United States Department of the Interior
Bureau of Land Management

RANGELAND HEALTH ASSESSMENT AND EVALUATION REPORT

SOUTH ROSEWORTH ALLOTMENT #01151

November 9, 2015

DRAFT

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ALLOTMENT INFORMATION

Field Office: Jarbidge Field Office (JFO)
Name of Permittee: Camas Creek Cattle Association, LLC
Allotment Name/Number: South Roseworth (01151)
Date of Field Assessment: May 21, 2013 with an additional visit on November 5, 2014 to collect additional field notes.
Stream Miles on Public Land (miles): 0

Table 1: South Roseworth Acres

Total Acres	BLM Acres	State Acres	Private Acres	Other Acres
208	204	0	4	0

Table 2: Assessment Participants

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

CURRENT PERMITTED LIVESTOCK GRAZING USE

Total Active Use: 35 Animal Unit Months (AUMs)
Livestock Type: Cattle
Livestock Numbers: 35 Cattle
Season of Use: 10/15 to 11/13
Current Land Use Plan: 2015 Jarbidge Resource Management Plan (RMP)
Current Stocking Level: 5.7 Acres/AUM

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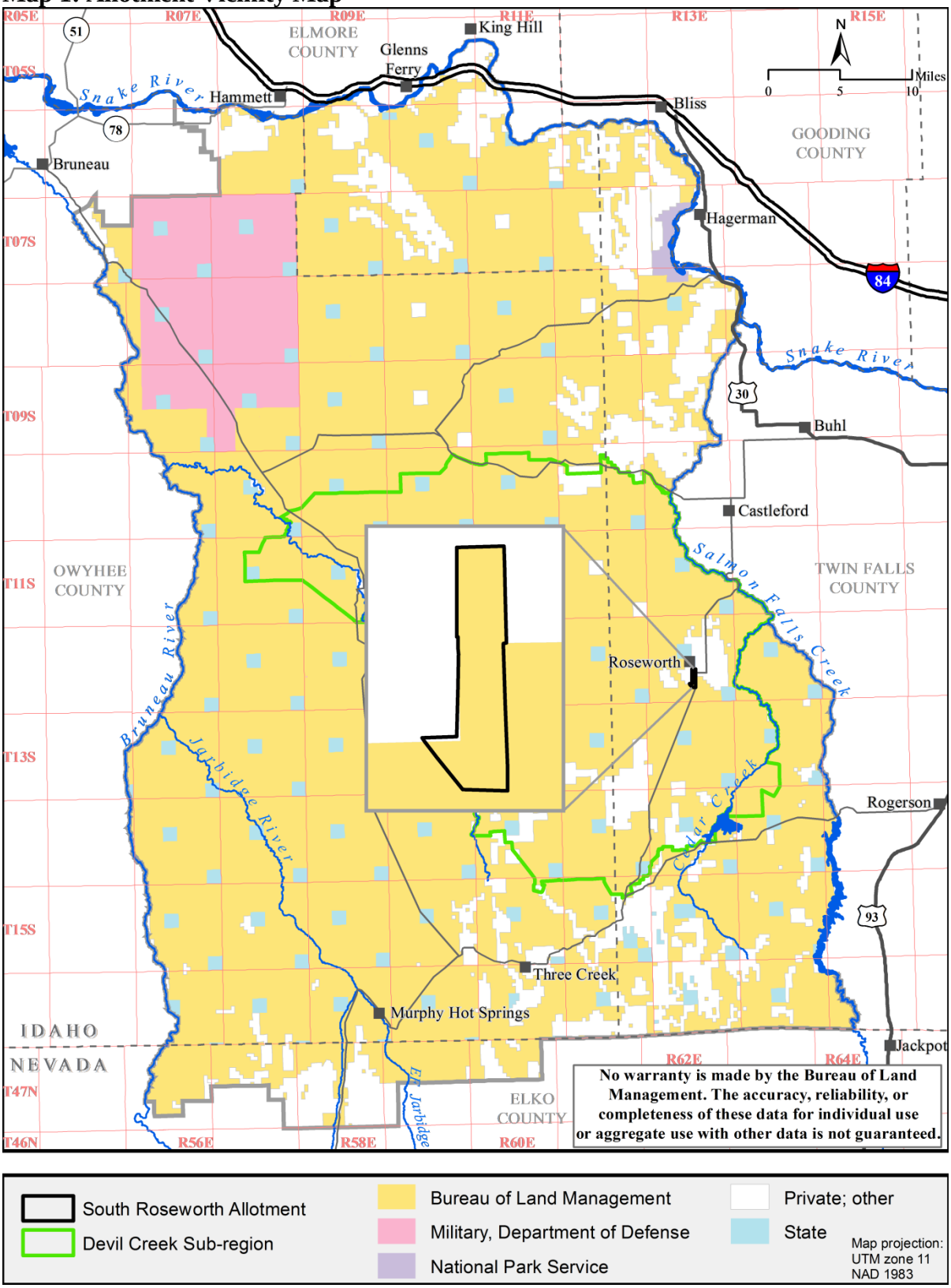
Map 1: Allotment Vicinity Map



ALLOTMENT PROFILE

The South Roseworth Allotment is located approximately 11 miles south of Castleford, Idaho (Map 1). The elevation ranges from approximately 4,650 feet to 4,700 feet. Topography in the allotment slopes gently from south to north.

Climate

Climatic conditions in the allotment are typical of south central Idaho. They are characterized by low humidity, clear skies, large diurnal variation in temperature, and wind patterns reflecting the westerly direction of the prevailing storm track. Rainfall is between 8 to 12 inches annually with the bulk of the moisture typically falling as rain from the 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 8-10” precipitation zone about 15 miles northwest of the allotment boundary. This area is slightly drier than the South Roseworth Allotment; however, the data collected at the RAWS station should reflect any trends in temperature and precipitation due to its close proximity.

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).

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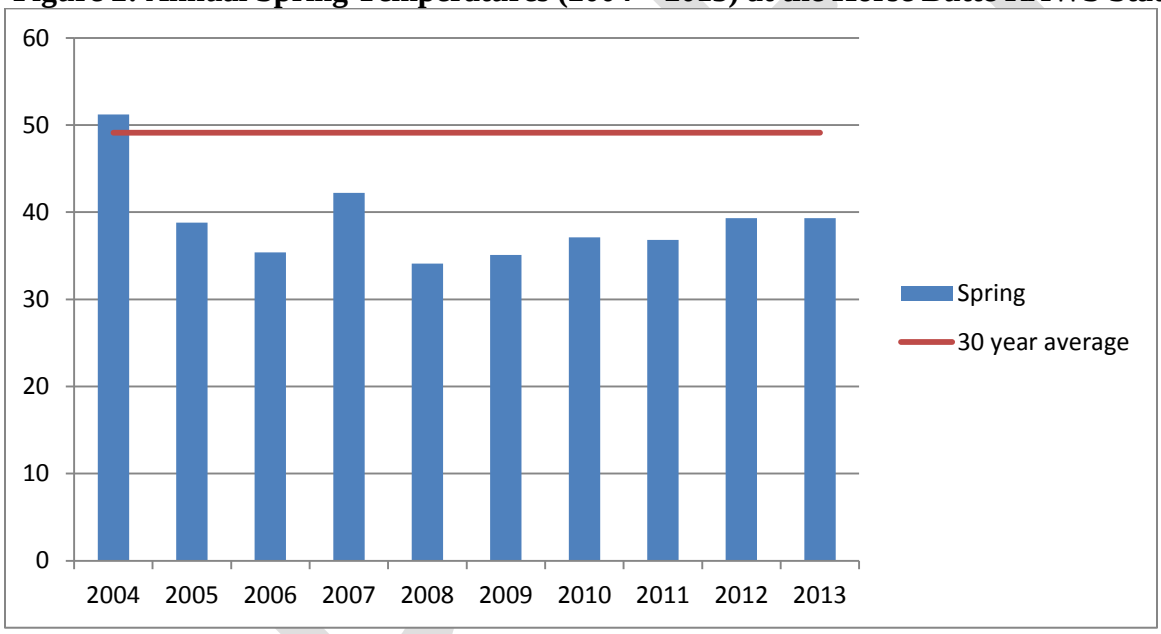
Figure 1: Annual Precipitation (2004 – 2013) at the Horse Butte RAWS Station

