United States Department of the Interior
Bureau of Land Management

RANGELAND HEALTH ASSESSMENT AND EVALUATION REPORT

CEDAR CANYON FIELD ALLOTMENT #01013

November 13, 2015

DRAFT

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ALLOTMENT INFORMATION

Field Office: Jarbidge Field Office (JFO)
Name of Permittee: Brian Davis
Allotment Name/Number: Cedar Canyon Field (01013)
Date of Field Assessment: May 7, 2013
Stream Miles on Public Land (miles): 0.4 (flow diverted upstream of allotment)

Table 1: Cedar Canyon Field acres

Total Acres	BLM Acres	Private Acreage	State Acreage	Other Acreage
891	198	97	596	0

Table 2: Assessment participants

Name	Position
Kate Crane	TFD Fisheries Biologist
Jim Klott	JFO Wildlife Biologist
Michael Haney	JFO Wildlife Biologist and Botanist
Dan Strickler	JFO Rangeland Management Specialist
Bonnie Ross	GIS Specialist

CURRENT PERMITTED LIVESTOCK GRAZING USE

Total Active Use: 15 Animal Unit Months (AUMs)
Livestock Type: Cattle
Livestock Numbers: 15 Cattle
Season of Use: 03/01 to 03/30
Current Land Use Plan: 2015 Jarbidge Resource Management Plan (RMP)
Current Stocking Level: 13.2 Acres/AUM

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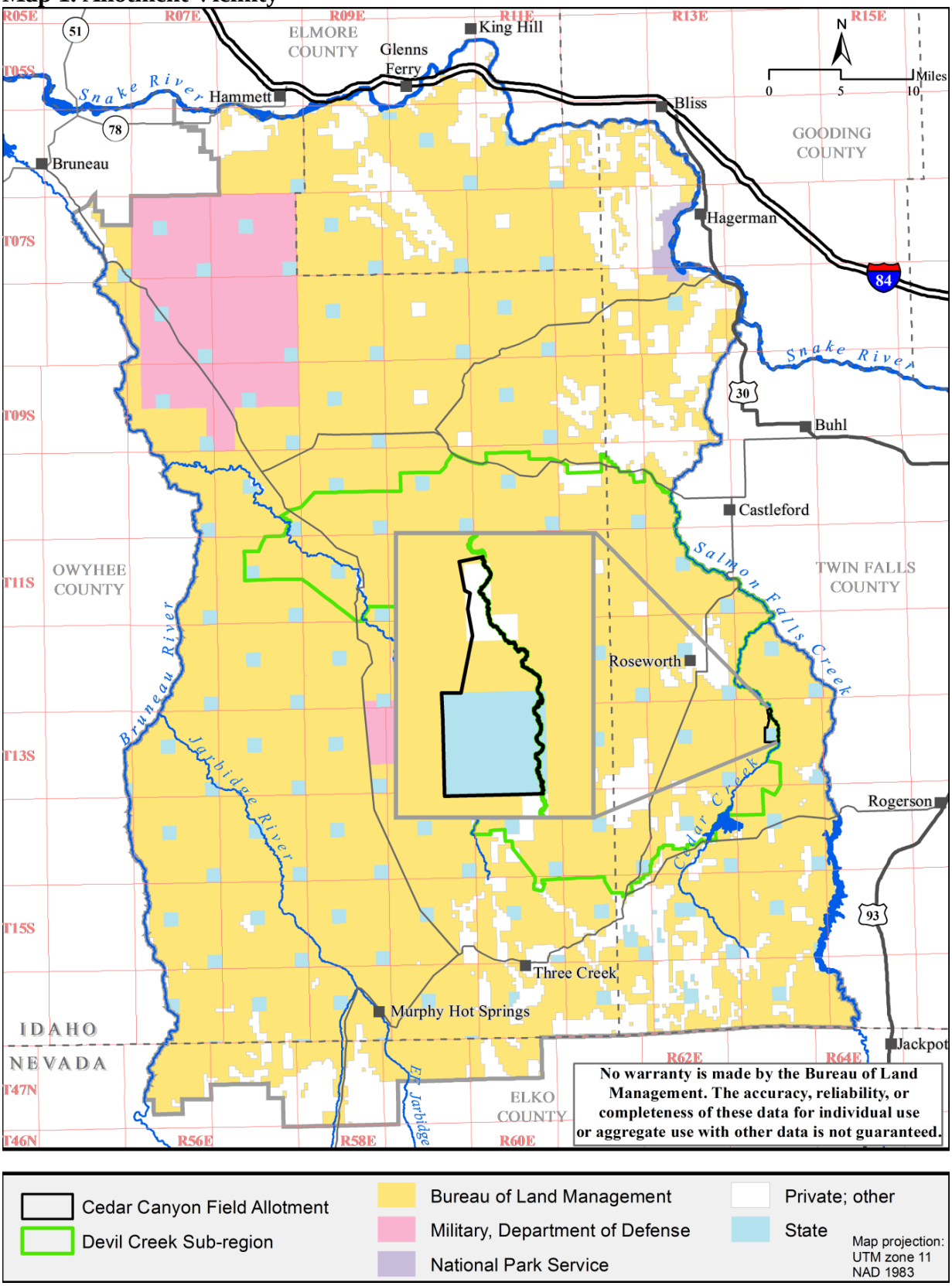
Map 1. Allotment Vicinity



ALLOTMENT PROFILE

The Cedar Canyon Field Allotment is located approximately 13 miles northwest of Rogerson, Idaho (Map 1). The majority of the allotment is relatively flat except for Cedar Creek Canyon which is the allotment's east border. Elevation ranges from 4,680 feet to 4,880 feet.

Approximately 1.6 miles of barbed wire fence form the north and west borders of the allotment and two miles of canyon rim form the east boundary. Gap fences along the east side of Cedar Creek Canyon separate this allotment from the Antelope Springs Allotment. Gap fences vary in length from about 20 feet to over 1,500 feet. Fences on BLM land are composed mostly of 4 strands of wire with all strands barbed.

The Cedar Canyon Field Allotment is divided into three pastures. The southern pasture is exclusively state land. Approximately 0.4 miles of fence near the private/BLM boundary line (Map 2) separates the Big Pond and Cedar Canyon Field Pastures. The Big Pond Pasture consists primarily of private land. The Cedar Canyon Field Pasture is predominantly BLM land. The South Pasture is created by approximately 1.0 mile fence along the BLM/State land boundary and is entirely state land. Gates are usually left open so the entire allotment can be grazed at the same time. This assessment does not address state or private land. Since 2009 the Cedar Canyon Field Allotment has been grazed with an adjacent State of Idaho section of land on its southern border. The fence between the allotment and the state section is in disrepair and does not prevent movement of cattle between the BLM and state lands. Slopes across most of the allotment are gentle (< 4 percent), with the exception of Cedar Creek Canyon where slopes may exceed 30 percent. The steep areas are protected by rock and cliffs.

Water in Cedar Creek is diverted into the Cedar Mesa Canal approximately 3.5 miles upstream from the Cedar Canyon Field Allotment. The canal provides irrigation water to private lands in the Roseworth area, just north of the allotment. The canal transects the state lands in the allotment providing water to livestock. Prior to the irrigation season water flows downstream of the diversion filling two ponds on private land. Some water may be present in Cedar Creek in the early spring until flow is eliminated by the diversion. Idaho Department of Environmental Quality has classified Cedar Creek as an intermediate stream below the diversion (IDEQ, 2007). The ponds are the only source of reliable water for livestock in the bottom of the canyon. Dependable livestock water is not available on BLM managed lands in the Cedar Canyon Field Allotment. Hence the need to use the private and BLM pastures as one unit.

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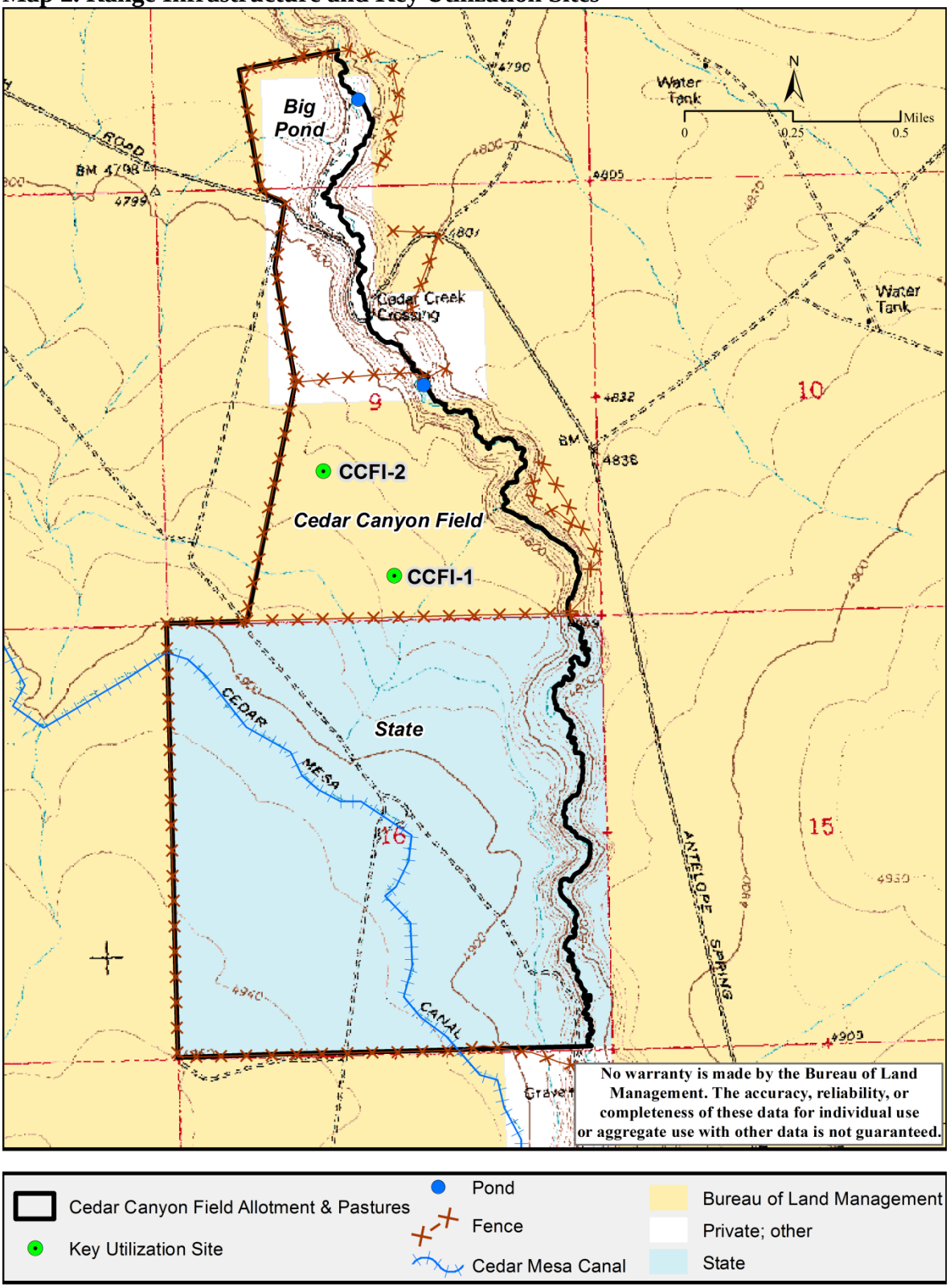
Map 2. Range Infrastructure and Key Utilization Sites



Climate

Climatic conditions in the allotment are characterized by low humidity, clear skies, large diurnal variation in temperature, and wind patterns reflecting the westerly direction of the prevailing storm track. Annual rainfall in the Cedar Creek Field Allotment ranges from 10 - 13 inches. Moisture typically falls as rain and snow from late-fall through late-spring.

Weather data collected at the Horse Butte RAWS station is used to assess precipitation and temperature trends from 2004 to 2013 in the Cedar Canyon Field Allotment. The RAWS station is located in an 8-10 inch precipitation zone about 21 miles northwest of the allotment. This area is about the same as the Cedar Field Allotment; therefore, the data collected at the RAWS station is expected to reflect any trends in temperature and precipitation due to its general proximity to the allotment.

