

**United States Department of the Interior
Bureau of Land Management**

RANGELAND HEALTH ASSESSMENT AND EVALUATION REPORT

CEDAR BUTTE EASTSIDE ALLOTMENT #01001

October 16, 2015

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ALLOTMENT INFORMATION

Field Office: Jarbidge Field Office (JFO)

Name of Permittee: Ray Jackson

Allotment Name/Number: Cedar Butte Eastside (01001)

Date of Field Assessment: May 8, 2013

Stream Miles on Public Land (miles): 0

Table 1: Cedar Butte Eastside acres

Total Acres	BLM Acres	State Acres	Private Acres	Other Acres
5,127	5,087	0	40	0

Table 2: Assessment participants

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

CURRENT PERMITTED LIVESTOCK GRAZING USE

Total Active Use: 373 Animal Unit Months (AUMs)

Livestock Type: Cattle

Livestock Numbers: 62 Cattle

Season of Use: 04/16 to 10/15

Current Land Use Plan: 1987 Jarbidge Resource Management Plan (RMP)

Current Stocking Level: 13.6 Acres/AUM

ALLOTMENT PROFILE

The Cedar Butte Eastside Allotment is located approximately 6 miles south of Castleford, Idaho (Map 1). The elevation ranges from approximately 4,200 to 4,700 feet.

Climate

Climatic conditions in south central Idaho 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 Butte Eastside Allotment ranges from 8 to 12 inches. The bulk of the 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. The RAWS station is located in an 8 to 12 inch precipitation zone approximately seventeen miles west of the Cedar Butte Eastside Allotment. The thirty-year annual average precipitation at the Horse Butte RAWS station is 8.1". Annual precipitation at the station was below the thirty-year average during five of the ten years, 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 years. Moisture exceeded the thirty-year average by at least two inches in 2005 (14.12), 2006 (10.1"), and 2010 (10.46).

The thirty- year average for rain that fell during the growing season (March–June) is 4". 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") and 2013 (1.48"). Plant growth was likely enhanced in 2005 and 2011 due to higher amounts of spring rainfall (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

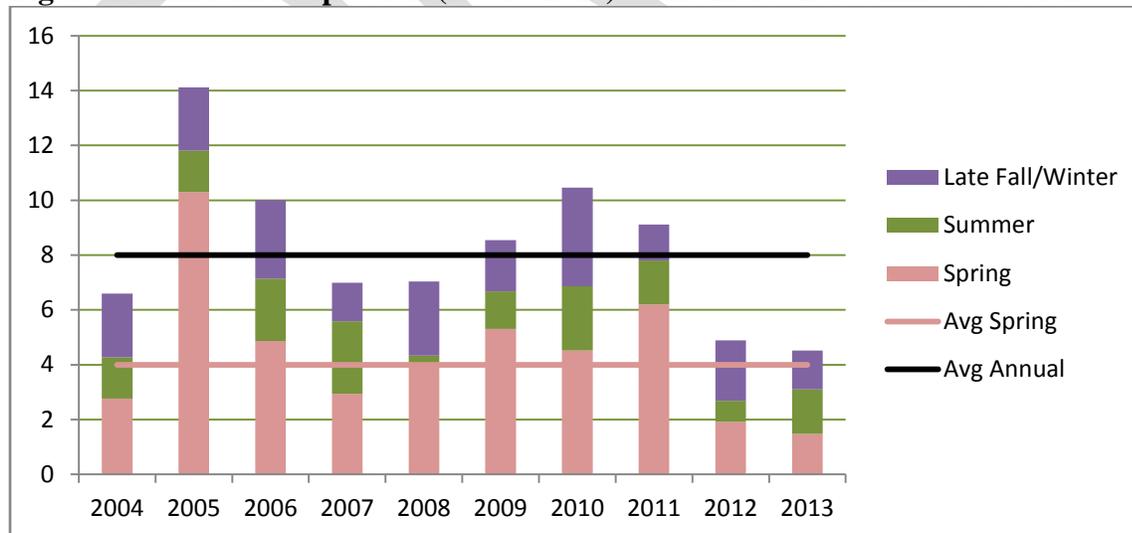
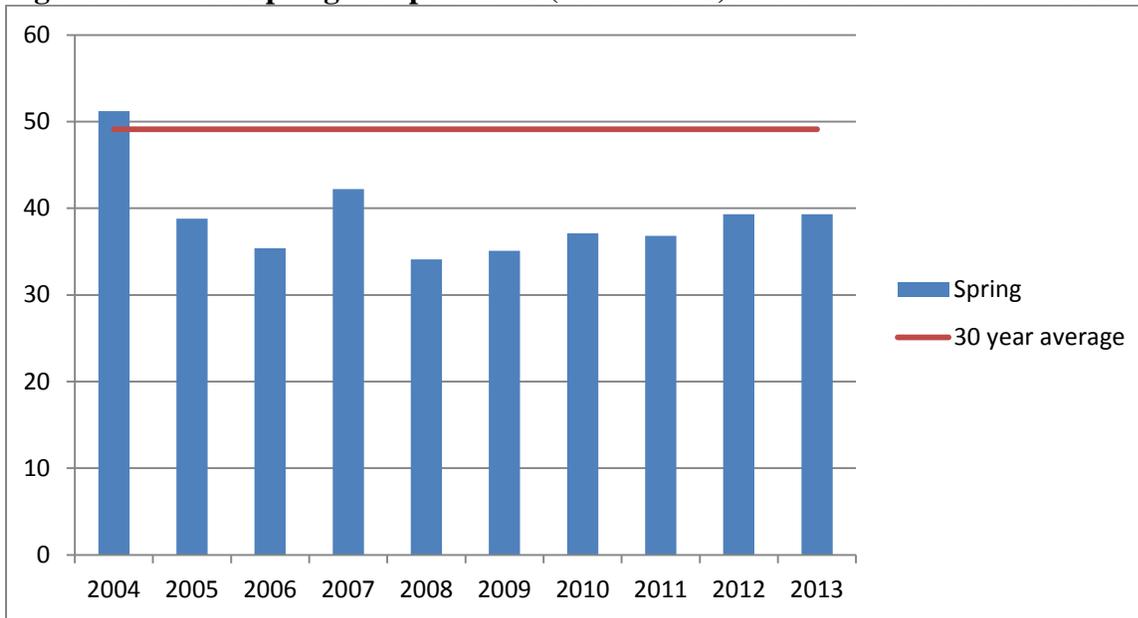


Figure 2: Annual Spring Temperatures (2004 – 2013) at the Horse Butte RAWs Station



Grazing Management

The Cedar Butte Eastside Allotment includes three pastures (North, South, and House); however, only the North and South receive regularly scheduled grazing use (Table 3). The House Pasture is separated from the North and South Pastures by a few miles. The north, west, and south borders of the allotment are completely fenced; however, some natural barriers (i.e. rim rocks, etc.) are used as pasture/allotment boundaries along the east border adjacent to Salmon Falls Creek (Map 2).

Livestock water is provided by two small reservoirs (one in each pasture) that exist within the allotment which were constructed for the purpose of providing livestock water. The reservoir receives water via waste water ditches from adjacent private cultivated land. Over the years most of the irrigation systems on adjacent private agricultural land have been upgraded to closed systems (sprinklers/pivots). Due to the conversion of irrigation systems, waste water is not supplied consistently.

Table 3. Acreage by pasture and ownership.

Allotment Name	Pasture Name	Public	State	Private	Total*
Cedar Butte Eastside	North	4,527	0	40	4,567
	South	313	0	0	313
	House	246	0	0	246
Allotment Total		5,086	0	0	5,126

*Total acres may not match the sum of individual ownership acres due to rounding numbers.

Currently, the Cedar Butte Eastside Allotment is subject to Chief U. S. District Judge B. Lynn Winmill's Decision and Order of February 26, 2009. Under the Order, the Bureau of Land Management (BLM) is directed to adjust livestock grazing to maintain and enhance sage-grouse, pygmy rabbit, and slickspot peppergrass habitat. The Cedar Butte Eastside Allotment is managed

as a non-priority allotment under the court order due to the limited suitable sage-grouse habitat in the allotment. The current grazing permit has active use of 373 Animal Unit Months (AUMs). Grazing use typically occurs from April through December.

A summary of actual use and utilization in the Cedar Butte Eastside Allotment from 2004 to 2013 is shown in Table 1. Utilization has been measured on crested wheatgrass (*Agropyron cristatum*) and Sandberg bluegrass (*Poa secunda*) (Table 4). Utilization measurements on Sandberg’s bluegrass during winter months can result in inconsistent measurements due to high amount of biomass loss to natural disarticulation from mechanical damage from wind, snow, and decomposition. Because of this, the JFO ceased monitoring use of Sandberg bluegrass during winter use periods. Utilization data was collected by the Height-Weight Method (Cooperative Extension Service et al., 1999). Locations of key utilization sites are shown on Map 2.

Up until 2004, when a Federal District Court order disallowed Temporary Non-Renewable (TNR) authorizations, TNR had been authorized through annual National Environmental Policy Act (NEPA) analysis and decisions. Since 2005, Congressional Appropriations language has allowed the JFO to annually authorize up to the allotment’s highest TNR authorization between 1997 and 2003, which is 138 AUMs, when forage is available. All actual use values shown in Table 4 that exceed the active use (373 AUMs) are TNR AUMs. Since 2004, actual use data within the Cedar Butte Eastside Allotment, including active use and TNR, has averaged 526 AUMs (excluding the years that actual use was not submitted). Actual use by pasture is not available.

There are no livestock trailing authorizations within this allotment.

Table 4: Actual Use (AUMs) and Utilization Summary

Year	Number and Class	In Date	Out Date	AUMs Used [^]	Utilization	
					Sandberg bluegrass	Crested Wheatgrass
2004	No data			423*	-	-
2005	No data			505*	22%- North Pasture	43%- North Pasture 11%- South Pasture
2006	61 Cattle	04/01	12/23	535	27%-North Pasture 30%- South Pasture	45%- North Pasture 35%- South Pasture
2007	No data			511*	-	31%- North Pasture 6%- South Pasture
2008	61 Cattle	04/16	12/22	504	11%- North Pasture 9%- South Pasture	21%- North Pasture
2009	61 Cattle	04/01	01/15	582	-	42%- North Pasture
2010	61 Cattle 21 Cattle	04/01 11/28	11/27 12/15	495	-	26%-North Pasture 19%- South Pasture
2011	61 Cattle	04/01	12/23	535	-	14%-North Pasture 13%- South Pasture
2012	61 Cattle	04/01	12/22	536	-	-
2013	61 Cattle	04/02	12/03	494	-	28%- North Pasture 18%- South Pasture

*Based off of Range Administration System billing, actual use form was not submitted by permittee

Vegetation

Vegetation in the Cedar Butte Eastside 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, Table 5). 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 shrublands 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).

Plant communities within the Cedar Butte Eastside Allotment have been modified from its original state. In the 1960s, approximately 640 acres within the North Pasture was seeded with crested wheatgrass as part of a project known as the Sill Seeding. Areas of sagebrush were sprayed with herbicide, plowed, and then seeded with crested wheatgrass/Siberian wheatgrass. The 1981 Lilly Grade Fire burned much of the allotment, it is believed that crested wheatgrass was seeded following the fire; however, this could not be verified in BLM records. Following the 1985 Lilly Grade Fire, northern portions of the North Pasture were seeded with Siberian wheatgrass (*Agropyron fragile*), western wheatgrass (*Pascopyrum smithii*), ‘Nomad’ alfalfa (*Medicago sativa media*) and fourwing saltbush. Since that time, sagebrush has increased and the allotment is a shrub steppe plant community. The 2011 Roseworth Fire burned within the North Pasture of the allotment (Map 3) and 944 acres were subsequently drill seeded with ‘Anatone’ bluebunch wheatgrass (*Pseudoroegneria spicata* spp. *spicata*), ‘Vavilov’ Siberian wheatgrass, ‘Appar Lewis flax (*Linum perenne*), and ‘Ladak’ alfalfa (*Medicago sativa*).