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



Grazing Management

The narrow 208 acre South Roseworth Allotment is divided by approximately 3.2 miles of perimeter fence. The allotment is divided east/west by two 0.25 mile fences into the North and South Pasture (Map 2). The North Pasture is 78 acres, whereas the South Pasture is 130 acres (Table 3). The east/west fences exclude the access road to the adjoining private land to the west. The area encompassed by the road and fence is approximately 4 acres. The east side of the allotment is bounded by a fence just west of the 17 Mile Road, whereas the western boundary fence is near the private/BLM property line. Another 0.2 miles of fence forms a corral a little over 3 acres in size in the North Pasture. The allotment is primarily BLM administered public land.

Table 3: Acreage by Pasture and Ownership in the South Roseworth Allotment

Pasture Name	Public	State	Private	Total*
North	77	0	1	78
South	127	0	3	130
Allotment Total	204	0	4	208

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

No water is present in the North Pasture. A gate is left open during permitted operation so livestock grazing the North Pasture can water at a pond on private land to the west. A trough in the northwestern corner of the South Pasture provides water to livestock. The South Pasture also contains an irrigation canal (0.4 of a mile) and reservoir in the southern portion of the pasture. Water is present in the canal from April until October when nearby private land is being farmed. The reservoir infrequently is filled with water from the canal and or precipitation. In years when the reservoir is full, the reservoir can cover up to 5 acres. The reservoir was constructed with a large earthen dam running from east to west across the southern portion of the South Pasture. The earthen dam has left several acres with little soil and sparse vegetation.

The South Roseworth Allotment is not listed in the 1987 Jarbidge RMP (BLM, 2007). The allotment was created from a portion of the Pigtail Allotment and Roseworth Tract Allotment in the late 1980s. The grazing permit has been transferred a few times between the late 1980s to the early 2000s when the base property was sold. Between the late 1980s to the early 2000s, the allotment was grazed only sporadically and for several years no livestock grazing occurred. In early 2005, Brackett Ranches Limited acquired the base property and began to graze the allotment more frequently. In 2012, the grazing permit was transferred to Camas Creek Cattle Association.

The South Roseworth 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 BLM complies with the order by avoiding grazing during sage-grouse breeding and nesting seasons. Cattle are permitted to graze in the allotment from October 15 to November 13 with a permitted active use of 35 animal unit months (AUMs). Livestock grazing has historically occurred mostly in the fall. Due to the allotments location and small size, the allotment has also generally been used as a holding pasture to stage cattle before they are moved to other areas.

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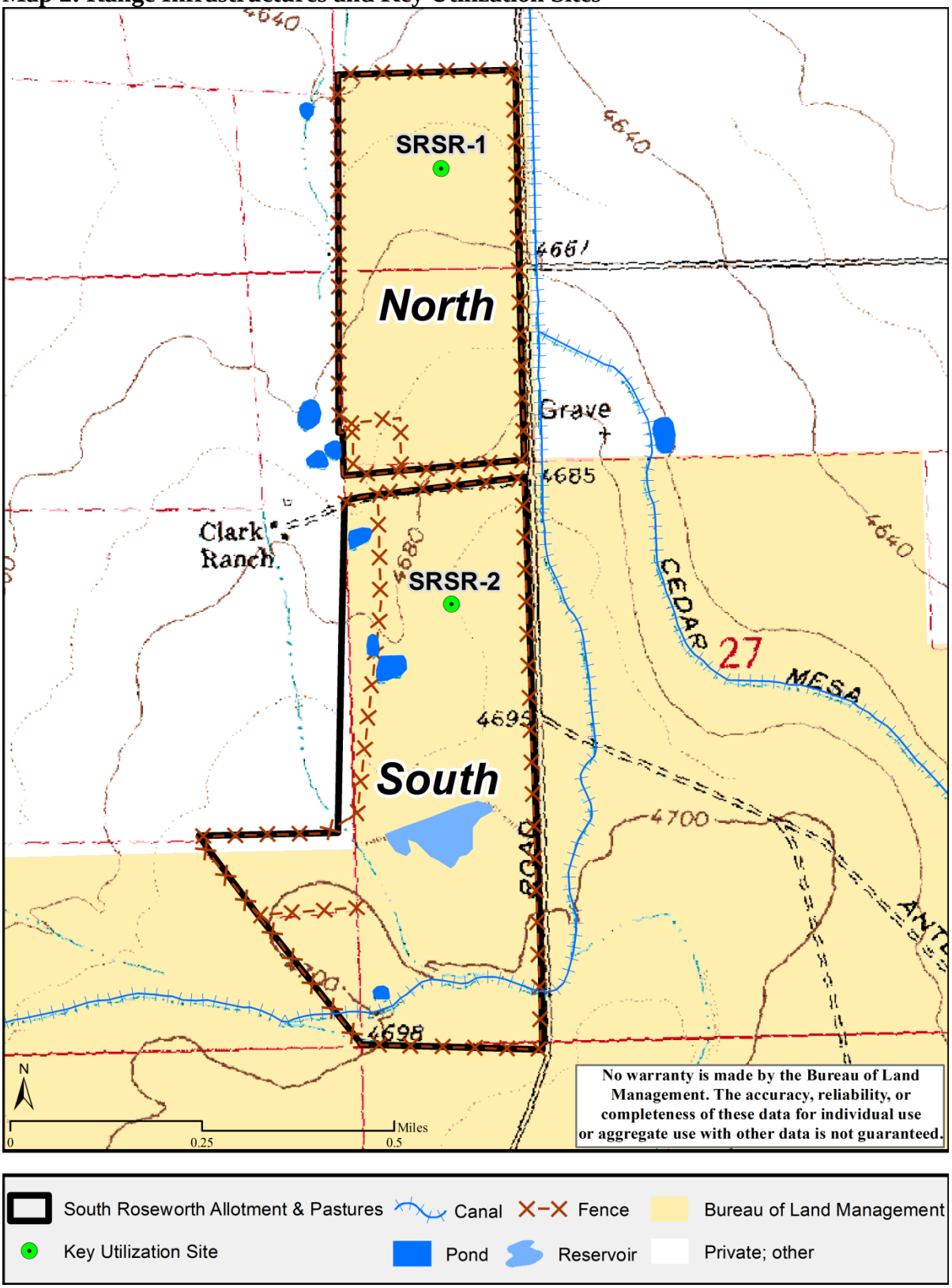
Map 2: Range Infrastructures and Key Utilization Sites



No scheduled use occurred in the South Roseworth Allotment in 2003, 2004, or 2013. Actual use data is not available on this allotment; therefore, after the grazing season billing has occurred according to the permit. Annual use from 2005 to 2014 has generally been 35 AUMs (Table 3). Utilization data has been collected on two grass species, Sandberg bluegrass (*Poa secunda*) and crested wheatgrass (*Agropyron cristatum*). Utilization in the allotment since 2006 has varied from 37 to 60 percent on Sandberg bluegrass and 4 to 33 percent on crested wheatgrass (Table 4). Locations of key utilization sites are shown on Map 2. Utilization data was collected at the end of the grazing season, using the Height-Weight Method (BLM, 1999). Utilization data were not collected annually in each pasture.

