

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

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**RANGELAND HEALTH ASSESSMENT AND EVALUATION REPORT**

**ROSEWORTH TRACT FFR ALLOTMENT #01009**

October 16, 2015

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## ALLOTMENT INFORMATION

**Field Office:** Jarbidge Field Office (JFO)

**Name of Permittee:** Cedar Creek Farms

**Allotment Name/Number:** Roseworth Tract FFR (01009)

**Date of Field Assessment:** May 21, 2013

**Stream Miles on Public Land (miles):** 0

**Table 1. Roseworth Tract FFR Acres**

Total Acres	BLM Acres	State Acres	Private Acres	Other Acres
8,146	874	643	6,629	0

**Table 2. Assessment Participants**

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

## CURRENT PERMITTED LIVESTOCK GRAZING USE

**Total Active Use:** 56 AUMs

**Livestock Type:** Cattle

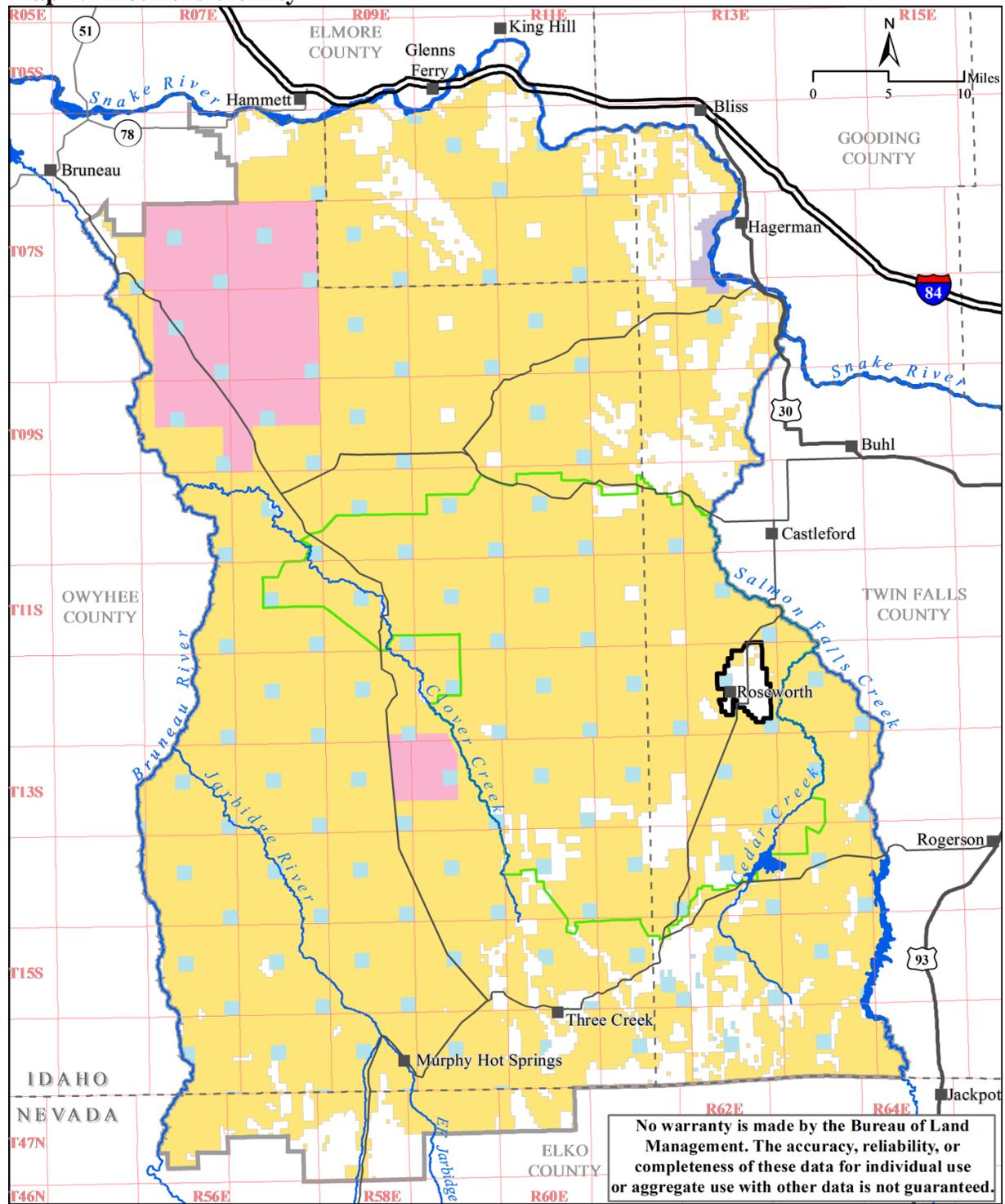
**Livestock Numbers:** 7 Cattle

**Season of Use:** 04/01 to 11/30

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

**Current Stocking Level:** 15.6 Acres/AUM

**Map 1. Allotment Vicinity**



	Roseworth Tract FFR Allotment		Bureau of Land Management		Private; other
	Devil Creek Sub-region		Military, Department of Defense		State
			National Park Service		

Map projection:  
UTM zone 11  
NAD 1983

## ALLOTMENT PROFILE

The Roseworth Tract Fenced Federal Range (FFR) Allotment is located approximately seven miles south of Castleford, Idaho (Map 1). The elevation ranges from approximately 4,300 to 4,500 feet.

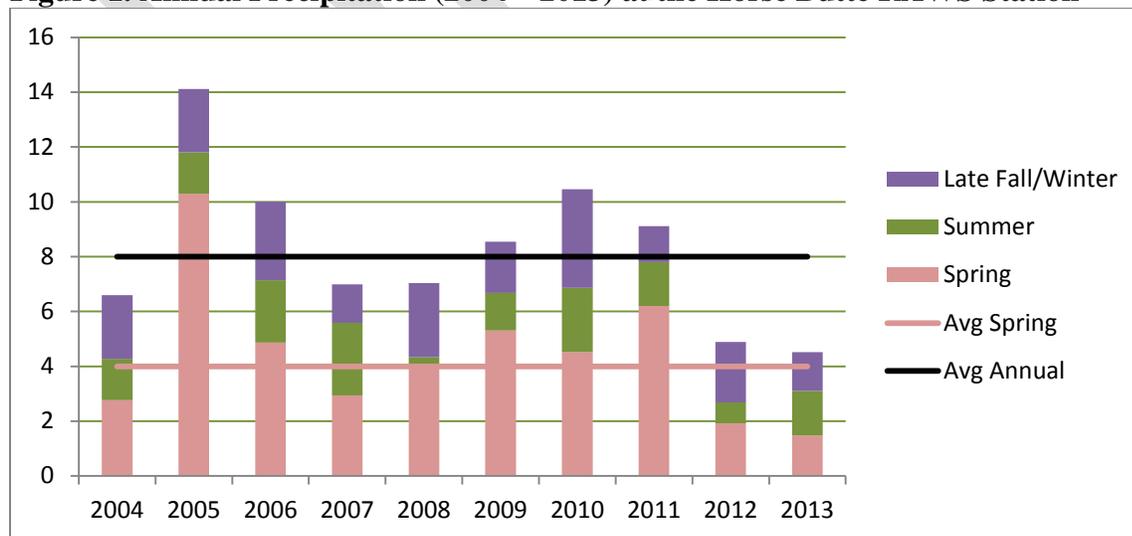
### Climate

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 Roseworth Tract FFR Allotment ranges from 8 to 12 inches. The bulk of the moisture typically falls as rain and snow from late fall through late spring.