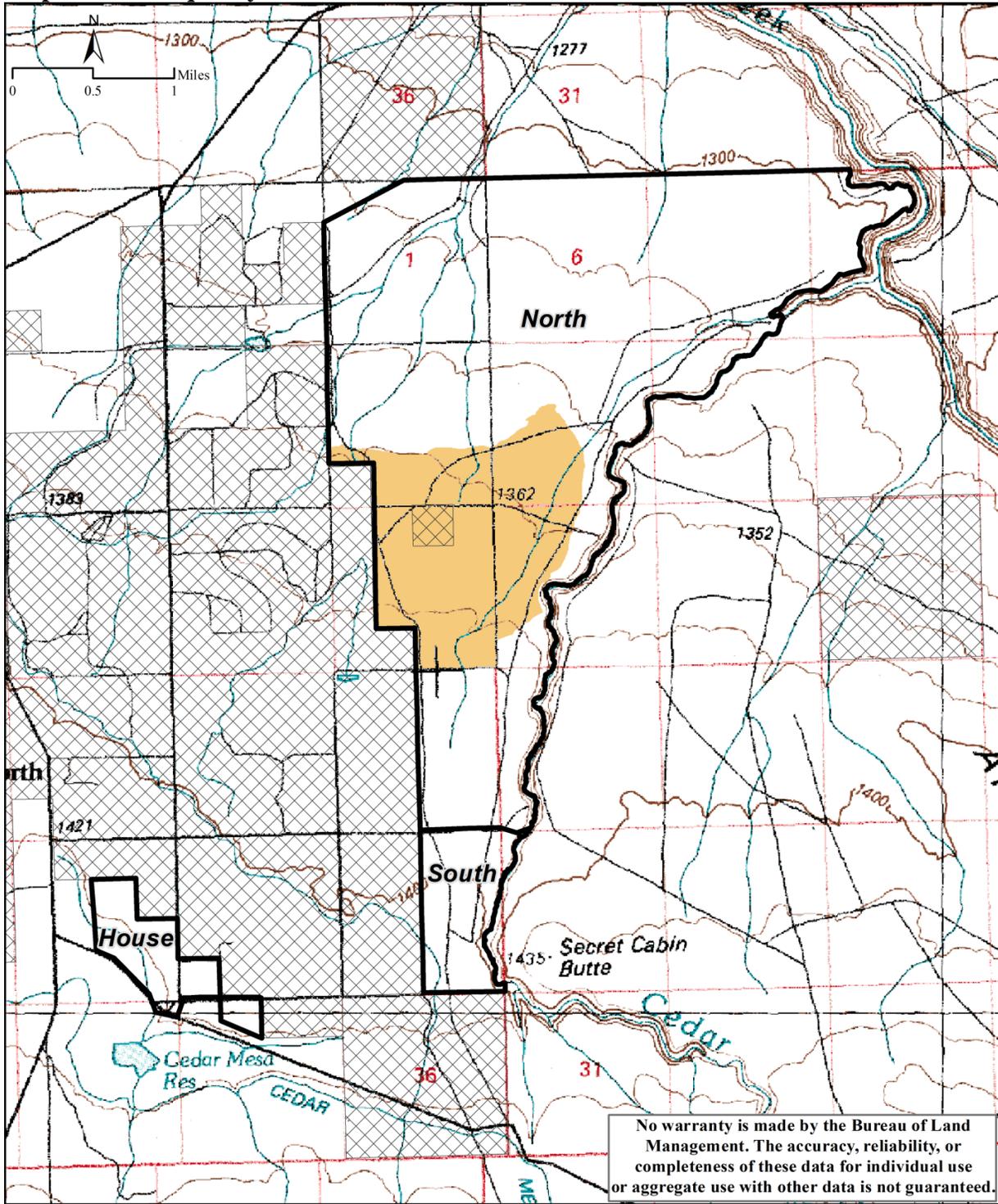
Table 5. Vegetation Community in Acres and Percentage by Pasture

Vegetation Community	North Pasture (4,527 acres)	South Pasture (313 acres)	House Pasture (246 acres)
Annual	17 (<1%)	0 (0%)	58 (24%)
Barren	3 (<1%)	0 (0%)	3 (1%)
Bluebunch wheatgrass	938 (21%)	0 (0%)	0 (0%)
Breaks	116 (3%)	31 (10%)	0 (0%)
Crested wheatgrass	7 (<1%)	0 (0%)	0 (0%)
Fourwing/Crested	238 (5%)	0 (0%)	0 (0%)
Rabbitbrush/Annual	25 (<1%)	0 (0%)	0 (0%)

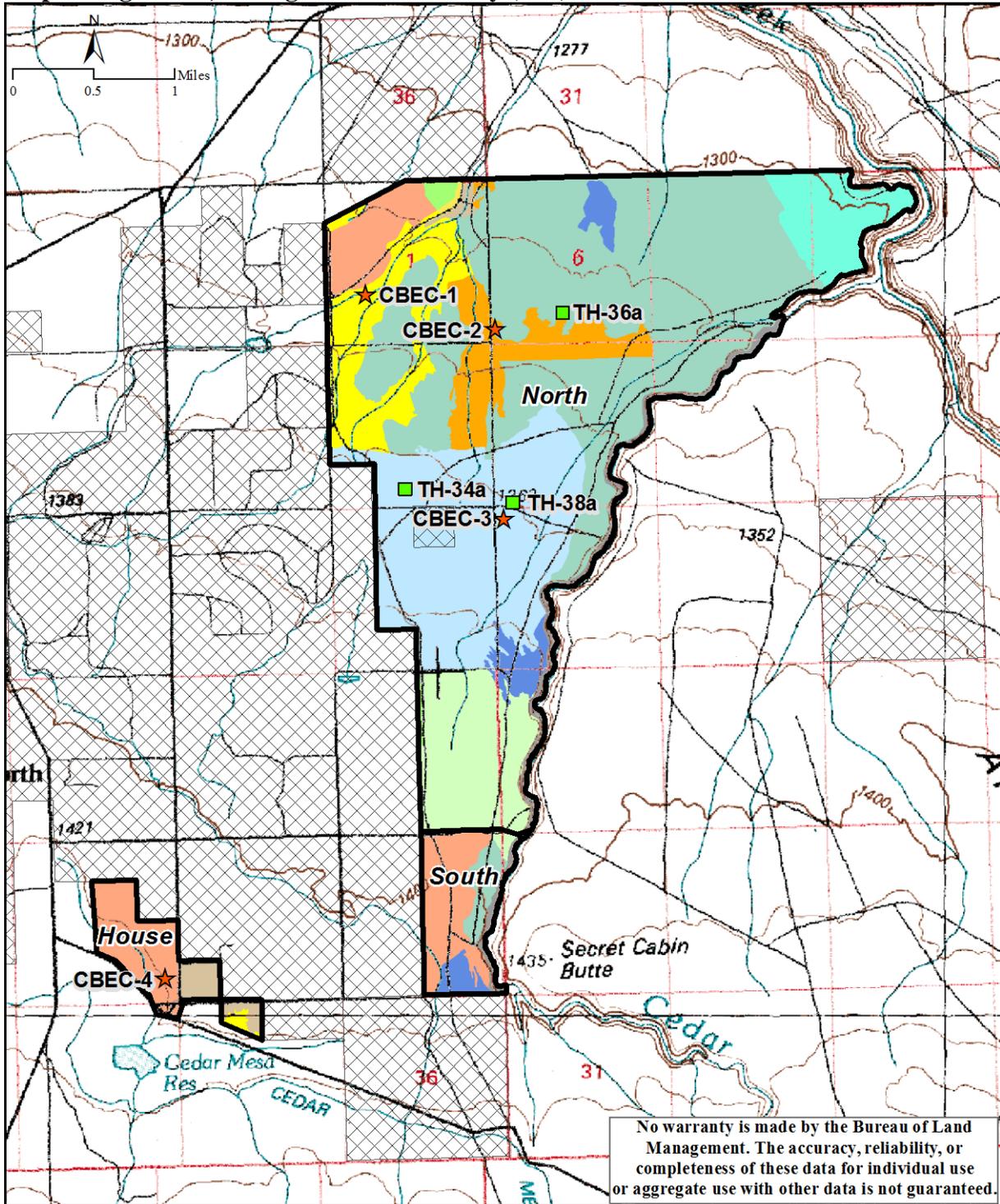
Vegetation Community	North Pasture (4,527 acres)	South Pasture (313 acres)	House Pasture (246 acres)
Rabbitbrush/Bluegrass	401 (9%)	12 (4%)	0 (0%)
Rabbitbrush/Crested	284 (6%)	0 (0%)	0 (0%)
Wyoming Sage/Annual	357 (8%)	0 (0%)	11 (5%)
Wyoming Sage/Bluegrass	1,873 (41%)	53 (17%)	0 (0%)
Wyoming Sage/Crested	158 (4%)	184 (58%)	174 (71%)
Wyoming Sage/Thurbers	107 (2%)	34 (11%)	0 (0%)
N/A	2 (<1%)	0 (0%)	1 (<1%)

* Vegetation community is listed by dominate cover species. Numerous other plant species, both native and non-native, are present in the communities.

Map 3. Fire Frequency



Map 4. Vegetation, Ecological Site Inventory (ESI) & Production and/or Cover Plots



In 2004 the JFO ID team conducted Interpreting Indicators of Rangeland Health (IIRH) field evaluations of the Cedar Butte Eastside Allotment, but an evaluation to determine if the allotment was meeting the Idaho Standards for Rangeland Health was not completed. The field data for the 2004 IIRH was completed in 2003 at four sites within the allotment, and all four sites have production data (Table 6) and three of the sites included cover data (Table 12). One of the sites (CBEC-3) was burned in the 2011 Roseworth Fire and was subsequently drill seeded, so it is not included, as the data is no longer applicable. Data from the site that burned and was drill seeded are available for review at the JFO.

Three Ecological Site Inventory (ESI) sites are located in the North Pasture (Map 3), and all three were read in 2006 (TH-34a, TH-36a, TH-38a). Two of the ESI sites (TH-34a, TH-38a) were burned in the 2011 Roseworth Fire and subsequently drill seeded. Therefore production and cover data from 2006 is not included for TH-34a and TH-38a, because data is no longer current as a result of the recent drill seeding. Data from the sites that burned and were drill seeded are available for review at the JFO. Vegetative production data and cover data recorded during the 2006 ESI for the unburned site (TH-36a) is summarized in Table 6 and Table 12. The majority of the areas within the pastures have been seeded, so crested wheatgrass makes up the majority of the production.

No trend sites have been established in this allotment. Due to differences in sampling locations and methodology (e.g. number of transects per site and number of points per transect) among the 2002 (Step Point Method; BLM, 1996) data, 2006 ESI data, 2012 Habitat Assessment Framework (HAF) data and the 2013 (Step Point Method; BLM, 1996) data, statistical tests cannot be used to analyze vegetative cover across years. However, the data can be used to describe general similarities or differences in vegetation between years or locations within the allotment.