Table 4: Actual Use and Utilization Summary

Year	Permitted Season of Use	AUMs[1]		Utilization (percent)[2]			
				North		South	
		Sched.	Billed	Sandberg bluegrass	Crested wheatgrass	Sandberg bluegrass	Crested wheatgrass
2003	NA	0	0	--	--	--	--
2004	NA	0	0	--	--	--	--
2005	10/15-11/13	35	35	--	--	--	--
2006	10/15-11/13	35	35	48%	--	--	--
2007	10/15-11/13	35	35	37%	--	60%	33%
2008	10/15-11/13	35	35	--	25%	--	16%
2009	10/15-11/13	35	35	--	20%	--	--
2010	10/15-11/13	35	35	--	--	--	--
2011	10/15-11/13	35	35	--	--	--	4%
2012	10/15-11/13	35	35	--	--	--	--
2013	NA	0	0	--	--	--	--
2014	9/1-11/1	35	16	--	--	--	--

[1]Actual use is calculated and billed after the grazing season and was not shown by pasture.
[2] When utilization data were not recorded its marked by dashes (--).

Vegetation

Vegetation in the South Roseworth Allotment was initially mapped in 2006 using field observations, field cover data, and 2004 National Agriculture Imagery Program (NAIP) imagery. The vegetation map was updated in 2013 using field observations and NAIP imagery (Map 3). Vegetation communities were classified and mapped based on dominant plant cover using a minimum mapping unit of 20 acres, which is appropriate for landscape-level planning but is not intended to show the complexity of vegetation communities at a finer-scale. With this, fifty-three vegetation communities were classified and mapped based on dominant plant cover. These vegetation communities were subsequently organized into five classes and six sub-classes according to national standards (Grossman et al., 1998), with the exception of evergreen 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).

Natural and man-made forces have impacted the vegetation community in the South Roseworth Allotment. Given the allotment's close proximity to rural settlements and forgiving slopes, livestock grazing has been occurring in this area for over a century. Past vegetation treatment efforts have also modified the plant communities from their native state in the South Roseworth Allotment. In the 1960s the entire allotment was seeded to crested wheatgrass (West Roseworth Plow and Seeding). Since then Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) has re-established across the majority of the allotment. BLM records indicate the allotment has not burned in the last 50 years. Despite this, the southern portion of the North Pasture appears to have burned sometime between 1976 and 1992. There appears to be an old fire scar in the 1992 color aerial photographs that is not present in the 1976 aerial photographs. This may have been from an unreported wildfire or escaped agricultural burn. This area is dominated by cheatgrass with Sandberg bluegrass and crested wheatgrass present in lesser amounts (Photo 1). Current vegetation mapping shows the majority of the allotment is dominated by Wyoming big sagebrush and crested wheatgrass (Photo 2, Table 5, Map 3).

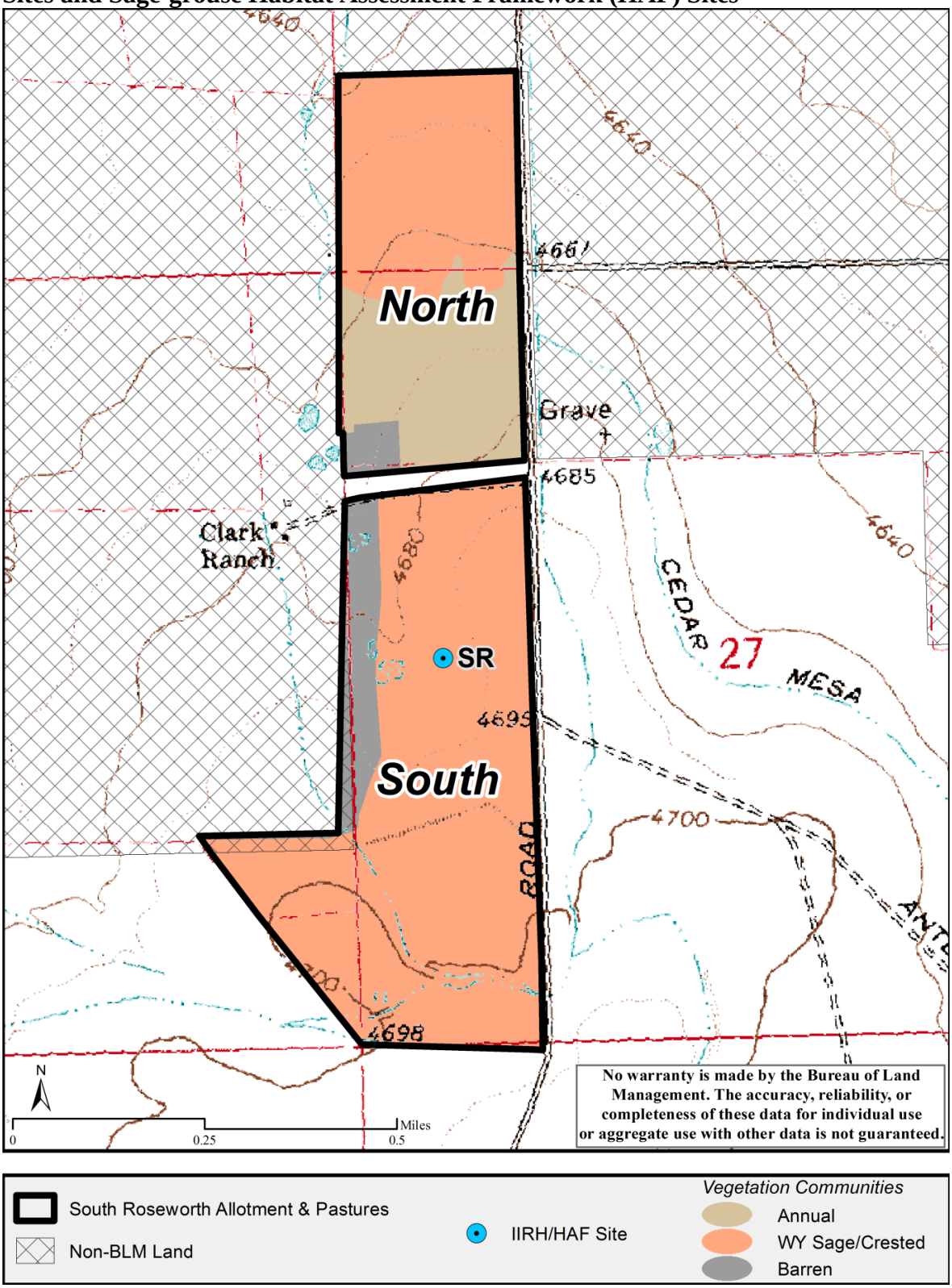
Photo 1: The Southern Portion of the North Pasture Dominated by Non-native Annual Vegetation

Photo 2: The Majority of the Allotment is Dominated by Wyoming Big Sagebrush and Crested Wheatgrass (Photo Taken at IIRH/HAF Site in the South Pasture)

Table 5: Vegetation Communities in Acres and Percentage by Pasture (BLM Acres Only)

Vegetation Community	North Pasture Acres (percent)	South Pasture Acres (percent)
Wyoming big sagebrush/crested wheatgrass	42 (54%)	115 (92%)
Annual	32 (42%)	0 (0%)
Barren	3 (4%)	10 (8%)
Total Acres	77	125

Map 3: Vegetation Communities and Interpreting Indicators of Rangeland Health (IIRH) Sites and Sage-grouse Habitat Assessment Framework (HAF) Sites



IDAHO RANGELAND HEALTH STANDARDS ASSESSMENT

There are eight standards for rangeland health that apply to BLM lands in the state of Idaho. Not all of the Standards apply to the South Roseworth Allotment due to variances in the land type and geographical area. Of the eight Idaho Standards for Rangeland Health, the following standards are applicable to the South Roseworth Allotment.