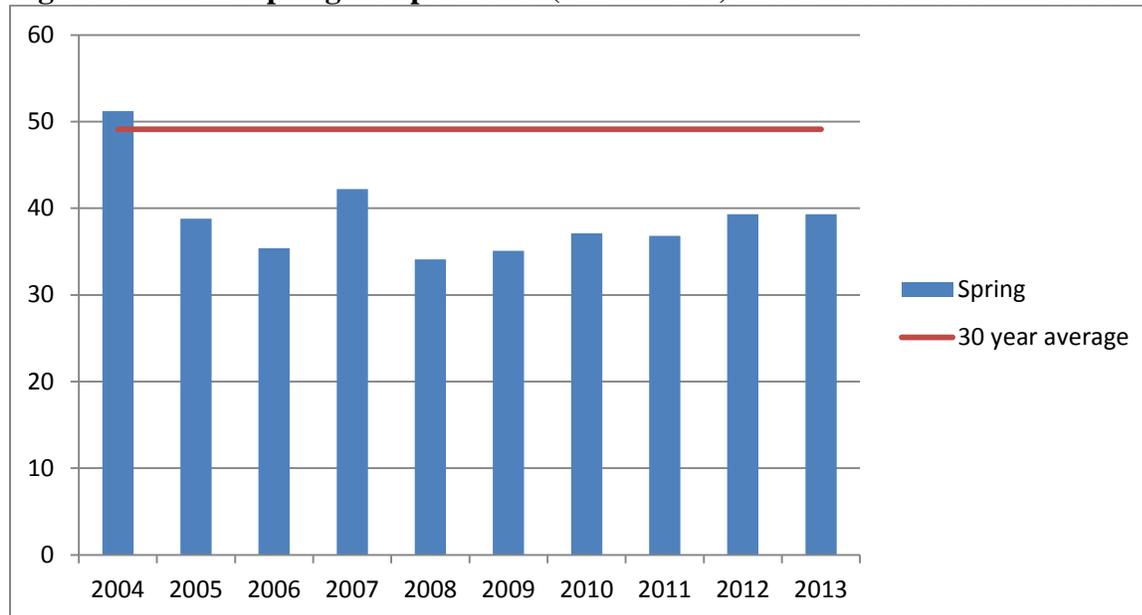
Weather data collected at the Horse Butte RAWS station is used to assess precipitation and temperature trends from 2004 to 2013. The RAWS station is located in an 8 to 12 inch precipitation zone within the allotment boundary. The thirty-year annual average precipitation at the Horse Butte RAWS station 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 Roseworth Tract FFR Allotment is comprised of five scattered BLM tracts that range in size from 40 to 450 acres and are intermingled with private land. Some of the larger tracts are split by roads and fences and not all are completely fenced. Irrigation pivots are authorized to cross two of the tracts. Agricultural waste water ditches and a pond provide livestock water (Map 2). Cattle are permitted to graze 56 AUMs from April 1 through November 30.

Although the tracts are not named, for this analysis they will be called the Central, West, Northeast, Northwest, and Southeast Tracts. The West Tract is 440 acres in size and is divided into 3 unequal fields. The Central Tract is 160 acres. Historically, a portion of the Central Tract served as a landfill for the Roseworth area. Northeast Tract is 120 acres divided into 2 fields, one 40 acres the other 80 acres. The Northeast Tract has an irrigation pivot crossing it in its southwest corner. Northwest Tract is 35 acres. The Northwest Tract is also crossed by an irrigation pivot and is bordered on the west side by the paved road to Roseworth. The Southeast Tract is 80 acres and is split. Southeast Tract contains a small reservoir approximately four acres in size. The pond has a drainage field that provides an artificial wetland area about 0.4 miles in length. Map 2 depicts the fenced divisions of each tract.

The Roseworth Tract FFR Allotment is now 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 Roseworth Tract FFR Allotment is managed as a non-priority allotment under the court order due to the limited suitable sage-grouse habitat in the allotment.

Actual use, since 2004, has ranged from non-use to 74 AUMs and is shown in Table 3. Non-use was taken two years out of the past 10 years and fewer than 57 AUMs were used five years.

Actual use forms were not submitted in 2006, 2007, or 2009; therefore, use is based on the grazing bill for these years. There is no formal grazing system for this allotment and livestock trailing is not currently authorized.

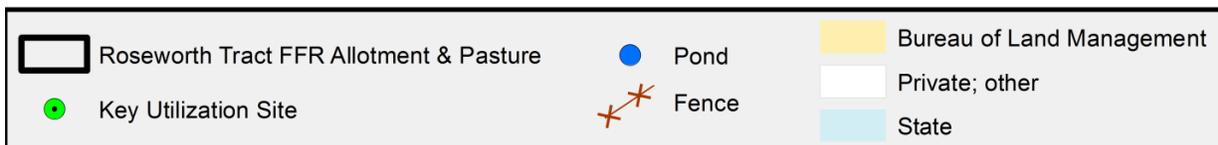
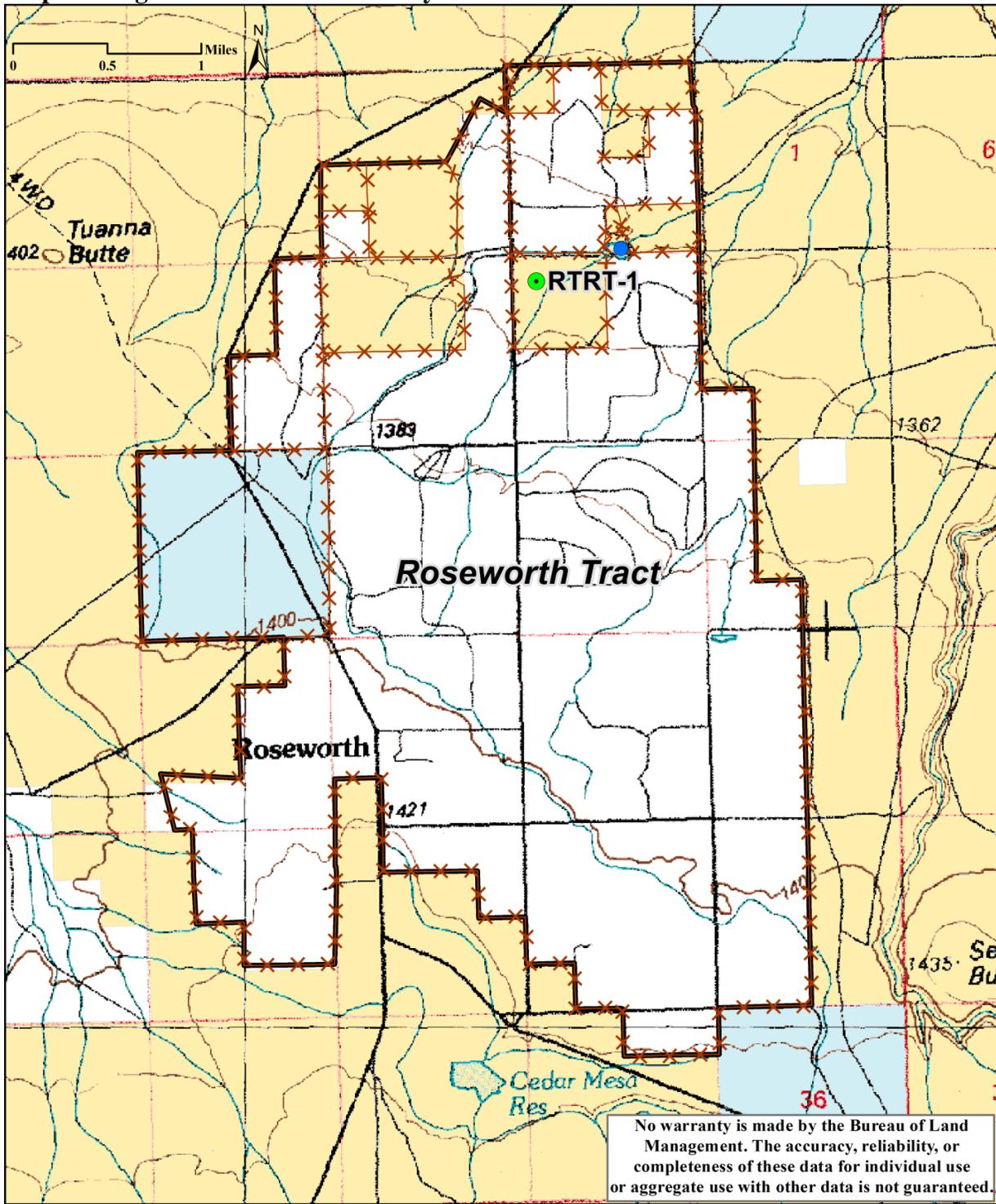
Actual use and percent utilization for the Allotment from 2004 to 2013 can be seen in Table 3. Utilization has been measured on Sandberg bluegrass (*Poa secunda*) and crested wheatgrass (*Agropyron cristatum*). Utilization measurements on Sandberg bluegrass during winter months can result in inconsistent measurements due to high amount of biomass loss to natural disarticulation from mechanical damage from wind, snow, and decomposition. Because of this, the JFO has ceased monitoring use of Sandberg's 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 in Map 2.