Table 6. Summary of 2006 and 2003 ESI Production Data (Total Dry Weight)

Vegetation Class	Species	Site				
		Loamy 8-12 ARTRW8/PSSP-ACTH7 ESD	2006-TH-36a	2003-CBEC-1	2003-CBEC-2	2003-CBEC-4
Perennial Grasses	Squirreltail	25-45	0	0	40	0
	Crested wheatgrass	-	331.9	244	1	341
	Sandberg bluegrass	25-45	138.9	44	79	188
	Thurbers needlegrass	8-180	0	0	0	0
	Bluebunch wheatgrass	100-225	0	0	0	0
	Thickspike wheatgrass	0-45	0	0	0	0
Annual Grasses	Cheatgrass	-	16.1	3	8	1

Vegetation Class	Species	Site					
		Loamy 8-12 ARTRW8/PSSP- ACTH7 ESD	2006- TH- 36a	2003- CBEC- 1	2003- CBEC- 2	2003- CBEC-4	
			North Pasture			House Pasture	
Perennial Forbs	Longleaf phlox	0-5	0	0	0	0	
	Mourning milkvetch	0-5	0	0	0	0	
	Purple milkvetch	0-5	0	0	0	0	
	Lupine	0-5	0	0	0	0	
	Longleaf phlox	0-5	0	0	1	0	
Annual Forbs	<i>Bur buttercup</i>	-	36.6	0	0	0	
	<i>Clasping pepperweed</i>	-	24	0	0	0	
	<i>Russian thistle</i>	-	0.9	0	0	0	
Shrubs	<i>Wyoming big sagebrush</i>	100-225	44.8	23	151	233	
	<i>Yellow rabbitbrush</i>	0-10	0	0	0	0	
TOTAL		400 - 900	460.9	314	280	763	

Noxious Weeds

The State of Idaho has listed 65 plant species as noxious weeds. Four are known to occur in the Cedar Butte Eastside Allotment: Canada thistle (*Cirsium arvense*), scotch thistle (*Onopordum acanthium*), whitetop (*Cardaria draba*) and diffuse knapweed (*Centaurea diffusa*). These noxious weeds were observed either at the time of the evaluation or during previous visits to the allotment, and were noted to occur along the western boundary of the allotment and along the drainage ditch and reservoir and appear to be associated with the adjacent private land. Currently there are no records that indicate these noxious weeds have been treated chemically. Treatment goals are to reduce noxious weeds to where they will not have a significant economic or environmental impact and/or to eradicate them completely. The BLM also works to prevent the establishment of new species and infestations in areas where they presently do not occur.

Many of the known noxious weed infestations are found and treated through the TFD Emergency Stabilization and Rehabilitation (ESR) program. Approved ESR plans allow three year funding for weed control and play a vital part in the success or failure of newly seeded areas. Weed personnel grid the burned areas and treat noxious weed infestations in order to allow the desired vegetation time to reestablish. Crews also treat road corridors throughout the field office which helps prevent the spread of weeds from vehicles transporting weed seeds to new areas or sites recovering from wildfire. Types of weed treatments done in the TFD include biological and mechanical control methods, as well as the use of herbicides.

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 Butte Eastside Allotment due to variances in the land type and geographical area. Of the eight Idaho Standards for Rangeland Health, the following three standards are applicable to the Cedar Butte Eastside Allotment.

- **Standard 1** – Watersheds provide for the proper infiltration, retention, and release of water appropriate to soil type, hydrologic cycling, and energy flow.
- **Standard 5** – 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.
- **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, 4, and 6 do not apply to the Cedar Butte Eastside Allotment*

Table 7: Applicable Standards by Pasture.

Standard	Pastures
1	All Pastures
2	Not Applicable
3	Not Applicable
4	Not Applicable.
5	All Pastures
6	Not Applicable
7	North and South Pastures
8	All Pastures

An interdisciplinary (ID) team conducted IIRH field evaluations at two sites representative of the Cedar Butte Eastside Allotment during May of 2013. The North and South Pastures each contained one site. The sites were located in areas of seeded non-native plant species. Of the two sites at which IIRH evaluations were conducted, one was a HAF site and one was a key site (Map 5).

IIRH field evaluation sites were selected using a predetermined process. Sites are typically located in vegetation communities that most represent the allotment. 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.

Seventeen indicators of rangeland health (Table 8) were used to evaluate three rangeland health attributes (Table 9): Soil and Site Stability, Hydrologic Function, and Biotic Integrity (TR 1734-6). An IIRH sheet was completed at each site, photographs were taken, 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.

Cover transects to determine vegetative cover were recorded at one of the IIRH sites 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. Cover data was collected at the IIRH site in the South Pasture following the step-point method (BLM, 1996).

In addition to evaluating rangeland health indicators at each of the IIRH sites, the ID Team also examined other areas to ensure evaluation sites were representative of the vegetation communities throughout the allotment. Data collected at the evaluation sites were compared to the Natural Resource Conservation Service's (NRCS) ESD reference sheet for the soil types and potential vegetation communities in the Cedar Butte Eastside Allotment. All IIRH sites within the allotment occurred in the Loamy 8-12" Wyoming Big Sagebrush/Bluebunch wheatgrass/Thurber's needlegrass ecological site. The ESD reference sheet describes the expected condition of the ecological site in state 1, phase A of the reference state. The reference phase plant community is expected to have Wyoming big sagebrush (*Artemisia tridentata ssp. wyomingensis*) in the overstory with bluebunch wheatgrass (*Pseudoroegneria spicata*) and Thurber's needlegrass (*Achnatherum thurberianum*) dominating the understory. Sandberg bluegrass (*Poa secunda*), squirreltail (*Elymus elymoides*), arrowleaf balsamroot (*Balsamorhiza sagittata*), and taper-tip hawksbeard (*Crepis acuminata*) should be sub-dominant species. A large variety of other grasses, forbs, and shrubs can occur in minor amounts. Natural fire frequency should be 50-70 years.

Indicator ratings for each IIRH site in the Cedar Butte Eastside Allotment are shown in Table 8. Rangeland health attributes ratings are shown in Table 9.

Map 5. Interpreting Indicators of Rangeland Health (IIRH) Sites

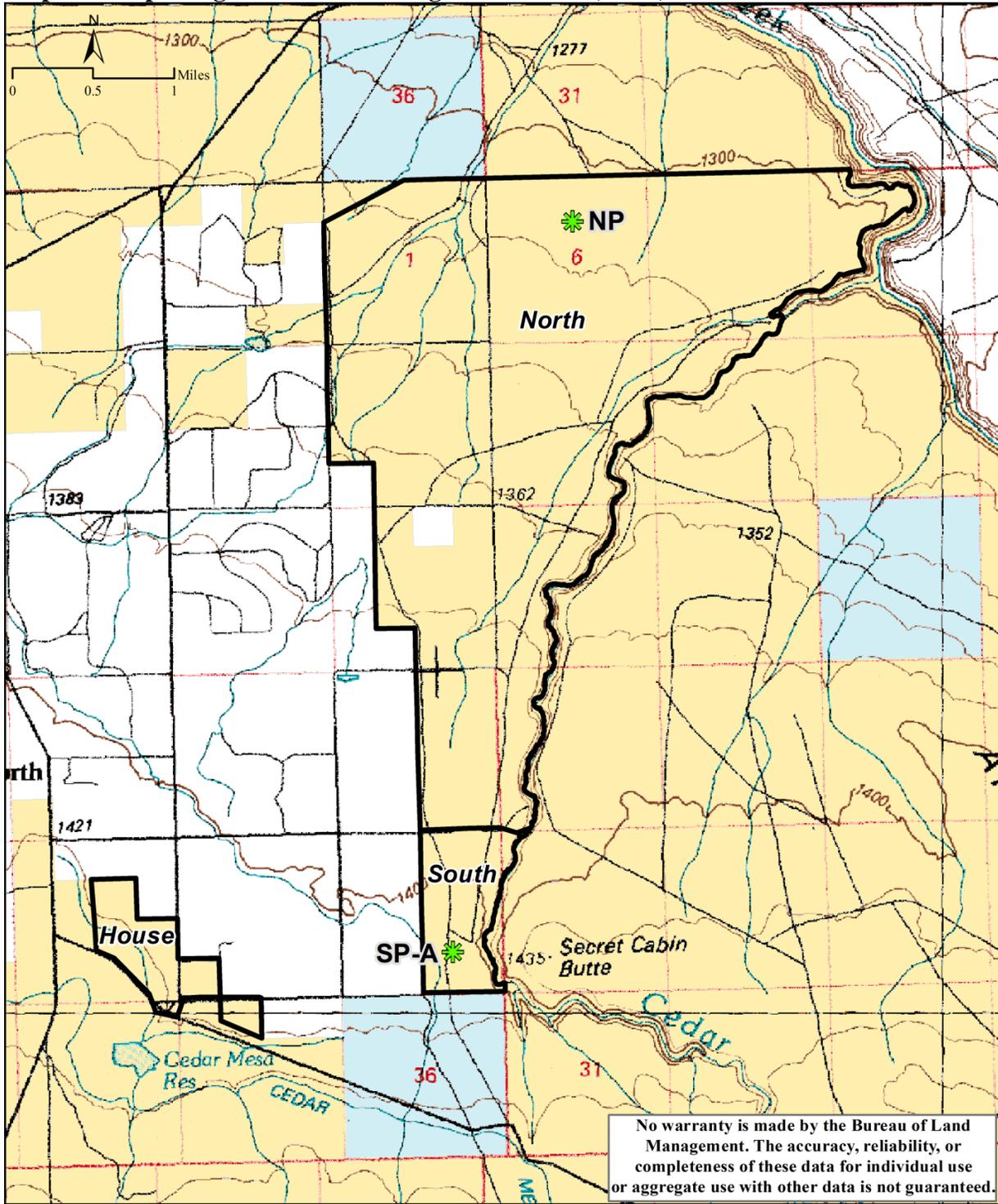


Table 8: Summary of 17 Rangeland Health Indicators

Indicators	Attributes	Degree of Departure from Ecological Site Description and/or Ecological Reference Area(s)				
	S = Soil & Site Stability H=Hydrologic Function B = Biotic Integrity	Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
1. Rills	S, H					NP, SP_A
2. Water-flow Patterns	S, H					NP, SP_A
3. Pedestals and/or terracettes	S, H					NP, SP_A
4. Bare ground	S, H					NP, SP_A
5. Gullies	S, H					NP, SP_A
6. Wind-scoured, blowouts, and/or deposition areas	S					NP, SP_A
7. Litter movement	S					NP, SP_A
8. Soil surface resistance to erosion	S, H, B					NP, SP_A
9. Soil surface loss or degradation	S, H, B					NP, SP_A
10. Plant community composition and distribution relative to infiltration	H					NP, SP_A
11. Compaction layer	S, H, B					NP, SP_A
12. Functional/structural groups	B			NP	SP_A	
13. Plant mortality/decadence	B					NP, SP_A
14. Litter amount	H, B		SP_A	NP		
15. Annual production	B					NP, SP_A
16. Invasive plants	B			SP_A		NP
17. Reproductive capability of perennial plants	B					NP, SP_A

NP = North Pasture IIRH Evaluation Site, SP_A = South Pasture IIRH Evaluation Site

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 8 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 9.

Table 9: Rangeland Health Attribute Rating by Site

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

NP = North Pasture IIRH Evaluation Site, SP_A = South Pasture IIRH Evaluation Site

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

Both IIRH sites were evaluated using the ESD (R011XY001ID) reference sheet for the Loamy 8-12” Wyoming Big Sagebrush/Bluebunch wheatgrass-Thurbers needlegrass ecological site (USDA and NRCS, 2013a). The reference sheet for this ESD indicates bare ground should range from 30 to 40%, litter cover should range from 5 to 10%, and soil stability test values should range from 4 to 6 (Scale of 1 to 6; Pellant et al., 2005). Litter percentage calculations used for rating indicator 14 include all litter, detached and standing, and includes all layers. While the ESD indicates that litter cover should range from 5 to 10%, foliar cover, data collected within the allotment show that the litter value is actually 32.5 to 54% (for all layers). Average percent bare ground recorded in the 2012 to 2013 cover data shows that bare ground is 12 to 13% of foliar cover. In addition, a soil stability test (Pellant et al., 2005) was completed in the allotment. The soil stability test from Cedar Butte Eastside Allotment (South Pasture) resulted in an average soil stability value of 5.2 which indicates adequate soil surface resistance to erosion.