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

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

Standards 2, 3, 4, 6, and 7 do not apply to the South Roseworth Allotment

Table 6: Standards Applicable to the South Roseworth Allotment by Pasture

Standard	Pastures
1	All Pastures (North and South)
2	Not applicable
3	Not applicable
4	Not applicable
5	All Pastures (North and South)
6	Not applicable
7	Not applicable
8	All Pastures (North and South)

Available data contributing to the rangeland health assessment for the allotment include a sage-grouse habitat assessment and IIRH evaluation. No trend sites have been established in this allotment. The JFO interdisciplinary (ID) team conducted the IIRH field evaluation at the same random location as where the sage-grouse habitat assessment data was collected (Map 3). The sage-grouse habitat assessment and IIRH field evaluation were conducted within a one month period in late spring of 2013. Appendix A explains how sage-grouse HAF sites were generated. In addition, the allotment was visited by an ID team on November 14, 2014 to collect additional field notes.

The site is located in the South Pasture in an area that was plowed and broadcast seeded to non-native crested wheatgrass in 1965. Post-treatment notes identify the plowing did not result in the complete removal of sagebrush. Due to limited success of the crested wheatgrass seeding, the area was re-treated using the same methods in 1968. Crested wheatgrass and Sandberg bluegrass are now the dominant perennial grass species. Wyoming big sagebrush has re-established at the site. Conditions at the shared HAF and IIRH evaluation site are generally

representative of the vegetation community throughout the allotment with the exception of the southern portion of the North Pasture that is categorized as an annual plant community (Map 3).

Vegetative cover data recorded during the HAF site visit were used to supplement appropriate IIRH indicators. Data was recorded following the line point intercept method as described in the Sage-grouse Habitat Assessment Framework (Stiver et al., 2010) protocol. Because forbs are important to sage-grouse, the line point intercept method was augmented using Daubenmire frames. Forb species were recorded in a 7.9 inch by 19.7 inch (20 cm by 50 cm) Daubenmire frame placed at each point along the line intercept transect. This resulted in more comprehensive data on forb species diversity than could be obtained by the line point intercept alone.

Indicators of rangeland health (Table 7) were used to evaluate three rangeland health attributes (Table 8): Soil and Site Stability, Hydrologic Function, and Biotic Integrity (Pellant et al. 2005). The IIRH evaluation sheet was completed at the 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.

Data collected at the evaluation site was compared to the Natural Resource Conservation Service's (NRCS) ESD reference sheet for the soil type and potential vegetation community in the South Roseworth Allotment. The entire allotment is within the Loamy 8-12" Wyoming big sagebrush/bluebunch wheatgrass (*Pseudoroegnaria spicata*)/Thurber's needlegrass (*Achnatherum thurberianum*) ecological site (USDA and NRCS, 2013a) and therefore was evaluated using the reference sheet for this ESD. The reference sheet describes the expected condition of the ecological site in state 1, phase A of the reference state.

The Loamy 8-12" Wyoming big sagebrush/bluebunch wheatgrass/Thurber's needlegrass (R011XY001ID) plant community should have Wyoming big sagebrush in the overstory with bluebunch wheatgrass dominating the understory. Thurber's needlegrass should be the subdominant grass. Other significant species included in the ESD are Sandberg bluegrass, bottlebrush squirreltail (*Elymus elymoides*), and arrowleaf balsamroot (*Balsamorhiza sagittata*). There can be a variety of other grasses, forbs, and shrubs in minor amounts. The natural fire frequency should be 50-70 years.

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 7 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 for each of the three attributes of rangeland health are shown in Table 8.

Table 7: 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					X
2. Water-flow Patterns	S, H					X
3. Pedestals and/or terracettes	S, H					X
4. Bare ground	S, H					X
5. Gullies	S, H					X
6. Wind-scoured, blowouts, and/or deposition areas	S					X
7. Litter movement	S					X
8. Soil surface resistance to erosion	S, H, B					X
9. Soil surface loss or degradation	S, H, B					X
10. Plant community composition and distribution relative to infiltration	H					X
11. Compaction layer	S, H, B			X		
12. Functional/structural groups	B				X	
13. Plant mortality/decadence	B					X
14. Litter amount	H, B			X		
15. Annual production	B					X
16. Invasive plants	B		X			
17. Reproductive capability of perennial plants	B					X

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Table 8: Rangeland Health Attribute Rating

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

Standard 1 (Watersheds)

Watersheds provide for the proper infiltration, retention, and release of water appropriate to soil type, vegetation, climate, and landform to provide for proper nutrient cycling, hydrologic cycling, and energy flow.

Rangeland Health Assessment

The IIRH site was evaluated using the ESD (R011XY001ID) reference sheet for the Loamy 8-12" Wyoming big sagebrush/bluebunch wheatgrass/Thurber's needlegrass ecological site (USDA and NRCS, 2013a). The reference sheet indicates that bare ground should range from 30 to 40 percent (top layer), litter cover should range from 5 to 10 percent (all layers), and the soil stability test value should range from 4 to 6. Litter percentage calculations used for rating indicator 14 include all litter, including litter that is both attached and detached from the plant. While the ESD indicates that litter cover should range from 5 to 10 percent, HAF data collected within the allotment show that litter actually comprised 36 percent cover for all layers (Table 9). The indicator for litter was rated as a moderate departure from the reference condition. Average percent bare ground was recorded at 14 percent cover (top layer) (Table 9). In addition, a soil stability test (Pellant et al., 2005) was completed and resulted in an average soil stability value of 4.3, indicating adequate soil surface resistance to erosion.

Soils within the South Roseworth Allotment are mostly Roseworth silt loam and the majority of the allotment is relatively flat. The Soil Survey Geographic (SSURGO) Database (USDA and NRCS, 2012) shows that the allotment has a moderate wind erosion hazard and a high water erosion hazard. Although the soil survey shows potential for both wind and water erosion in this area, no indications of active erosion or soil loss were noted during the 2013 IIRH field visit or during the November 2014 field visit.

Adequate soil cover is present within the allotment to reduce potential erosion. Abundant perennial vegetation, as well as biological soil crusts, are present to provide protection for site stability throughout the majority of the allotment (Photos 3 and 4; Table 9). Bunchgrasses are well distributed in the interspaces between shrubs and the soil surface in the interspaces displayed pronounced microtopography often with some biological soil cover. Moss and biological soil crusts were also present within the grass dominated areas (crested wheatgrass/Sandberg bluegrass) but to a lesser extent than in areas with sagebrush, crested wheatgrass, and Sandberg bluegrass. At the HAF site in the South Pasture biological soil crust was recorded at 36 percent cover (all layers) (Table 9). Large rocks and surface gravels are infrequent at the site but also aid in soil stability.