The thirty-year annual average precipitation at the Horse Butte RAWS station is 8.1 inches (Figure 1). Annual precipitation at the station was below the thirty-year average during five of the ten year evaluation period, especially in 2012 and 2013 (Figure 1). Total rainfall in 2012 was 4.89" and in 2013 it was 4.52". Rainfall was above the thirty-year average the remaining five years. Moisture exceeded the thirty-year average by at least two inches in 2005 (14.12 inches), 2006 (10.1 inches), and 2010 (10.46 inches).

The thirty- year average for rain that fell during the growing season (March–June) is 4 inches. Growing season precipitation was below the thirty-year average during four of the ten years (2004, 2007, 2012, and 2013). Rainfall was especially low in 2012 (1.92 inches) and 2013 (1.48 inches). Spring rainfall was above average in 2005 and 2011 (2" or more above the spring average). Except for 2004, temperatures during the growing season were cooler than the thirty-year average (Figure 2).

Figure 1: Annual Precipitation (2004 – 2013) at the Horse Butte RAWS Station

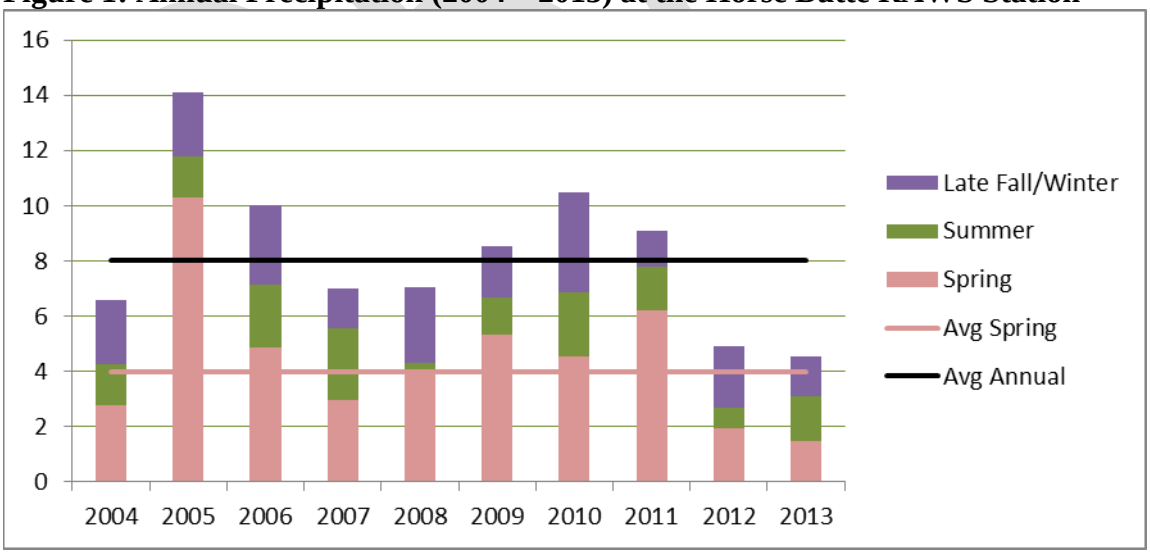
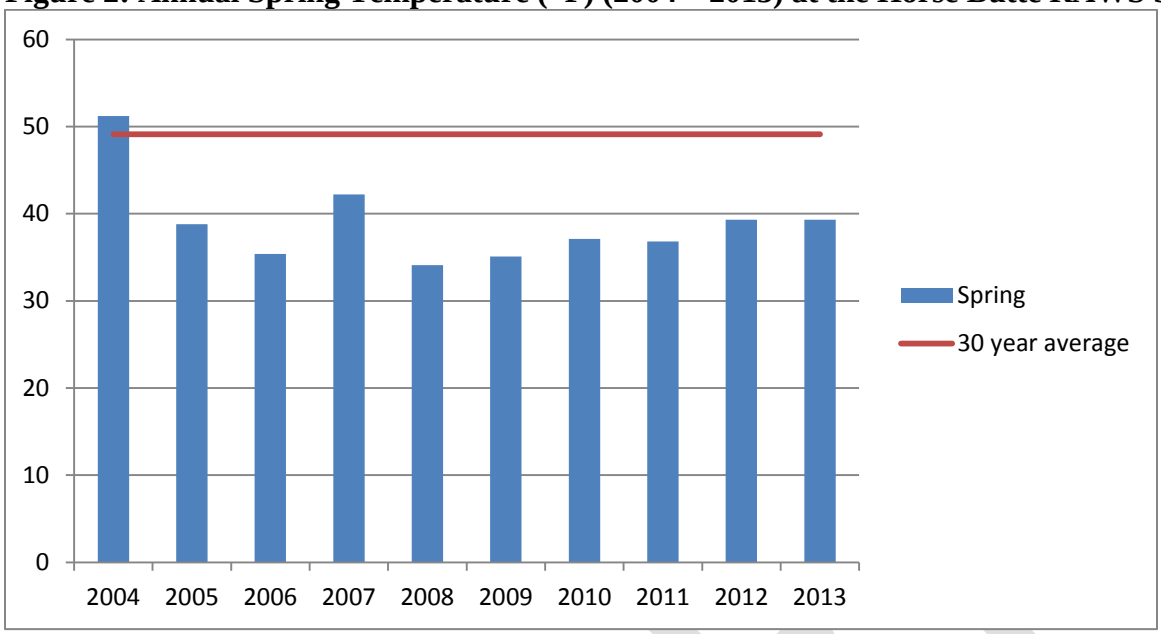


Figure 2: Annual Spring Temperature (^{O}F) (2004 – 2013) at the Horse Butte RAWS Station



Grazing Management

Prior to 2001 the Cedar Canyon Field Allotment was managed similar to a "custodial" allotment. An annual term and condition of the grazing license allowed for flexibility in the number of livestock and season of use the allotment could be grazed. During this time, livestock use typically occurred in spring during March and April. In 2001 this flexibility was removed as a term and condition.

In 2001, the allotment was managed jointly with the Cedar Creek Canyon Allotment and the state land parcel on the allotment's southern boundary. Livestock grazing was rotated through the Cedar Canyon Field (including the state land) and the Cedar Creek Canyon Allotments during the spring. Livestock were removed when utilization reached 50%. Subsequently, temporary non-renewable AUMs were authorized in 2001. From 2002 to 2008 livestock use was fairly consistant with 15 AUMs being authorized in the spring. Use was delayed until April during the 2002 through 2005 grazing seasons.

Since 2009 livestock management in the Cedar Canyon Field Allotment has been subject to Chief District Judge Winmill's Decision and Order of February 26, 2009. The court order directs the Bureau of Land Management (BLM) to adjust livestock grazing practices so to maintain and enhance sage-grouse, pygmy rabbit, and slickspot peppergrass habitats. As such, the allotment is jointly managed with the Cedar Creek Canyon Allotment using a deferred rotation system. The rotation system defers livestock grazing in the spring (April through May) two out of three years (Table 3). Grazing is not scheduled in March under this grazing system.

Table 3: Deferred Rotation Grazing System in the Cedar Canyon Field Allotment.

Year	April				May				June				July				August				September				October			
2009																												
2010																												
2011																												
2012																												
2013																												
2014																												

* Shaded cells indicate period grazed

Actual use and utilization for the Cedar Canyon Field Allotment is shown in Tables 4 and 5. Table 4 describes actual use from 2004 to 2008 (pre-court order management) and Table 5 shows the information from 2009 to 2013 (post-court order management).

Table 4: Actual Use and Utilization in the Cedar Canyon Field Allotment from 2003 through 2008.

Year	Season of Use	BLM AUMs	% Utilization	
			Crested Wheatgrass	Sandberg Bluegrass
2004	April 10 – May 1	11	35	18
2005	April 3 – April 15	6	20*	20*
2006	September 15 – October 15	15	-	-
2007	March 1 – March 30	15	44	1
2008	March 29 – April 1	7	42	20

-Grazing use was not measured
*Grazing use shown was averaged for the Allotment; the species was not specifically identified.

Table 5: Actual Use and Utilization in the Cedar Canyon Field Allotment since the 2009 Court Order.

Year	Season of Use	Actual Use		% Utilization*	
		BLM	Exchange of Use**	Crested Wheatgrass	Sandberg Bluegrass
2009	August 2 – October 24	16	147	20	4
2010	June 20 – August 21	16	108	35	-
2011	April 3 – May 20	11	66	28	-
2012	September 10 – November 3	16	87	-	-
2013	June 22 – August 8	16	79	-	-

-Grazing use was not measured
**State of Idaho Lands AUMs

Since 2004, actual use on BLM land in the Cedar Canyon Field Allotment has averaged 13 AUMs. Average actual use on state land from 2009 to 2013 has averaged 97 AUMs. Field notes document that livestock use also occurred on state land prior to 2009.

Livestock utilization was measured on Sandberg bluegrass (*Poa secunda*) and crested wheatgrass (*Agropyron cristatum*) during the ten year evaluation period. Utilization levels on crested wheatgrass ranged from 20 percent (slight use) to 44 percent (moderate use) prior to 2009. From 2009 to 2011 use levels ranged from 20 percent to 35 percent (slight to light use) on crested

wheatgrass. Grazing use on Sandberg bluegrass was consistently slight (4 percent to 20 percent) when measured. Locations of key utilization sites are shown on Map 3. Utilization data was collected by the Height-Weight Method (Cooperative Extension Service et al., 1999).

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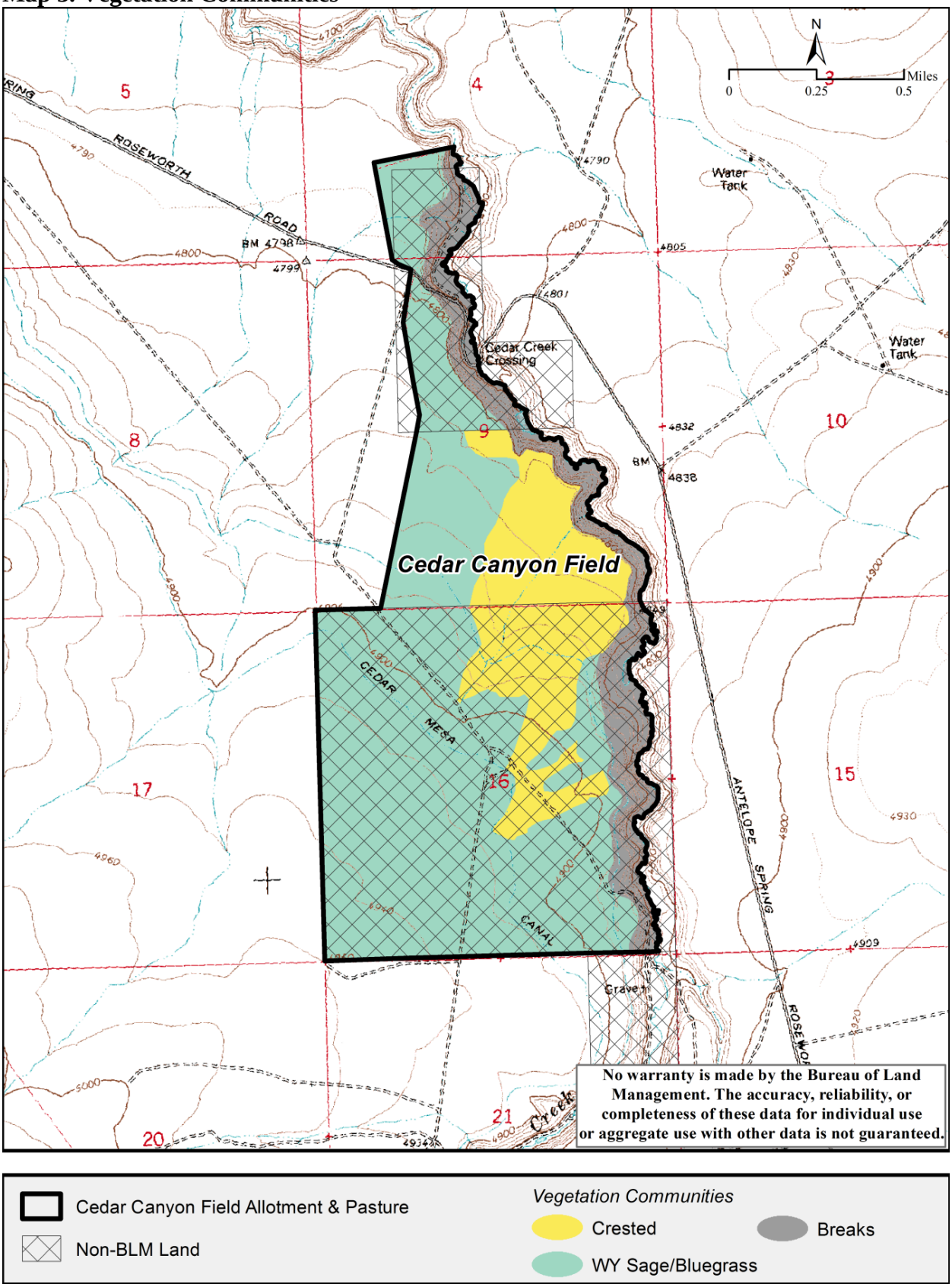
Map 3. Vegetation Communities