Multiple soil series exist within the Cedar Butte Eastside Allotment and they are typically silt loams. The majority of the allotment is relatively flat, except for Salmon Falls Creek and the associated canyon along the eastern border. The Soil Survey Geographic (SSURGO) Database (USDA and NRCS, 2012) shows that 97% of the allotment has a moderate wind erosion hazard (there is no data for the other 3%). In addition, the soil survey shows that 91% of the allotment

has a high water erosion hazard and 6% has a medium water erosion hazard (there is no data for the other 3).

Although the soil survey shows potential for both wind and water erosion in this area, no indications of soil loss or active erosion were noted during the 2013 IIRH field visit. Adequate soil cover is present within the allotment to reduce potential erosion. Bare ground is generally low, with an abundance of vegetation and biological soil crusts throughout the majority of the allotment (Table 10).

Table 10. Top Layer Cover by Vegetation Class at IIRH sites

Vegetation Class	IIRH Site NP	IIRH Site SP_A
	North Pasture	South Pasture
Perennial Grasses	13.5%	46%
Annual Grasses	0%	10%
Annual Forbs	0%	8%
Shrubs	15.5%	2%
Biological Soil Crust	17.5%	2%
Bare Ground	13%	12%
Litter	40.5%	20%
Top Layer Grand TOTAL	100%	100%

While the amount of litter deviated from the reference condition in some areas, the ID Team determined that the litter amount was appropriate for site stability and ecological processes as shown by adequate soil moisture, as well as annual plant growth/production matching what is expected.

North Pasture

IIRH Site NP (Loamy 8-12")

Site NP is located in a seeded vegetation community where crested wheatgrass is the dominant deep-rooted perennial grass species (9% cover), and Wyoming big sagebrush is the dominant shrub species (15.5% cover). In addition, biological soil crusts comprise 17.5% of the cover (Table 10). The site is of relatively flat topography with a north aspect and has not been burned by wildfire in over 50 years.

The indicator for litter amount was rated as a moderate departure from the reference condition due to an increase in the amount of litter (32.5%) found at the site.

All other indicators related to the Soil and Site Stability and Hydrologic Function attributes were rated none to slight departure from the reference condition. Therefore, the Soil and Site Stability and Hydrologic Function attributes were each rated as none to slight departure.

South Pasture

IIRH Site SP_A (Loamy 8-12")

Site SP_A is located in a seeded vegetation community where crested wheatgrass is the dominant deep-rooted perennial grass species (40% cover), and Wyoming big sagebrush is the dominant shrub species (2% cover). In addition, biological soil crusts comprise 2% of the cover (Table 10). The site is of relatively flat topography with a north aspect and was burned by wildfire in the 1981 Lilly Grade Fire. The ID Team determined that this site is representative of the House Pasture as well.

The indicator for litter amount was rated as moderate to extreme departure from the reference condition due to an increase in the amount of litter (54%) found at the site. This site contains 10% cheatgrass which is also contributing to the increase in litter. A soil stability test (Pellant et al., 2005) was completed at the site and the soil stability value averaged 5.2 indicating adequate soil surface resistance to erosion.

Photo 1. Soil Profile at IIRH site SP_A on May 8, 2013.



All other indicators related to the Soil and Site Stability and Hydrologic Function attributes were rated none to slight departure from the reference condition. Therefore, the Soil and Site Stability and Hydrologic Function attributes were each rated as none to slight departure.

Allotment Summary for Standard 1 (Watersheds):

The litter amount indicator was rated as moderate to extreme departure at one site, and moderate departure at one site. Attributes of rangeland health related to Standard 1 (Soil and Site Stability and Hydrologic Function) were rated as none to slight departure for both sites (Table 9).

Evaluation of Standard 1

The amount of litter found within the allotment is higher than what is described in the ESD. However, the ID Team determined that the amount of litter was appropriate for site stability and ecological processes as shown by adequate soil moisture, as well as annual plant production matching what is expected.

The ID Team noted that deep-rooted perennial grasses, as well as shrubs were present within both pastures to distribute water deep into the soil profile.

Evaluation Finding – Allotment/watershed is:

- Meeting the Standard
- Not meeting the Standard, but making significant progress towards meeting
- Not meeting the Standard

Rationale for Evaluation Finding

Abundant perennial vegetation is present within the Cedar Butte Eastside Allotment to provide protection for site stability. Additionally, bare ground is lower than expected throughout the allotment.

Observations made by the ID Team during 2013 IIRH efforts, as well as cover data (Table 10) collected within the Cedar Butte Eastside Allotment indicate that ground cover (vegetation, litter, etc.) is sufficient for soil stability. Adequate vegetation and litter are present to protect the soil surface from erosion. Additionally, no signs of soil loss, or active pedestal formation, were noted in any other areas of the allotment. Moreover, other signs of accelerated erosion, such as active rills, water flow patterns, gullies, or other indications of soil erosion were not present within the allotment. Infiltration, retention, and release of water processes relative to soil, vegetation, climate and landform are providing for appropriate nutrient and hydrologic cycling and energy flow.

Shrubs, as well as abundant deep-rooted perennial bunchgrasses, are present to carry soil moisture deep into the soil profile. Shrubs trap snow and have a taproot that penetrates deep into the soil profile; therefore, the lack of shrubs has the potential to affect infiltration and retention of soil moisture. In addition, perennial grasses appeared vigorous and were producing seedheads, suggesting that the reduction of shrub cover is not negatively affecting infiltration to the point of reducing plant vigor or reproductive capability.

The litter amount indicator ratings deviated from the reference condition found in the ESD at the site. However, litter is providing cover for site protection, replenishing nutrients, and does not appear to be negatively affecting ecological processes.

Therefore, all pastures within the Cedar Butte Eastside Allotment are 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

Allotment Summary for Standard 2 (Riparian Areas and Wetlands)

Naturally occurring riparian vegetation, springs or wetlands are not present within any of the three pastures within the allotment (i.e., North Pasture, South Pasture, House Pasture). Riparian Proper Functioning Condition (PFC) assessments (BLM 1998) have not been conducted within the allotment as no naturally occurring riparian vegetation is present due to the ephemeral flow regimes for the streams within the allotment.

The northeast corner of the North Pasture of the allotment is adjacent to Salmon Falls Creek, but livestock access to the stream and riparian area are precluded by topography. The allotment is on the elevated plateau adjacent to Salmon Falls Creek. Salmon Falls Creek is adjacent to but not within the allotment boundary and is not accessible to livestock from the allotment. Therefore, Standard 2 does not apply to the portion of Salmon Falls Creek within the North Pasture.

Cedar Creek is adjacent to the eastern boundary of the North and South Pastures of the allotment. Livestock may access Cedar Creek in several locations, but steep topography along this stream limits livestock access to a majority of Cedar Creek. 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) with a diversion and siphon which remove all available surface water released from the reservoir. Due to the year-round dewatering of Cedar Creek below the diversion, there is not sufficient surface water to support obligate wetland vegetation species for Cedar Creek within the allotment. Vegetation along the stream is primarily composed of upland species. Therefore, Standard 2 does not apply to the portions of Cedar Creek within the North and South pastures of the allotment.

One small reservoir exists within the allotment and was constructed for the purpose of providing livestock water in the North Pasture. The reservoirs receive agricultural water via a drainage connected to the Cedar Mesa canal system. Riparian vegetation [Baltic rush (*Juncus baliticus*), speedwell (*Veronica* spp.), willow-leaf dock (*Rumex salicifolius*), willow herb (*Epilobium* spp.)] is present along the drainage. The extra water allows clover (*Trifolium* spp.), Kentucky bluegrass (*Poa pratensis*), dandelion (*Taraxacum officinale*), and yarrow (*Achillea millefolium*) to be present. Riparian vegetation is generally absent at the pond. Canada thistle (*Cirsium arvense*) and bull thistle (*Cirsium vulgare*) are scattered along in the wetland. As a result of the wetland being artificially created, Standard 2 does not apply to the small reservoir in the North Pasture of the allotment.

The Cedar Mesa Canal runs through the House Pasture for approximately 0.6 mile. Water is present in the canal from April into October annually. The canal is operated and maintained as a conveyance system for irrigation water and does exhibit riparian and wetland characteristics.

Because the Cedar Mesa Canal is artificially maintained by the irrigation canal company, Standard 2 does not apply to the House Pasture of the allotment.

Standard 3 (Stream Channel/Floodplain)

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

See additional rationale under Standard 2. Streamflow is artificially regulated and prevents floodplains and/or stream channels from functioning naturally. Therefore, 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.

X Standard Doesn't Apply

Although vegetation cover data collected during the IIRH field visits include native plant species (Table 11), the JFO Interdisciplinary Team determined that the Cedar Butte Eastside Allotment should be assessed as a seeded plant community rather than native plant community due to the majority of the allotment having been seeded in the past.

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.

Rangeland Health Assessment

Standard 5 applies to the entire Cedar Butte Eastside Allotment; each pasture in the allotment has been altered to varying degrees by seedings. In the 1960s, approximately 640 acres within the North Pasture was seeded with crested wheatgrass as part of a project known as the Sill Seeding. Areas of sagebrush were sprayed, plowed, and then seeded with crested wheatgrass/Siberian wheatgrass. The 1981 Lilly Grade Fire burned most of the allotment, it is believed that crested wheatgrass was seeded following the fire; however, this could not be verified in BLM records. Following the 1985 Lilly Grade Fire, northern portions of the North Pasture were seeded with Siberian wheatgrass, western wheatgrass, 'Nomad' alfalfa and fourwing saltbush. Since that time, sagebrush has increased and the allotment is a shrub steppe plant community. The 2011 Roseworth Fire burned 944 acres within the North Pasture of the allotment and was subsequently drill seeded with 'Anatone' bluebunch wheatgrass, 'Vavilov' Siberian wheatgrass, 'Appar Lewis flax, and 'Ladak' alfalfa.

As a result of these treatments, the allotment is currently vegetated by both native and non-native perennial grass species (Table 5, Map 4). Not all of the seeded areas across the allotment are currently mapped as seeding (Crested wheatgrass, Wyoming sagebrush/crested wheatgrass), more acres within the two pastures have been seeded than what is shown on the vegetation community map (Map 4). Some of the seeded areas are mapped as native (Wyoming big sagebrush/Sandberg bluegrass, Wyoming big sagebrush/Thurbers needlegrass) rather than seeded because Sandberg bluegrass comprises the dominant foliar cover.

Both of the IIRH evaluation sites (NP and SP_A) within the North and South Pastures of the Cedar Butte Eastside Allotment are located within seeded plant communities, as shown by vegetation cover data collected in 2012 and 2013 (Table 11).

Vegetative cover data were also recorded in other areas of the Cedar Butte Eastside Allotment in 2012 and 2013 HAF and 2002 (production and cover) and 2006 ESI data. This is used as additional information to provide greater context to the existing conditions in the allotment. The 2013 (cover) and 2012 HAF data collected at the IIRH sites are summarized in Table 11. Additional cover data is summarized in Table 12. Vegetative cover data was collected at multiple layers; however, Tables 11 and 12 display only the top layer.

Table 11: Cover data collected in 2012 and 2013 at IIRH sites

Vegetation Class	Species	% Cover	
		IIRH/HAF site NP (2012)	IIRH site SP_A (2013)
Perennial Grasses	<i>Sandberg bluegrass</i>	4.5%	6%
	<i>Crested wheatgrass</i>	9%	40%
Annual Grasses	<i>Cheatgrass</i>	0%	10%
Annual Forbs	<i>Bur buttercup</i>	0%	4%
	<i>Tumble mustard</i>	0%	2%
	<i>Blue eyed mary</i>	0%	2%
Shrubs	<i>Wyoming sagebrush</i>	15.5%	2%
Vegetation Total		29%	66%
Other Cover	<i>Bare Ground</i>	13%	12%
	<i>Biotic Crust</i>	17.5%	2%
	<i>Litter in Contact with Soil</i>	2.5%	16%
	<i>Litter Standing</i>	37.5%	4%
	<i>Persistent Litter</i>	0.5%	0%
Grand Total		100%	100%

** Other plant species not recorded during cover transects but observed at the 2012 and 2013 sites are listed in Appendix B.