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Photo 3: Wyoming Big Sagebrush/Crested Wheatgrass Community in the South Pasture.

Note crested wheatgrass (circled in red) is relatively widespread in the area.

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Photo 4: Mosses and Biological Soil Crusts at Base of Sagebrush and in the Interspaces in the South Pasture

During the 2013 IIRH field visit soil compaction was observed (Photo 5). The indicator for compaction was rated as a moderate departure from the reference condition since it appeared that the soil was moderately restrictive to root penetration. The soil displayed a distinct platy structure that seemed to be excessively hard. Some of the plant roots appeared to be penetrating the hard platy layers of the soil while others were growing horizontally above these layers. During the November 2014 field visit the ID team walked around the South Pasture and dug 6 different soil pits. Signs of compaction were absent in all the soil pits except 1 near the reservoir in the southern portion of the South Pasture. The compaction layer appeared to moderately restrict water and root penetration. No signs of compaction or that the soil was restrictive to water and root penetration were observed in any of the other soil pits. No signs of puddling were observed indicating infiltration is occurring. In addition, plants appeared healthy and vigorous and did not appear to be negatively affected.

Photo 5: Evidence of Compaction Layer in the Soil Pit at the IIRH Site in the South Pasture, May 2013

Hard platy layers associated with soil compaction circled in red.

Evaluation of Standard 1

The compaction layer indicator, as well as the litter amount indicator, were rated as moderate departures at the site. A soil stability test was completed at the evaluation site and was rated none to slight departure as the stability value averaged 4.3 out of a possible 6. These values indicate adequate soil surface resistance to erosion. The attributes of rangeland health related to Standard 1 (soil and site stability and hydrologic function) were both rated as none to slight departures for the site (Table 8).

The compaction layer indicator was rated as a moderate departure at the site. Soil compaction can limit plant growth, water infiltration, or nutrient cycling. Field notes collected in 2013 indicate that the compaction layer was restricting some roots, while other roots were penetrating through the layer. It was also noted that the compaction layer did not appear to be restricting the infiltration of water/precipitation. During the November 2014 field visit 6 additional soil pits were dug. Signs of compaction were absent in 5 of the 6 soil pits. The soil pit in the southern portion of the South Pasture near the reservoir had a compaction layer which appeared to moderately restrict water and root penetration. No signs of puddling were observed indicating water infiltration is occurring. In addition, plants appeared healthy and vigorous and did not appear to be negatively affected.

The litter amount indicator was also rated as moderate departure at the site. However, the increased litter amount did not appear to be negatively affecting infiltration based on the lack of water flow patterns and normal plant growth/annual production.

Evaluation Finding – Allotment is:

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

Rationale for Evaluation Finding

Abundant perennial vegetation, as well as biological soil crusts, are present within the South Roseworth Allotment to provide protection for site stability. Evidence of accelerated erosion, such as active rills, gullies, flow patterns, etc., are not present within the allotment. Infiltration, retention and release of water processes relative to soil, vegetation, climate and landform appear to be providing for appropriate nutrient and hydrologic cycling and energy flow. The compaction layer indicator and litter amount indicator were rated as moderate departure at the site. However, following the November 2014 field visit it appears that the compaction layer is not widespread throughout the allotment. Overall, plants appeared healthy and vigorous and no signs of puddling were observed indicating that water infiltration is occurring. In addition, the amount of litter at the site does not appear to be negatively affecting infiltration. Shrubs, which occur through the majority of the allotment, help to capture and store precipitation, and facilitate the infiltration of moisture deeper into the soil profile (Ryel et al., 2003). Therefore, the South Roseworth Allotment is meeting Standard 1.

Standard 2 (Riparian Areas & Wetlands)

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

_X_ Standard Doesn't Apply

Standard 2 does not apply to the South Roseworth allotment because of the regulated flow. The only water bodies within the South Roseworth Allotment are a storage reservoir (rarely filled) and an irrigation canal which are both associated with the Cedar Mesa Canal system. The storage reservoir and canal are both located in the southern portion of the South Pasture (Map 2). Naturally occurring riparian vegetation, springs, streams or wetlands are not present within the allotment. A limited amount of wetland plant species, primarily mountain rush (*Juncus arcticus*), Kentucky bluegrass (*Poa pratensis*) and a few scattered willows (*Salix* spp.) are associated with the artificial water flows in the irrigation canal during the growing season. Several Russian olive (*Elaeagnus angustifolia*) trees are also present near the canal. Some Canada thistle (*Cirsium arvense)* and bull thistle (*Cirsium vulgare*), both noxious weeds, were present but were isolated to the area along the canal. The storage reservoir is formed by an 8 foot tall dike that runs east to west. The reservoir is rarely filled with water and riparian vegetation is limited to an area <3 acres in size consisting of mountain rush and meadow barley (*Hordeum brachyantherum*). Both these species are drought tolerant and generally occur in areas without perennial water. Approximately 50 Scotch cottonthistle (*Onopordum acanthium*)

plants were observed along the dike but the taller plants were all dead and appeared to have been sprayed.

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

Water flows associated with the irrigation ditch are not natural and are limited to the irrigation season. There are no natural stream channels or floodplains in the allotment. Therefore, Standard 3 does not apply to the South Roseworth 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 includes native plant species, the ID Team determined that the allotment should be assessed as a seeded plant community rather than native plant community since the majority of the allotment was seeded to crested wheatgrass in the 1960s.

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
As a result of the West Roseworth Plow and Seeding Project in the 1960s, the plant communities within the South Roseworth Allotment have been modified. In 1965, the pasture was broadcast seeded with crested wheatgrass, a non-native perennial grass, after mechanical disking which removed the majority of the sagebrush. Due to limited seeding success of crested wheatgrass, the same area was re-treated using the same methods in 1968. Today, crested wheatgrass and Sandberg bluegrass are the dominant grass species in the allotment and the dominant shrub species is Wyoming big sagebrush (Photo 2, Table 9).

The ID Team determined the evaluation site was representative of both pastures in the allotment aside from the area mapped as 'annual' in the southern portion of the North Pasture (Map 3). The area was lacking shrubs and was dominated by annual plant species (Photo 1). Fire records indicate the allotment has not burned in wildfires for the past 50 years. However, it appears the southern portion of the North Pasture burned in a fire sometime between 1976 and 1992. There appears to be an old fire scar in the 1992 color aerial photographs that is not present in the 1976

aerial photographs. This may have been from an unreported wildfire or escaped agricultural burn.

Vegetative cover data was collected at the site in 2013 following the Sage-grouse Habitat Assessment Framework (Stiver et al., 2010) protocol. To include a more comprehensive display of presence and distribution of ground cover categories, the cover data was collected at multiple layers and is summarized in Table 9 as top layer (e.g. first thing (plant, litter, biotic crust, rock or bare ground) encountered by a pin lowered to the ground) and all layers (e.g. all items encountered by the pin). Bare ground can only be categorized as such under top layer, therefore, all layers is blank for this category. Wyoming big sagebrush (16 percent), Sandberg bluegrass (22 percent), and curveseed butterwort (*Ceratocephala testiculata*) (17 percent) comprise the most frequently hit vegetation at the site, followed by crested wheatgrass (13 percent) and then cheatgrass (1 percent). Reproductive capability and vigor of perennial vegetation was adequate and reflective of the observed average annual production of perennial species.