Vegetation

Vegetation in the Cedar Canyon Field Allotment was initially mapped in 2006 using field observations, field cover data, and 2004 National Agriculture Imagery Program (NAIP) imagery. The vegetation map was updated in 2013 using field observations and NAIP imagery (Map 3). Vegetation communities were classified and mapped based on dominant plant cover using a minimum mapping unit of 20 acres, which is appropriate for landscape-level planning but is not intended to show the complexity of vegetation communities at a finer-scale. With this, fifty-three vegetation communities were classified and mapped based on dominant plant cover. These vegetation communities were subsequently organized into five classes and six sub-classes according to national standards (Grossman et al., 1998), with the exception of evergreen shrub lands dominated by sagebrush; these communities were defined as having 10 percent or more shrub cover rather than the national standard of more than 25 percent shrub cover. This was done to provide consistency with defined habitat needs (Wisdom et al., 2000) and proposed management objectives for greater sage-grouse (sage-grouse).

Vegetation in the Cedar Canyon Field Allotment was historically a sagebrush steppe plant community. Wildfire burned the eastern portion of the allotment in 1965, and again in 1979. Subsequently, much of the burned area (approximately 80 acres) was seeded to crested wheatgrass (Map 3). The western half of the allotment is predominantly vegetated by Sandberg bluegrass with Wyoming big sagebrush overstory (*Artemesia tridentata* ssp. *wyomingensis*). Other plant species, both native and non-native, are also present in the communities (Appendix A).

Ecological Site Inventory (ESI) sites have not been established in the Cedar Canyon Field Allotment; therefore, production data for the allotment is lacking. However, data collected in 2006 at ESI sites in adjacent allotments with similar vegetation indicate most of the native plant community in the allotment has transitioned to Wyoming big sagebrush/Sandberg bluegrass (Photo 1). Crested wheatgrass was planted on the east side of the allotment following wildfires in 1965 and 1979 (Photo 2).

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Photo 1. Overview of the Native Portion of Cedar Canyon Field Allotment at the Sage-grouse Habitat Assessment Framework Site.

Photo 2: Overview of the Eastern Portion of the Allotment Burned and Seeded following wildfire in 1979.

Noxious Weeds and Invasive Plants

The State of Idaho has listed 65 plant species as noxious weeds. Noxious weeds have not been documented in the allotment. Curveseed butterwort (*Ceratocephala testiculata*), an invasive species, was documented to occupy disturbed areas in the allotment.

The BLM works to prevent the establishment of new noxious weed species and infestations in areas where they presently do not occur. Many of the known noxious weed infestations are found and treated through the Twin Falls District (TFD) Emergency Stabilization and Rehabilitation (ESR) program. Approved ESR plans allow three year funding for weed control and play a vital part in the reestablishment of naturally recovering vegetation, as well as in the successful establishment of newly seeded areas. Weed personnel grid burned areas and treat noxious weed occurrences in order to allow for reduced competition during reestablishment of desired vegetation. Crews also treat road corridors throughout the field office which helps prevent the spread of weeds from vehicles that may be transporting weed seeds to new areas. Control methods used within the TFD for the treatment of noxious weeds include biological, mechanical, and chemical.

IDAHO RANGELAND HEALTH STANDARDS ASSESSMENT

There are eight standards for healthy rangelands that apply to BLM lands in the state of Idaho. Not all of the Standards apply to the Cedar Canyon Field Allotment due to variances in the land type and geographical area. Of the eight Idaho Standards for Rangeland Health, the following standards are applicable to the Cedar Canyon Field Allotment:

- **Standard 1 –** Watersheds provide for the proper infiltration, retention, and release of water appropriate to soil type, hydrologic cycling, and energy flow.

- **Standard 4 –** Healthy, productive, and diverse native animal habitat 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.

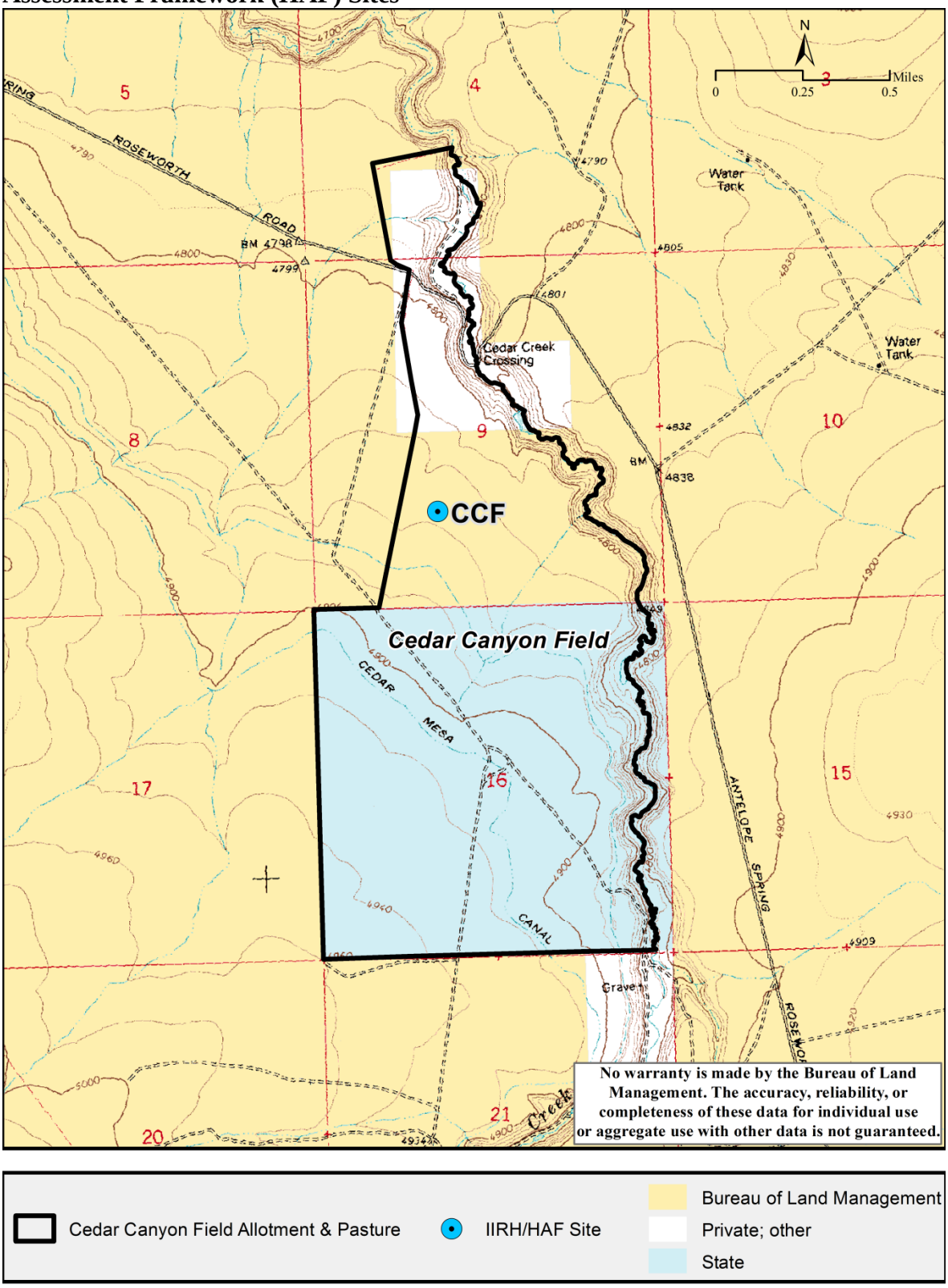
- **Standard 7** -- Surface and ground water on public lands comply with the Idaho Water Quality Standards.

- **Standard 8 –** Habitats are suitable to maintain viable populations of threatened and endangered, sensitive, and other special status species.

Standards 2, 3, 5, and 6 do not apply to the Cedar Canyon Field Allotment

An interdisciplinary (ID) team conducted an IIRH field evaluation at one site representative of the native plant communities within the Cedar Canyon Field Allotment during May of 2013 (Map 4). The site is also a Habitat Assessment Framework (HAF) site.

Map 4. Interpreting Indicators of Rangeland Health (IIRH) and Sage-grouse Habitat Assessment Framework (HAF) Sites



HAF sites were randomly generated through a GIS process (Appendix A). Key utilization sites were selected in representative areas based on the presence of key forage species, distance from livestock water, and accessibility of the area to livestock grazing. When the ID Team conducted IIRH field evaluations, the HAF sites were visited first. If the HAF site(s) was not representative of the vegetation community, an ESI site was then selected if available within that vegetation community. If no ESI site was available, a key utilization site was used. When the ID Team determined that none of the pre-determined sites were representative of the vegetation community, a new location was selected that was representative of the vegetation community.

Indicators of rangeland health (Table 6) were used to evaluate three rangeland health attributes (Table 7): Soil and Site Stability, Hydrologic Function and Biotic Integrity (Pellant et al., 2005). The IIRH evaluation sheet was completed at the evaluation site, the site was photographed, and a list of plant species observed was recorded. In addition, general field notes were recorded for the allotment that included such items as presence of noxious weeds, wildlife sign, recreation impacts, and presence or condition of range infrastructure.

Table 6. Summary of 17 Rangeland Health Indicators, Attributes and Degree of Departure at Sites in the Cedar Canyon Field Allotment.

Indicators	Attributes	Degree of Departure from Reference Sheet				
	S = Soil & Site Stability H=Hydrologic Function B = Biotic Integrity	Extreme to Total	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
1. Rills	S, H					X
2. Water-flow Patterns	S, H					X
3. Pedestals and/or terracettes	S, H					X
4. Bare ground	S, H					X
5. Gullies	S, H					X
6. Wind-scoured, blowouts, and/or deposition areas	S					X
7. Litter movement	S					X
8. Soil surface resistance to erosion	S, H, B					X
9. Soil surface loss or degradation	S, H, B					X
10. Plant community composition and distribution relative to infiltration	H					X
11. Compaction layer	S, H, B					X
12. Functional/structural groups	B				X	

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Indicators	Attributes	Degree of Departure from Reference Sheet				
	S = Soil & Site Stability H=Hydrologic Function B = Biotic Integrity	Extreme to Total	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
13. Plant mortality/decadence	B					X
14. Litter amount	H, B					X
15. Annual production	B					X
16. Invasive plants	B				X	
17. Reproductive capability of perennial plants	B					X

Table 7: Rangeland Health Attribute Rating of the Site

Rangeland Health Attribute	Degree of Departure				
	Extreme to Total	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
Soil and Site Stability					X
Hydrologic Function					X
Biotic Integrity				X	

A cover transect to determine vegetative cover was recorded at the HAF site in 2010 following the line point intercept method as described in the Sage-grouse Habitat Assessment Framework (BLM 2010) protocol. Because forbs are important to sage-grouse, the line point intercept method was augmented using Daubenmire frames. Forb species were recorded in 7.9 inch by 19.7 inch (20 cm by 50 cm) Daubenmire frame placed at each point along the line intercept. This resulted in more comprehensive data on forb species diversity present than could be obtained by the line point intercept alone.