Table 12. Percent Cover from Additional Samplings within the Allotment

Vegetation Class	Species	HAF site SP (2012)	HAF Site HP (2013)	ESI Site TH-36a (2006)	CBEC-1 (2002)	CBEC-2 (2002)	Roseworth ESR- 004 (2013)	Roseworth ESR- 005 (2013)

		South Pasture	House Pasture	North Pasture			North Pasture (within 2011 Roseworth Fire drill seeding)	
Perennial Grasses	Sandberg's bluegrass	22%	9%	28%	9%	12%	5.3%	24%
	Crested wheatgrass	0.5%	22%	30.7%	17%	0%	14.6%	5.3%
	Squirreltail	0.5%	0%	0%	0%	3%	5.3%	4%
	Bluebunch wheatgrass	0%	0%	0%	0%	0%	6.6%	1.3%
Annual Grasses	Cheatgrass	1.5%	0%	7.3%	4%	3%	28%	28%
Perennial Forbs	Spiny phlox	0%	0%	0%	0%	1%	0%	0%
	Carpet phlox	1%	0%	0%	0%	0%	0%	0%
	Lewis flax	0%	0%	0%	0%	0%	2.6%	0%
Annual Forbs	Tumble mustard	0%	0%	2%	0%	0%	0%	2.6%
	Bur buttercup	0%	0%	0.7%	0%	0%	0%	0%
	Clasping pepperweed	0%	0%	2.7%	0%	0%	0%	0%
	Yellow salsify	0%	0%	0%	0%	0%	0%	1.3%
Shrubs	Fourwing saltbrush	0%	0%	0%	2%	0%	0%	0%
	Rubber rabbitbrush	0%	0%	0%	1%	0%	0%	0%
	Wyoming big sagebrush	20.5%	14%	4%	6%	26%	0%	0%
Vegetation Total		46%	45%	75.4%	39%	45%	63.7%	66.5%
Other Cover	Bare Ground	33%	17%	5.3%	23%	24%	14.6%	8%
	Biotic Crust	9.5%	12%	4%	0%	18%	0%	0%
	Litter in contact with soil	6.5%	4%	13.3%	35%	9%	22.6%	25.3%
	Litter standing	3.5%	21%	2%	3%	4%	0%	0%
	Persistent Litter	0.5%	1%	0%	0%	0%	0%	0%
	Rock	1%	0%	0%	0%	0%	0%	0%
Grand Total		100%	100%	100%	100%	100%	99.6%	99.8%

North Pasture

IIRH Site NP (Loamy 8-12")

Site NP is located in a seeded vegetation community where crested wheatgrass is the dominant deep-rooted perennial grass species (9% cover), and Wyoming big sagebrush is the dominant shrub species (15.5% cover). In addition, biological soil crusts comprise 17.5% of the cover (Table 11). The site is of relatively flat topography with a north aspect and has not been burned by wildfire in over 50 years.

The indicator for litter amount was rated as a moderate departure from the reference condition due to an increase in the amount of litter (32.5%) found at the site.

The 2013 HAF data and IIRH field notes indicate that perennial forb species and large deep-rooted perennial were of low abundance and diversity. Because the abundance of perennial forb species and deep-rooted perennial bunchgrasses was lower than expected, the functional/structural group indicator was rated at a moderate departure from reference condition.

Cheatgrass was not recorded in the cover transect and was not noted to be at the site, and curvseed butterwort was noted to be present only at low levels; therefore, the indicator for invasive plants was rated a none to slight departure from reference condition.

All indicators related to the Biotic Integrity attribute other than Functional/Structural Groups and Litter Amount, were rated none to slight. The Biotic Integrity attribute was rated slight to moderate departure from the reference condition due to the forbs and deep-rooted bunchgrasses being reduced.

South Pasture

IIRH Site SP_A (Loamy 8-12")

Site SP_A is located in a seeded vegetation community where crested wheatgrass is the dominant deep-rooted perennial grass species (40% cover), and Wyoming big sagebrush is the dominant shrub species (2% cover). In addition, biological soil crusts comprise 2% of the cover (Table 11). The site is of relatively flat topography with a north aspect and was burned by wildfire in the 1981 Lilly Grade Fire. The ID Team determined that this site was also representative of the House Pasture.

The indicator for litter amount was rated as moderate to extreme departure from the reference condition due to an increase in the amount of litter (54%) found at the site.

The 2013 HAF data and IIRH field notes indicate that perennial forb species and shrubs were of low abundance and diversity. Because the abundance of perennial forb species and shrubs was lower than expected, the functional/structural group indicator was rated at a slight to moderate departure from reference condition.

Cheatgrass was recorded at 10% of cover and curvseed butterwort was recorded at 4% cover. Therefore, the indicator for invasive plants was rated a moderate departure from the reference condition.

All indicators related to the Biotic Integrity attribute other than Functional/Structural Groups, Litter Amount, and Invasive Plants were rated none to slight. The Biotic Integrity attribute was rated slight to moderate departure from the reference condition due to the forbs being reduced in combination with cheatgrass being found in some disturbed areas.

Allotment Summary for Standard 5 (Seedings):

The ID Team rated the functional/structural group indicator as slight to moderate departure from reference condition at site SP_A and a moderate departure at NP. Invasive plants were rated at a moderate departure at site SP_A. The litter amount indicator was rated moderate to extreme at SP_A, and moderate at NP.

With this, the Biotic Integrity attribute was rated as a slight to moderate departure from reference condition at both NP and SP_A (Table 9).

Evaluation of Standard 5

The 2013 IIRH field notes, as well as the cover data, indicate that throughout both the North and South Pastures crested wheatgrass dominates overall cover of deep-rooted perennial grass species. Sagebrush was present at each site and ranged from 2 to 15.5% of cover. The North Pasture site (NP) was rated in the moderate category and the South Pasture site (SP_A) was rated slight to moderate departure for the functional/structural group indicator. This was due to the overall perennial forb component either missing or greatly reduced in both pastures and in the North Pasture large perennial bunchgrasses were also reduced compared to the reference condition. Throughout the South Pasture, overall shrub cover is reduced.

The invasive species indicator was rated none to slight in the North Pasture (NP) site, and no invasive species were recorded in the cover transect. Within the South Pasture, site SP_A was rated as moderate departure because cheatgrass made up 10% of the cover was scattered throughout the site. Other invasive species and noxious weeds such as Canada thistle (*Cirsium arvense*), bull thistle (*Cirsium vulgare*), scotch thistle (*Onopordum acanthium*), Russian thistle (*Salsola kali*), and diffuse knapweed (*Centaurea diffusa*) were noted in the IIRH field notes to occur along the western boundary of the allotment in the North Pasture and along the drainage ditch and reservoir and appear to be associated with the adjacent private land.

One site (SP_A) rated in the moderate to extreme category for litter amount because the litter amount was higher than expected based on the reference condition, with 54%. The litter was noted in the IIRH field notes to be mainly composed of crested wheatgrass litter. The pasture's plant community is creating substantially more litter compared to the reference site, which is expected with a seeded plant community that is dominated by larger perennial bunchgrasses. The North Pasture (NP) site was rated moderate departure.

The Biotic Integrity Attribute was rated as a slight to moderate departure from the reference condition at both of the sites.

Evaluation Finding – North Pasture is:

- Meeting the Standard
- Not meeting the Standard, but making significant progress towards meeting
- Not meeting the Standard

Rationale for Evaluation Finding

The 2013 IIRH field notes, as well as the 2012 HAF cover data, indicate that perennial forb species were of low abundance and diversity across the North Pasture. Cover of perennial forbs was 0 to 1% across the cover transects collected in 2002, however none were present within the transects collected in 2006 or 2012 (Tables 11 and 12). One perennial forb (Lewis flax) was 2.6% cover, but was within the area drill seeded following the 2011 Roseworth Fire (Table 12). Deep-rooted perennial grasses had a reduced relative dominance at the IIRH site in 2013, and this site was determined to be representative of the majority of the North Pasture, with exception of the area burned and drill seeded following the 2011 Roseworth Fire. The ID Team rated the functional/structural group indicator as a moderate departure based on field observations documenting the low abundance and diversity of perennial forbs, and reduced relative dominance of deep-rooted perennial grasses in the North Pasture. Deep-rooted perennial bunchgrasses can help support nutrient cycling and energy flow due to their above and below ground structure. Deep-rooted grasses generally have a longer active growth period, larger root systems for stabilizing soils and facilitating soil moisture percolation, and relatively higher potential to capture and store carbon below ground.

Cheatgrass or other invasive species weren't measured in the cover transect at the IIRH site in the North Pasture, however in 2002 and 2006 at other sites in the pasture cheatgrass ranged from 3-7% of cover (Table 12). The area that was burned and subsequently drill seeded following the 2011 Roseworth Fire was noted to have a large amount of annuals present. In post-fire monitoring cheatgrass was 28% of the cover within the drill seeded area (Table 12). Other invasive species and noxious weeds such as Canada thistle, bull thistle, scotch thistle, Russian thistle (*Salsola kali*), and diffuse knapweed have been noted by the ID Team during the field evaluation and in previous visits to the North Pasture. Invasive species can become a threat to biotic integrity following large scale disturbances such as wildfire, and based on the current conditions within the 2011 Roseworth Fire drill seeding adequate desirable perennial species are not present within the seeded plant communities to hinder further spread or establishment of invasive or noxious plant species.

Adequate litter is present within the seeded plant communities to provide cover for site protection. The litter amount indicator rating deviated from the reference condition found in the ESD at the site. The presence of seeded species can result in higher biomass production, resulting in more litter than is described in the ESD reference sheet. The ID Team determined that the litter amount was appropriate for site stability and ecological processes as shown by adequate soil moisture, as well as plant growth/annual production matching what is expected at each site.

The seeded vegetation communities within the North Pasture of the Cedar Butte Eastside Allotment are not functioning to maintain native animal habitat or life form diversity due to the low abundance and diversity of perennial forbs and reduced relative dominance of large deep-

rooted perennial bunchgrasses. The reduced dominance of deep-rooted perennial grasses is a concern within the seeded areas as the diversity of perennial species may be diminishing over time. Additionally, plant production and cover of seeded species are reduced. Because of low abundance/diversity of perennial species (bunchgrasses, forbs), and the presence of invasive species across the North Pasture, the pasture is not meeting Standard 5.

Evaluation Finding – South and House Pastures are:

Meeting the Standard

Not meeting the Standard, but making significant progress towards meeting

Not meeting the Standard

Rationale for Evaluation Finding

Diversity of perennial species is as expected for the seeded areas within the South and House Pastures. Perennial species are productive and capable of reproduction and recruitment of new seedlings. Total ground cover of perennial forbs was 1% on one cover transect in the South Pasture and 0% in the House Pasture. Several perennial forb species were present (Appendix B) at lower levels than expected, and due to the high amount of crested wheatgrass cover, it may be difficult for perennial forb cover to increase within the pastures. Shrubs are present throughout the pastures, with varying amounts of cover. Therefore, the overall diversity of perennial species within the seeded areas of the pastures does not appear to be diminishing over time, as evidenced by the continued presence of both seeded and native plant species (Tables 11 and 12).

More litter is present in the seeded plant communities than expected; however, it is providing cover for site protection and replenishment of nutrients and does not appear to be negatively affecting ecological processes.

Curveseed butterwort and cheatgrass were recorded within the South Pasture and were scattered throughout the IIRH site. Due to the high cover of native and seeded grass species, the risk of invasive species increasing within the pasture is low. Invasive species such as curveseed butterwort and cheatgrass can become a threat to biotic integrity following large scale disturbances such as wildfire; however, adequate desirable perennial species and biological soil crusts are present within the seeded plant communities to hinder the spread or establishment of invasive or noxious plant species.