As indicated by the cover data, crested wheatgrass is co-dominant with Sandberg bluegrass and curveseed butterwort across much of the allotment (Table 9). Bottlebrush squirreltail was not recorded in the vegetative cover transect; however, it was observed at the site, but in low abundance. Although seven perennial forb species were observed and recorded in the plant list (Appendix B), they were not recorded in the vegetative cover transect and were noted to be generally lacking. Perennial or sage-grouse preferred forbs were also absent in 96 percent of the Daubenmire frames.

Table 9: Percent Ground Cover at the IIRH Site

Vegetation Class	Species*	Percent Cover	
		Top Layer	All Layers
Perennial Grass	Crested wheatgrass	11	13
	Sandberg bluegrass	10	22
Annual Grass	Cheatgrass	1	1
Annual Forb	Curveseed butterwort	16	17
Shrub	Wyoming big sagebrush	16	16
Vegetation Total		**54**	**69**
Other Cover	Bare Ground	14	-
	Biological Soil Crust	12	36
	Litter Standing	7	9
	Litter in Contact with Soil	13	36
	Persistent Litter	0	0
	Rock or Gravel	0	0
Total		**100**	**150**

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

Three noxious weeds are present in the allotment; all were observed during the November site visit. Scotch cottonthistle was present along the water-catchment side of the dike. Canada thistle was present but localized to the southern ditch area. An isolated rush skeletonweed (*Chondrilla*

juncea) plant was observed along the southern boundary fence. These occurrences have been reported to the Twin Falls District weed program coordinator.

The annual invasive species curveseed butterwort and cheatgrass were observed at the site. Curveseed butterwort was widespread and abundant (Table 9), occurring mainly in interspaces and to a lesser extent under the shrub canopy. Scattered patches of cheatgrass were present near roads, trails, and other disturbance areas except for the southern portion of the North Pasture that is dominated by cheatgrass and other invasive species (Table 5; Map 3).

Soils appeared relatively stable with the average value from the soil stability test within the expected range for soil surface resistance to erosion. Bunchgrasses were well distributed in the interspaces between shrubs, and interspaces were often well armored with pronounced microtopography and biological soil crust cover. Within the sagebrush/bunchgrass area of the allotment, biological soil crust cover was measured at 36 percent cover for all layers (Table 7), and was most common under shrub canopies. Moss and biological soil crust cover were also present within the grass dominated areas, but to a lesser extent. No rock or gravel was recorded in the cover data; however, surface gravels and larger rock were scattered on the soil surface throughout the allotment and aid in soil stability. Some soil compaction was observed but was not widespread (see Standard 1 for further details).

Evaluation of Standard 5

Analysis of IIRH and HAF data have been interpreted for the allotment as a whole. Native perennial forb species are limited to seven species (Appendix B) at low abundance while invasive annual species are abundant and common and noxious weeds are present.

Dominant deep-rooted grasses expected in the reference state have been replaced by crested wheatgrass, which is providing a similar amount of cover and above and below ground structure to its native equivalent. Where sagebrush plants are present, the cover is adequate to provide hydrologic, nutrient, and energy cycling for this functional group. Soil stability is facilitated by litter, biological soil crusts, surface rock, and adequate bunchgrass dispersal in interspaces.

Perennial forb species which would be expected to be present [onions – *Allium* spp., spiny phlox – *Phlox hoodii*; lambstongue ragwort – *Senecio integerrimus*; meadow deathcamas – *Zigadenus venenosus*; fleabane – *Erigeron* spp.] were absent. The ESD indicates arrowleaf balsamroot and tapertip hawksbeard should be the dominant forbs but also were absent. The condition of the plant community at the time of the seeding is not known.

Curveseed butterwort, an invasive annual plant, was widespread and abundant throughout the allotment. Cheatgrass occurred mainly around roads, trails, and other disturbance areas except for the southern portion of the North Pasture that is dominated by cheatgrass and other annual invasive species (Table 5; Map 3). Noxious weed species are also present in the allotment, indicating the vegetation community may have a low resistance to expansion of invasive and noxious weeds in the event of large-scale disturbance such as wildfire. The threat of invasive species to biotic integrity increases following adverse climatic conditions and disturbances such as wildfire, especially in areas already weakened by weed infestation.

A full complement of plant species consistent with site potential are not present within the allotment and invasive species are common. Both factors decrease the maintenance of life form diversity, production, native animal habitat, nutrient cycling, energy flow, and the hydrologic cycle. These factors support the conclusion that the allotment is not meeting Standard 5 – Seedings.

Evaluation Finding – Allotment is:

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

Rationale for Evaluation Finding

Standard 5 for Seedings is not being met in either pasture of the South Roseworth Allotment due to the general lack of forbs in the allotment and the widespread occurrence of invasive species. It is likely that a long history of livestock grazing and vegetation manipulation in the 1960s reduced the number of forb species and their density in the allotment while simultaneously providing opportunity for weed invasion. The allotment was plowed in 1965 and broadcast seeded to crested wheatgrass; however, due to limited seeding success the allotment was treated again in 1968 using the same methods (West Roseworth Plow and Seed).

Current livestock use occurs in the fall of each year. Utilization levels have not been consistently measured in the last 10 years, but did vary from 37 to 60 percent on native Sandberg bluegrass (*Poa secunda*) and 4 to 33 percent on non-native crested wheatgrass (*Agropyron cristatum*). Two of the three years recorded for Sandberg bluegrass (48 and 60 percent average utilization) were in the moderate herbaceous utilization class (41 to 60 percent). Because use is permitted in the fall when plants are dormant, the infrequent high intensity utilization should not alter the grass composition because grasses are dormant and resistant to damage from grazing during this time.

Forb diversity and abundance are lacking within the allotment. Instability in the system has left the allotment vulnerable to establishment of invasive species. Invasive annuals are currently exploiting these resources and threatening ecosystem function throughout the majority of the allotment. Curveseed butterwort and cheatgrass have shallower roots when compared to native perennial forbs and bunchgrasses and therefore do not cycle nutrients throughout as much of the soil profile. Additionally, cheatgrass can promote an accelerated fire return cycle, which can move a system out of balance with natural carbon cycling processes (Bradley et al., 2006). The presence of invasive species also increases competition for resources and decreases opportunity for native species to establish. Overtime, the quality and make-up of nutrients in areas dominated by invasive plants diminishes (Rocky Mountain Cheatgrass Management Project, 2013), providing further opportunity for invasion by other invasive plants or noxious weeds.

Decreased species diversity, altered functional and structural groups, and presence of invasive plants and noxious weeds reduces overall ecological function of the allotment. A product of decreased ecological function is lower resistance and higher risk for further weed expansion (invasive plants and noxious weeds) especially during adverse climatic conditions or widespread disturbance such as wildfire.

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

__X__Standard Doesn't Apply

The vast majority of South Roseworth Allotment is dominated by native and seeded non-native species. Wyoming sagebrush, Sandberg bluegrass, and crested wheatgrass dominate the allotment with the exception of the southern portion of North Pasture (16 percent of the allotment) classified as annual grassland. Because of the relatively small area of the allotment dominated by annual vegetation, Standard 6 does not apply.

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

__X__Standard Doesn't Apply

No water quality assessments have been completed within the allotment, and beneficial uses have not been designated (IDEQ, 2014). No ephemeral, intermittent or perennial water bodies are present within the allotment. Therefore, Standard 7 does not apply to the allotment. Water in the irrigation canal meets its beneficial use for agricultural irrigation.

Standard 8 (Threatened, Endangered and BLM Sensitive Plants and Animals)
Habitats are suitable to maintain viable populations of threatened and endangered, sensitive, and other special status species.