In addition to evaluating rangeland health indicators at the site, the interdisciplinary team examined other areas of the allotment to ensure the evaluation site was representative of the vegetation community. Data collected at the evaluation site was compared to the Natural Resource Conservation Service's (NRCS) ecological site description (ESD) reference sheet for the soil types and potential vegetation communities in the Cedar Canyon Field Allotment. The IIRH site within the allotment occurs in the Loamy 10-13" Wyoming Big Sagebrush/Bluebunch wheatgrass ecological site. The ESD reference sheet describes the expected condition of the ecological site in state 1, phase A of the reference state.

The Loamy 10-13" Wyoming Big Sagebrush/Bluebunch wheatgrass ecological site should have Wyoming big sagebrush in the overstory with bluebunch wheatgrass (*Pseudoroegneria spicata*) dominating the understory. Thurber's needlegrass, Sandberg bluegrass, bottlebrush squirreltail (*Elymus elymoides*) and arrowleaf balsamroot (*Balsamorhiza sagittata*) should be sub-dominant herbaceous species. Other significant species in the plant community can include Indian ricegrass (*Achnatherum hymenoides*), Idaho fescue (*Festuca idahoensis*), longleaf phlox (*Phlox*

longifolia) and spiny phlox (*P. hoodii*), and yellow rabbitbrush (*Chrysothamnus viscidiflorus*) or rubber rabbitbrush (*Ericameria nauseosus*) (USDA and NRCS 2013a).

The ratings of the 17 indicators do not result in a single rating of rangeland health for a site. The 17 indicators are related to three components of rangeland health known as attributes (soil and site stability, hydrologic function, and biotic integrity). The second column of Table 6 identifies which indicators are related to each of the three attributes. The ID team arrived at attribute departure ratings by considering the preponderance of evidence of departure for the group of indicators related to each attribute. Indicators showing departure from reference conditions may be weighted more heavily, based upon the effect of the departure on ecological function of the site being evaluated. The degree of departure ratings for each of the three attributes of rangeland health are shown in Table 7.

Standard 1 (Watersheds)

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.

Rangeland Health Assessment

The Cedar Canyon Field Allotment was evaluated using the ESD (R025XY019ID) reference sheet for the Loamy 10-13" Wyoming Big Sagebrush/Bluebunch wheatgrass ecological site (USDA and NRCS, 2013a). Subsequent to the 2013 assessment, several ESD reference sheets, including this one, were adjusted based on available local monitoring data to more accurately reflect expected field conditions specific to the field office.

Acceptable bare ground levels were therefore reduced and shifted from 30 to 40 percent to 10 to 30 percent, and expected litter levels were raised to be within 20 to 40 percent rather than 5 to 10 percent. To include a more comprehensive display of presence and distribution to all additional ground cover items within this section, any discussion regarding ground cover percentages reflect 'all layers' rather than 'top layer only' unless otherwise stated. For the soil stability test (Pellant et al., 2005), ESD values identify an expected range from 4 to 6 on a scale of 1 to 6.

Multiple soil series exist within the Cedar Canyon Field Allotment and typically consist of silt loam soils that cover much of the rhyolite and basalt flats that make up the majority of the Jarbidge Field Office landscape. Most of the allotment lacks any relevant topographic changes except for Cedar Creek and its associated canyon along the eastern border. Soils are generally shallow, restricted by an underlying cemented hardpan, and are further limited by shallow rooting depths and low available soil water capacity, especially when precipitation is below average during the growing season.

The Soil Survey Geographic (SSURGO) data base (NRCS, 2012) shows that 86 percent of the allotment has a moderate wind erosion hazard. The 14 percent that has no data for wind erosion hazard is associated with the rocky areas of Cedar Canyon. The same database also indicates that 86 percent of the allotment has a high water erosion hazard and 14 percent has a severe water erosion hazard, primarily within the canyon breaks.

IIRH at HAF-1 Site

A sage grouse habitat assessment (Map 4) was completed in May of 2010 and provides cover information for the 2013 IIRH (Table 8). Total shrub cover was 11 percent with the majority being mature sagebrush. Native perennial grasses were 40 percent of cover with all but 6 percent being Sandberg bluegrass, a shallow rooted species. Biological soil crusts were well represented, totaling 44 percent, and contributed to low bare ground levels of 12 percent. Total litter was at 20 percent with the majority of the litter found under vegetative cover rather than interspaces. The HAF data did not distinguish between persistent and non-persistent litter. Some additional surface protection and site stability was provided by 4 percent rock and gravel. Cheatgrass was not found along the HAF transect, but was noted as sparse in 2010, with patches within disturbed sites. Cheatgrass was observed along jeep trails and other high disturbance areas, but was not otherwise mentioned in the 2013 assessment.

Table 8. Ground Cover at the 2010 HAF Site for the Cedar Canyon Field Allotment.

Cover Attribute	All Layer (% cover)
Shrubs	11
Native perennial grasses	40
Non-native perennial grasses	0
Native annual grasses	0
Non-native annual grasses	0
Native perennial forbs	2
Non-native perennial forbs	0
Native annual forbs	2
Non-native annual forbs	0
Total Vegetative Cover	**55**
Biological soil crust*	44
Litter ground	20
Litter standing**	1
Gravel/Rock	4
Total Other Cover	**69**
Cover Total	**124**
Bare Ground	**12**

*Biological soil crusts include: algae, fungi, lichens, and mosses

**Litter standing refers to dead shrubs

The IIRH site (Map 4) showed none-to-slight departure ratings for all soil and hydrologic indicators and attributes during the assessment in May 2013 (Tables 6 and 7). No rills, gullies, extensive water flow patterns, active pedestaling, wind scour, or depositional areas were observed. Pedestaled grasses were common, but nearly all pedestals had been stabilized by biological soil crusts. Active pedestaling (recently exposed roots) was rare. Biological soil crusts were abundant and present across the landscape and well represented in the interspaces which contribute to soil stability. Interspaces had crust accumulations although in some areas crusts were patchy or bare. Water flow patterns were uncommon with most of those present being short. Very few showed greater size or connectivity.

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Bare ground was low at 12 percent (Table 8), and no recent soil surface loss or degradation was noted. Soil surface resistance to erosion was rated as none-to-slight since soil stability results fell within the expected range (4 to 6), measuring 5.8 in interspaces and 5.2 under canopies, for an overall rating of 5.3.

The plant community indicator, as it relates to hydrologic function, was rated none-to-slight due to the presence of mostly mature sagebrush vegetation. Litter (20 percent) was noted to be at the low end of the expected range. Large bunchgrasses (Thurber's needlegrass) were noted to be of low abundance but present, but no bluebunch wheatgrass was observed. According to the ESD bluebunch wheatgrass should be the dominant grass (based on production) at this site.

Evaluation of Standard 1

The 2013 IIRH concluded all the indicators related to soil and site stability and hydrologic function attributes to be at a none-to-slight departure from the reference condition; therefore, the soil and site stability and hydrologic function attributes were rated none-to-slight departure from the reference condition. Although deep-rooted perennial bunchgrasses were of low abundance, and the high amount of shallow-rooted bunchgrass is of concern, sagebrush is present in amounts sufficient to aid the hydrological cycle. With this, there was no evidence that proper hydrologic function had been altered. The growth of herbaceous species was vigorous. Although historic pedestalling indicates that soil stability was likely impaired at one time, soil stability ratings currently fall within expected ESD levels and are further enhanced by the presence of biological soil crusts. Shrubs, perennial grasses, and other ground cover, including biological soil crusts and litter, are presently limiting exposure of the soil to erosion. Topography over most of the allotment has a gentle slope which further reduces the chance of water erosion.

Evaluation Finding – Allotment is:

_X_ Meeting the Standard
____ Not meeting the Standard, but making significant progress towards meeting
____ Not meeting the Standard

Rationale for Evaluation Finding

Deep-rooted perennial bunchgrasses were noted to be of low abundance in the native portion of the allotment. Sandberg bluegrass is the dominant grass species and provides less hydrologic function than deep-rooted perennial bunchgrasses; however, sagebrush is present at levels suitable to capture and store precipitation. Biological soil crusts are widespread and common, including in plant interspaces. Biological soil crusts aid in soil stabilization, nutrient cycling, and slow the expansion of invasive species. Flow patterns are rare and generally short when present. Vegetative litter is associated with existing vegetative cover and to a lesser extent in inner spaces. Litter and standing dead plant material are present for site protection and for decomposition to replenish soil nutrients and are within expected levels. Pedestalled Sandberg bluegrass plants indicate some past soil loss, but pedestals are not active and are stabilized by biological soil crusts.

In the burned portion of the allotment, Sandberg bluegrass continues to persist with deep-rooted crested wheatgrass. The deep-rooted seeded grass augments the sparse rabbitbrush cover aiding with hydrologic function. Non-native annual forb and grass species, such as curveseed butterwort and cheatgrass, are present at very low amounts and primarily occupy disturbed areas within the

allotment. They are not abundant enough to influence hydrology, nutrient cycling, or soils. Therefore the preponderance of evidence indicates the Cedar Canyon Field Allotment is meeting Standard 1.

Standard 2 (Riparian Areas & Wetlands)

Riparian-wetland areas are in properly functioning condition appropriate to soil type, climate, geology, and landform to provide for proper nutrient cycling, hydrologic cycling, and energy flow.

_X_Standard Doesn't Apply

Springs or wetlands are not present within the allotment. Cedar Creek forms the eastern boundary of the allotment. The reach of Cedar Creek within the allotment is affected by flow alteration upstream of the allotment. This stream reach is downstream of Cedar Creek Reservoir (Roseworth Reservoir) and a diversion and siphon which remove the entirety of Cedar Creek's flow released from the reservoir. Due to the dewatering of Cedar Creek below the diversion during most of the growing season, wetland vegetation species, primarily Mountain rush (*Juncus arcticus*) (Photo 3) and a few sparsely scattered willows (*Salix* spp.), are limited to a few small patches along the stream bank in this stream reach within the allotment.The wetland plants are barely being maintained by occasional water releases to fill a pond at the north end of the allotment on private land. Vegetation along the majority of the stream banks is primarily composed of upland species including sagebrush, Kentucky bluegrass and in the more disturbed areas cheatgrass and other annuals (Photo 3). Standard 2 does not apply to the allotment.

Limited wetland vegetation also occurs along and adjacent Cedar Mesa Canal on state land. Cattle water out of the canal when water is present during the irrigation season. The beneficial use for water in the canal is for irrigation and livestock water.

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Photo 3. A Portion of Cedar Creek in the Cedar Canyon Field Allotment Taken in 2013.

<u>Standard 3 (Stream Channel/Floodplain)</u>

Stream channels and floodplains 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.

_X_Standard Doesn't Apply

The reach of Cedar Creek within the allotment is affected by flow alteration upstream of the allotment. This stream reach is downstream of Cedar Creek Reservoir (Roseworth Reservoir) and a diversion and siphon which remove all the flow released from the reservoir during irrigation season. At other times of the year a minimal amount of water by passes the siphon to help maintain small isolated patches of riparian habitat. Because the flow regime is so altered the stream channel and floodplain cannot function properly. Standard 3 does not apply to the allotment.

Standard 4 (Native Plant Communities)

Healthy, productive, and diverse native animal habitat 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

Rangeland Health Assessment

The majority of the allotment is vegetated by native species and the allotment is managed for sage-grouse habitat, therefore, it is evaluated under Standard 4 as a native plant community. The evaluation site for the Cedar Canyon Field Allotment was based on a sage-grouse habitat assessment (HAF) site randomly located within the unburned BLM portion of the allotment. Vegetation cover data were collected in 2010 and a plant species list was completed for the site (Appendix B) by the JFO interdisciplinary team (ID Team). Field notes indicate that deep-rooted perennial bunchgrasses are of lower abundance than expected for the site. Sagebrush is the dominant shrub in the unburned area with Sandberg bluegrass the dominant grass. Although few forbs were hit along the cover transect, forbs were fairly common and diverse (12 species) based on data from the 0.1 m Daubenmire frames. Three species of phlox accounted for approximately 70 percent of the forb abundance.

