Upper Raft River Fine-Scale area are listed Table 21 and Table 22 above. Sites were compared based on the type of assessment conducted for each specific habitat use (*plot counting* vs. *proportional analysis*).

Lekking

Through the plot counting analysis overall lek site suitability within Jim Sage is consistent with lek site suitability throughout the Upper Raft River Fine-Scale area with both scales at just over 80% suitable (Chart 2).

Nesting/Early Brood-Rearing

For the Jim Sage allotment the common influences negatively effecting suitability in nesting/early brood-rearing and winter habitat is the absence of sagebrush in some of the historical crested seeding, recently burned areas, and the Wyoming/greasewood ecological sites.

Suitable habitat within the proportional analysis area for nesting/early brood-rearing habitat on Jim Sage is greater than Upper Raft River Fine-Scale overall suitability. Jim Sage also has less unsuitable habitat when compared to the Upper Raft River Fine Scale area. Although both scales are not meeting the 80% threshold required to meet suitability the 70% unsuitable habitat within the Upper Raft River Fine-Scale area changes the overall rating for this scale. Although the

nesting/early brood-rearing habitat on Jim Sage is rated as marginal; Jim Sage is positively contributing to the upland summer/late-brood rearing habitat due lower percentages of unsuitable habitat (Chart 4).

Upland Summer/Late-Brood Rearing

Within the higher elevations of the upland summer/late brood-rearing habitat on Jim Sage sagebrush cover, perennial grass and forb cover, and preferred forb availability mostly rated as suitable. The lower elevation upland summer/late brood-rearing habitat dries faster than the higher elevations and therefore perennial forbs may not be available to sage-grouse later into the season.

Suitability within the proportional analysis area for upland summer/late brood-rearing habitat on Jim Sage is lower than Upper Raft River Fine-Scale overall suitability. However, Jim Sage is positively contributing to the upland summer/late-brood rearing habitat due lower percentages of unsuitable habitat.

Riparian Summer/Late-Brood Rearing

Riparian summer/late-brood rearing sites with Jim Sage are all meeting PFC and have suitable perennial forb availability at each site. In the absence of fire, sites within the spring and winter SUAs that do not meet suitability for sagebrush cover should recover and have the potential to be suitable in the future.

PFC data, outside of Jim Sage, but within the Upper Raft River Fine-Scale boundary has previously been conducted on other streams. However, comparisons between Jim Sage and the Upper Raft River Fine-Scale area cannot be conducted because the analysis for riparian summer/late brood-rearing habitat within the fine-scale area has yet to be completed.

Winter

Overall suitability within the winter habitat on Jim Sage is greater than the overall suitability found within Upper Raft River Fine-Scale area. In addition, unsuitable winter habitat on Jim Sage less than the unsuitable habitat found within Upper Raft River Fine-Scale area. Therefore, Jim Sage is positively contributing to winter habitat found within the Upper Raft River Fine-Scale Area.

4.0 References

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Toevs, G.R., J.J. Taylor, C.S. Spurrier, W.C. MacKinnon, and M.R. Bobo. 2011. Bureau of Land Management Assessment, Inventory, and Monitoring Strategy: For integrated renewable resources management. Bureau of Land Management, National Operations Center, Denver, CO.