**Table 3. Actual Use and Utilization Summary**

Year	Number of Livestock	In Date	Out Date	AUMs	Utilization	
					Sandberg bluegrass	Crested wheatgrass
2004	0	-	-	0	-	-
2005	10	06/15	10/15	40	8%	28%
2006*	7	4/1	11/30	57	17%	3%
2007*	7	4/1	11/30	57	-	-
2008	56	11/10	11/20	20	9%	-
2009*	7	4/1	11/30	56	-	-
2010	56	11/15	11/24	18	-	-
2011	56	11/21	11/28	15	-	-
2012	0	-	-	0	-	-
2013	45	5/25	7/13	74	-	-

\* Actual use form was not submitted by the permittee.

**Map 2. Range Infrastructures and Key Utilization Sites**



## **Vegetation**

Vegetation in the Horse Butte AMP 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).

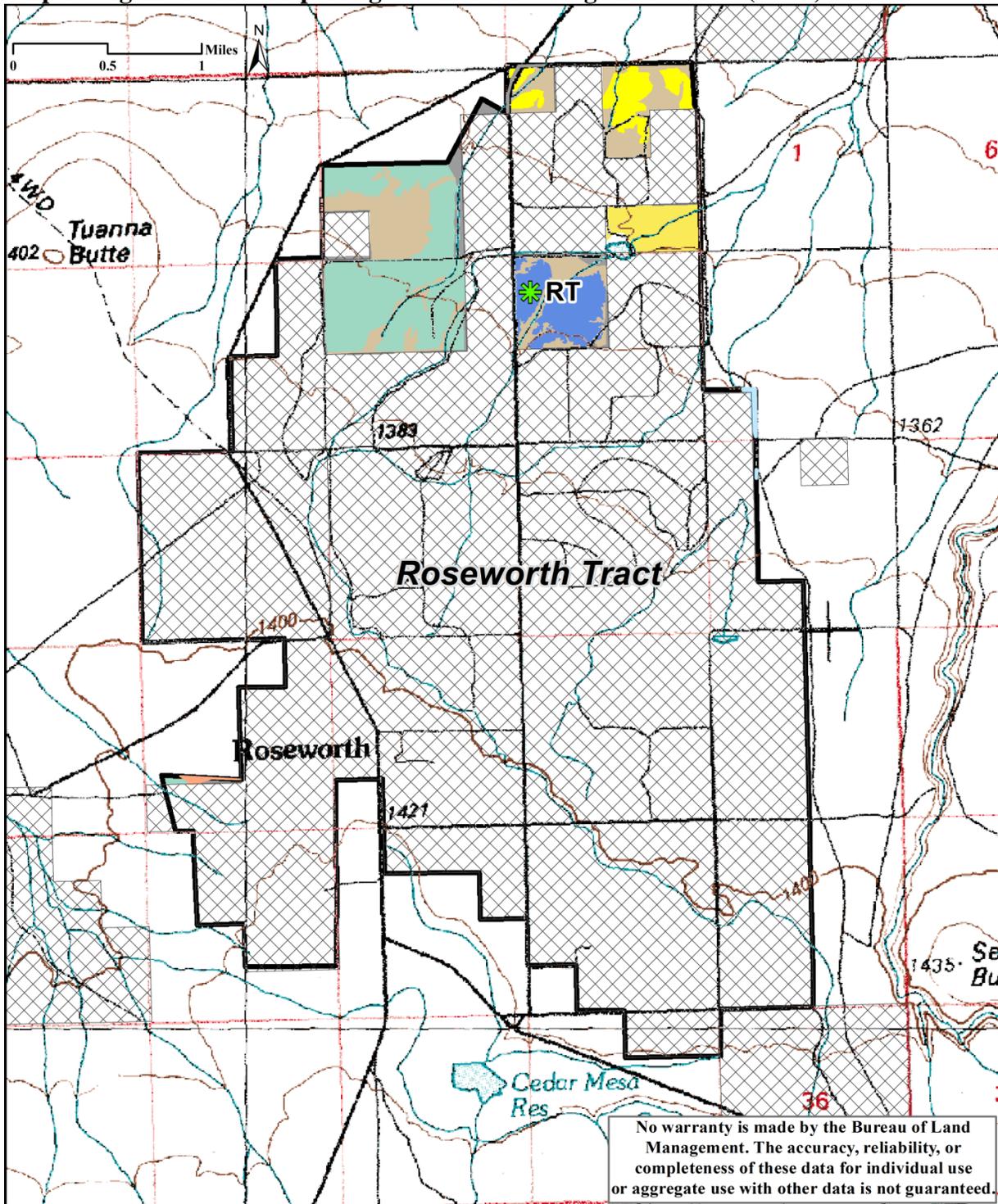
The allotment is predominantly vegetated with a mixture of perennial and annual grass species, with a shrub component present throughout most of the allotment (Table 4).

**Table 4. Vegetation Community by Area and Proportion of the Allotment**

<b>Vegetation Community*</b>	<b>Roseworth Tract FFR (874 acres)</b>
Annual	254 ac (29%)
Barren	2 ac (<1%)
Bluebunch wheatgrass	3 ac (<1%)
Crested wheatgrass	80 ac (9%)
Wyoming big sagebrush/Annual grasses	72 ac (8%)
Wyoming big sagebrush/Bluegrass	309 ac (35%)
Wyoming big sagebrush/Crested wheatgrass	3 ac (<1%)
Wyoming big sagebrush/Thurbers needlegrass	100 ac (11%)
N/A	52 ac (6%)

\*Vegetation community is listed by dominate cover species.