As a result of past wildfire and subsequent vegetation treatment efforts, a portion of the plant community within the Cedar Canyon Field Allotment has been modified from the native state (Map 3). Big sagebrush is usually killed by fire and is limited with the burned area. This burned area was seeded to crested wheatgrass following the wildfire. Rabbitbrush typically sprouts after fire and is present in the burned area. The amount of rabbitbrush varies, however, it appears to provide less than 10 percent cover over most of the seeding. Rubber rabbitbrush was the most abundant shrub present within the burned area. Sandberg bluegrass remains fairly common in the burned and seeded area.

No noxious weed species were noted within the allotment during the evaluation. However, cheatgrass and curveseed butterwort, both invasive plant species, were found within some disturbed areas.

The ESD reference sheet used for the evaluation of this site was (R025XY019ID) Wyoming Big Sagebrush/Bluebunch wheatgrass (USDA and NRCS, 2013a).[a] Recorded shrub cover was 11 percent and exclusively sagebrush (Table 9) at the site. Perennial grasses were dominated by Sandberg bluegrass with other native perennial grasses at reduced amounts (Table 9). Field notes in 2013 indicate Thurber's needlegrass and squirreltail are present at low abundance and none were encountered on the transect. Perennial native forbs (sagebrush phlox) provided 2 percent cover with an overall perennial forb diversity that included at least 20 species (see list in Appendix B) and was considered high on the 2010 HAF-1 form.

The amount of total litter is at the lower end the range (20 – 40 percent) for litter described in the Loamy 10 – 13 ESD reference sheet. Biological soil crust reduced the amount of bare ground in the allotment and was present under vegetation as well as in plant interspaces.

[a] Several ESD reference sheets, including this one, were adjusted subsequent to the 2013 assessment and based on available local monitoring data to more accurately reflect expected field conditions specific to the field office.

No invasive annuals were found on the cover transect. However, field notes indicated curveseed butterwort, clasping pepperweed, and cheatgrass were present. These annuals were noted at low levels in 2010 and 2013 at or near disturbed areas (roads, livestock congregation areas, rodent mounts, etc.).

Table 9: Percent Cover (all layers) at the Sage-grouse HAF Site Sampled in 2010.

Vegetation Class	Species*/Cover Type	% Cover (4686110 N 679337 E)
Perennial Grasses	Bottlebrush squirreltail	4
	Sandberg's bluegrass	34
	Western wheatgrass	2
Perennial Forbs	Sagebrush Phlox	2
Annual forbs	Maiden blue-eyed Mary	2
Shrubs	Wyoming big sagebrush	11
Total Vegetation Cover		55
Other Ground Cover	Biological soil crust	44
	Litter in Contact with soil	20
	Litter standing	1
	Rock or Gravel	4
Total Other Cover		69
Bare Ground		12
Grand Total		136

*Other plant species not recorded during cover transects but observed at the evaluation site are listed in Appendix B.

IIRH at HAF-1 Site

The 2013 IIRH site is located in a native vegetation community where Sandberg bluegrass is the dominant grass species (34% cover, all layers) and Wyoming sagebrush is the dominant shrub species (11% cover). In addition, biological soil crusts comprise 44 percent of total cover (Table 9).

The biotic integrity attribute was rated as a slight to moderate departure from the reference condition due to the low abundance of deep rooted perennial bunchgrasses (Table 7). Field notes recorded by the interdisciplinary team indicate that all of the functional/structural groups were present at the site, deep-rooted perennial bunchgrasses where noted to be of lower abundance than expected.

The functional/structural group indicator was rated slight to moderate at the site due to a reduction of large perennial bunchgrasses. Thurber's needlegrass was observed at trace levels but was not recorded in the 2010 HAF cover data. Sandberg bluegrass, a shallow rooted perennial bunchgrass, was shown to dominate vegetative cover at the site. Sagebrush cover was present to provide structure for wildlife in shrubs although not optimal for some species. Sagebrush cover was 11 percent, which is less than 15 percent cover recommended for sage-grouse. However, sagebrush recruitment was observed at the site indicating shrub cover will increase.

The site was rated slight to moderate for invasive plants due to curveseed butterwort being found in disturbed areas (fence line, livestock trails, jeep trails, burrows, etc.).

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Utilization site CCFI-1 (Photo 2) is located in the southeastern portion of the allotment that was burned by wildfires in 1965 and 1979 and seeded to crested wheatgrass. As can be seen from the photo rubber rabbitbrush was wide spread but not particularly dense. In the background Wyoming big sagebrush is establishing in the seeded area. Sandberg bluegrass continues to persist with crested wheatgrass and rabbitbrush.

All other indicators related to the Biotic Integrity attribute were rated none to slight. The ID Team noted perennial plant reproductive capability matches what is expected for the site, and annual production is within the normal range (Table 6).

Evaluation of Standard 4

Deep rooted perennial bunchgrasses were of low abundance. The native plant communities are dominated by Sandberg bluegrass, a shallow rooted, small statured perennial bunchgrass. This is indicative of a shift in the relative dominance of vegetation functional/structural groups. Declines in deep-rooted perennial bunchgrasses can result in a modification of nutrient cycling and energy flow due to changes in above and below ground structure. Shallow-rooted perennial grasses generally have a shorter active growth period, smaller root systems, and relatively lower potential to capture and store carbon below ground. Shrubs are present in the area and consist of mostly mature, even-aged Wyoming big sagebrush. Cover data indicate perennial forb species were diverse but not particularly abundant (2 percent cover). At this time shrub cover is adequate. Young sagebrush was present and shrub cover should increase in the future. The invasive species curveseed butterwort was present at the site with field notes indicating it was at very low amounts and limited to disturbed areas. Curveseed butterwort is an invasive species and can spread easily and compete with desired native species for limited nutrients. No cheatgrass was detected in the 2010 cover data and was not observed at the 2013 evaluation site.

Overall desirable perennial species and biologic soil crusts were present although late seral grasses were reduced. The biological soil crusts that are present protect the interspaces hindering the spread of invasive plants. Soil and site stability and hydrologic function attributes were rated none to slight by the ID Team in the 2013 IIRH.

Evaluation Finding – Allotment is:

__ Meeting the Standard
__ Not meeting the Standard, but making significant progress towards meeting
_X_ Not meeting the Standard

Rationale for Evaluation Finding

Deep-rooted perennial bunchgrasses within the native plant communities of the Cedar Canyon Field Allotment are not the dominant functional/structural group, as described in the ESD reference state. Rather, the native plant communities are dominated by Sandberg bluegrass, a shallow rooted, small statured perennial bunchgrass. This is indicative of a shift in the relative dominance of vegetation functional/structural groups. Declines in deep-rooted perennial bunchgrasses can result in a modification of nutrient cycling and energy flow due to changes in above and below ground structure. Shallow-rooted perennial grasses generally have a shorter active growth period, smaller root systems, and relatively lower potential to capture and store carbon below ground.

No noxious weeds were observed in the uplands of the allotment. The invasive species curveseed butterwort was noted by the ID Team, primarily within disturbed areas (rodent/badger mounds, jeep trails, along fences, livestock congregation areas), but occasionally sparsely scattered in other areas. The presence of invasive species, even at low levels, is a concern. Invasive species can increase after large disturbances, such as wildfire. A diverse, healthy productive native plant community helps maintain desired pre-fire seed sources to recover should wildfire events happen.

Altered functional and structural groups and presence of exotic annual weeds reduces overall ecological function of the allotment. A product of decreased ecological function is decreased resilience, especially during adverse climatic conditions or following wildfire. Perennial species within the allotment are productive and are capable of reproduction and recruitment of new seedlings.

The Cedar Canyon Field Allotment is not meeting Standard 4 primarily due to low amounts of late seral, deep-rooted perennial native bunchgrasses and limited forbs.

Standard 5 (Seedings)
Rangelands seeded with mixtures, including predominately non-native plants, are functioning to maintain life form diversity, production, native animal habitat, nutrient cycling, energy flow, and the hydrologic cycle.

_X_Standard Doesn't Apply

Although a portion of the Cedar Canyon Field Allotment has been seeded to perennial non-native grass species (crested wheatgrass), the JFO Interdisciplinary Team determined that the allotment should be assessed as a native plant community rather than a seeded plant community because the majority of public lands are native plant communities.

Standard 6 (Exotic Plant Communities, Other than Seedings)
Exotic plant communities, other than seedings, will meet minimum requirements of soil stability and maintenance of existing native and seeded plants. These communities will be rehabilitated to perennial communities when feasible cost effective methods are developed.

_X_Standard Doesn't Apply

The plant communities with the Cedar Canyon Field Allotment are dominated by native and seeded non-native species. Standard 6 does not apply to the allotment.

Standard 7 (Water Quality)
Surface and ground water on public lands comply with the Idaho Water Quality Standards.

Evaluation of Standard 7
Intermittent streams, perennial streams, springs or wetlands are not present within the Cedar Canyon Field Allotment. Cedar Creek throughout the allotment is within Idaho Department of

Environmental Quality (IDEQ) Assessment Unit (AU) ID17040213SK000_04 (IDEQ 2014). Therefore, Standard 7 applies to the allotment. This AU is listed as not supporting the designated beneficial use of cold-water aquatic life, primary contact recreation, and secondary contact recreation due to flow regime alteration, sedimentation/siltation and water temperature (IDEQ, 2014). The support status for the recreation beneficial uses has not been assessed by IDEQ. The AU was removed from the 303(d) list (Category 5 streams) for water temperature and sedimentation/siltation following the Environmental Protection Agencies' approval of the Salmon Falls Subbasin Assessment and Total Maximum Daily Loads (IDEQ, 2008). The AU is included in the IDEQ 2012 Integrated Report (IDEQ 2014) as a Category 4a stream (i.e., stream with an EPA approved TMDL) and 4C stream (Waters Impaired by Pollution). Cedar Creek within the allotment is within the same AU as Cedar Creek upstream of the siphon, which generally contains water when it is released from Cedar Creek Reservoir. The only water sources for livestock within the allotment occurs at ponds on private land and the Cedar Mesa Canal on State land. When water is present in the canal, it is used for private land irrigation and livestock water.

Evaluation Finding – Allotment is:
____Meeting the Standard
____Not meeting the Standard, but making significant progress towards meeting
_X__Not meeting the Standard

Rationale for Evaluation Finding
Standard 7 is not being met in the Cedar Canyon Field Allotment based on IDEQ beneficial use support status and water quality impairment information (IDEQ 2014). The AU within the allotment is listed by IDEQ as not supporting the designated beneficial use of cold water aquatic life, primary contact recreation and secondary contact recreation due to flow regime alterations, sedimentation/siltation, and elevated water temperature (IDEQ 2014). Therefore, the Cedar Canyon Field Allotment is not meeting Standard 7.

Standard 8 (Threatened, Endangered and BLM Sensitive Plants and Animals)

Habitats are suitable to maintain viable populations of threatened and endangered, sensitive, and other special status species.

Rangeland Health Assessment

Plants:
There are no known BLM sensitive plants within the allotment. However, systematic inventories for special status plants have not been conducted in the allotment. In the Jarbidge Field Office special status plants are generally associated with distinct soil types that occur on scattered portions of the field office. None of these soil types occur within the allotment based on SSURGO soil data (USDA and NRCS, 2012). Potential habitat occurs for one sensitive plant species, slickspot peppergrass (*Lepidium papilliferum*; Proposed Endangered, BLM sensitive species).