Rangeland Health Assessment
Plants:
There are no known BLM sensitive plants within the allotment. However, systematic inventories for special status plants have not been conducted in the allotment. In the Jarbidge Field Office special status plants are generally associated with distinct soil types that occur on scattered portions of the field office. None of these soil types occur within the allotment based on SSURGO soil data (USDA and NRCS, 2012). The South Roseworth Allotment does not contain potential habitat for slickspot peppergrass (*Lepidium papilliferum*; Proposed Endangered, BLM sensitive species). The nearest known occupied habitat for slickspot peppergrass is 17 miles to the west, on the west side of Clover Creek.

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 South Roseworth 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 and slowly move 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).

The allotment contains 157 acres mapped as sagebrush (74 percent of the allotment is sagebrush). Sage-grouse have been observed year round in the adjoining allotments to the south. Sage-grouse habitat extends from the South Roseworth Allotment to the south, east, and west (Map 4).

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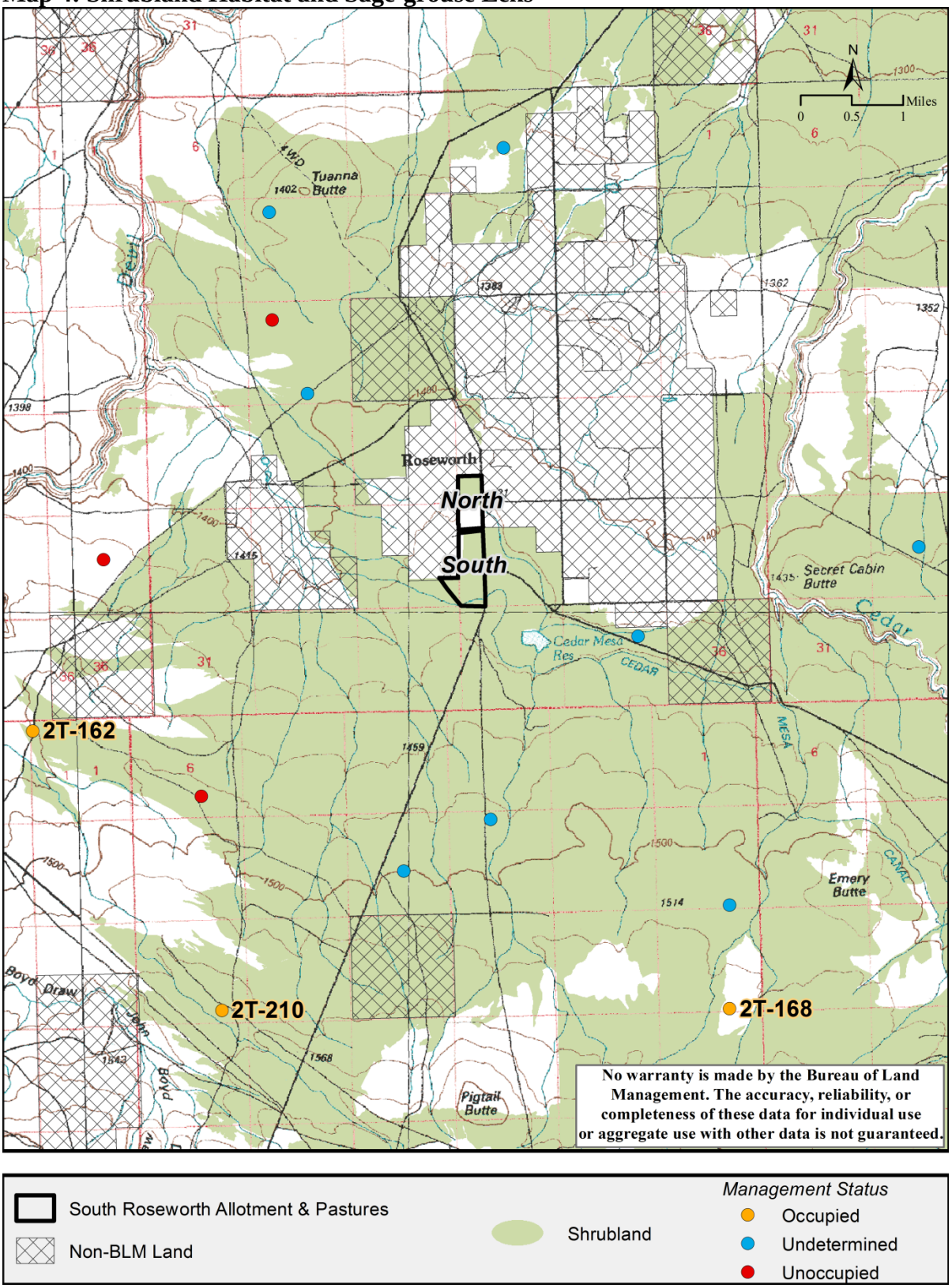
Map 4: Shrubland Habitat and Sage-grouse Leks



The South Roseworth Allotment does not contain any sage-grouse leks. Within five miles there are 3 occupied, 8 undetermined (due to a lack of recent surveys), and 3 unoccupied sage-grouse leks (Map 4). Lek 2T-210 was not known to occur until 2014. Sage-grouse attendance at occupied leks within 5 miles of the allotment are shown in Table 10. Leks are considered occupied if there has been documented sage-grouse activity within the past five years.

Table 10: Sage-grouse Attendance at Occupied Leks Within 5 Miles of the South Roseworth Allotment, 2000-2014

Lek	Location	Survey Year[1]														
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14
2T-162	4.2 miles SW	18	5	8	--	--	18	8	11*	12	14	5	8	3	10	6
2T-168	4.6 miles SE	16	--	--	--	--	--	--	--	--	--	--	--	--	--	4
2T-210	4.6 miles SW															18

[1]Where the table is blank the lek had not yet been identified; in years marked by dashes (--) the lek was not surveyed. An asterisk indicates area around lek burned in a wildfire that year (*).

Nesting and Early Brood Rearing Habitat

One sage-grouse habitat suitability assessment was conducted in the South Roseworth Allotment in 2013. The location of sage-grouse habitat suitability assessment (HAF site) is shown in Map 3. No sage-grouse sign was observed during the assessment. The sage-grouse habitat suitability assessment was used as additional information in evaluating rangeland health. The sage-grouse habitat suitability assessment is shown in Table 11.

Table 11: Sage-grouse Habitat Assessment Worksheet for Nesting and Early Brood-rearing Habitat (arid site)

Habitat Indicator	Suitable Habitat	Marginal Habitat	Unsuitable Habitat
Average Sagebrush Canopy Cover	**15 – 25%**	**10 - < 15% or > 25%**	**< 10%**
	16%		
Average Sagebrush Height	**12 - 30”**	**10 -11” or >30”**	**< 10”**
	22”		
Sagebrush Growth Form	**Spreading**	**Mix of spreading and columnar**	**Columnar**
	Spreading		
Average Grass Height	**≥ 7”**	**5 - < 7”**	**< 5”**
			3.6”
Average Perennial Grass Canopy Cover	**≥ 10%**	**5 - < 10%**	**< 5%**
	35%		
Average Forb Canopy Cover	**≥ 5%**	**3 - < 5%**	**< 3%**
			0%
Preferred Forb Abundance and Diversity	**Forbs common with at least a few preferred species common**	**Forbs common, but only 1 or 2 preferred species present**	**Forbs rare to sparsely present**
			X
Overall Site Evaluation			**X**
Pasture Evaluation			**North, South**

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The South Roseworth Allotment is located adjacent to a paved road and large trees to the east and a house on private property with large trees to west. A gravel road to a private residence bisects the allotment. The allotment is adjacent to private agricultural lands to the north, east, and west. Private agricultural lands generally have increased densities of black-billed magpies (*Pica hudsonia*) and common ravens (*Corvus corax*) as well as mid-sized-predators 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). Due to the allotments location it was rated unsuitable for sage-grouse. Trees are present west of the allotment on private land and east of the northern portion of the allotment. In the past ravens and magpies have nested in the trees. In addition, the sage-grouse habitat assessment documented that forbs are limited in the allotment and there is an abundance of non-native annual plants (cheatgrass 1 percent cover, curveseed butterwort 20 percent; cover values reported are for all layers). The portion of the allotment to the north of the gravel road that bisects the pasture contains a high amount of cheatgrass.