The seeded vegetation communities within the South and House Pastures are functioning to maintain life form diversity, production, native animal habitat, nutrient cycling, energy flow, and the hydrologic cycle. Therefore, the South and House Pastures are meeting Standard 5.

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.

Standard Doesn't Apply

The plant communities with the Cedar Butte Eastside are dominated by native and seeded non-native species; therefore, 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 Butte Eastside Allotment.

The North Pasture of the allotment is on the elevated plateau adjacent to Salmon Falls Creek. Salmon Falls Creek is adjacent to but not within the allotment boundary and is not accessible to livestock from the allotment. Therefore, Standard 7 does not apply to the portion of Salmon Falls Creek within the North Pasture of the allotment.

The Cedar Mesa Canal runs through the House Pasture and contains surface water from April into October annually. The canal is operated and maintained as a conveyance system for irrigation water. The IDEQ has not designated beneficial uses for the Cedar Mesa Canal and has not identified any water quality impairments for the canal because their assessment methodology is limited to perennial, wadeable, and nonwadeable flowing water bodies (IDEQ 2014). Because the Cedar Mesa Canal is artificially maintained, Standard 7 does not apply to the House Pasture of the allotment.

The reaches of Cedar Creek that are adjacent to the North and South Pastures of the allotment are within Idaho Department of Environmental Quality (IDEQ) water quality Assessment Unit (AU) ID17040213SK000_04 (IDEQ 2014). Therefore, Standard 7 applies to the North and South pastures of the allotment. The streams within the AU are identified by IDEQ as not meeting their designated beneficial uses due to impaired water quality. The designated beneficial uses for Cedar Creek within the allotment are cold water aquatic life, primary contact recreation, and secondary contact recreation. The support status for the recreation beneficial uses has not been assessed by IDEQ. The causes for non-attainment of the designated beneficial uses are flow regime alteration, sedimentation/siltation and elevated water temperature (IDEQ 2014). The AU was removed from the 303(d) list (Category 5 stream) for water temperature and sedimentation/siltation following the Environmental Protection Agency's (EPA) approval of the Salmon Falls Sub-basin Assessment and Total Maximum Daily Loads (TMDL) (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). Cedar Creek within the allotment is within the same AU as Cedar Creek upstream of the siphon, which only contains water when it is released from Cedar Creek Reservoir. The only water within the allotment is artificially supplied from farmland irrigation in the Roseworth area. However, since the portion of Cedar Creek in the North and South pastures is not meeting its designated beneficial uses, Standard 7 is not being met for the Cedar Butte Eastside Allotment.

Evaluation Finding – Allotment/watershed is:

Meeting the Standard

Not meeting the Standard, but making significant progress towards meeting

Not meeting the Standard

Rationale for Evaluation Finding

The North Pasture of the allotment is on the elevated plateau adjacent to Salmon Falls Creek. Salmon Falls Creek is adjacent to but not within the allotment boundary and is not accessible to livestock from the allotment. Therefore, Standard 7 does not apply to the portion of Salmon Falls Creek within the North Pasture of the allotment.

The Cedar Mesa Canal runs through the House Pasture and contains surface water from April into October annually. The canal is operated and maintained as a conveyance system for irrigation water. The IDEQ has not designated beneficial uses for the Cedar Mesa Canal and has not identified any water quality impairments for the canal because their assessment methodology is limited to perennial, wadeable, and nonwadeable flowing water bodies (IDEQ 2014). Because the Cedar Mesa Canal is artificially maintained, Standard 7 does not apply to the House Pasture of the allotment.

Standard 7 is not being met in the North and South Pastures of the Cedar Butte Eastside 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 due to flow regime alteration, sedimentation/siltation, and elevated water temperature (IDEQ 2014). Therefore, the Cedar Creek reaches within the North and South pastures are not meeting Standard 7.

The current livestock grazing management for the Cedar Butte Eastside Allotment does not include diverting surface flows from Cedar Creek and therefore is not contributing to the non-attainment of the designated beneficial uses for the AU (ID17040213SK000_04) due to flow alteration. Cedar Creek within the allotment does not contain the optimum flows required to meet the IDEQ numeric water temperature criteria (IDEQ 2014). The primary cause of the non-attainment for water temperature is due to the absence of surface water at the siphon (approx. 2 miles upstream of the allotment) and not due to livestock grazing. Although livestock grazing can impact streamside vegetation which can alter water temperature regimes, this is not the primary cause of non-attainment of water temperature criteria for the Cedar Butte Eastside Allotment. The non-attainment of sediment criteria is also related to the absence of streamflow (i.e., lack of flushing flows) within the allotment (IDEQ 2014). Although livestock grazing can contribute to the non-attainment of IDEQ sediment criteria, the data presented under Standard 1 suggests this has not been observed for the allotment. Therefore, livestock grazing on the Cedar Butte Eastside Allotment is not causing Cedar Creek to fail to support its designated beneficial uses.

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:

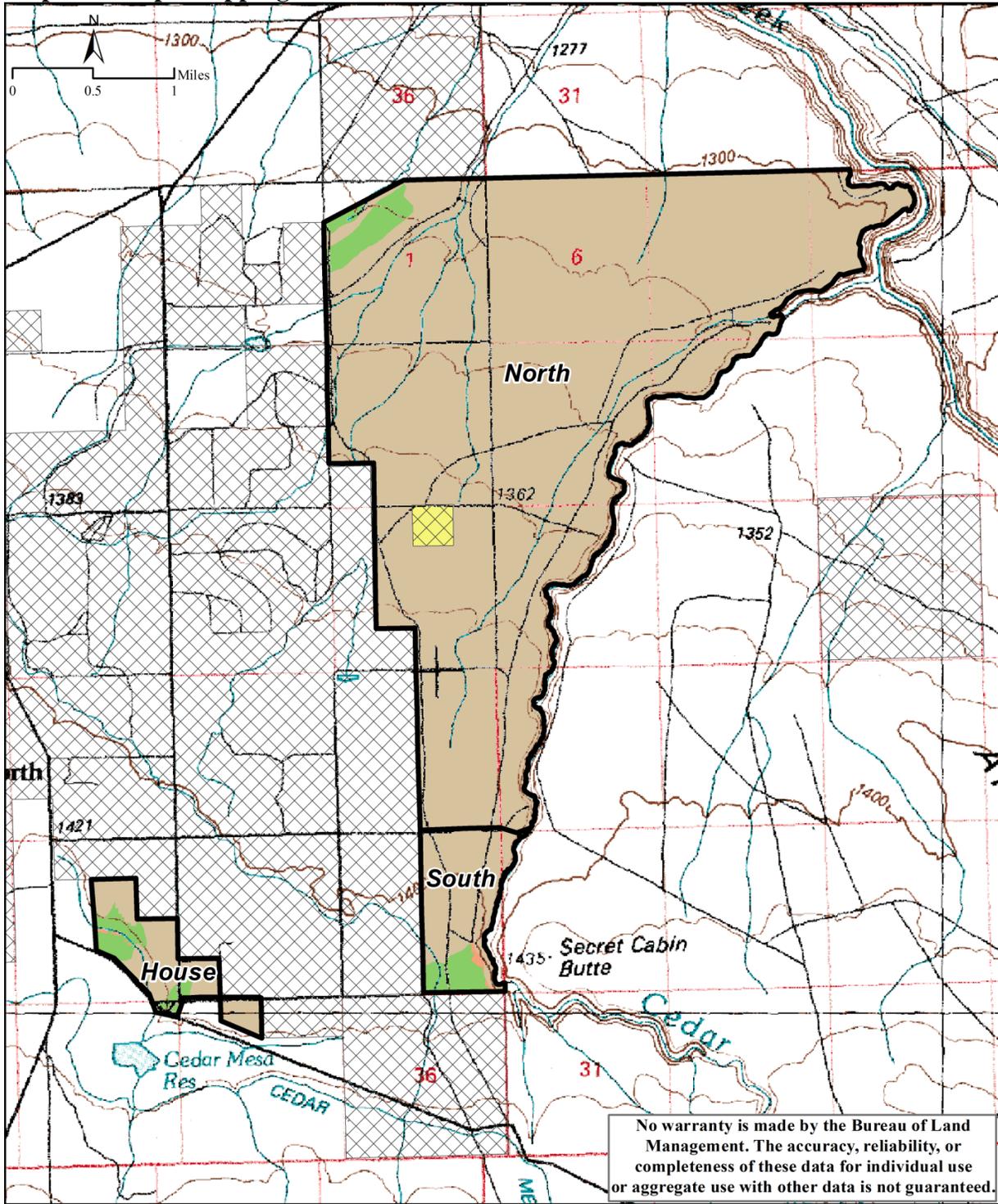
There are no known BLM sensitive plants within the allotment. However, systematic inventories for special status plants have not been conducted in the allotment. Special status plants are generally associated with distinct soil types that occur in scattered portions of the JFO. None of these soil types 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) (Map 6).

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 Butte Eastside Allotment contains 203 acres (4% of allotment) of potential slickspot peppergrass habitat (Map 6). A GIS model was developed to help focus inventory and 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 potential habitat and to categorize it into groups (high, medium, low, non-habitat) that identify the potential for finding the species. The allotment contains 191 acres of high potential, 7 acres of medium potential, 5 acres of low potential, and 4,884 acres of non-habitat for slickspot peppergrass (Table 13). The nearest known occupied habitat for slickspot peppergrass is 18 miles to the west, on the west side of Clover Creek.

Table 13. Slickspot Peppergrass Potential Habitat (Acres).

Pasture	High	Medium	Low	Non-habitat
House	62	2	0	182
North	78	0	4	4,445
South	51	5	1	257

Map 6. 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 with the potential to occur on the Cedar Butte Eastside 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. 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, slowly moving towards wetter areas like wet meadows, irrigated farmland, 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 Butte Eastside Allotment contains 2,951 acres mapped as sagebrush (58% of the allotment). Sagebrush occurs in the following pastures:

House (185 acres, 75% of pasture), North (2,495 acres, 55% of pasture), and South (271 acres, 87% of pasture). In 2011, the Roseworth Fire burned 944 acres in the center of the North Pasture. This area has been reseeded with grasses, forbs, and sagebrush and is currently mapped as a bluebunch wheatgrass vegetation community.

Sage-grouse have been observed year round in the adjoining allotments. Sage-grouse habitat extends all around the Cedar Butte Eastside Allotment with the exception of the area around Roseworth (Map 7).