**Map 3. Vegetation & Interpreting Indicators of Rangeland Health (IIRH) Sites**

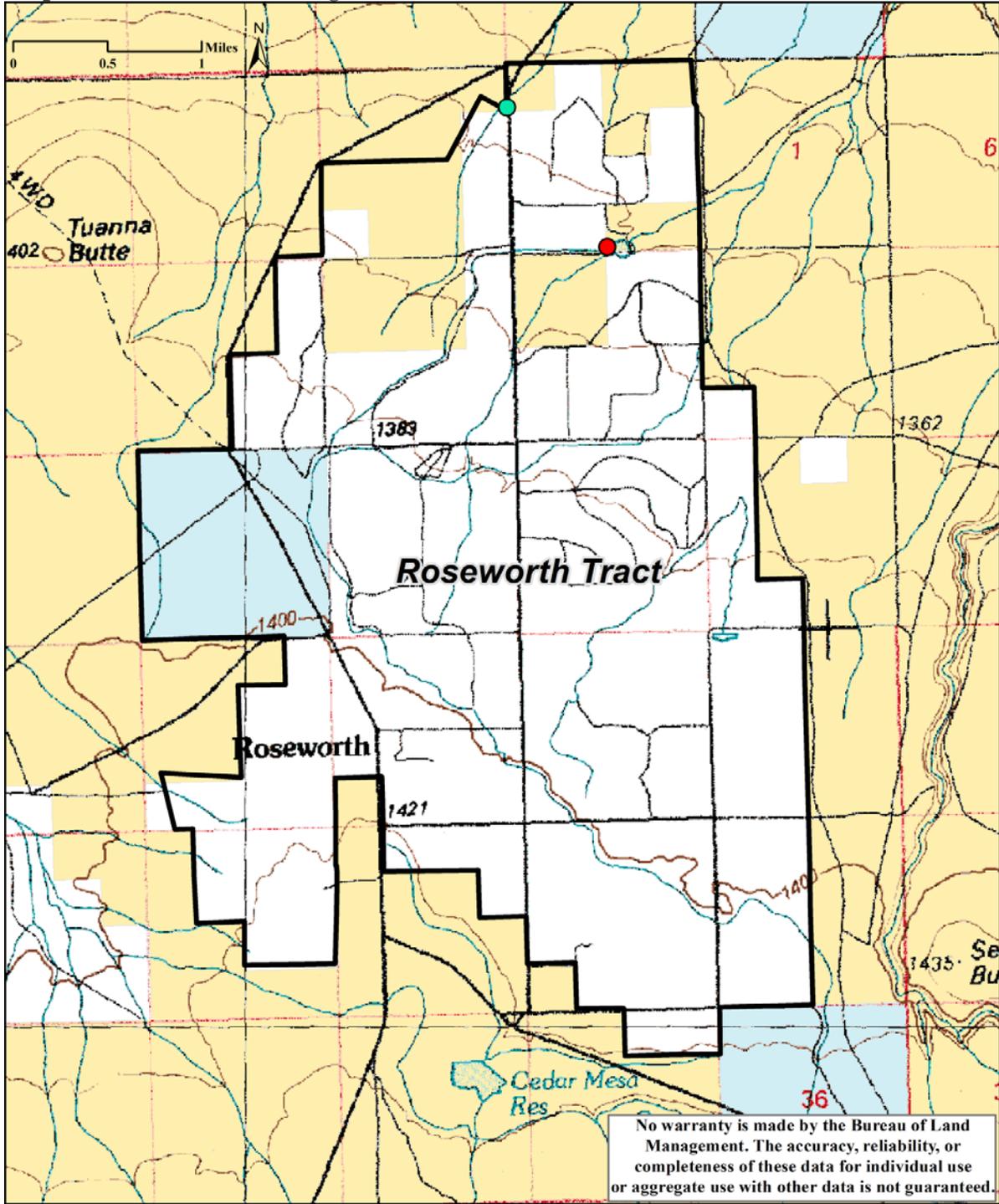


### **Noxious Weeds**

The State of Idaho has listed 65 plant species as noxious weeds. Within the Roseworth Tract FFR Allotment, whitetop (*Cardaria draba*), Scotch thistle (*Onopordum acanthium*), Canada thistle (*Cirsium arvense*), bull thistle (*Cirsium vulgare*) and diffuse knapweed (*Centaurea diffusa*), are known to occur (Map 4). There are two known occurrences of whitetop that were chemically treated in 2011. There is one known occurrence of Scotch thistle that was chemically treated in 2009. Diffuse knapweed, bull thistle, and Canada thistle were noted by JFO staff during previous visits to the allotment. 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. Control methods used within the TFD for the treatment of noxious weeds include biological, mechanical, and chemical.

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**Map 4. Noxious Weed Management**



There are no Ecological Site Inventory (ESI), production, or trend monitoring sites established on BLM lands within the Roseworth Tract FFR Allotment. The only information available for the allotment is that collected for the Rangeland Health Assessment.

## **IDAHO RANGELAND HEALTH STANDARDS ASSESSMENT**

There are eight standards for healthy rangelands that apply to BLM lands in the state of Idaho. Due to variances in the land type and geographical area, not all of the Standards apply to the Roseworth Tract FFR Allotment. Of the eight Idaho Standards for Rangeland Health, the following three standards are applicable to the Roseworth Tract FFR Allotment:

- **Standard 1** – Watersheds provide for the proper infiltration, retention, and release of water appropriate to soil type, hydrologic cycling, and energy flow.
- **Standard 4** – Healthy, productive, and diverse native animal habitat and populations of native plants are maintained or promoted as appropriate to soil type, climate, and landform to provide for proper nutrient cycling, hydrologic cycling, and energy flow.
- **Standard 8** – Habitats are suitable to maintain viable populations of threatened and endangered, sensitive, and other special status species.

*\*Standards 2, 3, 5, 6, and 7 do not apply to the Roseworth Tract FFR Allotment*

An interdisciplinary (ID) team conducted Interpreting Indicators of Rangeland Health (IIRH) field evaluations at one representative site in the Roseworth Tract FFR Allotment. The IIRH evaluation was done in May of 2013 at a Habitat Assessment Framework (HAF) site. The standard HAF data was not collected at the site, but the ID Team did collect foliar cover data, using the Step Point Method (BLM, 1996), at the time of the IIRH field evaluation (Table 8).

IIRH field evaluation sites were selected using a predetermined process. Sites are typically located in vegetation communities that most represent the allotment. HAF sites are generally selected for completing IIRH assessments. HAF locations are randomly generated through a GIS process (Appendix A). Because the criteria used for HAF site selection is specific to sage-grouse habitat, not all vegetation communities are always represented. If HAF sites are not located in a representative area, an ESI site is selected. If an ESI site is not found in the representative vegetation community, key utilization sites are used. Lastly, the ID Team selects a representative site if the above pre-determined sites are not representative of the plant communities. The ID Team also tours the allotment to ensure IIRH sites are representative of the vegetation communities throughout the allotment.

Seventeen indicators of rangeland health (Table 5) were used to evaluate three rangeland health attributes (Table 6): 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.

In addition to evaluating rangeland health indicators at the IIRH site, the ID Team also examined other areas to ensure the evaluation site was representative of the vegetation communities throughout the allotment. Data collected at the evaluation sites were compared to the Natural Resource Conservation Service’s (NRCS) Ecological Site Description (ESD) reference sheet for the soil types and potential vegetation communities in the allotment. The site was located in the Loamy 8-12 ARTRW8/PSSP-ACTH7 (Wyoming big sagebrush/bluebunch wheatgrass-Thurber’s needlegrass) ecological site. The ESD reference sheet #R011XY001ID describes the expected plant community in Reference State 1, Phase A. The reference plant community has an overstory of Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) with bluebunch wheatgrass and Thurber’s needlegrass dominating the understory. Sandberg bluegrass, squirreltail, thickspike wheatgrass (*Elymus lanceolatus*), arrowleaf balsamroot (*Balsamorhiza sagittata*), and taper-tip hawksbeard (*Crepis acuminata*) are sub-dominant species. A large variety of other grasses, forbs, and shrubs occur in minor amounts. Natural fire frequency should be 50-70 years.

Indicator ratings for the Roseworth Tract FFR Allotment are shown in Table 5. Rangeland health attributes ratings are shown in Table 6.

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 5 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 6.

**Table 5. Summary of 17 Indicators of Rangeland Health for the Roseworth Tract FFR Allotment.**

Indicators	Attributes S = Soil & Site Stability H=Hydrologic Function B = Biotic Integrity	Degree of Departure from Ecological Site Description and/or Ecological Reference Area(s)				
		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

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
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

**Table 6. Rangeland Health Attribute Rating at IIRH site**

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

**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 is located in the Central Tract, in an area mapped as a Wyoming big sagebrush/Thurber’s needlegrass vegetation community (Map 3). The IIRH Site was evaluated

using the ESD (R011XY001ID) reference sheet for the Loamy 8"-12" Wyoming big sagebrush/bluebunch wheatgrass-Thurbers needlegrass ecological site. The reference sheet for this ESD indicates that 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).