Late Brood Rearing Habitat
The southern portion of the allotment contains a canal (0.4 of a mile) and small reservoir (up to 5 acres). Water is present in the canal from April until October. Water in the reservoir varies annually, but the reservoir is usually dry. The scattered willows and Russian olives occur along the canal (approximately 1 dozen trees) provide nesting habitat for common ravens and black-billed magpies that prey on sage-grouse eggs and recently hatched chicks (Autenrieth, 1981; Coates, 2007). The allotments location and the presence of trees along the canal and adjacent private land make the allotment unsuitable as late brood rearing habitat.

Winter Habitat
Sagebrush is tall (average height 22 inches) enough to be above snow level during most years. In the Roseworth area snow depths seldom exceed 12 inches. Due to the allotments location it is unlikely that sage-grouse would use it as wintering habitat.

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.

There are no known ferruginous hawk nests in the allotment. However, there are 3 nests within 1.5 mile of the allotment. Junipers and Russian olives which occur along the canal (approximately 1 dozen trees) could provide suitable nesting habitat for ferruginous hawks. The allotment provides marginal 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. 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 percent), with spiny hopsage (*Grayia spinosa*) (10 percent), antelope bitterbrush (*Purshia tridentata*) (6 percent), and rabbitbrush (*Chrysothamnus visicidiflorus*) (3 percent) (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 South Roseworth Allotment. At this time sagebrush height and density are suitable for Brewer's sparrow nesting.

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

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

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

Loggerhead shrikes have been observed on the allotment and would be expected to nest and forage on the allotment. At this time sagebrush of suitable height for nesting occurs in the allotment; the tallest sagebrush on the cover transect was 30 inches. Additionally, junipers and Russian olives along the canal 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 the allotment. Sagebrush height and density is 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 percent) in a generally small area (less than 200 feet radius [3 acres]) from the burrow within a larger (90 acres to 170 acres) home range. The primary food of pygmy rabbits is sagebrush which comprises 99 percent of its winter diet (Green and Flinders, 1980). Grasses and forbs make up more of the diet in the late spring into early summer.

No surveys for pygmy rabbits have been conducted in the allotment. The allotment does not contain areas where sagebrush is of sufficient density or height for pygmy rabbit burrows. Additionally, forbs are essentially absent in the allotment and there is an abundance of non-native annual plants. The allotment was rated 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.

The allotments location and abundance of non-native annuals makes it marginal for Piute ground squirrels.

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 not present in the allotment. Spotted bats may forage over the allotment and drink and forage along the canal.

Evaluation for Standard 8
There are no known BLM sensitive or federally listed plants within the South Roseworth Allotment. The allotment does not contain potential habitat for slickspot peppergrass. The nearest known occupied habitat for slickspot peppergrass is 17 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 are shown in Table 12.

Table 12: Overall Habitat Suitability for BLM Sensitive Wildlife Species

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

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

The sage-grouse habitat suitability assessment rated the allotment as unsuitable since sage-grouse preferred forbs and perennial forbs are essentially absent and there are a high amount of non-native annuals (i.e., curveseed butterwort). In addition, the allotments location between a paved road, house, and presence of large trees on two sides makes use by sage-grouse unlikely.

The canal in the southern portion of the allotment contains approximately a dozen trees that could be used for ferruginous hawk nesting. The allotment contains marginal habitat for 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 the allotment.

Pygmy rabbit habitat was rated as unsuitable. The allotment does not contain areas where sagebrush is of sufficient density or height for pygmy rabbit burrows.

The allotment contains marginal habitat to maintain a stable population of Piute ground squirrels due to the near absence of perennial forbs and high amount of non-native annual plants.

Spotted bat roosting habitat was rated unsuitable since cliffs are not present in the allotment. Spotted bats may forage over the allotment and drink and forage along the canal.

Evaluation Finding – Allotment is:

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

Rationale for Evaluation Finding

The South Roseworth Allotments location, essential lack of perennial forbs, and high abundance of non-native annual plants makes it marginal to unsuitable for the majority of special status species. In addition, the south portion of the North Pasture is dominated by cheatgrass. This area of cheatgrass has the potential to expand into adjacent areas and thereby increase the risk of fire. Therefore, the South Roseworth Allotment is not meeting Standard 8.

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

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

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

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

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

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APPENDIX B: SPECIES LIST ACCUMULATED DURING UPLAND ASSESSMENTS

Scientific Name	Common Name	Species Type, Notes
Perennial Grasses		
Agropyron cristatum	Crested wheatgrass	Exotic, Seeded
Elymus elymoides	Bottlebrush squirreltail	Native
Hordeum brachyantherum	Meadow barley	Native
Poa pratensis	Kentucky bluegrass	Exotic, Isolated to Area Along Canal and Reservoir
Poa secunda	Sandberg bluegrass	Native
Annual Grasses		
Bromus tectorum	Cheatgrass	Exotic, Invasive
Rush		
Juncus arcticus	Mountain rush	Native, Isolated to Area Along Canal and Reservoir
Perennial Forbs		
Astragalus lentiginosus	Freckled milkvetch	Native
Astragalus purshii	Woollypod milkvetch	Native
Castilleja angustifolia	Northwestern Indian paintbrush	Native
Lomatium foeniculaceum	Desert biscuitroot	Native, Sage-grouse Preferred
Marrubium vulgare	Horehound	Exotic
Penstemon spp.	Penstemon	Native
Phlox aculeata	Sagebrush phlox	Native, Sage-grouse Preferred
Annual Forbs		
Ceratocephala testiculata	Curveseed butterwort	Exotic
Descurainia pinnata	Western tansymustard	Native
Draba verna	Spring draba	Exotic
Lepidium perfoliatum	Clasping pepperweed	Exotic
Sisymbrium altissimum	Tall tumblemustard	Exotic
Noxious Weeds		
Cirsium arvense	Canada thistle	Exotic, Isolated to Area Along Irrigation Canal
Cirsium vulgare	Bull thistle	Exotic, Isolated to Area Along Irrigation Canal
Chondrilla juncea	Rush skeletonweed	Exotic, One Plant Observed
Onopordum acanthium	Scotch cottonthistle	Exotic, Isolated to Reservoir Dike
Shrubs and Trees		
Artemisia tridentata ssp. *wyomingensis*	Wyoming big sagebrush	Native
Atriplex canescens	Fourwing saltbush	Native
Chrysothamnus viscidiflorus	Yellow rabbitbrush	Native
Grayia spinosa	Spiny hopsage	Native
Elaeagnus angustifolia	Russian olive	Exotic, Invasive
Salix spp.	Willows	Native, Isolated to Area Along Irrigation Canal

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This list may not include all plants that can be found in the South Roseworth Allotment and should not be considered exhaustive. Scientific and common names were derived from the USDA and NRSC Plant Database (USDA and NRCS, 2013b).

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