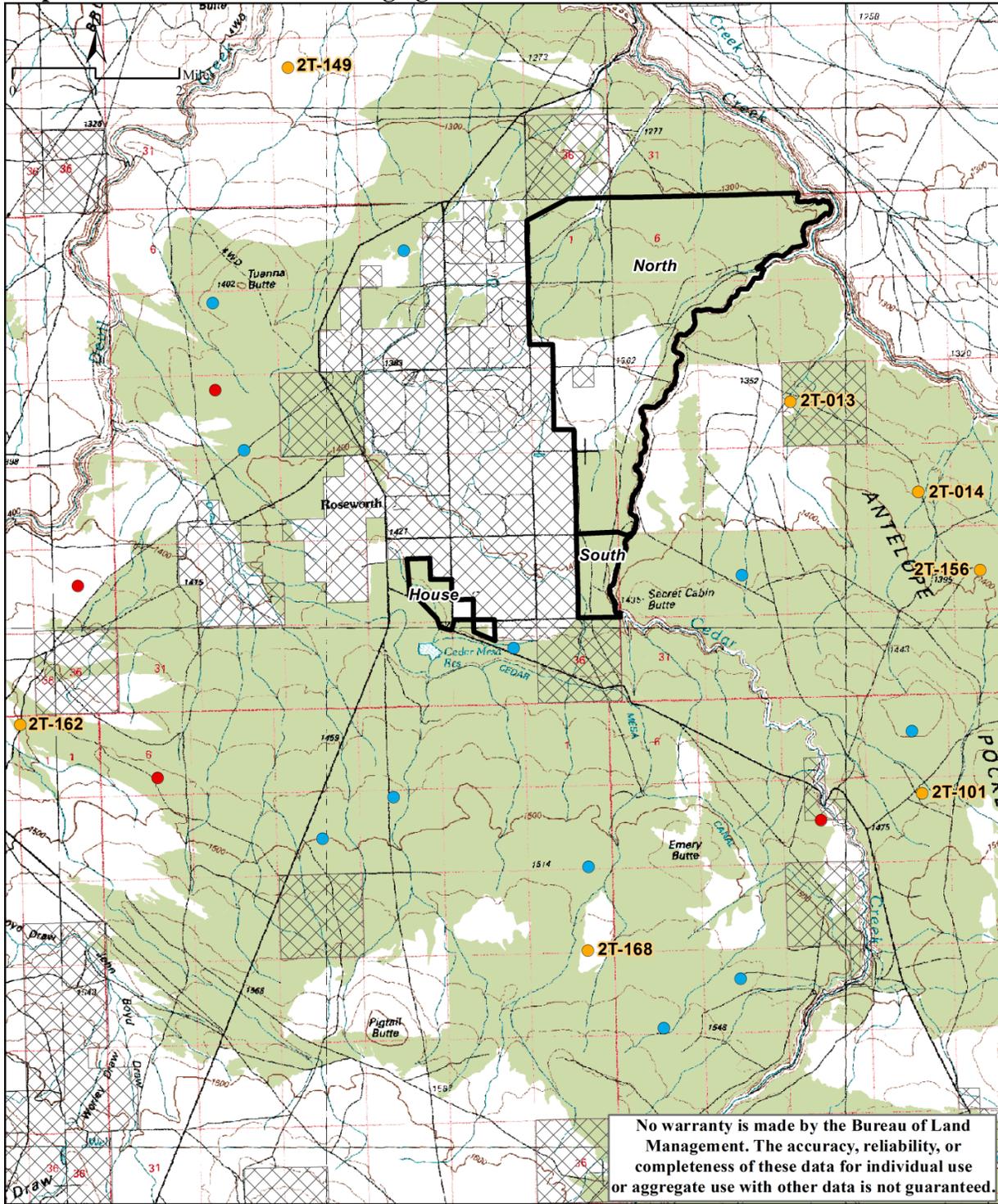
The Cedar Butte Eastside Allotment does not contain any sage-grouse leks. Within five miles there are 7 occupied, 11 undetermined (due to a lack of recent surveys), and 4 unoccupied sage-grouse leks (Map 7). Sage-grouse attendance at occupied leks within 5 miles of the allotment are shown in Table 14. Leks are considered occupied if there has been documented sage-grouse activity within the past five years.

Table 14. Sage-grouse Attendance at Occupied Leks within Five Miles of the Cedar Butte Eastside Allotment, 2000-2014.

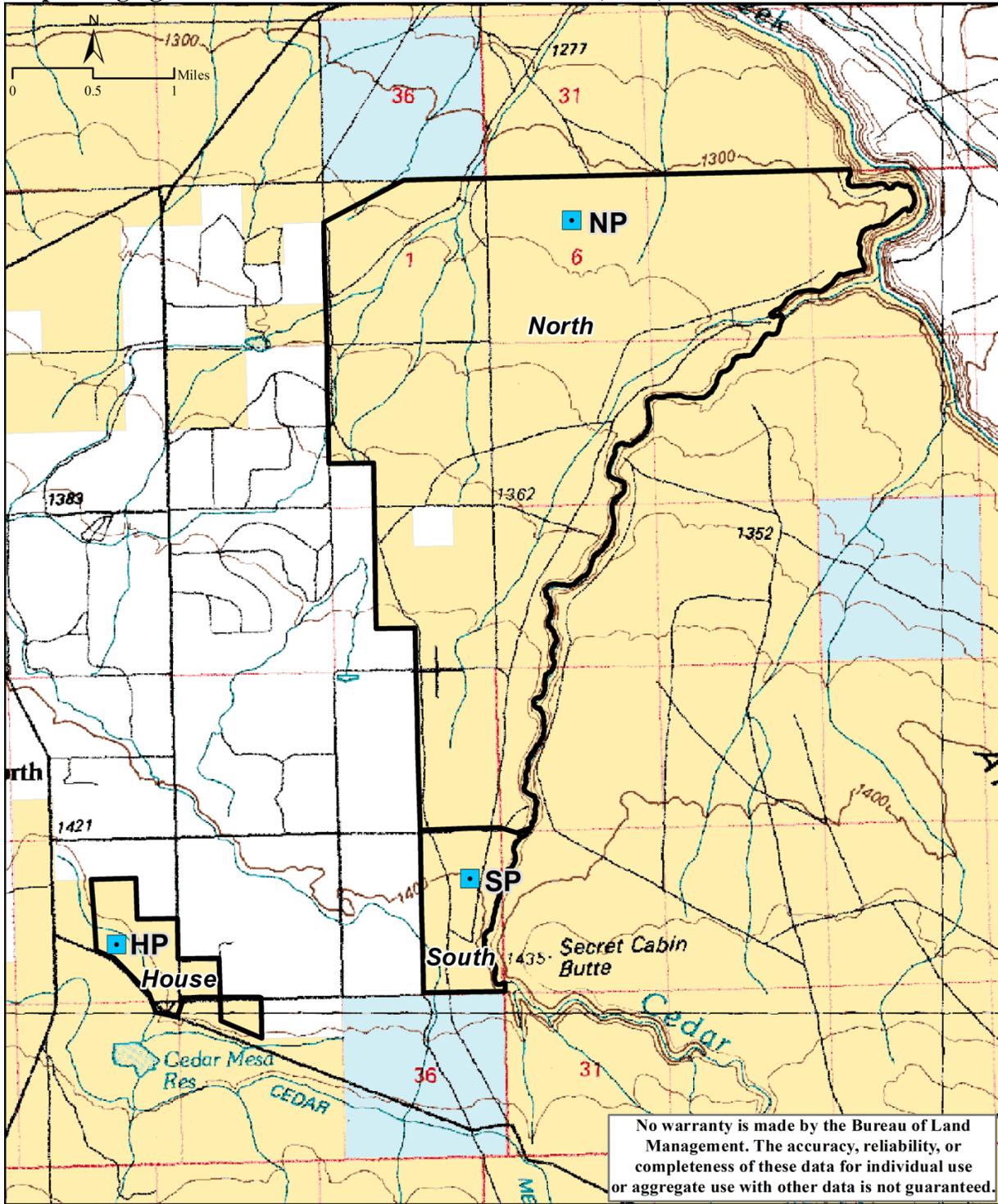
Lek	Location	Survey Year ¹														
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14
2T-013	1.5 mile E	--	--	--	--	--	--	0	--	0	--	--	--	0	--	14
2T-014	3.3 miles E	--	--	--	--	--	--	--	--	0	--	--	--	2	--	--
2T-149	3.4 miles NW	18	16	12	--	--	2	3	--	0	8	0	4	12*	16	9
2T-168	4.0 miles S	16	--	--	--	--	--	--	--	--	--	--	--	--	--	4
2T-101	4.2 miles SE	17	7	8	8	0	13	18	30	18	17	0	15	8	11	10
2T-156	4.3 miles E	19	21	10	11	0	22	40	10	25	23	10	22	25	22	27
2T-162	4.9 miles SW	18	5	8	--	--	18	8	11*	12	14	5	8	3	10	6

¹Surveys were not conducted in years indicated by dashes (--); an asterisk indicates area around lek burned in a wildfire that year (*).

Map 7. Shrubland Habitat and Sage-grouse Leks



Map 8. Sage-grouse Habitat Assessment Framework (HAF) Sites



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). Sage-grouse habitat suitability assessments were conducted in 2012 at HAF sites **NP**- North Pasture and **SP**- South Pasture. An assessment was also conducted in 2013 at HAF site **HP**- House Pasture. Locations of HAF sites are shown in Map 8.

Sage-grouse sign was not observed in any of the pastures during the assessments or the IIRH field visits. However, during winter surveys for pygmy rabbits, sage-grouse tracks and dropping were noted. 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. Sage-grouse habitat suitability assessments are shown in Table 15.

Table 15. 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%
	HP(15%), NP(15.5%), SP(20.5%)		
Average Sagebrush Height	12 - 30"	10 -11" or >30"	< 10"
	HP(28"), NP (22"), SP(25")		
Sagebrush Growth Form	Spreading	Mix of spreading and columnar	Columnar
	HP	NP, SP	
Average Grass Height	≥ 7"	5 - < 7"	< 5"
		HP(6.4")NP(6.2")	SP(4.0")
Average Perennial Grass Canopy Cover	≥ 10%	5 - < 10%	< 5%
	HP(47%), NP(24.5%), SP(37%)		
Average Forb Canopy Cover	≥ 5%	3 - < 5%	< 3%
			HP(0%), NP(0%), SP(1%)
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
			HP, NP, SP
Overall Site Evaluation		HP	NP, SP
Pasture Evaluation		House Pasture	North Pasture, South Pasture

One HAF site is located in the House Pasture (HAF site HP). This site is in an area mapped as Wyoming sagebrush/ crested wheatgrass. All habitat indicators were rated suitable except for grass height (marginal), average forb canopy cover (unsuitable), and preferred forb abundance

and diversity (unsuitable). Forbs were rare at the site with only 6 forb species observed. Only 1 forb was encountered in the Daubenmire frames (100 frames surveyed with each frame being 0.1m²) indicating very low forb density. Cheatgrass was not encountered along the line point intercept transect. The overall rating for the House Pasture is marginal as nesting and early brood rearing habitat due to a lack of forbs at the site despite suitable ratings for sagebrush and grass.

The North Pasture contains one HAF site (HAF site NP). This site is in an area mapped as Wyoming sagebrush/ Sandberg bluegrass in the north portion of the pasture. Attributes at HAF site NP were suitable for sagebrush cover, sagebrush height, and perennial grass cover, marginal for sagebrush growth form and grass height, and unsuitable for forb canopy cover and preferred forb abundance and diversity. The site has a general absence of forbs. Only two forb species were observed during the habitat suitability assessment and no forbs were encountered in any of the Daubenmire frames. While walking to the site during the IIRH field visit (approximately 0.3 of a mile), only six species of forbs were observed. During the walk, only 15 individual perennial forb plants were counted, which is extremely low. Cheatgrass was not encountered along the line point intercept transect. Overall, the North Pasture is unsuitable as nesting and early brood rearing habitat due to an absence of forbs and a lack of sagebrush in the southern portion of the pasture. The central portion of the pasture burned in the 2011 Roseworth Fire (944 acres, 21% of the pasture).

The South Pasture contains one HAF site (HAF site SP). The site is in an area mapped as Wyoming sagebrush/ Sandberg bluegrass. Attributes at HAF site SP were suitable for sagebrush cover, sagebrush height, and perennial grass cover, marginal for sagebrush growth form, and unsuitable for grass height, forb canopy cover, and preferred forb abundance and diversity. Forbs were rare to sparsely present at the site with only six species observed. The only common forbs were longleaf phlox (*Phlox longifolia*) and sagebrush phlox (*Phlox aculeata*). Cheatgrass was not encountered along the line point intercept transect. Overall, the South Pasture is unsuitable as nesting and early brood rearing habitat due to a lack of forbs at the site and low grass height.