Multiple soil series exist within the Roseworth Tract FFR Allotment and are predominately silt loams. The Soil Survey Geographic (SSURGO) Database (NRCS, 2012) shows that 100 percent of the allotment has a moderate wind erosion factor. The soil survey also shows that 6% of the allotment has a medium water erosion factor and the remaining 94% has a high water erosion factor. Topography at the site is relatively flat with a north aspect. The site has not experienced wildfire in over 50 years.

**Table 7. Ground Cover (Top Layer) at IIRH Site**

Cover Types	% Cover
Perennial Grasses	12
Annual Grasses (Cheatgrass)	8
Shrubs	38
Biological Crusts	24
Litter	6
Bare Ground	12
<b>Total</b>	<b>100</b>

*IIRH Site. Loamy 8-12”*

The IIRH site is located in a native vegetation community where Sandberg bluegrass is the dominant grass species (12% cover) and Wyoming big sagebrush is the dominant shrub species (38% cover). Biological soil crusts comprise 24% of the cover (Table 7). The amount of bare ground (12%) is below the expected range described in the ESD reference sheet. Ground cover is comprised of biological crusts (24%), litter (6%), perennial grasses (Sandberg bluegrass) (12%), and shrubs (Wyoming big sagebrush) (38%). Cheatgrass is present and provides 8% of the ground cover. Foliar cover was collected for litter and was higher than expected for the site at 38% (for all layers), but litter does not appear to be impeding plant growth and is providing for site stability.

Soil stability tests were not conducted within the Roseworth Tract FFR Allotment; and there were no observable signs of soil movement at the site.

The indicator for litter amount was assessed as a “moderate” departure from the ESD reference sheet. Although litter amount (38%) deviated from the reference condition for all layers, it is not inhibiting site stability and ecological processes as shown by adequate soil moisture and expected annual plant growth and biomass production. All other indicators related to the Soil and Site Stability and Hydrologic Function attributes were assessed as a “none to slight” departure from the ESD. Therefore, the Soil and Site Stability and Hydrologic Function attributes were each rated as a “none to slight” departure.

### **Evaluation of Standard 1**

Rangelands under Standard 1 should provide for proper infiltration, retention, and release of water appropriate to site potential to provide for proper nutrient cycling, hydrologic cycling, and energy flow. The amount and distribution of ground cover are appropriate for site stability and evidence of accelerated soil erosion was not observed.

The amount of litter found within the allotment is higher than what is expected; however, the amount of litter is providing for site stability and ecological processes, as demonstrated by adequate soil moisture and annual plant production matching what is expected for the site.

Plant community composition and distribution relative to infiltration was rated none to slight at the IIRH site within the allotment. Although the presence of deep-rooted perennial bunchgrasses was lower than expected in most of the native plant communities, the ID Team noted that deep-rooted perennial grasses and shrubs were present 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***

Adequate ground cover (e.g., perennial vegetation cover, biological soil crusts, and litter) is present to provide for soil stability in the Roseworth Tract FFR Allotment (Table 7).

Observations made by the ID Team during 2013 IIRH evaluation, as well as cover data (Tables 7 and 8) collected, indicate that ground cover is sufficient for soil stability. Deep-rooted perennial bunchgrasses are notably less than is expected in the native plant communities, but there appears to be enough deep-rooted perennial bunchgrasses and Wyoming big sagebrush to carry soil moisture deep into the soil profile.

Bare ground is lower than expected throughout the tracts and no evidence of accelerated erosion (e.g., active rills, water flow patterns, pedestals) was observed. 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.

Litter amounts deviated from the ESD reference sheet; however, litter amounts seem appropriate for site stability and ecological processes, as shown by adequate soil moisture and plant growth/annual production matching what is expected at each site. The Soil and Site Stability and Hydrologic Function attributes were rated as a “none to slight” departure from what was expected within the ESD at the IIRH site, so the allotment was determined to be 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

No intermittent or perennial streams are present in the Roseworth Tract FFR Allotment. One artificially created wetland is present in the Southeast Tract. The reservoir occurs on 4.1 acres of BLM-administered land with an additional 1.5 acres occurring on adjacent private land. A Properly Functioning Condition (PFC) assessment (BLM 2003) was conducted on the BLM portion of the wetland in 2007 and the functional rating for the wetland was PFC. Several ditches also occur in the allotment. The ditches supply water to private lands for irrigation purposes. Since all water bodies in the allotment are of artificial origin, Standard 2 does not apply.

### **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 rationale under Standard 2.

### **Standard 4 (Native Plant Communities)**

*Healthy, productive, and diverse native animal habitat and populations of native plants are maintained or promoted as appropriate to soil type, climate, and landform to provide for proper nutrient cycling, hydrologic cycling, and energy flow.*

### **Rangeland Health Assessment**

Native plant communities occupy most of the public land within the Roseworth Tracts FFR Allotment (91%). The Southeast Parcel (80 acres) is seeded to crested wheatgrass and is less than 10% of the allotment. Therefore, vegetation in the Roseworth Tract FFR Allotment is evaluated under Standard 4 – Native Plant Communities.

Field notes recorded during the 2013 IIRH evaluation list the presence of native shrubs, grasses, and forbs (Appendix B). Foliar vegetation cover data was collected at the site in 2013 (Table 8). Cover data was collected at multiple layers, but only the top layer was used to assess vegetation cover. Wyoming big sagebrush comprises the highest amount of vegetation cover at the site, followed by biological soil crusts, and Sandberg bluegrass (Photo 1).

**Table 8. Percent Vegetative Cover (Top Layer)**

Vegetation Class	Species*	% Cover
		2013
Perennial Grasses	<i>Sandberg bluegrass</i>	12%
Annual Grasses	<i>Cheatgrass</i>	8%
Shrubs	<i>Wyoming big sagebrush</i>	38%
<b>Vegetation Total</b>		<b>58%</b>
Other Cover	<i>Biotic Crust</i>	24%
	<i>Bare Ground</i>	12%
	<i>Litter in contact with soil</i>	4%
	<i>Litter standing</i>	2%
	<i>Rock/Gravel</i>	0%
<b>Grand Total</b>		<b>100%</b>

\* Other plant species observed, but not recorded at the 2013 cover transects are listed in Appendix B

**IIRH Site. Loamy 8-12”**

The IIRH site is located in a native vegetation community where Sandberg bluegrass is the dominant grass species (12% cover) and Wyoming big sagebrush is the dominant shrub species (38% cover). Biological soil crusts comprise 24% of the cover. Bluebunch wheatgrass and Thurber’s needlegrass have been replaced by Sandberg bluegrass and cheatgrass. Overall, the amount of deep-rooted perennial bunchgrasses and forbs is less than expected for the site resulting in a “moderate” departure from the ESD reference sheet for the functional/structural group indicator.

**Photo 1. IIRH Evaluation Site within the Roseworth Tract FFR Allotment.**



Cheatgrass is scattered throughout the site and dominates disturbed areas (e.g., roads, rodent burrows, etc.). It provided 8% of the cover, so the indicator for invasive species was assessed as a “moderate” departure from that expected for the site. The amount of litter at the site was also assessed as a “moderate” departure, due to higher than expected litter (38% cover) being present, relative to that described in the ESD.

The indicator for plant mortality/decadence was rated as a “slight to moderate” departure from the ESD reference sheet due to sagebrush mortality observed at the site. The remaining indicators related to the Biotic Integrity attribute were rated as “none to slight” departures. The Biotic Integrity attribute was rated as a “slight to moderate” departure from the ESD reference sheet based on the departures attributed to functional/structural groups, invasive plants, litter amounts, and mortality/decadence.