Slickspot peppergrass grows in the semiarid sagebrush-steppe ecosystem of southwestern Idaho. Interspersed within this habitat type, slickspot peppergrass can be found in visually distinct microsites known as slickspots (mini playas or natric sites) that act as small water basins and where the sodium and clay content is higher than adjacent, unoccupied habitat (Moseley 1994). The Cedar Canyon Field Allotment contains 173 acres (86 percent of BLM acreage in the allotment) of slickspot peppergrass habitat (Map 5). A GIS model was run to help focus inventory and project clearance efforts to areas that would have a higher probability of finding slickspot peppergrass plants (BLM, 2012). This model used updated soils data, vegetation community data, fire frequency, slope, and elevation to further refine habitat and to categorize it into groups (high, medium, and low) that identify the potential for finding the species. The allotment contains 169 acres modeled as high potential and 3 acres of medium potential habitat for slickspot peppergrass. Of the 169 acres of high potential habitat, 83 acres were seeded to crested wheatgrass following wildfires in the 1970's. Observers did not observe slickspot peppergrass during site visits in 2010 and 2013. Both site visits coincided with the known flowering period for this species. The nearest known occupied habitat for slickspot peppergrass is 21 miles to the west, on the west side of Clover Creek.

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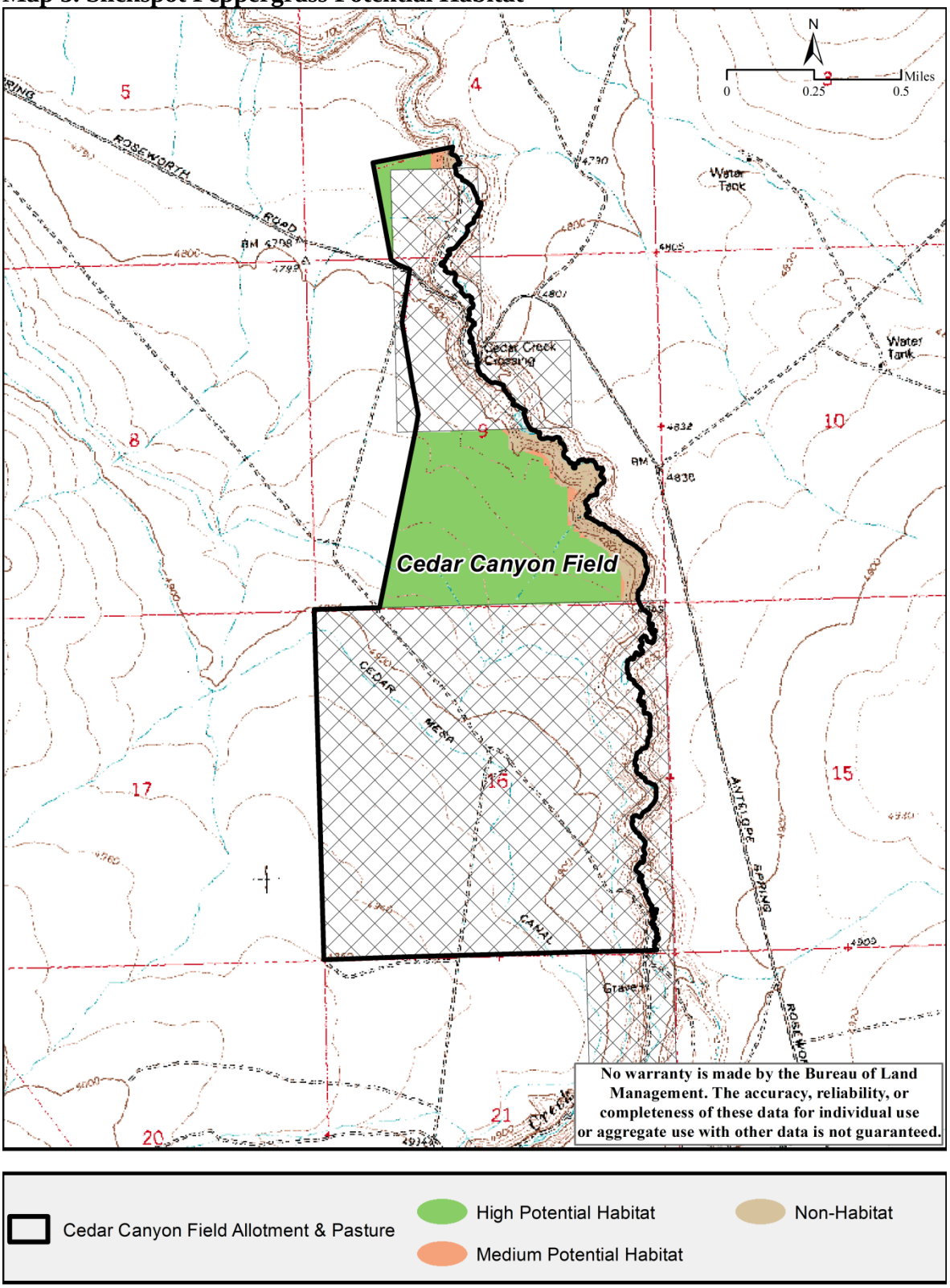
Map 5. Slickspot Peppergrass Potential Habitat



Animals:
Presence of various sensitive wildlife species are based upon primarily incidental observations by BLM personnel and data entered into the Idaho Natural Heritage Center database by other individuals. Species found on the Cedar Canyon Field Allotment are discussed below.

There are no BLM sensitive or federally listed fish or aquatic invertebrates or their habitat within the allotment.

Greater Sage-Grouse (*Centrocercus urophasianus*; BLM sensitive species)
Sage-grouse require sagebrush and other shrub habitat to fulfill seasonal habitat needs (Connelly et al., 2000; Holloran et al., 2005). Sage-grouse are dependent on sagebrush ecosystems and require extensive stands of sagebrush with a diverse and vigorous herbaceous understory.

Sage-grouse display and breed on leks (i.e., display grounds with sparse vegetation cover) between March and May. After breeding hens disperse into nesting areas around the leks. Approximately 75% of sage-grouse hens nest within 4 miles of a lek (Holloran and Anderson, 2005; Holloran et al., 2007). Sage-grouse typically return to the same lek and nest areas year after year. Hens seek out nest sites that are concealed from predators, especially avian predators (Conover et al., 2010) by a combination of sagebrush and grass cover. When chicks hatch the hen and her chicks feed on insects and forbs and slowly move towards wetter areas like wet meadows or streams and springs where forbs are still green and growing. A diverse forb component and an abundance of forbs are necessary to support a variety of insects which are critical to the growth of young sage-grouse (Knick and Connelly, 2011). In the fall as forbs dry up sage-grouse switch from eating forbs to sagebrush through the winter. Sage-grouse may either migrate to different seasonal habitats or may remain in a single general area throughout the year.

In 2010, BLM developed the Sage-Grouse HAF to assess seasonal sage-grouse habitats at multiple scales (Stiver et al., 2010). Habitat suitability requirements were based on the following guidelines which were published in 2000 and describe desired conditions for sage-grouse habitats during nesting and early brood rearing, late brood rearing, and winter:

- Nesting and early brood rearing habitat should support 15-25 percent canopy cover of sagebrush, perennial herbaceous cover should average at least 7” in height with at least 10 percent canopy cover for grasses and at least 5 percent for forbs and a diversity of forb species during spring (Connelly et al., 2000).

- Late brood rearing habitat should support 10-25 percent canopy cover of sagebrush. Riparian areas or wet meadows in the general area improve habitat for sage-grouse (Connelly et al., 2000).

- Winter habitat should have 10-30 percent canopy cover of sagebrush with at least 10-14” exposed above the snow (Connelly et al., 2000).

Based on vegetation mapping from 2013, the Cedar Canyon Field Allotment contains 84 acres mapped as sagebrush (42% of the BLM acreage in the allotment; Map 3). Sagebrush in the western half of the allotment is contiguous with sagebrush in the Cedar Crossing Allotment to

the west and south in Cedar Creek Canyon Allotment. The eastern portion (approximately 80 acres) of the Cedar Canyon Field Pasture burned in 1965 and 1979 most of which was seeded to crested wheatgrass. Sagebrush remains sparse (<5% cover) in the eastern portion of the Cedar Canyon Field Pasture.

Sage-grouse have been observed in the adjoining allotments year round. Sage-grouse habitat occurs in the surrounding allotments (Map 6). The allotment contains 1 unoccupied sage-grouse lek (last occupied in 1964 prior to the fire); however, sage-grouse hens from outside the allotment likely use the unburned area for nesting. Within five miles of the allotment there are 8 occupied and 8 undetermined (due to a lack of recent surveys) sage-grouse leks (Map 6). Sage-grouse attendance at occupied leks within 5 miles of the allotment is shown in Table 10. Lek 2T-147 was not known to occur until 2009, at which time data collection started to occur sporadically. Leks are considered occupied if there has been documented sage-grouse activity within the past five years.

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Map 6. Shrubland Habitat and Sage-grouse Leks

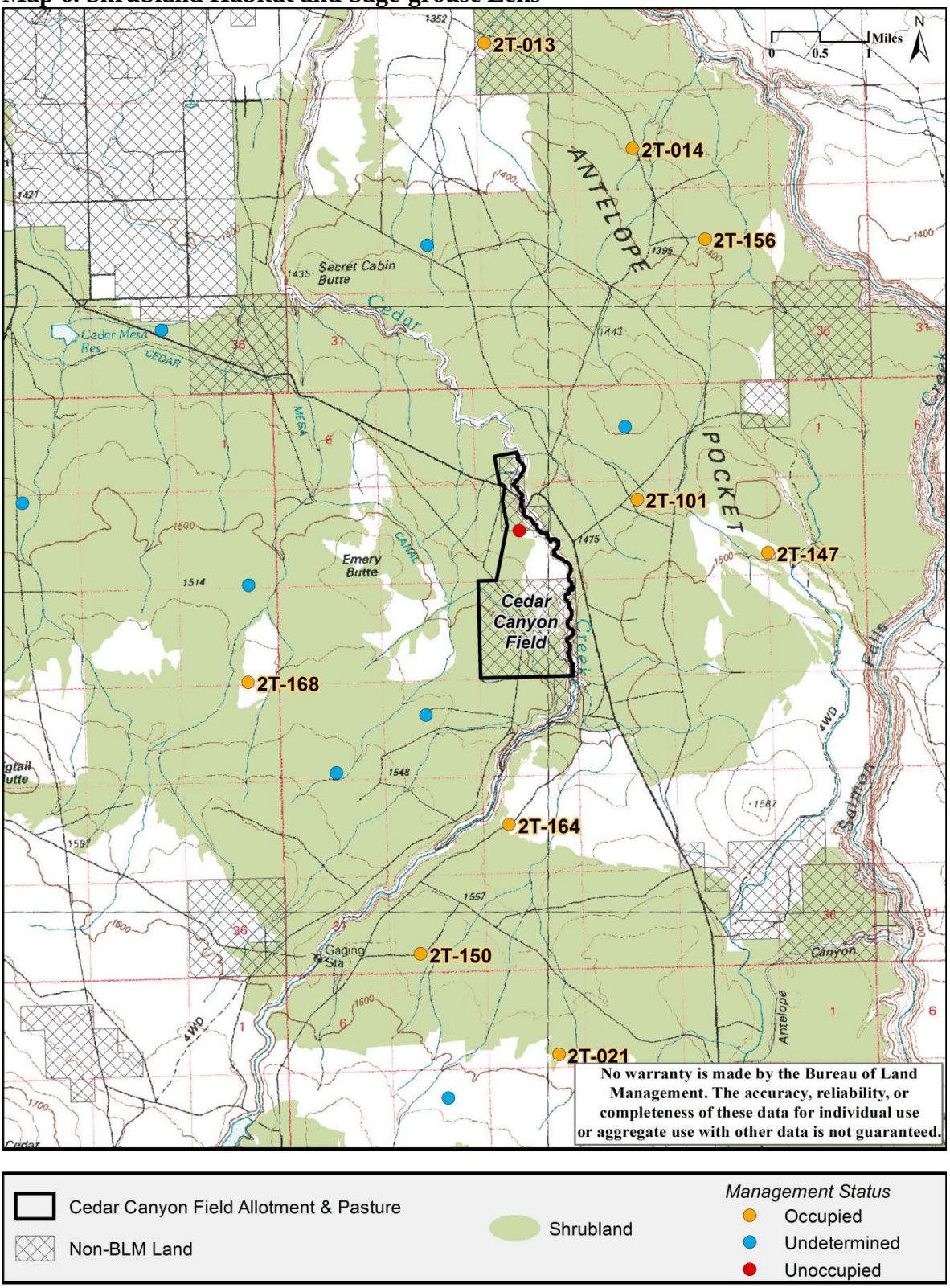

Table 10: Sage-grouse Attendance at Occupied Leks within Five Miles of the Cedar Canyon Field Allotment, 2000-2014.