The Cedar Butte Eastside Allotment is adjacent to private agricultural land in the Roseworth area. Private agricultural lands generally have increased densities of black-billed magpies (*Pica hudsonia*) and common ravens (*Corvus corax*) as well as mesopredators such as cats (*Felis catus*), dogs (*Canis lupus familiaris*), red foxes (*Vulpes vulpes*), and striped skunks (*Mephitis mephitis*). These areas also have increased levels of human associated disturbance, infrastructure, roads, and tall structures. Human disturbance or occupancy increases displacement of wildlife (Miller et al., 1998, 2001) and temporal or spatial habitat fragmentation or abandonment. Roads reduce and divide habitat (Forman and Alexander, 1998) and are a source of wildlife mortality (Jochimsen, 2006). Tall structures provide raptors and ravens additional perching or nesting sites (Steenhof et al., 1993), which may alter habitat use by some wildlife, or increase predation locally at some distance from the structure (Armentrout and Hall, 2006).

Late Brood Rearing Habitat

The Cedar Mesa Canal runs through the House Pasture and is approximately 0.6 mile in length. Water is present in the canal from April into October annually. The canal provides water to wildlife in the House Pasture. The canal also provide some late brood rearing habitat for sage-grouse since seep areas along the canal contain a higher abundance of preferred forbs such as dandelion (*Taraxacum officinale*), clover (*Trifolium* spp.), and western yarrow (*Achillea millefolium*). These forbs remain succulent through the summer compared to forbs in the surrounding uplands. Russian olives along the Cedar Mesa Canal (approximately 5 trees) provide nesting habitat for black-billed magpies and common ravens which prey on sage-grouse eggs and recently hatched chicks (Autenrieth, 1981; Coates, 2007). The presence and abundance of these trees along the canal may limit sage-grouse use along the canal.

The North Pasture contains a drainage that carries irrigation runoff that is approximately 1.3 miles in length. Water is present is the drainage from April into October most years. Some late brood rearing habitat is present along the drainage but due to water availability in the pasture it is a high use area for livestock. In addition, noxious weeds (i.e., bull thistle, Canada thistle, and Scotch thistle) occur along the drainage. Overall, the drainage is marginal as late brood rearing habitat for sage-grouse.

The South Pasture does not contain late brood rearing habitat.

All pastures in the allotment are adjacent to irrigated private land. Late in the summer when forbs begin to desiccate in the uplands, sage-grouse are attracted to alfalfa (*Medicago sativa*) and other irrigated crops.

Winter Habitat

Shrub height (22-28") and cover (15-20%) are suitable for wintering sage-grouse in all pastures. During winter, snow depths are usually less than 12" leaving most sagebrush above the snow and available 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, 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.

Ferruginous hawks prey primarily on smaller 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.

Ferruginous hawks are known to sporadically nest in isolated junipers in the allotment. At this time one active nest is present in the North Pasture (Nest F37; Table 16).

Table 16. Ferruginous Hawk Nest Data.

Nest	Survey Year ¹																		
	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13
F37			1	--	--	--	1	--	--	--	--	--	--	--	I	--	--	3	--

¹Surveys were not conducted in years indicated by dashes (--). If the nest was active with young, the number of young was recorded, if the nest was inactive (I) or active (A) with no young that was also recorded.

Suitable nesting trees occur in the North Pasture (approximately 12 junipers), South Pasture (4 junipers), and House Pasture (approximately 7 Russian olives mostly along the Cedar Mesa Canal). All pastures provide suitable habitat 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 habitat. Brewer’s sparrow place nests primarily in shrubs, but occasionally on the ground. The nest shrub is typically taller and denser 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 rabbitbrush (*Chrysothamnus viscidiflorus*) (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).

Brewer’s sparrows have been observed and are expected to be common in sagebrush habitats within the Cedar Butte Eastside Allotment. At this time, all pastures in the allotment contain suitable sagebrush height and density 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 likely nest and forage on the allotment since they have been observed 0.1 mile to the west. At this time sagebrush of suitable height for nesting occurs in all pastures of the allotment. Additionally, pastures contain scattered junipers and Russian olives that could be used for nesting.

Sagebrush sparrow (*Artemisioispiza nevadensis*; BLM sensitive species)

Sagebrush sparrows are sagebrush obligates that are typically common in shrub-steppe habitats (Martin and Carlson, 1998). Sagebrush sparrows nest 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).

Sagebrush sparrows have been observed and are expected to be common in pastures of the allotment. Sagebrush height and density are suitable for sagebrush sparrow 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% of its winter diet (Green and Flinders, 1980). Grasses and forbs make up more of the diet in the late spring into early summer.

Limited surveys for pygmy rabbits have been conducted in the allotment (approximately 200 acres have been surveyed). Surveys have been conducted in the north end of the North Pasture and south end of the South Pasture but no pygmy rabbit sign was observed. Due to past vegetation treatments in the 1960s and 1980s, portions of each pasture within the allotment lack the sagebrush density preferred by pygmy rabbits. However, areas of suitable habitat remain. The vegetation map does not reflect habitat suitability or some of the historic seedings. The central portion of the North Pasture that burned in the Roseworth Fire of 2011 is currently 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.

Although Piute ground squirrels have been observed in the allotment, the BLM does not have distribution data on ground squirrels within the allotment. Sagebrush habitat in each pasture is 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 border of the North and South Pastures. Salmon Falls Creek also provides roosting habitat along the northeastern border of the North Pasture. The House Pasture does not contain roosting habitat. Spotted bats may forage over the allotment and along Cedar and Salmon Falls Creeks. Water that can be used by bats is found along Salmon Falls Creek, the Cedar Mesa Canal in the House Pasture, and the irrigation runoff drainage and the associated pond in the North Pasture. Salmon Falls Creek contains water year round. The Cedar Mesa Canal and the irrigation runoff drainage and associated pond generally contain water from April into October.

Evaluation for Standard 8

There are no known BLM sensitive or federally listed plants within the Cedar Butte Eastside Allotment. However, systematic inventories for special status plants have not been conducted in the allotment. GIS modeling predicts that the allotment contains 191 acres of high potential, 7 acres of medium potential, 5 acres of low potential, and 4,884 acres of non-habitat for slickspot peppergrass. The nearest known occupied habitat for slickspot peppergrass is 18 miles to the west, on the west side of Clover Creek.

There are 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 by pasture are shown in Table 17.

Table 17. Overall Habitat Suitability for BLM Sensitive Wildlife Species in the Allotment.

Species Name and Type of Habitat	House	North	South
Sage-grouse (nesting & early brood rearing)	M	U	U
(late brood rearing)	S	M	U
(winter)	S	S	S
Ferruginous hawk (nesting)	S	S	S
(foraging)	S	S	S
Brewer's sparrow (nesting)	S	S	S
Sagebrush sparrow (nesting)	S	S	S
Loggerhead shrike (nesting)	S	S	S
Pygmy rabbit (year round)	M	M	M
Piute ground squirrel (year round)	S	S	S
Spotted bat (roosting)	U	S	S
(foraging)	S	S	S

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

Overall, sage-grouse nesting and early brood rearing habitat is marginal to unsuitable in all pastures due to a general absence of forbs despite all pastures having favorable shrub height and cover. Grass heights were suitable in the House Pasture, marginal in the North Pasture, and unsuitable in the South Pasture. The Cedar Mesa Canal in the House Pasture and the drainage in the North Pasture offer some late brood rearing habitat for sage-grouse. Sagebrush heights and cover in all pastures provide suitable winter habitat for sage-grouse. There are some areas within the allotment such as the area burned in the 2011 Roseworth Fire, where sagebrush cover is unsuitable.

More than an adequate numbers of potential nest trees are present for ferruginous hawk nesting in all pastures. All pastures contain habitat that supports prey species such as mountain cottontail, black-tailed jackrabbit, and ground squirrels usually hunted by ferruginous hawk.

Shrub height and cover is suitable for Brewer's sparrow, sagebrush sparrow, and loggerhead shrike nesting in all pastures. However, the southern portion of the North Pasture that burned in the Roseworth Fire of 2011 lacks suitable shrub height and density. The burned area is only a small part of the North Pasture (944 acres, 21% of pasture).

Pygmy rabbit habitat was rated as marginal in all pastures. Although sagebrush has increased in areas treated in the 1960s and 1980s, shrub density is not adequate in most of the treated area to support pygmy rabbits. Relic native sagebrush steppe has both the density and height for pygmy rabbit burrows. However, the relic areas are generally less than half the pastures.

All pastures contain suitable habitat to maintain a stable population of Piute ground squirrels due to adequate shrub and grass cover. Steenhof and others (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 in the North and South Pastures due to cliffs being present along the eastern edge of both pastures. The House Pasture was rated unsuitable because it lacks cliffs for roosting. The sagebrush habitat provides adequate insect diversity and abundance for spotted bat foraging. Water that can be used by bats is found along Salmon Falls Creek, the Cedar Mesa Canal in the House Pasture, the irrigation runoff drainage and the associated pond in the North Pasture.

Evaluation Finding – Allotment/watershed is:

- Meeting the Standard
- Not meeting the Standard, but making significant progress towards meeting
- Not meeting the Standard

Rationale for Evaluation Finding

The Cedar Butte Eastside Allotment is suitable for the majority of special status species. However, perennial forbs and sage-grouse preferred forbs are generally absent in the allotment. These forbs are necessary to support a variety of insects which are critical to the growth of young sage-grouse. Without these forbs, the allotment was rated marginal to unsuitable for sage-grouse during nesting and early brood rearing. Therefore, pastures in the Cedar Butte Eastside Allotment are 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: shrublands, 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 shrublands 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.

APPENDIX B: SPECIES LIST ACCUMULATED DURING UPLAND ASSESSMENTS

Scientific Name	Common Name	Species Type	Site(s) where species occurred
Perennial Grasses			
<i>Achnatherum thurberianum</i>	Thurber's needlegrass	Native	SP
<i>Agropyron cristatum</i>	Crested wheatgrass	Exotic, Seeded	HP, NP, SP
<i>Elymus elymoides</i>	Squirreltail	Native	SP
<i>Poa secunda</i>	Sandberg bluegrass	Native	HP, NP, SP
Annual Grasses			
<i>Bromus tectorum</i>	Cheatgrass	Exotic, Invasive	HP, NP, SP
Perennial Forbs			
<i>Antennaria dimorpha</i>	Low pussytoes	Native, Sage-grouse Preferred	HP
<i>Astragalus lentiginosus</i>	Freckled milkvetch	Native	HP
<i>Astragalus purshii</i>	Woollypod milkvetch	Native	HP
<i>Castilleja angustifolia</i>	Northwestern Indian paintbrush	Native	HP, NP, SP
<i>Erigeron pumilus</i>	Shaggy fleabane	Native, Sage-grouse Preferred	HP, NP
<i>Opuntia polyacantha</i>	Plains pricklypear	Native	HP, SP
<i>Penstemon spp.</i>	Penstemon	Native	SP
<i>Phlox aculeata</i>	Sagebrush phlox	Native, Sage-grouse Preferred	SP
<i>Phlox hoodii</i>	Spiny phlox	Native, Sage-grouse Preferred	SP
<i>Phlox longifolia</i>	Longleaf phlox	Native, Sage-grouse Preferred	SP
Annual Forbs			
<i>Ceratocephala testiculatus</i>	Curveseed butterwort	Exotic	HP, NP, SP
<i>Collinsia parviflora</i>	small Maiden blue eyed Mary	Native	SP
<i>Draba verna</i>	Spring draba	Exotic	SP
<i>Lepidium perfoliatum</i>	Clasping pepperweed	Exotic	SP
<i>Sisymbrium altissimum</i>	Tall tumbled mustard	Exotic	SP
Noxious Weeds			
<i>Cardaria draba</i>	Whitetop	Exotic, Invasive	NP
<i>Onopordum acanthium</i>	Scotch cottonthistle	Exotic, Invasive	NP
Shrubs			
<i>Artemisia tridentada ssp. wyomingensis</i>	Wyoming big sagebrush	Native	HP, NP, SP
<i>Atriplex canescens</i>	Fourwing saltbush	Native, Seeded	NP
<i>Ericameria nauseosa</i>	Rubber rabbitbrush	Native	NP

This list does not include all plants that can be found in the Cedar Butte Eastside 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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