#### **Evaluation of Standard 4**

Plant vigor (total plant production, seed and seedstalk production, cover, etc.) is adequate to enable reproduction and recruitment of plants when favorable climatic events occur. Noxious weeds are not increasing. Adequate litter and standing dead plant material are present for site protection and for decomposition to replenish soil nutrients relative to site potential.

The ID Team rated the functional/structural group indicator as a “slight to moderate” departure from the ESD reference sheet. Deep-rooted perennial bunchgrasses, such as bluebunch wheatgrass and Thurber’s needlegrass were not recorded in the cover transect. Thurber’s needlegrass was observed at the site albeit at low density. Bluebunch wheatgrass was not observed. Sandberg bluegrass, a short stature and shallow rooted bunchgrass, dominates the site. Sandberg bluegrass matures early in the growing season, and with the absence of bluebunch wheatgrass and low amounts of Thurber’s needlegrass the energy flow and nutrient cycle is disrupted. Bluebunch wheatgrass and Thurber’s needlegrass mature later in the season prolonging the flow of energy and creating more biomass which contributes to the cycling of nutrients.

Wyoming big sagebrush, Sandberg bluegrass, and biological soil crusts currently dominate the site providing soil cover and competition to invasive vegetation. Forb cover was not recorded along the step point transect and forbs were not common at the site. Ten species were recorded but plant density was low. Native plant diversity is reduced at the site.

Cheatgrass was scattered throughout the site and was dominant in disturbed areas (roads, rodent burrows, etc.). Based on the amount of cheatgrass and it being scattered throughout, the indicator for invasive species was rated as a “moderate” departure from what is expected for the site. Noxious weeds were not seen during the 2013 IIRH evaluation; however, Scotch thistle, Canada thistle, bull thistle, whitetop, and diffuse knapweed have been noted during previous visits to the allotment by JFO staff. The potential for cheatgrass and noxious weeds to increase in the allotment is probable especially if the area is disturbed further.

Litter amounts were higher than indicated on the ESD reference sheet, but do not appear to be affecting ecological processes. Sagebrush provided most of the vegetation cover at the site (38%), but appeared decadent and was showing signs of increased mortality.

***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***

Deep-rooted perennial bunchgrasses, such as bluebunch wheatgrass and Thurber’s needlegrass were either absent or occurred in low amounts at the site. Removal of deep-rooted grass species allows summer moisture and other resources to be more available to other vegetation, increasing the likelihood of transition to a shrub or annual grass state (Perryman, et al., 2009). A mixture of plants that occupy varying depths of the soil profile provides more efficient use of soil moisture and nutrients (National Research Council, 1994). The absence or low density of deep rooted perennial bunchgrasses is indicative of a shift in the relative dominance of vegetation functional/structural groups. Sandberg bluegrass, a short statured plant, has become the dominant perennial grass species throughout much of the native plant communities. Declines in deep-rooted perennial bunchgrasses can result in a modification of nutrient cycling and energy flow due to changes in above and below ground plant structure. Shallow-rooted grasses generally have a shorter active growth period, smaller root systems, and relatively lower potential to capture and store carbon below ground.

Five noxious weeds and cheatgrass have been found in the allotment. These species can be a threat to the biotic integrity of the site, especially following large scale disturbances such as wildfire.

Standard 4 is not being met in the Roseworth Tract FFR Allotment due to the presence of both noxious and invasive species and the low abundance of deep-rooted perennial bunchgrasses.

**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.*

- Standard Doesn’t Apply

The plant communities with the Roseworth Tract FFR are dominated by native plant species; therefore, vegetation in the allotment was evaluated using Standard 4 – Native Plant Communities.

**Standard 6 (Exotic Plant Communities, Other than Seedings)**

*Exotic plant communities, other than seedings, will meet minimum requirements of soil stability and maintenance of existing native and seeded plants. These communities will be rehabilitated to perennial communities when feasible cost effective methods are developed.*

- Standard Doesn’t Apply

Plant communities in the Roseworth Tract FFR are dominated by native plant species. Standard 6 does not apply to the allotment.

**Standard 7 (Water Quality)**

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

X Standard Doesn't Apply

No intermittent or perennial streams are present within the allotment; therefore, no water quality assessments have been completed within the allotment, and beneficial uses have not been designated (IDEQ 2014). Standard 7 does not apply to the allotment.

**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:**

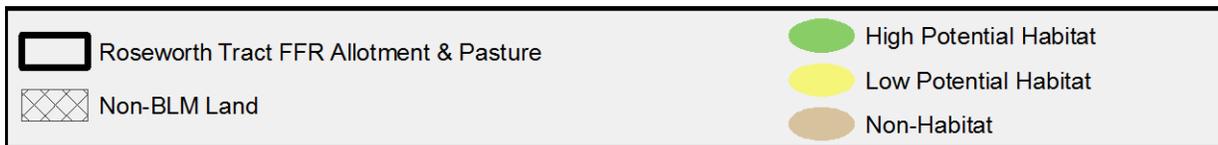
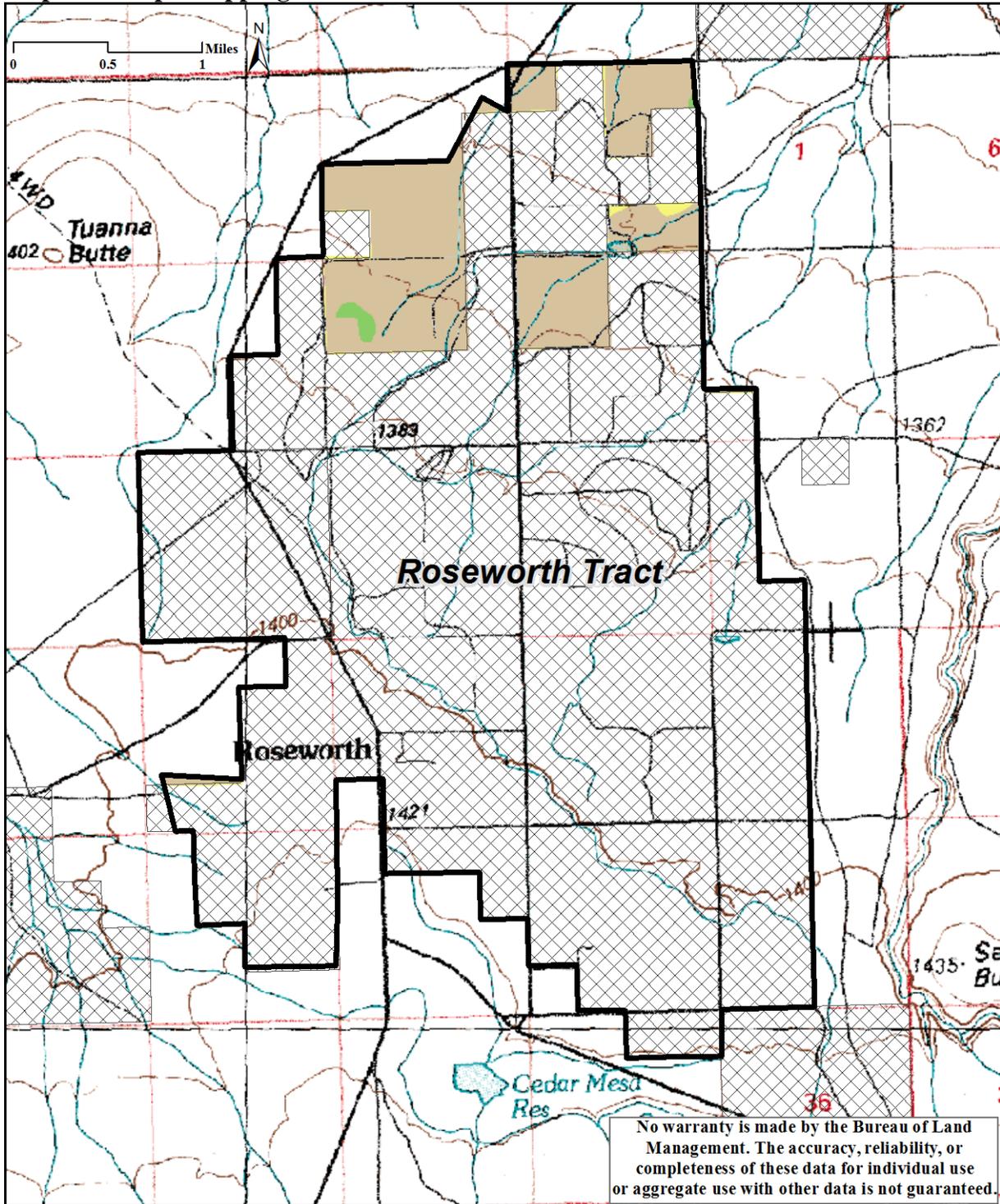
There are no known BLM sensitive plants within the allotment; however, systematic inventories for special status plants have not been conducted. In the JFO special status plants are generally associated with distinct soil types that occur in scattered portions of the field office. None of these soil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