Lek	Distance and Direction	Survey Year*														
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14
2T-101	1.0 mile E	17	7	8	8	0	13	18	30	18	17	0	15	8	11	10
2T-147	2.1 miles E										12	--	--	7	5	--
2T-164	2.5 miles S	4	--	4	--	0	3	4	1	0	0	2	0	0	0	0
2T-156	3.0 miles NE	19	21	10	11	0	22	40	10	25	23	10	22	25	22	27
2T-014	3.4 miles NE	--	--	--	--	--	--	--	--	0	--	--	--	2	--	--
2T-150	3.9 miles S	13	13	10	3	0	3	8	3	4	5	6	4	15	7	6
2T-013	4.2 miles N	--	--	--	--	--	--	0	--	0	--	--	--	0	--	14
2T-021	4.9 miles S	--	--	9	13	15	22	16	12	8	8	7	13	10	15	11

*Where the table is blank the lek had not yet been identified; in years marked by dashes (--) the lek was not surveyed.

Nesting and Early Brood Rearing Habitat

The current conditions of sage-grouse seasonal habitats were assessed following protocols outlined in the Sage-grouse Habitat Assessment Framework (Stiver et al., 2010). A sage-grouse habitat suitability assessment was conducted at one site in the allotment in 2010. The site was located in the western portion of the allotment that contains sagebrush (Map 4). Sage-grouse droppings were observed during the assessment.

Sage-grouse habitat suitability assessments are not necessarily an indication of rangeland health; they are merely indicators of habitat suitability. However, vegetation data collected as part of the habitat suitability assessments may be used to inform and interpret other rangeland health information and observations. The sage-grouse habitat suitability assessment is shown in Table 11.

Table 11: Sage-grouse Habitat Assessment Worksheet for Nesting and Early Brood Rearing Habitat (Arid Site).

Habitat Indicator	Suitable Habitat	Marginal Habitat	Unsuitable Habitat
Average Sagebrush Canopy Cover	15 – 25%	10 - < 15% or > 25%	< 10%
		11%	
Average Sagebrush Height	12 - 30”	10 -11” or >30”	< 10”
	22 inches		
Sagebrush Growth Form	Spreading	Mix of spreading and columnar	Columnar

Habitat Indicator	Suitable Habitat	Marginal Habitat	Unsuitable Habitat
		Mixed	
Average Grass Height	≥ 7”	5 - < 7”	< 5”
	10 inches		
Average Perennial Grass Canopy Cover	≥ 10%	5 - < 10%	< 5%
	44%		
Average Forb Canopy Cover	≥ 5%	3 - < 5%	< 3%
			2%
Preferred Forb Abundance and Diversity	Forbs common with at least a few preferred species common	Forbs common, but only 1 or 2 preferred species present	Forbs rare to sparsely present
	X		
Overall Site Evaluation		X	
Pasture Evaluation			Cedar Canyon Field

The HAF site is located on the western side of the Cedar Canyon Field Pasture in an area mapped as a Wyoming sagebrush/ Sandberg bluegrass vegetation community. Attributes at the HAF site were rated suitable for all habitat indicators except for sagebrush canopy cover (marginal), sagebrush growth form (marginal) and average forb canopy cover (unsuitable). Although average forb canopy cover was unsuitable, the site was rated suitable for preferred forb abundance and diversity with 21 species of forbs observed. The most common species included sagebrush phlox, low pussytoes (Antennaria dimorpha), spiny phlox, morning milkvetch (*Astragalus atratus*), and longleaf phlox all sage-grouse preferred forbs, except morning milkvetch. The eastern side of the Cedar Canyon Field Pasture did not contain a HAF site. This area was seeded to crested wheatgrass and the area contains less than 5% sagebrush cover. The Cedar Canyon Field Pasture of the Cedar Canyon Field Allotment was rated unsuitable as nesting habitat for sage-grouse. Sagebrush density is low (11%) on the western side of the Cedar Canyon Field Pasture and sagebrush is sparse (<5%) on the eastern side of the allotment despite having decades to recover.

A list of plants species observed at the HAF site, including preferred sage-grouse forbs is included in Appendix B.

Late Brood Rearing Habitat
The BLM portion of Cedar Canyon Field Pasture does not contain late brood rearing habitat for sage-grouse. Cedar Creek in this allotment occurs in the bottom of a steep canyon and is dry throughout the summer and early fall. Riparian areas associated with steep drainages or canyons are not used by sage-grouse (Stiver et al., 2010).

Winter Habitat
In the western half of the Cedar Canyon Field Pasture, shrub height (22 inches) and cover (11%) are suitable for wintering sage-grouse. During winter snow depths are usually less than 12 inches leaving most sagebrush above the snow and available for wintering sage-grouse. Sagebrush in the eastern portion of the Cedar Canyon Field Pasture is limited and is generally unsuitable for wintering sage-grouse.

Ferruginous Hawk (*Buteo regalis*; BLM sensitive species)
Ferruginous hawks typically inhabit flat and rolling terrain in grasslands and shrub-steppe regions (Bechard and Schmutz, 1995). They primarily nest in trees or less frequently on cliffs, rock outcrops or on the ground at the crest of ridges. Although ferruginous hawks exhibit flexibility in nest site selection (trees, power poles, cliffs, breaks, and hay stacks) they prefer elevated nest sites and rarely nest on level ground (Bechard and Schmutz, 1995). Ferruginous hawks may have more than one nest site within their nesting territory that they may use in different years (Bechard and Schmutz, 1995). Locally, ferruginous hawks that nest on the ground are rarely successful. Both the male and female share in the nest selection, egg incubation and young rearing, though the male does most of the hunting. One clutch of 2-4 eggs is laid in spring and parents care for the young until several weeks after fledging (Bechard and Schmutz, 1995).

Ferruginous hawk prey primarily on mammals. Prey species include ground squirrel (*Urocitellus* spp.), black-tailed jackrabbit (*Lepus californicus*), mountain cottontail (*Sylvilagus nuttalli*), and pocket gopher (*Thomomys talpoides*). Fledgling birds, reptiles and insects constitute a small percent of the diet (Bechard and Schmutz, 1995).

Management of shrub-steppe and grassland habitats that provide healthy native shrub and bunchgrass communities and a natural range of habitat variation would be expected to provide suitable habitat for ferruginous hawks.

There are no ferruginous hawk nests in the allotment. However, there is a nest 2.3 miles to the west. At this time few trees are available for use by ferruginous hawks for nesting in the northern portion of the allotment on private land [approximately 20 junipers (*Juniperus occidentalis*) along an unnamed draw]. Additionally a few scattered junipers (approximately 10) occur along the bottom and sides of Cedar Creek Canyon. Ferruginous hawks from adjoining allotments likely hunt in the Cedar Creek Canyon Allotment. The western half of the allotment is dominated by sagebrush steppe and the eastern half is dominated by crested wheatgrass with a few scattered shrubs. The allotment provides habitat suitable for mammalian prey (black-tailed jackrabbit, mountain cottontail, ground squirrels, etc.) favored by ferruginous hawks.

Brewer's Sparrow (*Spizella breweri*; BLM sensitive species)
Brewer's sparrows are typically associated with sagebrush steppe. Brewer's sparrow place nests primarily in shrubs, but occasionally on the ground at the base of a shrub. The nest shrub is typically taller and in an area with denser shrub cover than in the surrounding habitat (Rotenberry et al., 1999). Shrubs used for nesting by Brewer's sparrows include primarily big sagebrush (81%), with spiny hopsage (*Grayia spinosa*) (10%), antelope bitterbrush (*Purshia tridentata*) (6%), and yellow rabbitbrush (*Chrysothamnus visicidflorus*) (3%) (Rotenberry et al., 1999). Brewer's sparrows construct their nest in the canopy of sagebrush which averaged 27 inches tall (Rotenberry et al., 1999). In Idaho, Brewer's sparrow nests ranged from 7.8 to 19.6 inches above the ground, averaged 9 inches from the top of the sagebrush and averaged 7 inches from the edge of the shrub canopy (Rotenberry et al., 1999). These sparrows feed on small insects and seeds (Rotenberry et al., 1999).

Management and conservation of habitat to provide suitable sage-grouse habitat would also benefit Brewer's sparrow (Rowland et al., 2006).

Brewer's sparrows have been observed and are expected to be common in sagebrush habitats on the western half of the Cedar Canyon Field Pasture of Cedar Canyon Field Allotment. At this time shrub height and density are suitable for Brewer's sparrow nesting in the western half of the Cedar Canyon Field Pasture. The eastern half of the Cedar Canyon Field Pasture where sagebrush is limited is unsuitable for nesting. Overall, the Cedar Canyon Field Pasture is marginal for Brewer's sparrow nesting.

Loggerhead shrike (*Lanius ludovicianus*; BLM sensitive species)
Loggerhead shrikes are associated with open grasslands and shrub-steppe habitats. In southern Idaho loggerhead shrikes place nests in big sagebrush, antelope bitterbrush and greasewood (Woods and Cade, 1996). Nest shrubs ranged from 35 to 117 inches tall (Woods and Cade, 1996). The average height of the nest was 31 inches and ranged from 13 to 63 inches above ground (Woods and Cade, 1996). Although big sagebrush was shorter than greasewood or bitterbrush nest height was similar for all shrubs (Woods and Cade, 1996). In the Jarbidge Field Office a few loggerhead shrike nests have been found in western juniper.

Loggerhead shrikes feed on arthropods, amphibians, reptiles, small mammals and birds (Yosef, 1996). They use thorny bushes or barbed wire fences to impale their prey to facilitate feeding and to store future meals.

Management of shrub-steppe habitat that provides healthy native shrub and bunchgrass communities and a natural range of habitat variation would be expected to provide suitable habitat for loggerhead shrikes.

Loggerhead shrikes have been observed on the allotment and would be expected to forage and nest within the allotment. At this time scattered junipers along Cedar Creek as well as shrubs in the western half of the Cedar Canyon Field Pasture may be used for nesting. Shrubs in the western half of the allotment are shorter in height (average shrub height was 22 inches, tallest sagebrush on transect was 33 inches) than those preferred by loggerhead shrikes for nesting. Overall, the Cedar Canyon Field Pasture is marginal for loggerhead shrike nesting.

Sagebrush sparrow (*Artemisiospiza nevadensis*; BLM sensitive species)
Sagebrush sparrows are sagebrush obligates that are typically common in shrub-steppe habitats (Martin and Carlson, 1998). Sagebrush sparrow place nests in shrubs, in bunchgrasses or occasionally on the ground at the base of a shrub (Martin and Carlson, 1998). The nest shrub is usually taller than the surrounding vegetation (Martin and Carlson, 1998). In Idaho sagebrush sparrows nest in big sagebrush, however, in Oregon they may also use antelope bitterbrush, rabbitbrush, greasewood (*Sarcobatus vermiculatus*) and bunchgrasses (Martin and Carlson, 1998). In general sagebrush sparrow nests are placed closer to the main stem than the edge of the shrub. In shrubs the nest can range from 9 to 11 inches above the ground. Sagebrush sparrows feed on seeds, insects, spiders, fruits, and succulent vegetation (Martin and Carlson, 1998).

Management and conservation that provides suitable sage-grouse habitat would also benefit sagebrush sparrow (Rowland et al., 2006).

Sagebrush sparrows have been observed and are expected to be common within the western portion of the Cedar Canyon Field Pasture that is dominated by sagebrush. At this time habitat is marginal for sagebrush sparrow since only the western half of the Cedar Canyon Field Pasture contains suitable shrub height and density for nesting.