Slickspot peppergrass grows in the semiarid sagebrush-steppe ecosystem of southwestern Idaho. Interspersed within this habitat type, slickspot peppergrass can be found in visually distinct microsites known as slickspots (mini playas or natric sites) that act as small water basins and where the sodium and clay content is higher than adjacent, unoccupied habitat (Moseley, 1994). The Roseworth Tract FFR Allotment contains 29 acres (3% of allotment) of potential slickspot peppergrass habitat (Map 5). 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, and low) that identify the potential for finding the species. The allotment contains 14 acres of high potential, 15 acres of low potential, and 845 acres of non-habitat for slickspot peppergrass (Table 9). The nearest known occupied habitat for slickspot peppergrass is 17 miles west of the allotment, on the west side of Clover Creek.

**Table 9. Slickspot Peppergrass Potential Habitat on BLM lands (Acres).**

<b>Pasture</b>	<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>Non-habitat</b>
N/A	0	0	0	14
Roseworth Tract	14	0	15	823
Water (Reservoir)	0	0	0	8

**Map 5. Slickspot Peppergrass Potential Habitat**



### Animals:

Presence of various sensitive wildlife species are primarily based upon 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 Roseworth Tract FFR Allotment are discussed below.

No BLM sensitive or federally listed fish or aquatic invertebrates, or their habitat, are found in 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) through 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 eating 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% canopy cover of sagebrush, perennial herbaceous cover should average at least 7" in height with at least 10% canopy cover for grasses and at least 5% for forbs and a diversity of forb species during spring (Connelly et al., 2000).

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

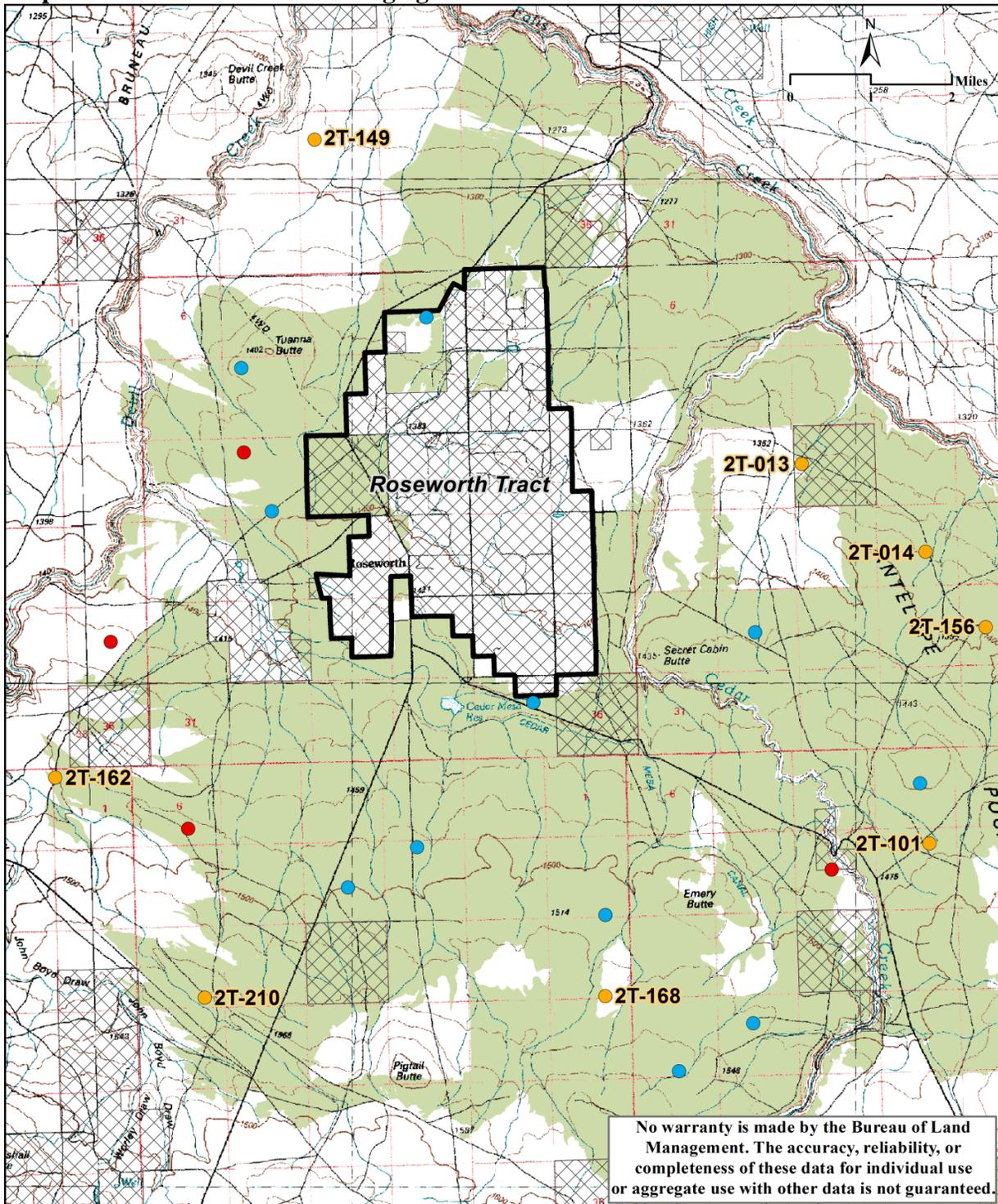
Winter habitat should have 10-30% canopy cover of sagebrush with at least 10"-14" exposed above the snow (Connelly et al., 2000).

The Roseworth Tract FFR Allotment is comprised of five small parcels of BLM land that are adjacent to or surrounded by private agricultural land in the Roseworth area. In total, these BLM parcels contain 728 acres mapped as sagebrush (83% of BLM land in the allotment is sagebrush; Map 6).

Sage-grouse have been observed year round in the adjoining allotments. Sage-grouse habitat extends around the entire Roseworth Tract FFR Allotment (Map 6).

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**Map 6. Shrubland Habitat and Sage-grouse Leks**



No warranty is made by the Bureau of Land Management. The accuracy, reliability, or completeness of these data for individual use or aggregate use with other data is not guaranteed.

	Roseworth Tract FFR Allotment & Pasture		Shrubland	<b>Management Status</b>	
	Non-BLM Land		Occupied		Undetermined
			Unoccupied		

The Roseworth Tract FFR Allotment contains 1 historical sage-grouse lek (no documented activity since 1955). Within five miles there are 8 occupied, 11 undetermined (due to a lack of recent surveys), 1 not verified (recorded in lek database as 0 birds on lek in 2000, lek has not been counted since), and 4 unoccupied sage-grouse leks (Map 6). Lek 2T-210 was not known to occur until 2014. Sage-grouse attendance at occupied leks within five 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 Five Miles of the Roseworth Tract FFR Allotment, 2000-2014.**

Lek	Location	Survey Year <sup>1</sup>														
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14
2T-149	2.3 miles NW	18	16	12	--	--	2	3	--	0	8	0	4	12*	16	9
2T-013	2.8 miles E	--	--	--	--	--	--	0	--	0	--	--	--	0	--	14
2T-162	3.8 miles SW	18	5	8	--	--	18	8	11*	12	14	5	8	3	10	6
2T-168	3.8 miles S	16	--	--	--	--	--	--	--	--	--	--	--	--	--	4
2T-014	4.1 miles E	--	--	--	--	--	--	--	--	0	--	--	--	2	--	--
2T-101	4.6 miles SE	17	7	8	8	0	13	18	30	18	17	0	15	8	11	10
2T-210	4.6 miles S															18
2T-156	4.8 miles E	19	21	10	11	0	22	40	10	25	23	10	22	25	22	27

<sup>1</sup>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*

Sage-grouse habitat suitability assessments were not conducted in the Roseworth Tract FFR Allotment since parcels are small, are adjacent to or surrounded by private agricultural land, and have a generally poor plant understory. Cover data collected during the IIRH field visit recorded dense sagebrush cover (38% Wyoming big sagebrush) and invasive annual grasses (8% cheatgrass). Ten species of forbs were observed; however, no perennial forbs were hit along the step point transect. A list of plant species observed during the IIRH field visit is included in Appendix B. Sage-grouse sign was not observed during the IIRH field visit.

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). The allotment is generally unsuitable for nesting sage-grouse due to the allotment's location, adjacent to agricultural land and human infrastructure. In addition, cheatgrass, an

invasive annual, is scattered throughout the allotment and dominates some disturbed areas. Over time cheatgrass can displace native perennial and annual forbs.

#### *Late Brood Rearing Habitat*

The Southeast parcel contains a small reservoir approximately four acres in size and a drainage and artificial wetland area 0.4 mile in length. The West parcel contains a drainage that is 0.3 mile in length. Both drainages are adjacent to areas with suitable sagebrush cover for sage-grouse. Artificial water sources along the drainages are important as late brood rearing habitat for sage-grouse since they contain a higher abundance of preferred forbs than the surrounding uplands. Sage grouse are also attracted to alfalfa (*Medicago sativa*) and other irrigated crops on adjacent private land. Overall, the allotment provides marginal late brood rearing habitat for sage-grouse due to the allotments location. In addition, approximately 8 Russian olive (*Elaeagnus angustifolia*) trees occur along the drainage in the southeast parcel which may limit sage-grouse use of the area.

#### *Winter Habitat*

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.

Ferruginous hawks prey primarily on smaller mammals, including ground squirrels (*Urocitellus* spp.), black-tailed jackrabbits (*Lepus californicus*), mountain cottontails (*Sylvilagus nuttalli*), and pocket gophers (*Thomomys talpoides*). Fledgling birds, reptiles and insects constitute a small percent of the diet (Bechard and Schmutz, 1995).

There are no ferruginous hawk nests in the allotment. However, there are 6 nests within 1.5 mile of the allotment. Russian olives trees occur in the northeast (approximately 4 trees), southeast (approximately 8 trees), and western (1 tree) parcels. These trees could provide suitable nesting habitat for ferruginous hawks. The allotment provides marginal habitat for mammalian prey (e.g., 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%), 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" tall (Rotenberry et al., 1999). In Idaho, Brewer's sparrow nests ranged from 7.8" to 19.6" above the ground, averaged 9" from the top of the sagebrush and averaged 7" 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 Roseworth Tract FFR 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). A natural range of habitat variation would be expected to provide suitable habitat for loggerhead shrikes. Nest shrubs ranged from 35" to 117" tall (Woods and Cade, 1996). The average height of the nest was 31" and ranged from 13" to 63" 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.

Loggerhead shrikes have been observed and would be expected to nest and forage on the allotment. At this time, sagebrush of suitable height for nesting occurs in the allotment (tallest sagebrush recorded on the transect was 47"). Additionally, the scattered Russian olives 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 sparrow will 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" 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%) 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.

No surveys for pygmy rabbits have been conducted in the allotment. Most parcels contain sagebrush but, the proximity to agricultural land makes the habitat quality poor due to human disturbance and infrastructure.

#### 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). A natural range of habitat variation would be expected to provide suitable habitat for Piute ground squirrels.

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. The allotment's 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 within the allotment, but spotted bats may forage over the allotment.

### **Evaluation for Standard 8**

There are no known BLM sensitive or federally-listed plants within the Roseworth Tract FFR Allotment; however, systematic inventories for special status plants have not been conducted. GIS modeling predicts that the allotment contains 14 acres of high-potential and 15 acres of low-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.

No BLM sensitive or federally-listed fish or aquatic invertebrates, or their habitat, are found within the allotment. Habitat for BLM sensitive wildlife species does occur within the allotment and the overall habitat ratings for each species are shown in Table 11.

**Table 11. Overall Habitat Suitability for BLM Sensitive Wildlife Species within the Roseworth Tract FFR Allotment.**

<b>Species Name and Type of Habitat</b>	<b>Roseworth Tract FFR</b>
Sage-grouse (nesting & early brood rearing) (late brood rearing) (winter)	Unsuitable Marginal 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).

Due to the allotment's location, it is generally unsuitable for sage-grouse during nesting and early brood rearing. Irrigated agricultural lands on private land may provide some late brood rearing habitat for sage-grouse. It is unlikely that sage-grouse would use the allotment as winter habitat.

The allotment contains scattered Russian olive 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.

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. Most parcels contain sagebrush but the proximity to agricultural land makes the habitat quality poor.

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

Spotted bat roosting habitat was rated unsuitable since cliffs are not present in the allotment; however, spotted bats may forage over the 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 Roseworth Tract FFR Allotments is comprised of five small parcels of BLM land that are adjacent to or surrounded by private agricultural land in the Roseworth area. These parcels generally had a poor plant understory and contained noxious weeds and cheatgrass making it marginal to unsuitable for the majority of special status species. Cheatgrass is scattered throughout these parcels and dominates some disturbed areas. Over time cheatgrass can displace native perennial and annual forbs. Therefore, the Roseworth Tract FFR 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: 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**

<b>Scientific Name</b>	<b>Common Name</b>	<b>Species Type</b>
<b>Perennial Grasses</b>		
<i>Achnatherum thurberianum</i>	Thurber's needlegrass	Native
<i>Poa secunda</i>	Sandberg bluegrass	Native
<b>Annual Grasses</b>		
<i>Bromus tectorum</i>	Cheatgrass	Exotic, Invasive
<b>Perennial Forbs</b>		
<i>Astragalus lentiginosus</i>	Freckled milkvetch	Native
<i>Balsamorhiza hookeri</i>	Hooker's balsamroot	Native
<i>Castilleja angustifolia</i>	Northwestern Indian paintbrush	Native
<i>Erigeron pumilus</i>	Shaggy fleabane	Native, Sage-grouse Preferred
<i>Iva axillaris</i>	Poverty weed	Native
<i>Machaeranthera canescens</i>	Hoary tansyaster	Native
<i>Phlox aculeata</i>	Sagebrush phlox	Native, Sage-grouse Preferred
<i>Phlox hoodii</i>	Spiny phlox	Native, Sage-grouse Preferred
<i>Zigadenus venenosus</i>	Meadow deathcamas	Native
<b>Annual Forbs</b>		
<i>Lactuca serriola</i>	Prickly lettuce	Exotic, Sage-grouse Preferred
<i>Lepidium perfoliatum</i>	Clasping pepperweed	Exotic
<i>Sisymbrium altissimum</i>	Tall tumbled mustard	Exotic
<b>Shrubs</b>		
<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	Wyoming big sagebrush	Native
<i>Chrysothamnus viscidiflorus</i>	Yellow rabbitbrush	Native

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