Pygmy rabbit (*Brachylagus idahoensis*; BLM sensitive species)

Pygmy rabbits are sagebrush obligates that are usually found in areas with tall dense stands of big sagebrush and deep soils (Green and Flinders, 1980; Heady and Laundré, 2005). Pygmy rabbits usually excavate burrow systems with multiple entrances. Burrow entrances are often at the base of sagebrush (Green and Flinders, 1980). Pygmy rabbits spend most of their time (68%) in a generally small area (less than 200 feet radius [3 acres]) from the burrow within a larger (90 acres to 170 acres) home range. The primary food of pygmy rabbits is sagebrush which comprises 99 percent of its winter diet (Green and Flinders, 1980). Grasses and forbs make up more of the diet in the late spring into early summer.

Management and conservation of habitat to provide suitable sage-grouse habitat would also benefit pygmy rabbit (Rowland et al., 2006).

No surveys for pygmy rabbits have been conducted in the allotment. However, potential habitat is found in the western half of the Cedar Canyon Field Pasture. During site visits in 2010 and 2014 no sign of pygmy rabbits was observed. Habitat in the western half of the allotment is marginal for pygmy rabbits because the height and density of sagebrush is low and soils are generally shallow. The eastern half of the allotment was seeded to crested wheatgrass and sagebrush remains limited (<5% cover) making the area unsuitable for pygmy rabbits.

Piute ground squirrel (*Urocitellus mollis*; BLM sensitive species)

Piute ground squirrels are associated with shrub-steppe habitats in southwestern Idaho. They emerge from hibernation in late February into March depending on the year and begin hibernation by late June (Yensen and Sherman, 2003). The diet of Piute ground squirrels is dominated by herbaceous vegetation including grasses and forbs, seeds, and animal matter (Rickart, 1987; Yensen and Sherman, 2003). Piute ground squirrels excavate deep and shallow burrow systems (Reynolds and Wakkinen, 1987).

Piute ground squirrels are an important prey item to many predators in shrub-steppe habitats including other sensitive species like ferruginous hawks and prairie falcons.

Management of shrub-steppe habitat that provides healthy native shrub and bunchgrass communities and a natural range of habitat variation would be expected to provide suitable habitat for Piute ground squirrels.

Piute ground squirrels have been confirmed in the Cedar Canyon Field and adjacent allotments. Sagebrush and grassland habitats in the allotment are suitable to maintain a relatively stable Piute ground squirrel population (Steenhof et al., 2006).

Spotted bat (*Euderma maculatum*; BLM sensitive species)
Spotted bats are typically found in arid portions of the western United States where it forages primarily on moths (Adams, 2003). It roosts in rock crevices in tall cliffs. Little is known about the behavior and population size of spotted bats.

Roosting habitat for spotted bats is present in the canyon cliffs along Cedar Creek on the eastern edge of the allotment including the Cedar Canyon Field Pasture. Spotted bats may forage over the allotment and drink and forage along Cedar Creek or the canal on state land. Spotted bats have been observed approximately 3.1 miles southeast of the allotment.

Evaluation for Standard 8
There are no known BLM sensitive or federally listed plants within the Cedar Canyon Field Allotment. Although systematic inventories for special status plants have not been conducted in the allotment, field visits in 2010 and 2013 did not document any sensitive species. GIS modeling predicts that the allotment contains 169 acres of high potential and 3 acres of medium potential habitat for slickspot peppergrass. The eastern portion of the Cedar Canyon Field Pasture burned and was seeded to crested wheatgrass in the 1970s, which could influence the potential for slickspot peppergrass in the seeded area. The nearest known occupied habitat for slickspot peppergrass is 21 miles to the west, on the west side of Clover Creek.

There is no BLM sensitive or federally listed fish or aquatic invertebrates or their habitat within the allotment.

Habitat for BLM sensitive wildlife species occurs within the allotment. Overall habitat ratings for each species are shown in Table 12.

Table 12. Overall Habitat Suitability for BLM Sensitive Wildlife Species in the Allotment.

Species Name and Type of Habitat	Cedar Canyon Field
Sage-grouse (nesting & early brood rearing)	Marginal
(late brood rearing)	Unsuitable
(winter)	Suitable
Ferruginous hawk (nesting)	Suitable
(foraging)	Suitable
Brewer's sparrow (nesting)	Marginal
Sagebrush sparrow (nesting)	Marginal
Loggerhead shrike (nesting)	Marginal
Pygmy rabbit (year- round)	Unsuitable
Piute ground squirrel (year-round)	Suitable
Spotted bat (roosting)	Suitable
(foraging)	Suitable

Suitable (combination of components make the habitat suitable), Marginal (some habitat components are missing), Unsuitable (one or more critical habitat components are missing).

Overall, sage-grouse nesting and early brood rearing habitat is unsuitable. The western half of the Cedar Canyon Field Pasture was rated marginal since it contains marginal shrub cover and a mixed shrub shape despite being rated suitable for shrub height, residual herbaceous height and cover, and forb abundance and diversity of sage-grouse preferred forbs. The eastern half of the

Cedar Canyon Field Pasture was seeded to crested wheatgrass and contains less than 5 percent sagebrush making it unsuitable for sage-grouse during nesting and early brood rearing. No late brood rearing habitat for sage-grouse is found in the allotment. Sagebrush heights and cover provide marginal winter habitat for sage-grouse.

More than an adequate number of potential nest trees are present for ferruginous hawk nesting in the allotment. Suitable habitat for prey species (e.g., black-tailed jackrabbit, ground squirrel, and mountain cottontail) usually hunted by ferruginous hawks is present in the allotment.

Shrub height and cover is marginal for Brewer's sparrow, sagebrush sparrow, and loggerhead shrike nesting in the Cedar Canyon Field Pasture.

Pygmy rabbit habitat was rated as unsuitable. The western half of the Cedar Canyon Field Pasture is marginal for pygmy rabbits because the height and density of sagebrush is low and soils are generally shallow. The eastern half of the Cedar Canyon Field Pasture is unsuitable for pygmy rabbits since sagebrush cover is less than 5 percent and the area has been seeded to crested wheatgrass. Grassland areas lack both shrub cover and height favored by pygmy rabbits.

The western portion of the Cedar Canyon Field Pasture contains suitable habitat to maintain a stable population of Piute ground squirrels due to adequate shrub and grass cover which extends well beyond the allotment to the west and south. Steenhof et al. (2006) reported ground squirrel abundance was greater in areas with sagebrush compared to grassland. They additionally reported Piute ground squirrels in areas with sagebrush and Sandberg bluegrass had heavier body weight compared to ground squirrels in grassland which may improve over winter survival.

Spotted bat roosting habitat was rated suitable due to cliffs being present along the eastern edge of the allotment. Sagebrush and grassland habitat in the allotment provides adequate insect diversity and abundance for spotted bat foraging. Ponds in Cedar Creek occasionally provides a water source for spotted bats as does the canal on the state section in the southern part of the allotment.

Evaluation Finding – Allotment is:

__ Meeting the Standard
__ Not meeting the Standard, but making significant progress towards meeting
X Not meeting the Standard

Rationale for Evaluation Finding

The Cedar Canyon Field Allotment contains habitat ranging from suitable to unsuitable for special status species. The eastern portion of the BLM administered land within the Cedar Canyon Field Pasture last burned in 1979; however, sagebrush has not reestablished at densities sufficient for sagebrush most dependent special status species. Overall, the Cedar Canyon Field Allotment is not meeting Standard 8.

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APPENDIX A: PROCESS FOR GENERATING SAGE-GROUSE HABITAT ASSESSMENT FRAMEWORK SAMPLE SITES

Sage-grouse Habitat Assessment Framework sites were randomly generated in the following manner. In GIS the vegetation layer was broken into the following habitat categories: shrub-lands, native perennial grass, non-native perennial grass, and annual grassland. The pasture layer was then incorporated and six random points were generated for each habitat category in the pasture.

Using National Agriculture Imagery Program imagery, any points that fell in non-habitat (maintained roads, ponds, gravel pits, cliffs) were removed. To ensure sampling transects did not cross allotment or pasture boundaries, randomly selected points within 100 meters of fences were removed. Random points were also evaluated for ease of access and to maximize sampling efficiency; random points that were more than one mile from a road, jeep trail, or fence were generally dropped. In cases where the amount of BLM land in a pasture was small and state or private land dominated the pasture, the pasture was generally dropped from sampling. Also if the habitat category was minimally present such as 30 acres of annual grassland out of a 1,200 acres pasture, no sampling would be done in the annual area. For shrub-lands to be evaluated they had to be at least 20 acres in size to accommodate sampling transects.

Ultimately, only two random sites in each habitat category were retained. Two points were retained to provide an alternate sampling site if the first point was not in the appropriate habitat category due to mapping errors. If both points were not in the appropriate habitat category, field crews were instructed to travel to the nearest appropriate habitat in the pasture, select a random bearing leading into the habitat category and pace a randomly selected distance prior to sampling.

Due to limited field crew and time when forbs are easily discernable, the following was the priority order for sampling: (1) shrubland habitats; (2) perennial native grassland, (3) non-native perennial grass; and (4) annual grass communities. When randomly generated points in shrubland habitats were in the same general area as randomly generated points in grassland habitats, field crews would often sample both sites on the same day regardless of their priority order. This was to increase sampling efficiency by reducing the amount of time spent traveling between points.

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APPENDIX B: SPECIES LIST ACCUMULATED DURING UPLAND ASSESSMENTS AT THE HAF SITE IN 2010

Scientific Name	Common Name	Species Type
Perennial Grasses		
Achnatherum thurberianum	Thurber's needlegrass	Native
Agropyron cristatum	Crested wheatgrass	Exotic, Seeded
Elymus elymoides	Bottlebrush squirreltail	Native
Pascopyrum smithii	Western wheatgrass	Native
Poa secunda	Sandberg bluegrass	Native
Annual Grasses		
Bromus tectorum	Cheatgrass	Exotic, Invasive
Perennial Forbs		
Allium nevadense	Nevada onion	Native
Antennaria dimorpha	Low pussytoes	Native, Sage-grouse Preferred
Arabis spp.	Rockcress	Native
Astragalus atratus	Mourning milkvetch	Native
Astragalus lentiginosus	Freckled milkvetch	Native
Astragalus purshii	Woollypod milkvetch	Native
Castilleja angustifolia	Northwestern Indian paintbrush	Native
Chaenactis douglasii	Douglas' dustymaiden	Native
Crepis acuminata	Tapertip hawksbeard	Native, Sage-grouse Preferred
Crepis atribarba	Slender hawksbeard	Native, Sage-grouse Preferred
Erigeron chrysopsidis	Dwarf yellow fleabane	Native, Sage-grouse Preferred
Erigeron pumilus	Shaggy fleabane	Native, Sage-grouse Preferred
Linanthus pungens	Granite prickly phlox	Native
Lomatium foeniculaceum	Desert biscuitroot	Native, Sage-grouse Preferred
Phlox aculeata	Sagebrush phlox	Native, Sage-grouse Preferred
Phlox hoodii	Spiny phlox	Native, Sage-grouse Preferred
Phlox longifolia	Longleaf phlox	Native, Sage-grouse Preferred
Physaria geyeri	Geyer's twinpod	Native
Taraxacum officinale	Common dandelion	Exotic, Sage-grouse Preferred
Zigadenus venenosus	Meadow deathcamas	Native
Annual Forbs		
Cerastium nutans	Nodding chickweed	Native
Ceratocephala testiculata	Curveseed butterwort	Exotic
Collinsia parviflora	Maiden blue eyed Mary	Native
Lepidium perfoliatum	Clasping pepperweed	Exotic
Microsteris gracilis	Slender phlox	Native, Sage-grouse Preferred
Shrubs		
Artemisia tridentada var. *wyomingensis*	Wyoming big sagebrush	Native

This list does not include all plants that can be found in the Cedar Canyon Field Allotment and is not exhaustive. Scientific and common names were derived from the USDA NRSC Plant Database (USDA and NRCS, 2013b).

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